



European level report: Key descriptive statistics on the consideration of water issues in the Rural Development Programmes 2014-2020

WRc is an Independent Centre of Excellence for Innovation and Growth. We bring a shared purpose of discovering and delivering new and exciting solutions that enable our clients to meet the challenges of the future. We operate across the Water, Environment, Gas, Waste and Resources sectors.

RESTRICTION: This report has the following limited distribution:

External: European Commission

Any enquiries relating to this report should be referred to the Project Manager at the following address:

WRc plc,
Frankland Road, Blagrove,
Swindon, Wiltshire, SN5 8YF
Telephone: + 44 (0) 1793 865000

Website: www.wrcplc.co.uk

Follow Us:



European level report: Key descriptive statistics on the consideration of water issues in the Rural Development Programmes 2014-2020

Authors:

Josselin Rouillard

Ecologic Institute

Maria Berglund

Fresh Thoughts

With Contributions from:

Paola Banfi (Milieu), Guido Schmidt (Fresh Thoughts), Thomas Dworak (Fresh Thoughts), Ruta Landgrebe (Ecologic), Edi Interwies (Intersus) and Rodrigo Vidaurre (Ecologic)

Date: March 2017

Report Reference: UC12064.01

Project Manager: Ian Codling

Project No.: 15955-G

Client: European Commission

Client Manager: Ian Codling

Document History

Version number	Purpose	Issued by	Quality Checks Approved by	Date
V.01	Final report issued to Commission	Maria Berglund	Ian Codling	31 March 2017

© European Commission 2017

The contents of this document are subject to copyright and all rights are reserved. No part of this document may be reproduced, stored in a retrieval system or transmitted, in any form or by any means electronic, mechanical, photocopying, recording or otherwise, without the prior written consent of European Commission.

This document has been produced by WRc plc.

Contents

1.	Introduction	1
2.	Objective of the report.....	4
3.	The SWOT analysis: characterisation of the RDP region and pressure assessment .5	
3.1	Background	5
3.2	Do RDPs use information from WFD implementation?	5
3.3	Are the main agricultural pressures on the water environment identified?	7
3.4	Key messages.....	9
4.	RDPs strategy: selected priorities and measures	10
4.1	Background	10
4.2	Is there a strategic linkage between RDP and WFD objectives?	11
4.3	Which measure types were selected?	12
4.4	Key messages.....	15
5.	RDP measures: design and targeting	16
5.1	Background	16
5.2	Which measures are funded to tackle water pressures?	17
5.3	Are measures targeted to support WFD and FD implementation?	20
5.4	Are there measures that may maintain and or increase agricultural pressures on water bodies?	23
5.5	Do RDPs fulfil the ex-ante conditionality 5.2?	24
5.6	Key messages.....	26
6.	Indicator plan and RDP budget.....	27
6.1	Background	27
6.2	How ambitious are the RDPs with regards to environmental and water objectives?	28
6.3	Which measures under Priority 4 are most funded?	30
6.4	Do RDPs propose additional indicators to measure progress on water issues?	32
6.5	Key messages.....	33
7.	Conclusions.....	34
8.	References	37

Appendices

Appendix A	MS Annexes	38
------------	------------	----

List of Tables

Table 4-1	Relevant Priorities and focus areas	10
Table 4-2	10 RDP measures with the most direct link to water and flood management	10
Table 6-1	CMEF context and target indicators most relevant to water management	27
Table 6-2	Minimum and maximum RDP expenditures under Priority 4 for selected measures (% of Priority 4 budget).....	31

List of Figures

Figure 1-1	Simplified illustration of a process to identify and fill in the gap between the current status of water bodies and the objective of WFD good water status	2
Figure 3-1	Key aspects of the WFD reflected in the SWOT (% of RDPs, N=52)	6
Figure 3-2	Environmental objectives of the WFD	7
Figure 3-3	Significant agricultural pressures identified in the RDPs (% of RDPs, N=52).....	8
Figure 3-4	Significant agricultural pressures mentioned in RDPs and RBMP (% of RDPs, N=52)	9
Figure 4-1	Reference to the WFD and FD in the overarching RDP Strategy (% of RDPs, N=52)	12
Figure 4-2	Measures proposed under Priority 4 (% RDPs, N=52)	14
Figure 5-1	Measures most used to tackle pollution pressure from arable farming (% RDPs, N=52).....	18
Figure 5-2	Measures most frequently proposed for pollution pressures from livestock farming (% RDPs, N=52).....	19
Figure 5-3	Measures most used to tackle hydrological and morphological pressures from land drainage, flood protection and irrigation (% RDPs, N=52).....	20
Figure 5-4	Design of measures and their sub-measures to support water management (% of RDPs, N=52).....	21
Figure 5-5	Targeting of activities funded in RDPs (% of RDPs, N = 52)	22
Figure 5-6	Use of spatial targeting in RDPs (% RDPs)	23
Figure 6-1	Average budget per priority (% of total budget of RDP, N=52)	28
Figure 6-2	Value for the Indicator T10 “% of agricultural land under management contracts improving water management” (% of RDPs, N=52)	29

Figure 6-3	Value for the Indicator T14 “% of irrigated land switching to more efficient irrigation system” (% of RDPs, N=22).....	30
Figure 6-4	Average budget per measure under Priority 4 (% of total budget of Priority 4, N=52)	31

1. Introduction

Agriculture has been identified by EU member states as an important sector responsible for exerting pressures on waterbodies that need to be addressed in order to allow the achievement of the Water Framework Directive's (WFD) objective of 'good status' of all water bodies. The 2012 assessment of the 1st cycle WFD River Basin Management Plans (RBMPs) indicated that over 92% of the River Basin Districts consider agriculture as a significant pressure¹. The 2015 assessment of the draft 2nd RBMPs (2015-2021)² indicated that diffuse pollution associated with fertiliser and pesticide use is the most important agricultural pressure. A third of the draft 2nd RBMPs also reported pressures from water abstraction and morphological modifications resulting from agriculture as affecting achievement of good status.

To achieve its environmental objectives, the WFD relies on the implementation of "basic" and "supplementary" measures (Figure 1-1). Basic measures are the minimum to be included in the programmes of measures in RBMPs and must consist of:

- Measures associated with the implementation of other Community legislation for the protection of waters (referred to in WFD Article 11(3) a and Annex VI, for example, measures to achieve compliance with the objectives of the Nitrates Directive, and
- Other WFD-specific basic measures (WFD Articles 11(3) paragraphs b to l) that are required to be established by member states to address agricultural pressures at source to help achieve the environmental objectives. These WFD-specific basic measures require the establishment of controls (e.g. general binding rules) or other regulatory instruments, such as permit regimes for agricultural abstraction, controls on diffuse sources of pollution (phosphate, nitrates, pesticides, soil/sediment), and measures to protect drinking water catchments to reduce the level of treatment needed.

Basic measures are a mandatory component of the programme of measures. However, on their own they may not be sufficient to ensure that agricultural pressures are reduced to the level to secure the environmental objectives. In those cases, supplementary measures are

¹ European Commission (2012). Staff Working Document. European Overview (2/2), Accompanying the document Report from the Commission to the European Parliament, the Council on the implementation of the Water Framework Directive (2000/60/EC) River Basin Management Plans {COM (2012)670 final}

² WRC et al. (2015) Screening of draft second cycle river basin management plans. See: ec.europa.eu/environment/water/2015conference/pdf/Screening%20Assessment.pdf.

required (Article 11(4) to be established by the MS. The WFD is not prescriptive on the type of supplementary measures. Many member states have chosen to rely to a large extent on the Rural Development Programmes (RDPs) to deliver supplementary measures to tackle pressures from agricultural activities³. Depending on how ambitious the basic measures are will determine the scale of the remaining gap to be filled by supplementary measures like those funded through the RDPs. The combination of basic and supplementary measures should allow agriculture pressures to be addressed to the extent that they allow for the achievement of good status.

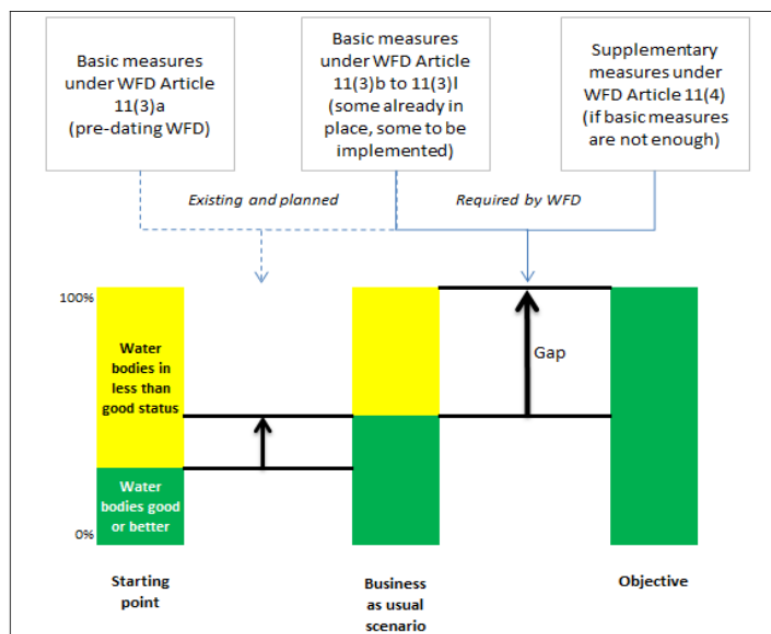


Figure 1-1 Simplified illustration of a process to identify and fill in the gap between the current status of water bodies and the objective of WFD good water status

In parallel, the Floods Directive (FD) requires to take coordinated measures to reduce flood risk across Europe and to ensure synergies with the measures included under the WFD. A major opportunity identified in the Blueprint to Safeguard Europe's Waters in 2012⁴ was to enhance the implementation of both the WFD and to contribute towards the FD through the

³ European Commission (2015): Communication from the Commission to the European Parliament and the Council. The Water Framework Directive and the Floods Directive: Actions towards the 'good status' of EU water and to reduce flood risks. {COM/2015/0120 final}

⁴ European Commission (2012): Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. A Blueprint to Safeguard Europe's Water Resources COM/2012/0673 final

implementation of natural water retention measures on agricultural and rural land⁵. NWRM are “multi-functional measures that aim to protect water resources and address water-related challenges by restoring or maintaining ecosystems as well as natural features and characteristics of water bodies using natural means and processes”⁶. The use of NWRM in the agricultural landscape can lead to reduced run-off, increased water storage in period of excessive precipitation and thereby reduced flood risk and more abundant reserves during periods of scarcity. The Blueprint recommended promoting NWRM through EU agricultural and rural development policies.

Agriculture is an important economic activity found in rural areas across Europe, but faces numerous environmental, social and economic challenges. To strengthen the resilience of rural areas, the EU has laid out the following objectives and priorities for rural development within the EU for the period 2014-2020⁷: 1) fostering the competitiveness of agriculture; 2) ensuring the sustainable management of natural resources, and climate change and 3) achieving a balanced territorial development of rural economies and communities including the creation and maintenance of employment. The preservation of natural resources is thus a central objective of European rural development policy, which recognises, as one of its focus area, that good quality water in sufficient quantity and healthy aquatic ecosystems, among good quality of other resources, is necessary for the sustainable development of rural areas and the future of agriculture.

Since the start of European rural development policy in 2000, the attention given in the RDPs to the protection of water resources has increased, and an assessment of the draft RDPs of the third programming period (2014-2020) showed that water management issues are now integrated in most RDPs. However, it was also found that many opportunities were missed to optimize their design to effectively support the achievement of the WFD and FD objectives. The RDPs 2014-2020 are now adopted in all Member States. It is thus timely to assess the extent to which RDPs integrate water issues, and fund measures that can lead to an improvement in water status. Results can inform future policy developments, with the view to maximise synergies between the three (rural development, water and flood) policy areas, and strengthen the successful implementation of RBMPs across Europe.

⁵ European Commission (2014). EU Water Policy Document on Natural Water Retention Measures. WFD CIS Working Group Programme of Measures.

⁶ *ibid*

⁷ Regulation (EU) No 1305/2013 of the European Parliament and of the Council of 17 December 2013 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) No 1698/2005

2. Objective of the report

This report provides an assessment of how current RDPs (2014-2020) address agricultural pressures on water bodies and promote measures that can contribute to protect and restore the water environment. The analysis presented in this report examines whether RDPs fulfil minimum regulatory requirements, but also whether RDPs go beyond compliance and offer good practice that can help ensure waters are restored to good status. Specific attention was given to synergies with the WFD and the RBMPs. The extent to which RDPs address the management of flood risks and link with the FD and FRMPs was also explored.

This report focuses on providing an EU level overview based on quantitative statistics compiled on 52 RDPs (out of 118), covering a total of 129.3 million ha of agricultural land, including 6.6 million ha of irrigated land, and 113 billion Euros of planned public spending. The statistics are based on the assessment presented in the Member State Annexes (see Appendix A). All MS were covered, including a selection of RDPs from MS which opted for a regional approach (Belgium, Germany, France, Italy, Spain, UK)⁸.

All RDPs follow the same structure: an economic, social and environmental characterisation of the RDP area (in Chapter 4 of each RDP), a description of the main strategic objectives of the RDP (in Chapter 5 of each RDP), a detailed description of measures to be funded (in Chapter 8 of each RDP), a budget and indicator plan (in Chapter 10 and 11 of each RDP). This report presents results of the assessment for each of these topics. Background information is first provided, followed by key results in the form of figures and statistics at EU level, and concluding on key messages arising from this assessment.

⁸ In countries with a regionalised approach (e.g. France, Italy), national framework RDPs were not included in the statistics. Instead, key measures funded nationally were included in the regional statistics.

3. The SWOT analysis: characterisation of the RDP region and pressure assessment

3.1 Background

The SWOT analysis in the RDP provides an overview of the key economic, social and environmental characteristics in the RDP region, and identifies the agricultural and rural development issues that should be addressed. It serves to justify the RDP strategy, the measures, the targets, and budget.

To carry out this diagnostic regarding agricultural pressures and impacts on the water environment, the RDP can rely on the assessments prepared during the implementation of the WFD in the so-called Article 5 characterisation of river basins and identification of significant water management issues. The most up-to-date information ordinarily should have been prepared in 2012-2013 for the preparation of the 2nd cycle RBMPs (2015-2021). The SWOT analysis could thus refer to the relevant river basin districts in the RDP area, and report relevant WFD information, in particular the percentage of water bodies failing good status and the attribution of this to the agricultural sector.

More specifically, one can expect the SWOT analysis to provide an overview of the agricultural production types (and where in the RDP area) are causing the most pressures, for example:

- Point and diffuse pollution (nitrogen, phosphorous, sediments) from arable farming, horticulture and cattle farming.
- Point and diffuse pollution of pesticide from arable farming and horticulture.
- Hydrological alterations associated with abstraction for irrigation.
- Morphological modifications such as dredging, bed and bank reinforcement, river straightening and realignment, and impounding (e.g. dams, reservoirs, weirs) associated with irrigation, agricultural drainage and flood protection of arable land.

Such detailed assessment of sources would then allow for better design and targeting of RDP measures to address these pressures on water bodies.

3.2 Do RDPs use information from WFD implementation?

Overall, 87% of reviewed RDPs refer to the WFD in the SWOT chapter, while 33% of RDPs mention the FD. The majority of RDPs (65%) refer to the river basins relating to the RDP area and report water bodies failing good status (Figure 3-1). 54% of the RDPs clearly indicate that the information used came from the most recent Article 5 characterisation. However only 4%

(2 out of 52 RDPs) mention the targets set in RBMPs for reaching good status for the next deadline in 2021.

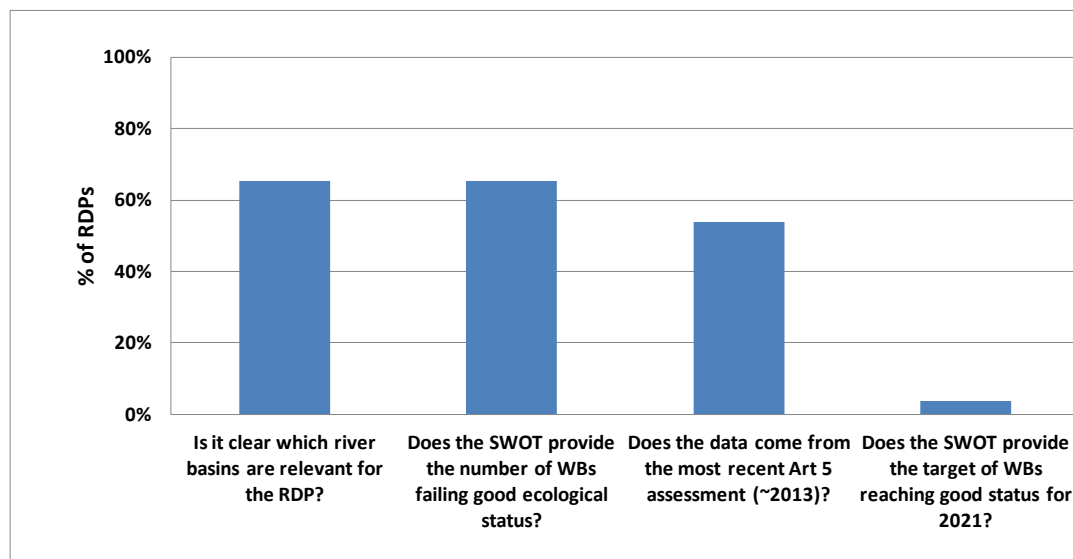


Figure 3-1 Key aspects of the WFD reflected in the SWOT (% of RDPs, N=52)

It is important to note that, while RDPs may report water bodies failing “good status”, they do not necessarily indicate whether this is in relation to “good ecological status” and “good chemical status” of surface waters, and “good chemical status” and “good quantitative status” of groundwater (Figure 3-2). Ecological status relates to the status of biological, physico-chemical and hydro-morphological quality elements. Chemical status specifically relates to status in relation to priority substances, such as mercury and several types of pesticides and heavy metals, which are not considered in the evaluation of good ecological status of WBs.

The 1st assessment of RBMPs in 2012 reported that 43% of river basin districts designated water bodies as heavily modified in terms of their hydrological dynamics and morphological characteristics, due to irrigation, 56% due to drainage and 77% due to flood protection. Irrigation is driven by agricultural activities, while drainage and flood protection is linked to a range of water uses, including agriculture. Under the WFD, heavily modified water bodies must reach good ecological potential. Mitigation measures are expected to address the impact of hydro-morphological modifications and reach WFD good ecological potential. However, the assessment of RDPs has shown that RDPs do not report information on heavily modified water bodies, good ecological potential, or mitigation measures.

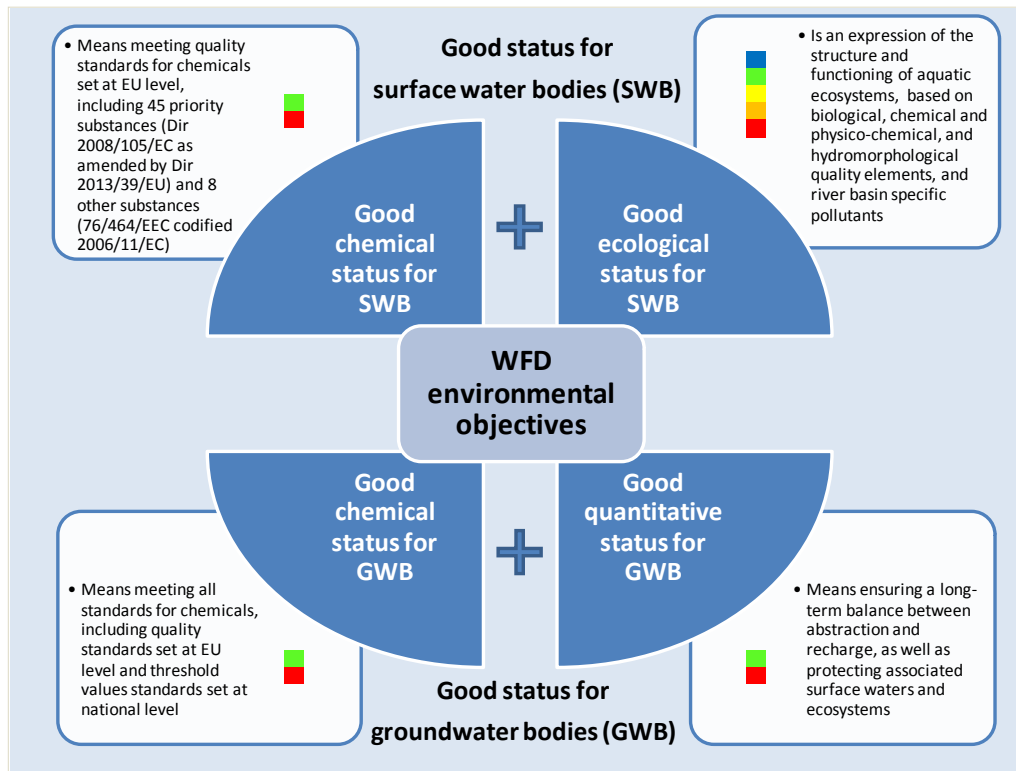


Figure 3-2 Environmental objectives of the WFD

3.3 Are the main agricultural pressures on the water environment identified?

Figure 3-3 shows pressures and associated agricultural activities reported as significant in the RDP areas as presented in the SWOTs of the RDPs. Diffuse pollution of nutrients (nitrogen, phosphorus) and pesticides from arable farming were the most frequently reported pressures (respectively 69% and 60% of RDPs). The least reported were morphological pressures from land drainage and/or flood protection (17%), irrigation infrastructures (14%) and livestock farming (6%).

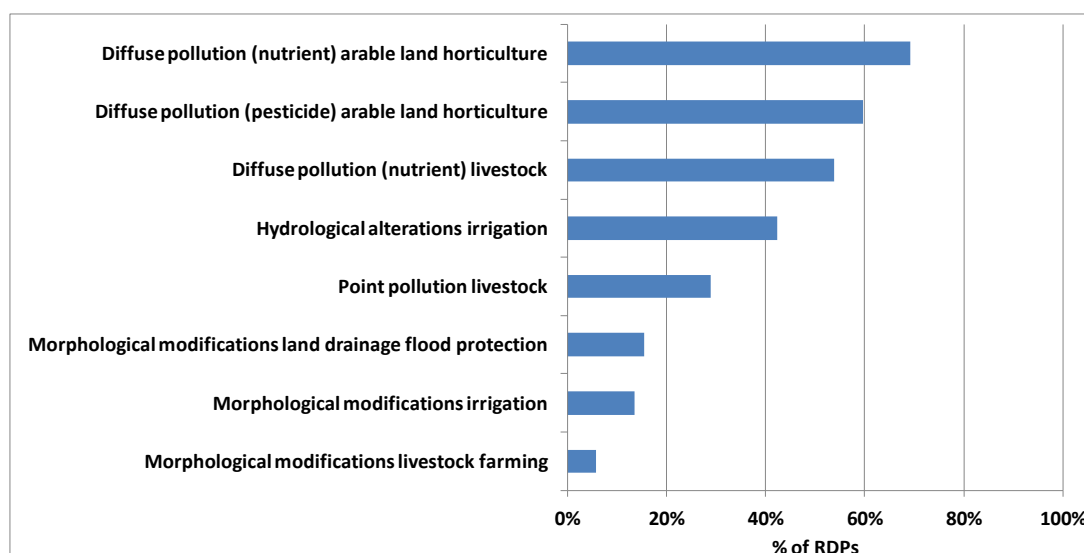


Figure 3-3 Significant agricultural pressures identified in the RDPs (% of RDPs, N=52)

The consistency between pressures identified in RDPs and the relevant RBMPs in the RDP area was examined (Figure 3-4):

- The majority of RDPs report diffuse nutrient and pesticide pollution from arable farming and horticulture, and nutrient diffuse pollution from livestock farming, when the relevant RBMPs have done so.
- In most cases, also the reporting of abstraction for irrigation is consistent. 44% of RDPs report the pressure as significant when the relevant RBMPs do so. An additional 33% of RDPs do not report the pressure when the relevant RBMPs did not identify this pressure as significant.

Most non-alignment between RDPs and RBMPs occurs in the reporting of morphological pressures:

- 44% of RDPs do not mention morphological pressures from land drainage and flood protection when these have been identified as significant in the relevant RBMPs.
- 38% of RDPs do not mention morphological pressures from cattle farming when these have been identified as significant in the relevant RBMPs.
- 31% of RDPs do not mention morphological pressures from dams, reservoirs, weirs and other barriers when these have been identified as significant in the relevant RBAMPs.

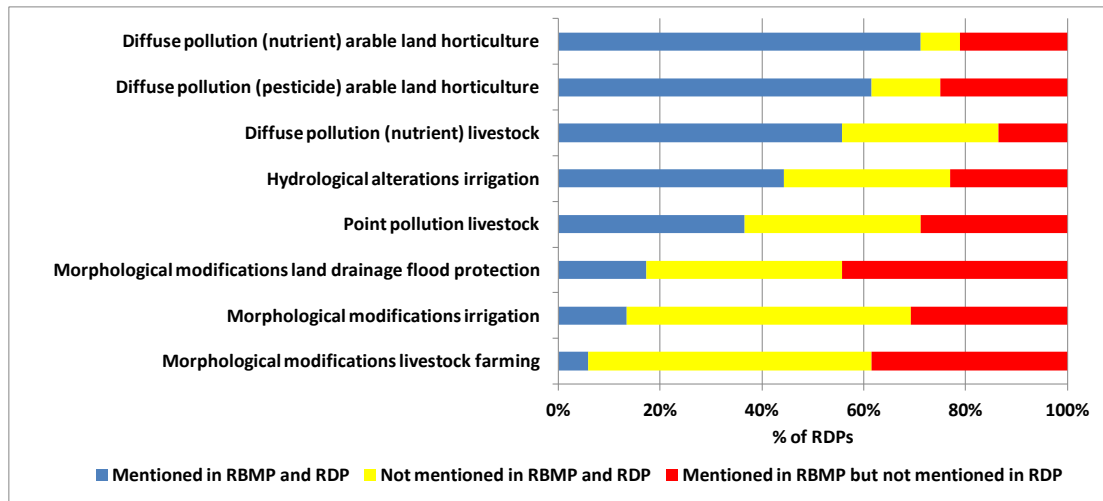


Figure 3-4 Significant agricultural pressures mentioned in RDPs and RBMP (% of RDPs, N=52)

3.4 Key messages

- The majority of SWOTs from the reviewed RDPs report information taken from the relevant RBMPs when describing the state of the RDP region, which demonstrates information exchange and coordination occurs between the two policy areas.
- The RDPs usually report information on the status of surface and groundwater in the RDP area. However, they generally do not clearly differentiate between the different objectives embedded in the WFD (ecological vs chemical vs quantitative), and a minority of RDPs report information on the FD. It is thus difficult to judge from the RDPs, which rather usually refer to the overall objective of improving water management, what the main priorities and targets are for reaching WFD and FD objectives.
- On the reporting of agricultural pressures, it is positive that the reviewed RDPs are mostly consistent with the RBMPs with regards to important pressures such as nutrient and pesticide pollution and hydrological alterations associated with abstraction for irrigation.
- Inconsistencies nevertheless exist with regards to the reporting of pressures linked to dredging, bed and bank reinforcement, river realignment and impounding for land drainage, food protection and irrigation. These modifications to the morphological conditions of water bodies support agricultural activities but can negatively affect the status of waters. It would be important to highlight the scale of these pressures in the RDP regions in the SWOT and identify opportunities for reducing their impacts on the water environment in view of supporting the achievement of the WFD objectives.

4. RDPs strategy: selected priorities and measures

4.1 Background

The European Union has identified six economic, social and environmental priorities for the 2014-2020 RDP programming period, each of which includes sub-priorities called “focus areas”. These priorities form the basis of the intervention logic of the RDPs. Focus Area 3B “Supporting farm risk prevention and management”, 4B “Improving water management, including fertiliser and pesticide management” and 5A “Increasing efficiency in water use by agriculture” are more directly linked to water and flood management (Table 4-1). RDPs must describe the specific objectives of each priority and focus area, and the selected measures which will contribute to reaching these objectives. To create a good link between the RDP and water management objectives, the RDP strategy should include an explicit support to water management and to achieving the objectives of the WFD or FD.

Table 4-1 Relevant Priorities and focus areas

Priority 3 “Promoting food chain organisation, animal welfare and risk management”
<i>Focus Area 3B “Supporting farm risk prevention and management”</i>
Priority 4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry”
<i>Focus Area 4B “Improving water management, including fertiliser and pesticide management”</i>
Priority 5 “Promoting resource efficiency and a low carbon and climate resilient economy”
<i>Focus Area 5A “Increasing efficiency in water use by agriculture”</i>

There are 19 measure types available for the RDPs to programme. Several measures can fund actions directly relevant to water and flood management (Table 4-2). The RDP should describe how the selected measures can help to reduce agricultural impacts on water resources.

Table 4-2 10 RDP measures with the most direct link to water and flood management

Measure	Description of relevant sub-measures for water and flood management
Measure 1 “Knowledge transfer”	Training to increase capacity and skills, including environmental skills.
Measure 2 “Advisory services”	Information provision through extension services and farm-level advice, including on environmental dimensions.
Measure 4 “Investments”	Measures such as more efficient fertilizer application, expanding manure storage, irrigation systems and non-productive investments

	tied to agri-environment-climate.
Measure 5 “Natural disasters”	Restoring farms after flood damage and invest in flood prevention.
Measure 7 “Basic services”	Floodplain management, wetland restoration, improving river continuity (e.g. fish ladders on dams), re-meandering, other river restoration work.
Measure 8 “Forest investments”	Afforestation, riparian forests and other forest-based landscape features (tree-belts) and land use (e.g. agro-forestry).
Measure 10 “Agri-environment-climate”	Soil conservation, green cover, buffer strips and riparian margins, land use conversion from arable to grassland, reduced fertilisers and pesticides application, hedgerows, extensive grassland management.
Measure 11 “Organic farming”	Organic reducing inorganic fertiliser and pesticide use
Measure 12 “Natura 2000 and WFD payments”	WFD payments to support farmers to meet requirements introduced by the Water Framework Directive in accordance with the programmes of measures of the river basin management plan. For example, M12 compensation may be provided by a member state when agri-environment-climate or organic farming is made obligatory in order to protect specific drinking water areas or reach WFD objectives.
Measure 16 “Cooperation”	Cooperative action, pilot projects and innovative practices. For example, collaborative projects between farmers, scientists and authorities to implement natural water retention measures across whole catchments.

4.2 Is there a strategic linkage between RDP and WFD objectives?

The Strategy chapter of each RDP is divided into two sub-chapters: the overarching objectives of the RDP are presented in the first sub-chapter; specific objectives and targets for each selected Priorities and Focus Areas are presented in the second sub-chapter.

Examining the first sub-chapter on the overarching objectives of each reviewed RDP, the following can be highlighted (Figure 4-1):

- 94% of RDPs aim to support water management *in general*, and 33% of RDPs aim to support flood risk management *in general*.
- 63% of RDPs specifically state that the RDP aims to contribute to WFD implementation, and 8% of RDPs specifically state that the RDP aims to contribute to FD implementation.

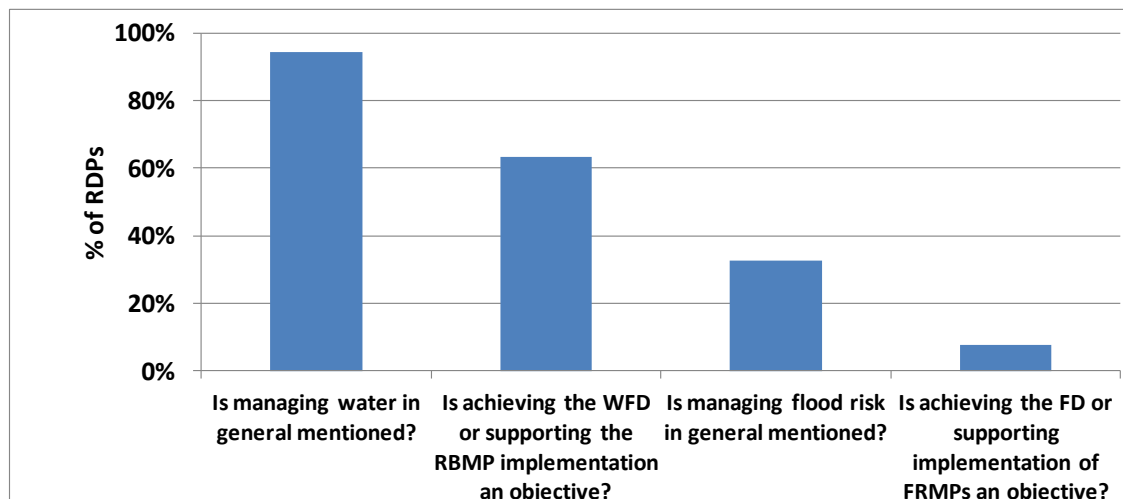


Figure 4-1 Reference to the WFD and FD in the overarching RDP Strategy (% of RDPs, N=52)

Examining the second sub-chapter on selected Priorities and Focus Areas, the following can be highlighted:

- All RDPs selected Focus Area 4B “Improving water management, including fertiliser and pesticide management”.
- While 54% of RDPs selected Focus Area 3B “Supporting farm risk prevention and management”, 15% of RDPs specifically mention flood and/or drought risk management. No RDP aims to contribute to the implementation of the FD under this Focus Area.
- 52% of RDPs selected Focus Area 5A “Increasing efficiency in water use by agriculture”.

Overall, there is a good level of support in the reviewed RDPs towards water management, in particular fertiliser and pesticide management and increased efficiency in water use by agriculture, while flood risk management is not always promoted in the objectives of the reviewed RDPs. Also, RDPs do not always explicitly support the reaching of WFD and FD objectives, which may indicate missed opportunities in how RDP water and flood related measures could be optimised to support WFD or FD implementation.

4.3 Which measure types were selected?

The Strategy chapter of each RDP provides an overview of the measures programmed for Priority 4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry”. Measures selected apply uniformly to all Focus Areas 4A (biodiversity), 4B (water)

and 4C (soils). It is thus not possible to report a list of measures RDPs specifically selected for 4B “Improving water management, including fertiliser and pesticide management”.

The most frequently selected measures in the reviewed RDPs are M10 “agri-environment-climate” (100% of RDPs) and M11 “organic farming” (98%). Both measures support changes to land management to protect biodiversity, reduce water pollution and reduce soil erosion. 81% of RDPs programme M4 “investments” which provides funding for investment in machinery, equipment and non-productive investments supporting agri-environment-climate measures.

In addition, the majority of RDPs programme various knowledge transfer measures (M1 “knowledge transfer” and M2 “advisory services” in 75% and 67% of RDPs respectively) and incentives for innovative collaborations for environmental management (M16 “co-operation” in 58% of RDPs). Many RDPs also provide payments under M7 “basic services” (62% of RDPs) which can support a range of measures to revitalise rural areas through e.g. habitat restoration, rural sewage and water schemes, and under M8 “forest investments” (56% of RDPs), which can support less intensive forestry (e.g. establishment of riparian forests, agro-forestry). M12 “Natura 2000 and WFD payments” is included in 52% of reviewed RDPs. When programmed specifically for the WFD, these payments can be applied where RBMPs include mandatory (supplementary) measures.

It is important to note that the figures reported above indicate an intention to use these measures for environmental management, and do not indicate whether they are used specifically for water management. The next Chapter 5 presents in more detail which measures and sub-measures are used specifically for water management.

M13 “areas facing natural or other specific constraints” is programmed against Priority 4 in 83% of RDPs. However, the main purpose of the measure is to maintain agriculture in these areas. Since the support under this measure can concern various types of agriculture with different impacts on the environment, benefits for the (water) environment may vary widely between contexts, and are thus unclear.

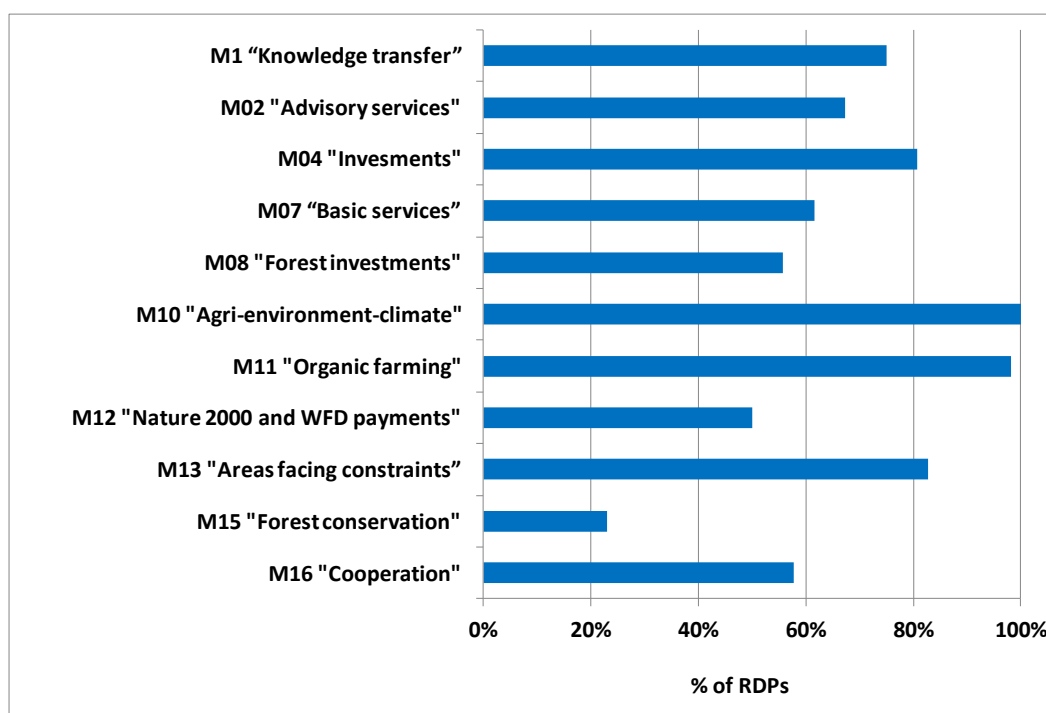


Figure 4-2 Measures proposed under Priority 4 (% RDPs, N=52)

The Strategy chapter provides an overview of the measures programmed under Focus Area 3B “Supporting farm risk prevention and management” and 5A “Increasing efficiency in water use by agriculture”.

Amongst the 28 RDPs which identified Focus Area 3B “Supporting farm risk prevention and management” as a relevant sub-priority for their RDP area, M5 “Natural disasters” was the most selected measure (7 RDPs), followed by M1 “knowledge transfer” (3 RDPs), M2 “advisory services” (4 RDPs), and M16 “cooperation” (1 RDP). RDPs programmed M5 to provide compensation payments to farms in order to recover from natural disasters. No RDPs used M5 to promote the overall resilience of farms and surrounding rural areas, for example by adapting farming practices more resilient to future risks (e.g. increased flood and droughts predicted under climate change).

24 RDPs identified Focus Area 5A “Increasing efficiency in water use by agriculture” as relevant to their RDP area. Out of these 24 RDPs, 22 RDPs selected M4 “investments” which can fund more water efficient irrigation infrastructure, as well as new irrigation networks, reservoirs and impoundments to increase water storage and supply in new areas (not previously irrigated). It is possible therefore that some measures under Focus Area 5A, while delivering efficiency for the farmer with regard to water use, may not deliver a benefit for the water environment. 3 RDPs selected M10 “agri-environment-climate” which can support adaptation to cropping and use of water efficient crops and crop varieties. Knowledge exchange and cooperation under M1 “knowledge transfer”, M2 “advisory services” and M16 “cooperation” are proposed in respectively 14, 13 and 14 RDPs.

4.4 Key messages

- The vast majority of reviewed RDPs present a clear support to tackle fertiliser and pesticide pollution and increase efficiency in water use by agriculture. They also propose a good range of measures to promote environmental improvements, including land use management (M10 “agri-environment-climate”), investments in machinery and equipment (M4 “investments”) and knowledge transfer (M1 “knowledge transfer” and M2 “advisory services”).
- In contrast, limited focus has been given so far to addressing flood risk and how agricultural land use can contribute to reducing flood risk at the river basin scale. Currently, the focus of RDPs is on recovering from the impact of natural disasters on individual farms, instead of increasing the overall resilience of farms and rural areas.
- While the reviewed RDPs promote improved water management *in general*, they do not systematically present a stated objective to specifically support the implementation of the WFD and FD. A clear goal to support WFD and FD implementation would help maximise synergies between the three policy areas, optimise water and flood relevant measures in RDPs, and improve the overall cost-effectiveness of the RDPs.
- M13 “areas facing natural or other specific constraints” is essentially aiming to maintain agriculture in less productive areas. Since the support under this measure can concern various types of agriculture with different impacts on the water environment, the benefits for water management can also vary widely between contexts and, as such, are unclear.
- The majority of RDPs programming Focus Area 5A “Increasing efficiency in water use by agriculture” prioritise investments in (irrigation and related) infrastructure (21 out of 23 RDPs). Few RDPs propose to use M10 “agri-environment-climate” under Focus Area 5A (3 RDPs), although M10 could be used to encourage the conversion to crops with a lower water need in water scarce areas.

5. RDP measures: design and targeting

5.1 Background

The chapter on measures in the RDPs lists in more detail the sub-measures and operations funded by each programmed measure (e.g. sub-measures for M1, sub-measures for M2, etc.). It provides more information on what concrete activities are foreseen within each programme measure (see Table 4-2).

The RDPs were assessed to check which water-relevant sub-measures and operations were funded, in particular:

- NWRMs, which include a large range of agricultural land management and habitat restoration measures which may result in reduced run-off, flood risk reduction, water quality improvements, and the restoration of the morphology of water bodies⁹.
- Changes in fertiliser and pesticide product application in order to reduce total nitrogen, phosphorous or pesticide loads on farm land and modify the timing of spraying campaign so as to reduce the leaching and run-off of pollutants.
- Investments in infrastructure such as manure storage and water-efficient irrigation equipment, which can reduce the pressures and risks posed by agricultural activities to the environment.
- Investments in engineering works for land drainage, flood protection and irrigation such as dredging, bed and bank reinforcement, river straightening and realignment, and impounding (e.g. dams, reservoirs, weirs), which can result in the deterioration of water status.

Measures may include eligibility conditions that have to be met for a project to be considered for financial support. Eligibility conditions can be used to target implementation to areas where water bodies are failing good status, areas of highest societal importance (for example drinking water zones or bathing waters), or areas which may help reducing flood risk downstream. Such targeting may ensure that public funds are being deployed where the benefits are expected to be higher, therefore could enhance the overall cost-effectiveness of the RDP.

⁹ See www.nwrm.eu

In addition, measures may include selection criteria that can be used to score the applications and rank them according to their contribution to water management. Selection criteria are required to be developed for some measures (e.g. M4 “investments” and M7 “basic services”). However, MS may still develop such criteria for other measures such as M10 “agri-environment-climate” and M11 “organic farming” in order to prioritise the environmental targeting of these measures.

The potential to contribute to water management was assessed in two ways:

- When the measure or sub-measure, explicitly or implicitly, aims to contribute to water management. The description of measures or sub-measures may include a stated objective to tackling specific water pressures (explicitly), or the activities and operations proposed appear beneficial for water management (e.g. optimisation of fertiliser use) with no reference made to nutrient leaching and water pollution (implicitly).
- When the measure or sub-measure explicitly aim to support WFD or FD implementation. For example, the description of the measures or sub-measure may include a reference to the WFD or FD implementation, or the activities and operations funded may be targeted to priority areas (e.g. areas with water bodies failing good status, nitrate vulnerable zones, drinking water protection areas and areas with water deficits) identified in the RBMPs or FRMPs.

It is important to note that measures and sub-measures descriptions are not necessarily clear or specific about the type of activities that are funded, nor do they always state the benefits of the measure for a specific pressure. Also, the description of measures and sub-measures are not necessarily clear about the type of areas being targeted (e.g. referring sometimes to “water sensitive areas”). Thus, the assessment presented in this chapter required a degree of interpretation from the assessors involved in the RDP review.

5.2 Which measures are funded to tackle water pressures?

Four main agricultural pressures are identified in RDPs, including (from the most frequently reported to least reported): (1) diffuse pollution of nutrients and pesticides from arable and horticulture farming; (2) diffuse pollution of nutrients from livestock farming; (3) hydrological alterations due to irrigation; (4) morphological modifications due to land drainage, flood protection, irrigation and livestock (see Chapter 3.3).

RDPs propose a range of measures to tackle nutrient and pesticide pollution from arable farming, with an emphasis on optimisation of current practices to reduce application and intercept pollution pathways (Figure 5-1). Measures most frequently proposed in the reviewed RDPs include optimisation of product use and application (92% of RDPs) followed by a number of land use management measures (e.g. green cover, buffer strips, hedgerows, intercropping).

Measures that aim to reduce the intensity of agricultural land use are also promoted, with a preference for conversion to pastures (40% of RDPs) compared to e.g. reforestation and agro-forestry (8% of RDPs). A number of additional measures are proposed by some RDPs to tackle pesticide pollution, such as promoting cleaning and handling facilities for equipment and use of alternative biological pest-control methods.

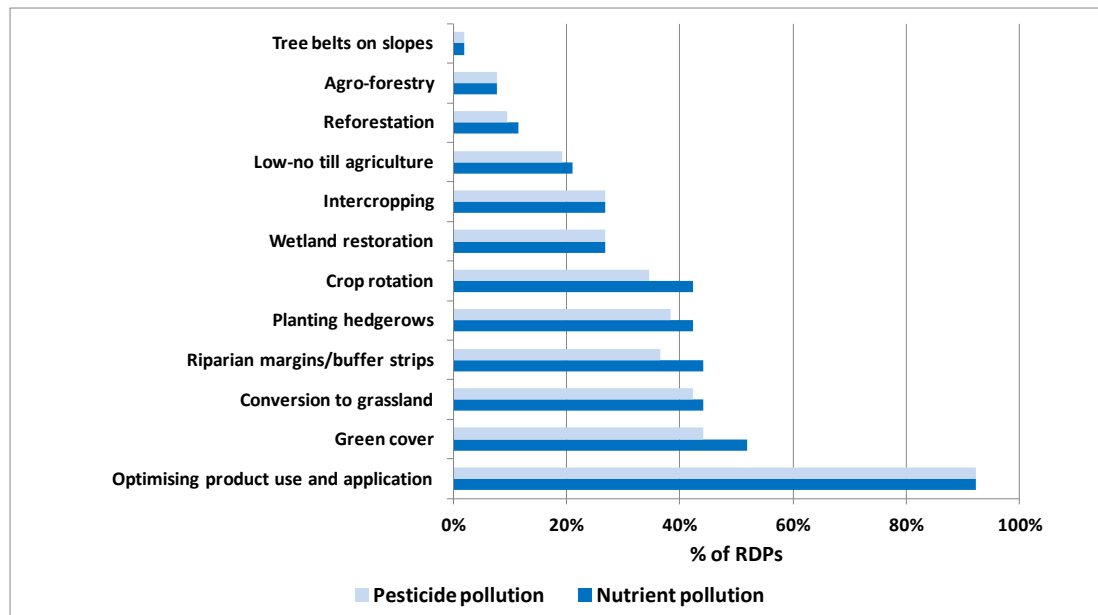


Figure 5-1 Measures most used to tackle pollution pressure from arable farming (% RDPs, N=52)

With regards to nutrient pollution from livestock farming, measures most frequently proposed in the RDPs include optimisation of fertiliser use (90% of reviewed RDPs), improved manure storage (54% of RDPs), improved wastewater treatment from livestock buildings (40% of RDPs), reduced stocking density (25% of RDPs) (Figure 5-2). A range of land use changes (buffer strips, hedgerows, wetlands, etc.) are also proposed in some RDPs, which may contribute to reduce nitrate leaching and intercept run-off and erosion particles (phosphorous) from nutrient rich fields.

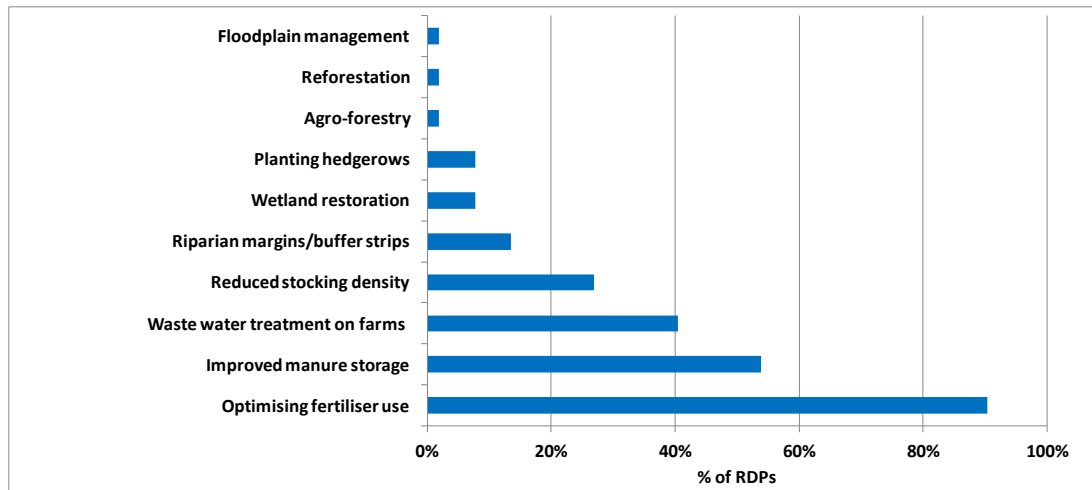


Figure 5-2 Measures most frequently proposed for pollution pressures from livestock farming (% RDPs, N=52)

With regards to hydrological pressures, measures most frequently proposed in the reviewed RDPs include modernisation of irrigation equipment (respectively 54% of RDPs), rainwater harvesting (29% of RDPs), and conversion to more water efficient crops (17% of RDPs) (Figure 5-3). To tackle morphological pressures, RDPs promote most frequently wetland restoration (33% of RDPs), floodplain management (29% of RDPs), remeandering (19% of RDPs), and the removal of embankments and dykes (19% of RDPs).

The proportion of RDPs proposing measures to tackle abstraction pressures broadly match those that reported this pressure in the SWOT section (Section 1.3.3). However, there is a mismatch with regards to morphological pressures. Furthermore, in the SWOT, morphological pressures presented the greatest inconsistencies with RBMPs, with 44% of RDPs not reporting morphological pressures from agricultural land drainage and flood protection while RBMPs did identify these pressures as significant (Chapter 3.3). Thus, few RDPs propose a comprehensive approach to tackle morphological pressures from agriculture.

No RDP Focus Area mentions morphological issues, in contrast to Focus Area 3B which is linked to flood risk, Focus Area 4B focuses on water quality and Focus Areas 5A on water scarcity. However, it is important to note that the WFD has expanded the scope of water management from a narrow focus on water quality and quantity to one that recognises the essential role that morphological conditions of water bodies play in the good status of aquatic ecosystems. It would thus be essential to further examine and tackle morphological pressures from agriculture in future rural development programmes.

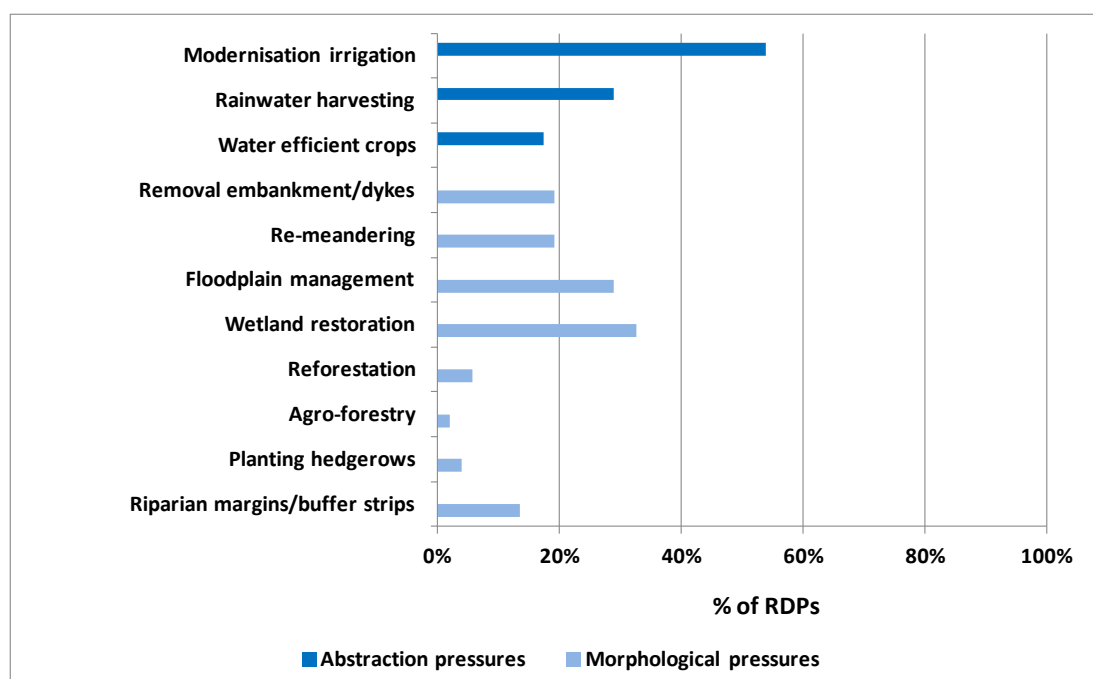


Figure 5-3 Measures most used to tackle hydrological and morphological pressures from land drainage, flood protection and irrigation (% RDPs, N=52)

5.3 Are measures targeted to support WFD and FD implementation?

It is likely that any of the measures reducing the pressures arising from agricultural activities presented in Section 5.2 will contribute to improve and protect the water environment in most contexts. However, it is expected that the effectiveness of measures to support the achievement of WFD or FD objectives will be higher if there is an explicit objective in the description of the sub-measures (objectives, eligibility conditions or selection criteria) to support WFD or FD implementation. The RDP review shows that the targeting of measures varies importantly between measures (Figure 5-4):

- All RDPs propose at least one sub-measure under M10 “agri-environment-climate” that can contribute to water management. More specifically, 62% of RDPs have at least one sub-measure under M10 that specifically aims to support WFD or FD implementation.
- 98% of RDPs propose at least one sub-measure under M11 “organic farming” that can contribute to water management. However, only 21% of RDPs have at least one sub-measure under M11 that specifically aims to support WFD or FD implementation.
- 98% of RDPs propose at least one sub-measure under M4 “investment” that can contribute to water management. However, only 23% of RDPs have at least one sub-measure under M4 that specifically aims to support WFD or FD implementation.

- 52% of RDPs propose at least one sub-measure under M12 “Natura 2000 and WFD payments” (see also Chapter 4.3). M12 is used specifically for WFD payments in only 19% of the RDPs¹⁰. The remaining 33% of RDPs use M12 for Natura 2000 which may lead to side-benefits for water management.

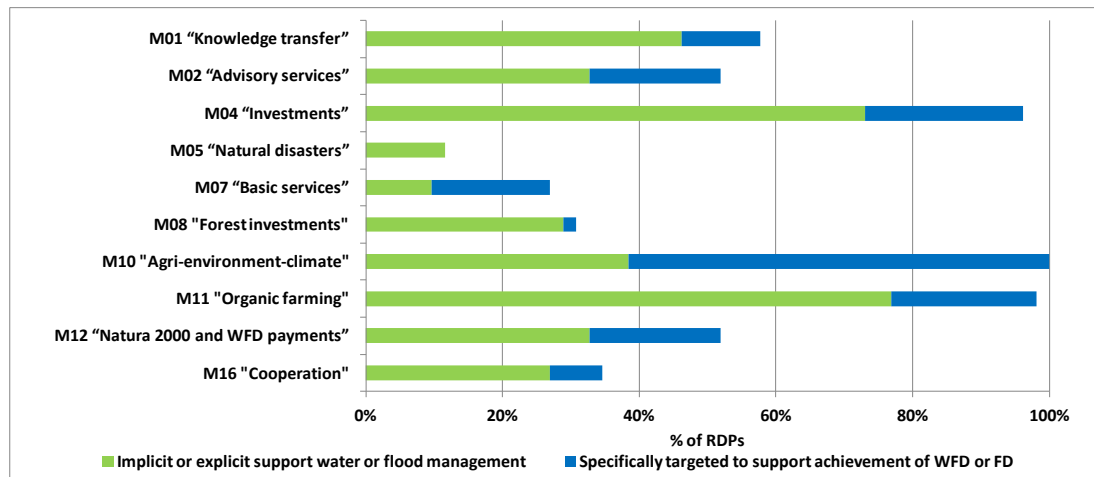


Figure 5-4 Design of measures and their sub-measures to support water management (% of RDPs, N=52)

Figure 5-5 presents the targeting at the level of sub-measures funded by RDPs (objectives, eligibility conditions or selection criteria) within each programme measure. For example:

- 38% of RDPs fund sub-measures optimising fertiliser product application that aims to support WFD or FD implementation (while 54% fund this type of activity without targeting). The figures for pesticide product application are similar.
- In contrast, 4% of RDPs fund sub-measures for the modernisation of irrigation equipment so they can contribute specifically to reaching WFD objectives (when 62% of RDPs fund this type of investment without targeting).

Overall RDPs propose limited targeting for infrastructure investments such as the modernisation of manure storage, the building of wastewater treatment on farms, rainwater harvesting and modernisation of reservoirs. A higher level of targeting towards WFD or FD objectives is proposed for land management changes (green covers, riparian margins and buffer strips, conversion to grassland, crop rotation, intercropping, reduced stocking density), landscape features (hedgerows) and habitat restoration (wetland restoration, floodplain management, re-meandering).

¹⁰ The reasons for the lack of use of M12 for WFD purposes were not examined in this project. It should nevertheless be investigated in the future.

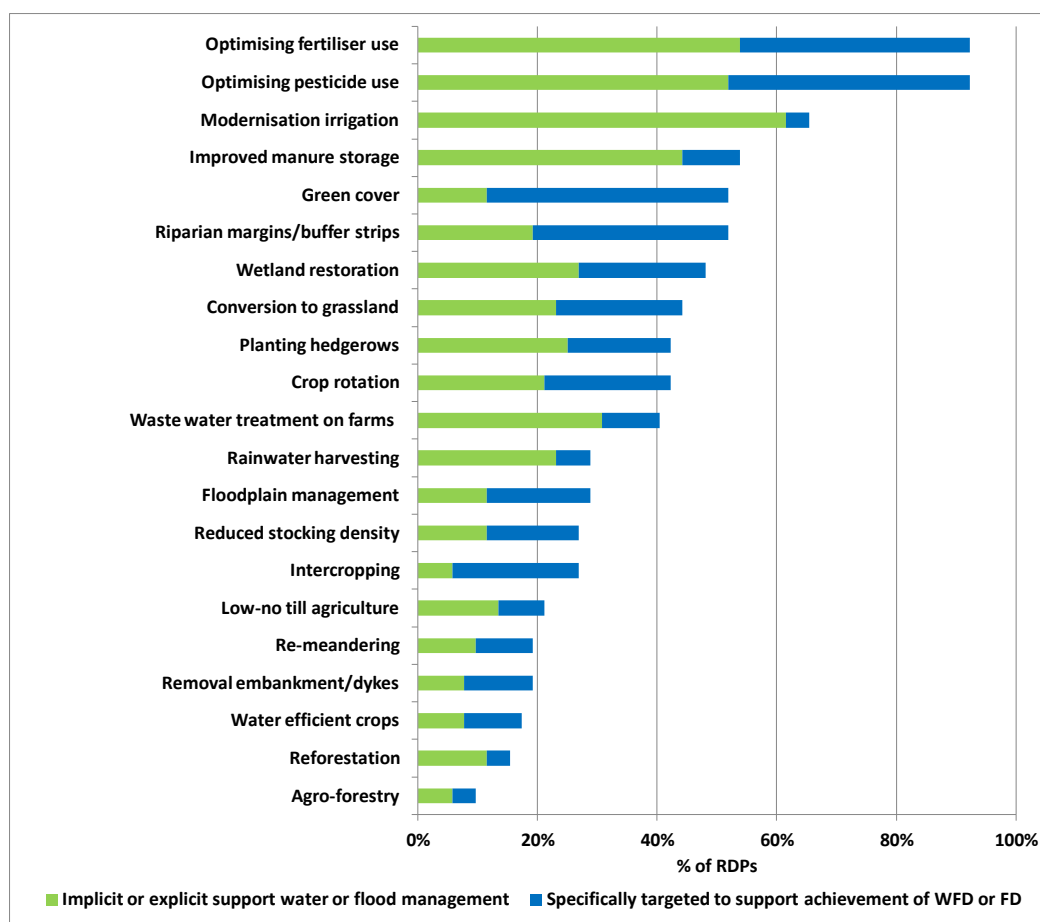


Figure 5-5 Targeting of activities funded in RDPs (% of RDPs, N = 52)

Figure 5-6 shows the type of targeting proposed in RDPs:

- 23% of RDPs include sub-measures which are targeted to areas with water bodies failing good status.
- 15% of RDPs include sub-measures which are targeted to drinking water protection areas (e.g. for measures aiming to reduce pesticide or nutrient pollution).
- A targeting towards Nitrate Vulnerable Zones (NVZs) is proposed in 54% of RDPs for which NVZs are regionalised (i.e. 20 RDPs out of 37 reviewed RDPs).
- A targeting towards areas with water deficits is proposed in 25% of reviewed RDPs which have activated Focus Area 5A (i.e. 6 RDPs out of 24).

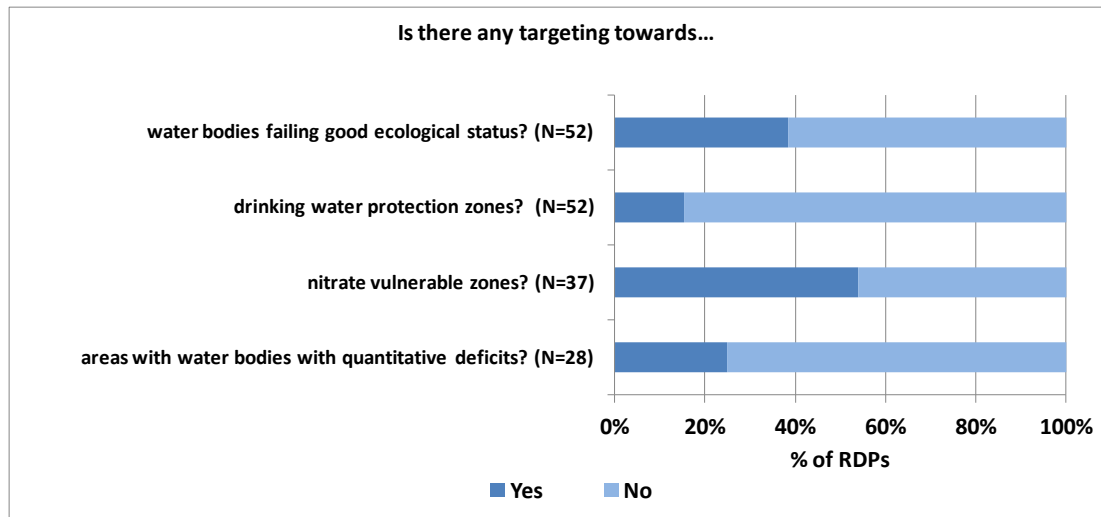


Figure 5-6 Use of spatial targeting in RDPs (% RDPs)

5.4 Are there measures that may maintain and or increase agricultural pressures on water bodies?

The reviewed RDPs fund a number of sub-measures that can maintain or potentially increase agricultural pressures on the water environment, including: expansion of irrigation (50% of RDPs), new land drainage (17%), and new embankments (14%).

These sub-measures are occasionally funded to support WFD or FD objectives, for example when new reservoirs are built outside the river bed in order to capture and store water in period of high flows (e.g. in winter) to support meeting ecological flows in period of low flows (usually summer).

However, it must be stressed that a number of legal requirements exist to ensure appropriate consideration of the impacts from such investments on water resources:

- Article 46 of the RDP regulation requires that any investment in irrigation, whether in new or existing irrigated areas, should meet a number of criteria ¹¹.

¹¹ The criteria include the following: a river basin management plan is in place in the irrigated area; water metering is in place; investments into existing installation result in potential water savings of a minimum of between 5% and 25% according to the technical parameters of the existing installation; any investment in areas where ground or surface waters are in less than good status for reasons related to water quantity (according to the RBMPs) has to ensure an effective reduction in water use of at least 50% of the potential water saving. Net increases in irrigation area are only possible in areas where water bodies are not a less than good status for reasons related to water quantity.

- Article 4(7) of the WFD¹² sets out a number of conditions which must be met before any new developments which may deteriorate water body status are realised. Projects proposed to finance dredging, the construction of new reservoirs, technical flood works and new irrigation should undergo a screening to determine if deterioration is expected. This screening should be done in cooperation with the water agency or by the water agency. If the screening indicates that the investment potentially leads to deterioration, a full Art. 4 (7) assessment needs to be undertaken. As an obligation under the WFD, this legal provision is applicable to all RDP areas.

Results from the assessment of RDPs indicate that:

- Article 46 is referred to fully in 68% of RDPs which fund the modernisation and/or the expansion of irrigation (19 out of 28 RDPs), meaning that the legal text was either fully transposed in the relevant sections of the RDP or fully transposed and contextualised (linked to implementation on the ground and made relevant to the local context).
- A further 32% (9 out of 28 RDPs) describe Article 46 but not fully, meaning that the article is only mentioned with a link to the original legislation or that the legal text is summarised or that the implementation criteria are not clearly defined.
- 89% of RDPs funding the expansion of irrigation do not refer to WFD Article 4(7) (25 RDPs out of 28).
- 71% of RDPs funding drainage and flood prevention measures do not refer to WFD Article 4(7) (12 out of 17 RDPs).

Overall, results suggest that RDPs could more explicitly refer to relevant WFD procedures and assessments that would help ensure investments do not cause deterioration of water status.

5.5 Do RDPs fulfil the ex-ante conditionality 5.2?

RDPs must meet a number of “ex-ante conditionalities” (EAC) or must provide an action plan to achieve them. Several EACs are relevant to water management¹³. In particular, EAC 5.2 relates to Article 9 of the WFD and requires:

¹² For details on Article 4 (7), see: <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32000L0060>

¹³ EAC 4.1-4.3 regarding cross compliance, including minimum requirements for fertilizers and plant protection products (PPPs) were not assessed in detail.

- Element 1 – there is an incentive pricing policy to use water resources efficiently
- Element 2 – there is adequate contribution of agriculture sector (including self-abstraction for irrigation) to the recovery of the costs of water services, including environmental and resource costs reflected in pricing policy.

For MS or regions to demonstrate full compliance with Article 9 of the WFD (and the EAC 5.2) the following conditions should be met:

- All abstractions from surface and ground waters (and reservoirs) for agricultural use are subject to a permit and are regulated by water meters.
- There is an inspection system and fines /penalties for a farmer who does not comply with the volume defined in the permit requirements.
- All abstractions from surface and ground waters (and reservoirs) by farmers are subject to a fee, i.e. price).
- The price paid for water is based on the volume of water abstracted by individual agriculture uses. The volume of water (paid for) is calculated by individual farm level meter.
- There a clear government commitment (i.e. regulation) to apply volumetric pricing policy for all agriculture users. The pricing policy provide incentives for the agriculture sector to shift to crops, irrigation technologies and practices that ensure efficient use of water or, in water-scarce areas to less-water consuming crops.
- The price paid for water internalises environmental and resource costs, i.e. the water price charge to farmers goes beyond costs linked to infrastructure such as maintenance, energy, distribution

EAC 5.2 relates to measures programmed under Focus Area 5A on promoting water use efficiency and measures financing the modernisation of irrigation systems. The existence of a WFD Article 9 compliant water pricing policy in agriculture would ensure appropriate contribution of agricultural water users to the costs of irrigation infrastructure, thereby contributing towards efficient water use and safeguarding the resource for the future.

Overall, 27 RDPs clearly state that the ex-ante conditionality 5.2 is fulfilled. Other RDPs either state that the conditionality is not fulfilled or no information is provided. Examining specifically the 28 RDPs funding irrigation equipment (modernisation or new), 23% (6 out of 28 RDPs) clearly state that the ex-ante conditionality was fulfilled. This indicates that, in many Member States, steps have to be taken to ensure that water pricing policies appropriately recover the cost of water irrigation services and provide adequate incentives to use water resources efficiently.

5.6 Key messages

- The focus in the reviewed RDPs on tackling diffuse pollution pressures is in line with the main identified agricultural pressures in the SWOT analysis (nutrient and pesticide pollution). A good range of measures are funded, from optimisation of product application to green infrastructures and land use management approaches (e.g. green cover, buffer strip).
- While morphological pressures have not been widely covered in the SWOT analysis, RDPs do offer relevant natural water retention type measures. They encourage for example riparian land use change, floodplain management and wetland restoration. These measures are usually not explicitly used to reduce pressures from morphological alterations or reduce flood risk. Thus, there is an opportunity in the future to optimise them for delivery towards both the WFD and FD implementation
- The focus of measures selected in RDPs to address hydrological pressures is predominantly on improving irrigation infrastructure. RDPs could take a wider approach by promoting rainwater harvesting and conversion to less water consumptive crops.
- It is positive that M10 “agri-environment-climate” is usually used to explicitly support WFD or FD implementation. Similar targeting could be explicitly included in M1, M2, M4, M11 and M16 to optimise the implementation of these measures when used for water management purposes. With better data on water pressures available in RBMPs, there is an opportunity to increase future spatial targeting of RDP measures towards e.g. areas with water bodies failing good status, nitrate vulnerable zones, drinking water protected areas or areas with water deficits.
- M12 “Natura 2000 and WFD payments” to specifically support the reaching of WFD objectives is not commonly used (15% of RDPs), though it has significant potential to support implementation of mandatory measures included in RBMPs.
- The financing of new infrastructure for flood protection, irrigation and land drainage can potentially result in the deterioration of the status of water bodies, especially when the cumulative impact of such projects is not assessed. RDPs could more explicitly refer to relevant WFD procedures (in particular Article 4.7 assessments) in order to help ensure investments do not cause deterioration of water status.
- Information reported regarding the ex-ante conditionality 5.2 indicates that Member States should do more to ensure that water pricing policies appropriately recover the cost of water irrigation services and provide adequate incentives to use water resources efficiently.

6. Indicator plan and RDP budget

6.1 Background

The EAFRD requires that each RDP include an indicator plan, comprising of planned expenditure of each rural development measure selected in relation to a corresponding Focus Area and a list of indicators to be measure to track characterise the RDP area and RDP implementation progress.

Each RDP must include budgets for each Priority and each programme measure. The relative emphasis of the RDP on environmental protection or strengthening agricultural competitiveness can thus be understood by examining the relative share of the budget between Priorities. Because the budget for Priority 4 is not divided into each of its Focus Areas, the budget for Focus Area 4B “improved water management, in particular fertiliser and pesticide management” cannot be singled out. Thus, the ambition of the RDP in terms of the budget specifically allocated to tackle water pollution cannot be assessed.

The Common Monitoring and Evaluation Framework (CMEF)¹⁴ lists the indicators that must be measured by all RDPs. Table 6-1 presents the indicators most relevant for water and flood management.

Table 6-1 CMEF context and target indicators most relevant to water management

Context indicators	
Indicator 20	Irrigated land
Indicator 39	Water abstraction in agriculture
Indicator 40	Water quality (including nitrogen and phosphorus)
Indicator 42	Soil erosion by water
Target indicators	
T10 (Focus Area 4B)	% of agricultural land under management contracts improving water management
T11 (Focus area 4B)	% of forestry land under management contracts to improve water management
T14 (Focus area 5A)	% of irrigated land switching to more efficient irrigation system

¹⁴ See http://ec.europa.eu/agriculture/rural-development-previous/2007-2013/monitoring-evaluation_en

These indicators are useful to track general progression. However, additional indicators are needed to capture fully the RDP contribution towards improved water management and the reaching of EU water objectives. Member States can voluntarily go beyond this list to better measure economic, social or environmental issues of significance for the region and the impact of the RDP. Additional indicators to track progression towards EU water objectives could draw on those used under WFD reporting that already exists or additional ones, such as the number of water bodies expected to reach good ecological and chemical status, the reduction in the volume of pesticide product usage, or the reduction of abstraction in the RDP area.

6.2 How ambitious are the RDPs with regards to environmental and water objectives?

Figure 6-1 presents the average budget per Priority. On average, 46% of the reviewed RDPs' budget is allocated to Priority 4 "Restoring, preserving and enhancing ecosystems related to agriculture and forestry" and 8% to Priority 5 "Promoting resource efficiency and a low carbon and climate resilient economy", which are both aiming to improve the environmental performance of farming. This compares favourably with 23% of RDP budget allocated to Priority 2 "Enhancing farm viability and competitiveness of all types of agriculture".

The budget allocation for Priority 4 varies widely between RDPs, with some authorities allocating 25% of RDPs to Priority 4 while others may allocate more than 80% of available resources.

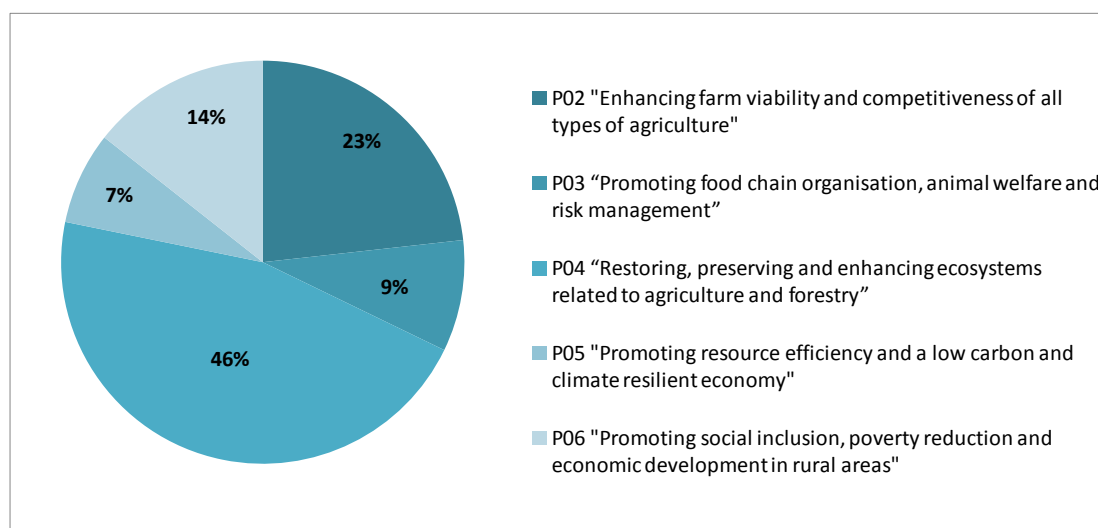


Figure 6-1 Average budget per priority (% of total budget of RDP, N=52)

On average, the reviewed RDPs propose to establish for 15% of the agricultural land within their RDP area (equivalent to ~21 million ha) under land management contracts to improve water management (T10). The indicator varies widely, with some RDPs not setting any target for T10 and others setting an 80% target of land under land management contract to improve

water management. The majority of RDPs (31% of reviewed RDPs) propose to contract between 10% and 20% of agricultural land (Figure 6-1).

These large variations between RDPs reflect the level of priority attached to water by the member states, but also reflects different strategies as to how funding can be used to maximise benefits. Some RDPs opt for a targeted approach; this strategy may be optimal where significant pressures are localised and important changes to agricultural practices are needed to result in measurable improvements. Other RDPs may opt for a more widespread approach by covering a wider area with lower intensity measures; this strategy may be optimal where measurable improvements can be realised through minimal changes to agricultural practices.

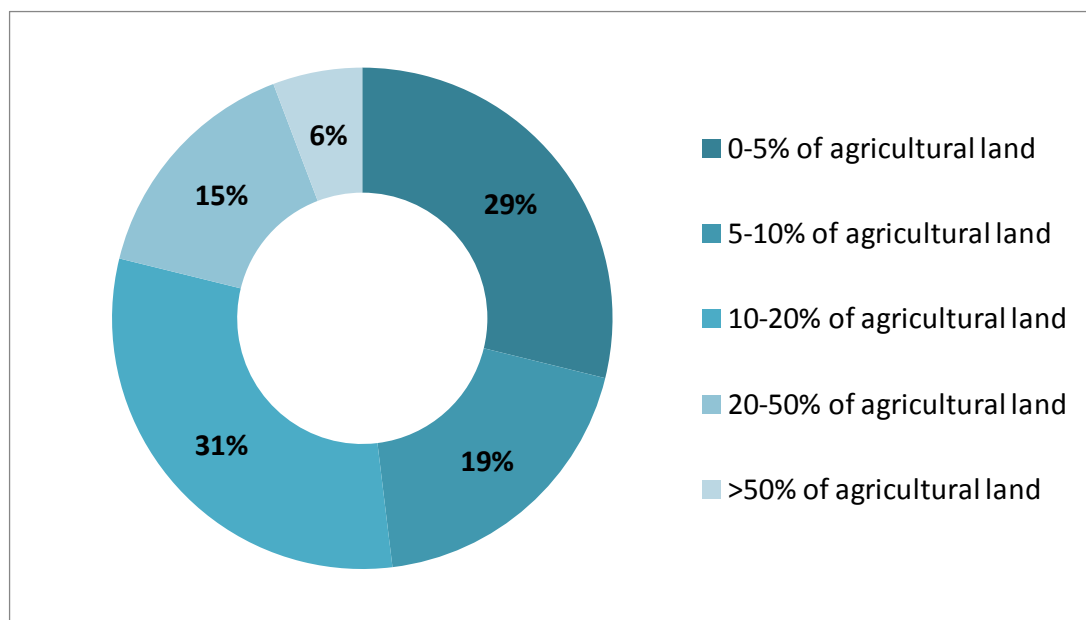


Figure 6-2 Value for the Indicator T10 “% of agricultural land under management contracts improving water management” (% of RDPs, N=52)

On average, authorities plan to switch 9% of irrigated land within their RDP area (equivalent to 776,842 ha) to more efficient irrigation system (T14). The targets vary widely between RDPs, with RDPs that do not set any target under T14 while others aim to reach up to 50% of irrigated land switching to more efficient irrigation. The majority (50% of reviewed RDPs) set a target between 0% and 5% of irrigated land (Figure 6-3).

A higher level of efficiency should ensure that the most efficient systems are put in place. Saved water can be used to achieve WFD objectives in water scarce areas, for example by assuring minimal environmental flows or by replenishing aquifers. In water-scarce and other vulnerable areas, more water efficient irrigation can help strengthen farm resilience to climate risks. Where irrigation systems are old and their modernisation can deliver significant efficiency gains, there is a chance that choosing the lowest targets of 5% water saving (as per

Article 46) will not result in the efficiency gains that are made possible by the provision of the EU funds. This may limit the value of providing funding for the modernisation of irrigation equipment in protecting the resource that the agricultural community and other water users need for the future.

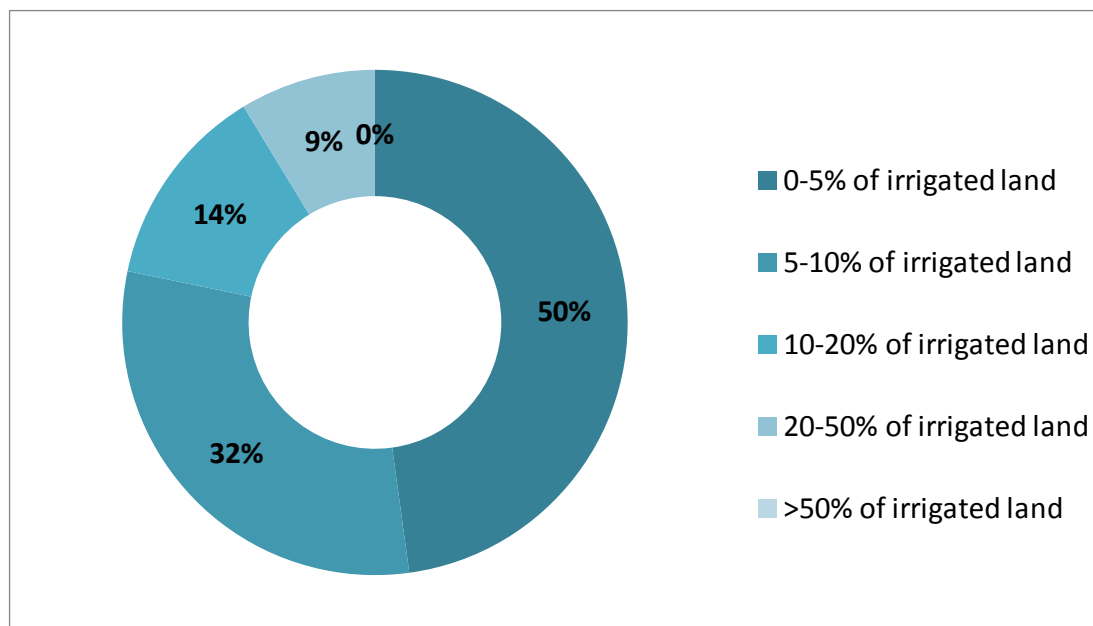


Figure 6-3 Value for the Indicator T14 “% of irrigated land switching to more efficient irrigation system” (% of RDPs, N=22)

6.3 Which measures under Priority 4 are most funded?

Figure 6-4 presents the planned expenditures of the reviewed RDPs for different measures under Priority 4. The following observations can be made:

- The largest share of the budget under Priority 4 is, on average, allocated to M10 “agri-environment-climate” (36% of Priority 4 budget). M11 “organic farming” is the third most funded measure under Priority 4 (16%), while M8 “forest investments” receives on average 7% of the RDP Priority 4 budget. The three measures offer significant potential for environmental improvements by focusing on changes to agricultural practices, land management and land use.
- M13 “areas facing natural or other specific constraints” is on average the second most funded measure under Priority 4 (27%) of Priority 4 budget, although the measure offers unclear environmental and water benefits.
- Planned expenditures for M4 “investments”, which represent investments into infrastructure and equipment for environmental improvements, is on average 7% of Priority 4 budget.

- M12 “Natura 2000 and WFD payments” has on average 2% of Priority 4 budget, which suggests that the measure will not contribute significantly to WFD implementation.

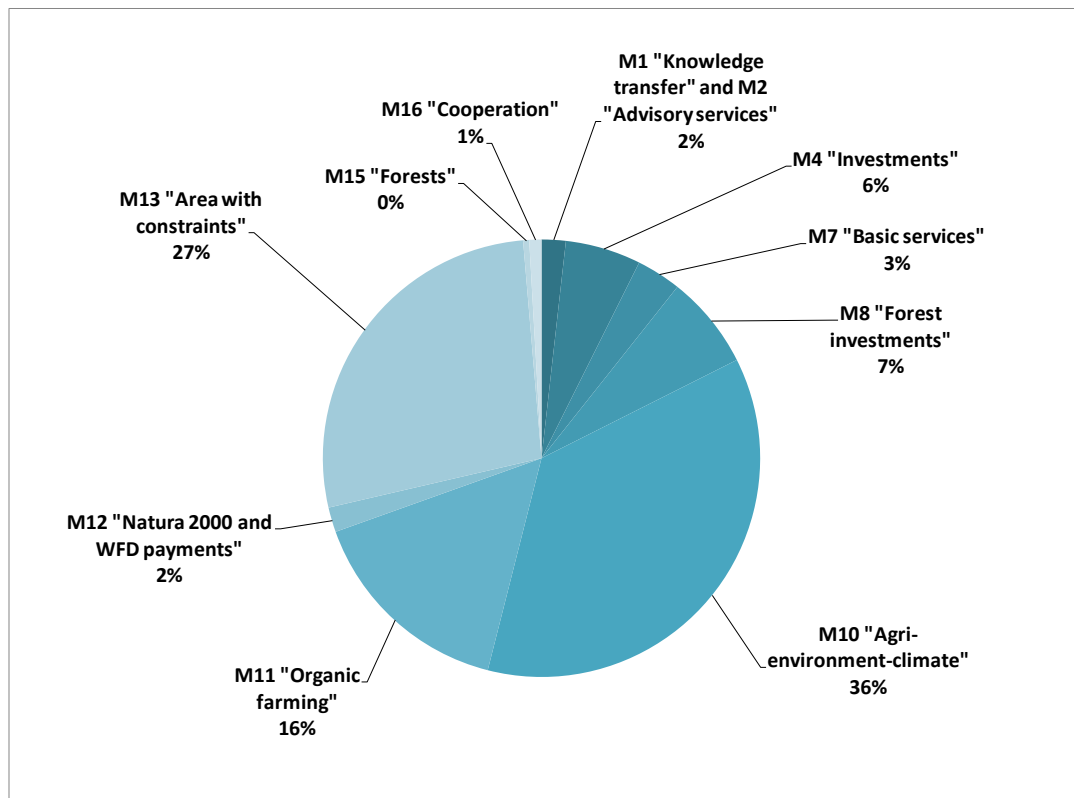


Figure 6-4 Average budget per measure under Priority 4 (% of total budget of Priority 4, N=52)

It is important to note that the figures presented above and in Figure 16 are average planned expenditures. Examined individually between RDPs, budget allocation varies widely, which illustrate different priorities and contexts between RDPs (Table 6-2).

Table 6-2 Minimum and maximum RDP expenditures under Priority 4 for selected measures (% of Priority 4 budget)

Measure	Minimum planned expenditure	Maximum planned expenditure
M4 “investments”	0%	46%
M10 “agri-environment-climate”	8%	83%

M11 “organic farming”	0%	55%
M12 “Natura 2000 and WFD payments”	0%	14%
M13 “areas facing natural or other specific constraints”	0%	84%

6.4 Do RDPs propose additional indicators to measure progress on water issues?

Four RDPs (out of 52 RDPs) present additional context indicators that will allow for better tracking of progress on water issues, including:

- Three RDPs use an indicator on WFD objectives (e.g. % of water bodies failing good status).
- One RDP uses an indicator on pesticide pollution (% of water samples exceeding the quality limits for drinking water, both for SWBs and GWBs).

No RDP provides additional context indicators on morphological pressures.

One RDP (out of 52 RDPs) presents an additional target indicator relevant to water or flood management. The indicator measures the area of land protected from flood risk, in part related to the implementation of floodplain restoration and management and NWRM planned in the RDP region.

6.5 Key messages

- It is positive that Priority 4 has received the largest share of RDP budget. Together with Priority 5, they represent more than 50% of RDP average budget. This shows a good level of commitment by RDP authorities.
- M10, M11, M7 and M4 which offer significant potential for environmental improvements receive all significant allocation of planned expenditure. Other measures such as M12 and M16 which can also offer significant benefits for the achievement of WFD objectives should also be considered by Member States in the future.
- A significant proportion of Priority 4 budget is used for M13 “areas facing natural or other specific constraints”, although the contribution of M13 to improving water management is unclear. M13 could be optimised to ensure positive contribution to the protection of the water environment.
- Notwithstanding different strategies regarding the targeting of measures, the RDPs could be more ambitious with regards to the surfaces of land contracted to improve water management and area to be switched to more efficient water use.
- Additional context and target indicators are needed to fully track how the RDP water-related measures contribute to the implementation of the WFD. Several opportunities can be seized by using data and information from the implementation of the WFD and RBMPs (e.g. WFD European reporting, number of water bodies expected to reach good ecological and chemical status).

7. Conclusions

Compared to the first programming period of RDPs, rural development programmes of most Member States now present an improved level of integration with water management issues, often proposing a logical structure between the identified pressures in the SWOTs, the priorities set out in the strategy, and the measures funded. This is most noticeable with regards to efforts to tackle agricultural pressures on water quality. The majority of RDPs are largely consistent with WFD information on the status of water bodies and key nutrient and pesticide pressures. In addition, RDPs fund a diverse range of measures to tackle pollution pressures, from investments into infrastructure and equipment to changes of agricultural practices, the establishment of green infrastructures, land use management, knowledge transfer, innovation management, and the promotion of collaborative projects.

It is positive that the reviewed RDPs generally present a good level of commitment to environmental management, as demonstrated by the average RDP budget allocated to Priority 4 and Priority 5, and to M4 “investments”, M10 “agri-environment-climate” and M11 “organic farming” which offer significant potential for environmental improvements. A majority of RDPs reviewed also explicitly promote improved water management in general and the implementation of RBMPs is considered in the design of M10 “agri-environment-climate” in most RDPs. Overall, collaboration between authorities at EU, national and regional levels has led to some improvements in the coordination of rural development and water policies.

Nevertheless, as the RDP assessment presented in this report shows, additional efforts are needed to optimise the contribution that RDPs can make to support the reaching of WFD good status and reduce flood risk. In particular, RDPs do not systematically present a stated general objective to support the implementation of the WFD and FD, and with the exception of M10, measures used to support water management are not necessarily clearly targeted to support achievement of WFD and FD objectives. A clear goal to support WFD and FD implementation would help maximise synergies between the three policy areas, optimise water and flood relevant measures in RDPs, and improve the overall cost-effectiveness of the RDPs. With better data on water pressures available in RBMPs, there is an opportunity to increase future spatial targeting of RDP measures towards e.g. areas with water bodies failing good status, nitrate vulnerable zones, drinking water protected areas or areas with water deficits.

A second aspect relates to the range of water-related issues considered and the type of measures funded for water related purposes, in particular regarding flood risk and morphological alterations. The review of RDPs showed that information on flood risk and the FD is only reported in few cases, and that the focus is on recovering from the impact of natural disasters on individual farms, instead of increasing the overall resilience of farms and rural areas. RDPs could develop further how to address flood risk in rural areas and how agricultural land use can contribute to reducing flood risk at the river basin scale.

Regarding morphological alterations, information from agricultural pressures associated with drainage, dredging, embankments, and the building of reservoirs and impoundments is only addressed in a minority of RDPs. There is a missed opportunity in most RDPs to promote Natural Water Retention Measures (NWRM), which can act as effective remedial measures to protect and restore the morphological quality of water bodies and reduce flood risk, while improving water quality. Some RDPs currently encourage measures similar to NWRM such as riparian land use change, floodplain management and wetland restoration, although they rarely explicitly use them to reduce pressures from morphological alterations due to agricultural activities or to reduce overall flood risk. Thus, future RDPs could further include NWRM to tackle morphological pressures (searching also for multiple benefits), and optimise them for delivery towards both the WFD and FD implementation.

Irrigation and managing water quantity is clearly a predominant issue in RDPs which regions are affected by water scarcity. It is positive that this important pressure on the water environment is recognised in most of the SWOTs of the relevant RDPs, and that RDPs usually activate Focus Area 5A “Increasing efficiency in water use by agriculture” and provide funding for the modernisation of irrigation infrastructure to become more water efficient. Nevertheless, Member States could be more ambitious with regards to the area to be switched to more efficient water use, as currently the average targets across RDPs are low (9%). The range of measures used to tackle water scarcity could also be broader, for example by more systematically promoting investments into rainwater harvesting (e.g. through M4 “investment”) and the conversion to less water consumptive crops (e.g. through M10 “agri-environment-climate”).

Other measures which can offer significant benefits for the achievement of WFD objectives could be more systematically used, such as M7 “Basic services”, M8 “Forest investments”, M12 “Natura 2000 and WFD payments” and M16 “cooperation”. There are examples in the reviewed RDPs of good use of M7 “Basic services” to fund habitat restoration and M8 “Forest investments” to fund a range of less intensive forestry land uses such as agro-forestry and riparian forests. M12 “Natura 2000 and WFD payments” is rarely used (15% of RDPs) to specifically support the reaching of WFD objectives, though it has significant potential to financially support implementation of RBMP measures deemed mandatory to secure WFD objectives. M16 “cooperation” could be used whenever catchment-scale approaches can bring additional value to restoring water bodies or reduce flood risk, or when collaboration between farmers and other societal actors (e.g. scientists, NGOs) can support uptake of innovative technologies and agricultural practices.

A third major dimension identified in the RDP review is related to the financing of new infrastructure for flood protection, irrigation and land drainage which can potentially result in the deterioration of the status of water bodies, especially when the cumulative impact of such projects is not assessed. In this regard, RDPs could more explicitly refer to relevant WFD procedures (in particular Article 4.7 assessments) in order to help ensure investments do not cause deterioration of water status. In addition, the RDP review suggest that Member States

should do more to ensure that water pricing policies appropriately recover the cost of water irrigation services and provide adequate incentives to use water resources efficiently.

While RDPs do appear committed to support the sustainable management of natural resources, a significant proportion of Priority 4 budget (27%) is allocated to M13 “areas facing natural or other specific constraints”, which essentially aim to maintain agriculture in less productive areas. Since the support under this measure can concern various types of agriculture with different impacts on the water environment, the benefits for water management can vary widely between contexts and are thus unclear. RDPs should in the future ensure that M13 supports environmentally performing farming systems.

A final area highlighted by the review is with regards to the monitoring framework established by the RDPs. While RDPs provide relevant information on the status of the water environment in the RDP area, it remains difficult to judge, with the information currently presented by the SWOTs and the context and target indicators, what the gaps and priorities are for reaching WFD and FD objectives. Additional context and target indicators are needed to fully track how the RDP water-related measures contribute to the implementation of the WFD. Several opportunities can be seized by using data and information that already exists from the implementation of the WFD and RBMPs (e.g. WFD European reporting, number of water bodies expected to reach good ecological and chemical status).

8. References

European Commission (2012). Staff Working Document. European Overview (2/2), Accompanying the document Report from the Commission to the European Parliament, the Council on the implementation of the Water Framework Directive (2000/60/EC) River Basin Management Plans {COM (2012)670 final}.

European Commission (2012): Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. A Blueprint to Safeguard Europe's Water Resources COM/2012/0673 final.

European Commission (2013): Regulation (EU) No 1305/2013 of the European Parliament and of the Council of 17 December 2013 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) No 1698/2005 .

European Commission (2014). EU Water Policy Document on Natural Water Retention Measures. WFD CIS Working Group Programme of Measures.

European Commission (2015): Communication from the Commission to the European Parliament and the Council. The Water Framework Directive and the Floods Directive: Actions towards the 'good status' of EU water and to reduce flood risks. {COM/2015/0120 final}

WRc et al. (2015) Screening of draft second cycle river basin management plans. See: ec.europa.eu/environment/water/2015conference/pdf/Screening%20Assessment.pdf.

Appendix A MS Annexes

Disclaimer

This project reviewed the 2014-2020 Rural Development Programmes¹⁵ with the objectives to assess to which extent MS have included water management and flood prevention in their programmes. National RDPs from 23 MS were included in the assessment, as well as selected regional rural development programmes from Belgium, France, Germany, Italy, Spain and the UK. As such, the review covers all 28 MS. RDPs from the outermost regions were not considered. The regional RDPs were selected based on the following criteria: size of the territory in relation to the overall country; covering a diversity of pressures within the MS; and covering regions with predominately arable production as well as those with a greater share of livestock production. In total 53 RDPs were assessed – just under ½ of all RDPs. The RDPs chosen for the analysis, therefore, are a good representation of the types of pressures facing rural areas regarding water management and flood prevention, different production types and varying farm sizes.

The aim of the assessment is to show insofar the MS/regions consistently included water management and/or flood prevention throughout the intervention logic of their RDPs, from the pressures analysis in the SWOT, the identification of needs, the development of the overall strategy and that of the individual focus areas, the selection of measures, the indicators used to evaluate measures and finally the share of the budget allocated to environmental issues. It is important to stress that the aim of this assessment was not to carry out a compliance check of the approved RDPs. Rather, the analysis aimed a) to better understand how MS plan to tackle water management issues and flood prevention in their programmes and b) to identify whether the intervention logic as regards water and floods is sound or whether MS/Regions could use some guidance on how to improve the inclusion of water and floods within their programmes. Against the backdrop that many MS – if not all – have included measures from the RDPs in their programmes of measures under their river basin management plans, the assessment sought to highlight approaches within the MS/Regions to approaching agriculture pressures on water and flooding issues in rural areas, as well as to point out any potential missed opportunities to approach water management and flood prevention in the most effective – i.e. cost and environmental – way.

For each RDP assessed, a summary was produced (MS Annex) that focused on the water management and floods information found in the different chapters in the programme: SWOT including needs, Strategy, Measures, Indicators and Budget. The individual MS Annexes

¹⁵ The project assessed the 2014-2020 RDPs submitted to the Commission by 28 September 2016. Any modifications to the RDPs or National Frameworks prepared after this date were not considered in the assessment.

provides a brief summary of the information contained in each chapter regarding water management and floods and also highlight, where necessary, what information was missing or where parts could have been strengthened. To this end, suggestions were also made that go beyond the minimum requirements of the EAFRD to encourage best practice from a water management and flood prevention perspective.

To conclude, the production of the MS Annexes focussed solely on water and flood issues, but this does not disregard the contribution that RDPs can and should make to other environmental issues or problems facing the agriculture sector in terms of competition and economic growth.

A1 Austria

In Austria, there are three river basin districts: The Elbe, the Rhine and Danube. 2/3 of the rivers in Austria are significantly affected by morphological alterations, mainly linked to sectors other than agriculture. The main agriculture pressure identified in the respective draft 2014-2020 River Basin Management Plans (dRBMPs) is diffuse pollution from organic substances (nitrates, phosphates) and chemicals (pesticides). Also, soil erosion and local water abstraction are mentioned as pressures.

SWOT

The SWOT in the RDP provides up to date information (using the latest WFD Art. 5 assessment) on the status of groundwater bodies in Austria. Four ground water bodies do not meet the good chemical status; the RDP does not indicate what % of the total these GWBs represent. For surface water, only the number of monitoring station that exceed the nitrate threshold of 45mg/l are presented and a further reference to the draft RBMP is given but no precise magnitude of the problem is given. The pressures identified in the RBMPs are in line with the pressures identified in the SWOT. However, the SWOT does not refer to which River Basins are found within the regional territory of the RDP, but since it covers all of Austria it applies to the Danube, Elbe and Rhine.

The main pressure linked to agriculture is diffuse nutrient pollution, and soil erosion due to intensive agriculture in areas with low rainfall and areas with intensive livestock. Water abstraction is only mentioned as a future pressure due to climate change. Hydromorphological pressures are also identified in the SWOT but as in the RBMP these are identified as not only caused by agricultural land use (which is not further specified in the SWOT). Flooding is addressed as a risk in the SWOT.

The strengths as identified in the programme include drinking water supply is mainly from groundwater and springs, high water resources, dense monitoring network as a basis for planning measures, a high share in extensive and organic agriculture, high share of grassland, dense network of advisory services.

Significant impact of agricultural activity (nutrients, pesticides, hydromorphological impacts) are a main weakness impacting water status. The high nutrient loads are also contributing to not meeting good status and good environmental status on the Black and North Sea. A further weakness is the low level of data of pesticide use in agriculture

As opportunity, the programme identifies a good legal base to set voluntary measures, a high acceptance of need for these measures in polluted areas and water bodies, improved knowledge on soil processes and their role for water protection and finally the acceleration of voluntary measures in particular also with organic farming.

The threats identified are: i) development of agricultural markets and improved agricultural technology which leads to intensification, ii) climate change related loss or movement of biodiversity, iii) termination of small businesses leading to less labour-intensive management methods which are highly relevant for maintaining biodiversity, iv) extensive management is struggling to cover costs v) intensification and afforestation of marginal land, vi) administrative burdens, vii) lack of human resources for advisory systems.

Overall the SWOT assessment addressed the main pressures on the water bodies (surface and groundwater) as identified in the RBMP and provides a link to the plan. Data sources used are common and the fact that the RBMP and the RDP are prepared by the same ministry ensures a good overlap. However more details on the water status in the RDP could be provided (e.g. map of water status).

Needs

The following needs have been linked to Focus area 4b (Improving water management, including fertiliser and pesticide management): i) Increase information on natural hazards, ii) securing and improvement of the water status and water cycle in agricultural and forest ecosystems, iii) reduction and prevention of phosphorus emissions in surface and groundwater bodies, iv) reduction and prevention of nitrate emissions in surface and groundwater bodies, v) reduction and prevention of pesticides in surface and groundwater bodies, vi) reduction and prevention erosion and protection of permanent pasture, vii) prevention of natural hazards, viii) securing of forest protection and rebuilding after natural hazards, ix) Efficient irrigation in the case of droughts, and x) reduction of ammonia emissions.

The needs descriptions are very clear in their link to the pressures identified in the SWOT and types of measures needed to address the needs. All pressures identified in the SWOT have been turned into needs. Morphological issues are covered by need ii). A clear reference to the WFD and the Floods Directive is made.

Strategy

The general strategy is structured in line with the six Priority areas. The general strategy of the RDP points specifically to the need to address environmental issues and the protection of ecosystems. As part of the general strategy, the RDP mentions the reduction of nutrients and pesticides as of main importance. This emphasis can be seen through the fact that about 65% of the total budget is used to improve the environmental quality with P04 as the by far biggest budget line. Focus area P3a and P2 have a minor role. However, achieving good status under the WFD is not an explicit objective. Neither flood management in general nor the Floods Directive specifically are mentioned in the strategy.

The link between needs and measures has been fully established.

Focus area 3b on “supporting farm risk prevention and management”, which can be used to implement flood prevention measures, is programmed with measures focusing on improving knowledge and awareness of natural hazards with the overarching aim to improve quality of life in rural areas (M1, M2, M16). The protection of the water balance is mentioned as a particular issue.

Focus area 4b on “improving water management” is linked to 8 measures: M1, M2, M4, M7, M10, and M11. The focus is clearly on supporting the objectives of the WFD by following a comprehensive approach to farming to i) protect water bodies which are not polluted and ii) focus on water bodies with higher concentrations of nutrients and other pollutants. The instruments for addressing diffuse pollution (nutrients and pesticides) cover demand-oriented fertilisation and plant protection, water and erosion protection measures as well as measures under forest management. Morphological pressures are in the focus of these measures as well.

The target indicator for FA 4b states that 75.26% of agricultural land should be under management contracts to improve water management, which indicates a sufficient level of ambition given the pressures identified in the SWOT.

Focus area 5a on “increasing efficiency in water use by agriculture” is programmed and covers: Knowledge transfer and information actions (M1), Advisory services, farm management and farm relief services (M2), Investments in physical assets (M4) and Co-operation (M16). The overall aim of the priority 5a is to achieve a higher resilience on climate change in line with legal conditions. For certain regions investment in irrigation might be needed due to climate change in order to ensure agricultural production.

Ex-ante Conditionalities

EAC 5.2 was assessed by the MS as fulfilled. No action plan was required.

Measures

Focus area 4b and 5a include the following measures: M1, M2, M4, M7, M10, and M11.

Measure 1 (Knowledge and information transfer) finances activities to extra-occupational training and advanced education, farm exchange, information and demonstration activities. Under P4b the focus of these measures is on the improvement of water management; under P3b the link is to risk management on farm level. Thereby flooding is not explicitly addressed. For P5a knowledge on efficient water use should be promoted. No specific

geographical targeting is given.

Measure 2 (farm advice, farm management and subsite management) addresses the use of a broad range of farm advice services and the qualification for providing farm advice. Related to P3b water related farm advice is given related to climate change and risk management. The measure contributes to P4b by providing advice on water protection and how various management methods have an impact on the water quality. In regard to P5a the focus is on water consumption. No specific geographical targeting is given.

Measure 4 (investments into assets) allows beside others, payments for improving and increasing irrigation but also for extending manure storage, river restoration in areas with water status less than good or areas of small steams (catchment less than 500km²) and water retention measures. Sub-measures that contribute to the P3b activities related to minimising the risk from landslides and flooding are funded if they follow the requirements of the RBMP and are not in nature conservation areas. Measure 4 contributes to P4b through investments in manure storage, as well as investments for the return of areas to their original environmental state, thus aiming to achieve a systematic improvement of the status of water bodies along the environmental objectives according to the EU Water Framework Directive. The requirements of the RBMP have to be met.

For manure storage, specific criteria for targeting have been defined on the national level. In relation to P4b ecological effects are only mentioned as a second priority. For increasing irrigation, the detailed rules of Art 4.6 are listed as a conditionality for funding and the areas targeted are regions with less than 500mm of rain in average (10 years) from May to September.

Measure 7 (Basic services and village renewal) covers a broad range of issues and within this it provides also some elements of funding related to water. The sub-measures focus on improvement and management of N2000 areas and development of management plans to reduce risks from flooding and soil erosion.

Measure 10 (agri-environmental and climate measures) the focus is on green measures reducing nutrients and pesticides and increasing ecosystem functions (also by improving hydromorphological conditions). These measures mainly contribute to P3a by reducing risks, to P4b by improving or maintaining the environment and water in particular. P5a is not addressed. Sub measures cover a broad range of water protection measures such as permanent pasture, keeping landscape features (e.g. hedges), optimising fertiliser use (control/limitations), optimising pesticide use (control/limitations), Conversion of arable lands to permanent pastures, crop rotation, Intercropping, green cover, low-no till agriculture. Generally, Austria targets a broad range of farming activities and areas as this measure has by far the biggest share in the budget with the overall aim to maintain the good status of the Austrian environment.

Measure 11 (organic farming) is seen as important to reduce chemical pressures on water. There is no targeting towards water, but there is the aim to keep the high levels of organic producers in Austria.

Indicators

The RDP uses the required CMEF indicators to provide context to the SWOT and existing issues being faced in Austria. Information is provided on nitrogen pollution (context indicator 40) and water erosion (context indicator 42). While the RDP clearly defines Good Status and the percentage of water bodies failing GS, the context indicators do not include this information. Also, there are no context indicators defined for phosphorus pollution – despite being listed as the main pressure from the agriculture sector on water bodies – pesticide pollution or morphological alterations. There are no programme specific indicators chosen.

The target indicator focuses on the percentage of agricultural land under management contracts to improve water management, which on its own will not be suitable for monitoring how the water-related measures are contributing to the implementation of the WFD and achieving good ecological and chemical status.

As not required, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD (e.g. hydromorphology). The monitoring system does not refer to data reported from the WFD monitoring systems.

Conclusions

The Austrian RDP addresses well the pressures identified in the RBMP and spends most of the budget to maintain and improve the status of water in terms of nutrients, pesticides and hydromorphology. There is a clear explanation of the main pressures coming from agriculture linking to specific agriculture production types. The SWOT provides up to date information on the status of water bodies, based on the latest WFD Art. 5. Report, The Needs defined reflect the pressures identified and priority areas have been assigned to individual Needs. There is a clear link to the WFD and the Flood Directive. The Strategy developed for Priority 4b indicates which measures will contribute to water protection and management and how the achievements of the WFD are supported.

It is important to note that the low levels of nutrients and pesticides in water in Austria are a result of measures from previous RDPs and the territorial approach of agri-environmental measures (M10) so far. This approach is seen as essential to avoid derogating from the WFD good status objective and no specific territorial targeting is therefore foreseen for the measures. This approach is also reflected in the fact that about 65% of the budget are

foreseen to improve nature and ecosystems and therewith to measures M4 and M10. The importance of these measures for water management is fully reflected in the budget and the target indicator for P4b states that 75.26 of percentage of agricultural land under management contracts to improve water management, which indicates a sufficient level of ambition given the pressures identified in the SWOT. M4 allows for a lot of investments into assets, of which several allow the improvement of the water status. Also, investments into irrigation are allowed but strictly limited to certain regions and under the conditions of Art 46. Other measures programmed under P4b such as M1 M2, M7, M11, provide complementary means to tackle diffuse water pollution.

In general water-related priorities and measures are very well described and designed. A broad range of production types is addressed (e.g. also wine production) and the measures are in line with the pressures identified in the SWOT. Even if flood risks and a link to the flood directive is not specifically mentioned in the measures, there is a good approach to target natural hazards in general (e.g. also avalanches)

The RDP did not include additional programme specific indicators to adequately measure the results of the measures in terms of achieving ecological and chemical status, it will be difficult to discern its contributions to WFD objectives at the end of the programming cycle and to inform future revisions.

Overall, the RDP presents a very clear intervention logic as regards addressing pressures related to water management issues, and there are no measures that pose a threat meeting EU water objectives. The RDP will deliver a good contribution to maintain and improve the Austrian waters.

Recommendations:

1. Although not required, consider expanding both the context and target indicators to better reflect water management. The context indicators of nitrogen and phosphorus pollution do not cover two important water management issues, namely pesticide pollution and morphological alterations. These missing aspects do not enable obtaining a full picture of the environment in the territory. Moreover, the target indicators do not enable to track the impact these measures have on improving the water environment. Especially with constraint budgets, it would be beneficial to have indicators in place that enable the authorities to track whether a measure's implementation is having a positive effect on the water environment and is therefore worth financing. Here, linking also the monitoring programme to existing programmes under the WFD would be helpful and would not pose any additional administrative or financial burden on the district.
2. Some sub-measures under M10 could be better targeted towards waterbodies at risks.

A2 Belgium (Flanders)

Flanders has two river basin districts (RBDs): the Scheldt and the Meuse. The main pressure identified in the RBMPs related to agriculture is diffuse pollution (nitrates, pesticides, phosphorous, organic matter). Abstraction for irrigation is not a significant pressure. Hydromorphological pressures are mentioned but are linked to activities other than agriculture. Agriculture is the main source of nitrogen pollution in both RBDs. No surface water bodies (SWBs) have achieved good ecological status. Good chemical status has been achieved in 40% of natural SWBs and 19% of artificial and heavily modified SWBs. Good chemical status has been achieved in 26.2% of GWBs, and good quantitative status has been achieved in 66.7% of GWBs.

SWOT

The SWOT provides information regarding the water quality in the territory. However, it does not refer to the WFD or to the latest update of the 2013 Art. 5 assessment of the WFD. In the Needs section, it states that by the end of 2015 7 out of 202 Flemish SWBs and 7 out of 42 GWBs will be in good status (which one is unknown) and that extended timeline exemptions under the WFD have been applied for the rest of the WBs.

According to the SWOT, water consumption from the agriculture sector makes up 9% of total water consumption (excluding cooling water), of which 80% is pumped from groundwater (40% of total groundwater use). In some areas, groundwater bodies are decreasing in quantity due to soil sealing and lack of infiltration.

Since 1990 the surplus for nitrogen and phosphorus decreased by 68% and 95%, respectively, due to decreases in livestock numbers, the reduced use of chemical fertilisers, increasing manure treatment and the lower nutrient content of feed. Specific areas in Flanders still have fertilisation problems due to high livestock numbers without enough land for manure spreading. Phosphate loads in groundwater are not considered significant. The pollution of SWBs and GWBs is claimed to have greatly reduced in the last 10 years due to decreasing use of pesticides.

Flooding issues are not mentioned in the SWOT.

Strengths of the programme include sustainable water use (rainwater harvesting). Weaknesses include that water quality needs to be improved and that the standards of the Nitrates Directive and WFD have not been achieved. Opportunities are increased water efficiency to save groundwater in sensitive areas through the use of rainwater and re-use of wastewater but a continued threat is that groundwater use in certain regions is still high. Furthermore, water use to clean tanks remains necessary, requiring good quality water and the increase in water pricing may threaten sectors requiring high water quality.

Needs

There are 25 needs identified in the programme, 3 of them are directly linked to FA 4b “Improving water management, including fertiliser and pesticide management” and FA 5a “Increasing efficiency in water use by agriculture”: 1) improving water management, 2) promoting an efficient use of water in agriculture, and 3) increasing innovation in agriculture and forestry. Improving water management focuses on reducing nutrient and pesticide inputs and increasing water retention (against floods and droughts). The RBMPs of the Scheldt and Meuse are mentioned, as well as the Floods Directive. The need to promote water use efficiency focuses on reducing groundwater use in agriculture to support the implementation of the WFD.

In addition, the needs “restoring, preserving and enhancing biodiversity and landscape quality” and “expanding organic farming” are also linked to FA4b. The need to preserve landscape quality includes the requirement to support the WFD and the Nitrates Directive, which will help to improve biodiversity.

Three needs are linked to FA3b “Supporting farm risk prevention and management”; flood risks are not mentioned.

Strategy

The general strategy describes strategic themes, including sustainability in the agriculture sector including water quality. It generally describes that sustainable agriculture practices and ecological land management should be promoted for, among others, water management and efficient use of nutrients and pesticides. Special attention will be paid to the objectives of the WFD and the Nitrates Directive

With regards to the budget, 24.17% of the public support is assigned to P4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry”; compared to 41.75% for P2 “Enhancing farm viability and competitiveness of all types of agriculture” and 1.69% for FA3a “Improving competitiveness of primary producers”. The RDP overall therefore focuses more on increasing competitiveness than presentation of natural resources.

Priority 3b is activated in the frame of weather insurance; it is not linked to flood risk prevention.

The strategy for FA 4b is linked to M01, M2, M04, M07, M8, M10, M11 and M16. The strategy mentions measures like mechanical weeding and natural pest prevention controls to reduce the application of pesticides. For the management of fertilisers, additional training is needed and the measures included in the Strategy will support the implementation of the WFD and its daughter directives on priority substances and groundwater. Reference is also made to the Nitrates Directive and the directive on plant

protection products. €25 million has been allocated to the need to improve water management, most of which is budgeted to M10.

The target indicator T10 for P4b indicates that 4.68% of agricultural land will be contracted to improve water management. Considering that none of the surface water bodies (could be that 7 will have achieved GES by 2015) are meeting Good Ecological Status, it is unlikely that the RDP will contribute significantly to reaching WFD objectives.

On the basis of the SWOT analysis and needs identification, did RDP did not select FA 5a. However, several measures are identified to have secondary effect on FA 5A. Those measures are complementary with measures outside the RDP to increase efficient water use (like water pricing, water permitting) Training and guidance on efficient water use are provided. The explanation is that water pricing, water permitting and training and guidance on efficient water use has led to positive changes.

Ex-ante Conditionalities

EAC 5.2 was assessed by the MS as fulfilled. No action plan was required.

Measures

Priority 4b is linked to M01, M2, M04, M07, M8, M10, M11 and M16.

Measure 1 finances trainings and demonstration activities. The training and demonstrations include information on the use of fertilisers and pesticides, which the description states will contribute to WFD objectives.

Measure 2 finances farm advisory services and consultancy services. The former mention that water management issues can be included, the latter includes a specific module on the WFD.

Measure 4 finances investments in agriculture holdings.

- Sub-measure 4.1 is clustered into three types of concrete actions, including investments in the resilience of agriculture or horticultural businesses (diversification, on-farm investments) aimed at efficient energy use and on-farm investments that target green-house gas and ammonia emissions. The description makes a link to FA 4b. However, under the section on eligible costs investments in efficient water use at farm level will be financed, e.g. water purification, water re-use, storage of waste water and rainwater collection. No water relevant eligibility or selection criteria have been included.
- Sub-measure 4.4 on support for non-productive investments focus on soil and

water management, as well as increase natural and landscape values. Water related eligible investments include reconstruction of ponds and small-scale water infrastructure such as dams and weirs to support water retention. Investments in small-scale infrastructure must be sent for approval to the environment agency dealing with river basin management. Selection criteria prioritise investments that focus on improving water quality and improving soil quality. Despite the requirement to involve the environment agency, the RDP does not explicitly state that measures on small-scale infrastructure must be assessed cumulatively under the context of a WFD Art. 4 (7) assessment.

Measure 7 finances basic services and village renewal. The measure focuses on supporting Natura 2000 habitats and primarily targets FA 4a on biodiversity. It finances one-off grants, establishing Natura 2000 sites and specific projects. The general description also states that water management could be improved through the creation and restoration of wet areas that will support water retention and buffering against pollution. There are no specifics about eligible costs focussing on the water environment within the individual sub-measures, and there are no eligibility conditions or selection criteria targeting the water environment.

Measure 8 finances investments in forest area development. It finances afforestation, the establishment of agroforestry systems and reforestation. The general description states that a secondary effect of afforestation is the positive influence on water quality through increased water filtration and retention and to this end contributes indirectly to P4b. The focus of this measure is more on P4a and P5. Selection criteria prioritise Natura 2000 sites, and there are no links to risk areas identified under the WFD. It is important to note that under P4b the target indicator for forest land is 0.

Measure 10 finances agri-environment-climate measures. 37 measures are financed, of which 5 primarily target P4b. These are: mechanical weeding and no application of chemical pesticides; mating disruption of pests to avoid pesticide application in fruit crops; growing crops requiring little fertilization, no fertilisation of arable land, no fertilisation of grassland. The operation "water quality" requires farmers to grow crops with low nutrient requirements on 90% of their land. Some of the other measures (growing flax and hemp with reduced fertilisation; species-rich grassland; erosion buffer strips; grass buffer strips; flower strips, alfalfa strips), which primarily designed to address biodiversity, also ban the use of fertiliser and pesticide use and therefore also contribute to P4b. In addition, the measure on growing legumes, which focuses on climate change mitigation, also promotes nitrogen fixing and therefore also contributes to P4b (provided additional nutrient application to land is controlled). None of the measures under M10 are targeted for the WFD through selection criteria (not required by the EAFRD).

Measure 11 finances organic farming. The general description highlights that organic farming avoids negative impacts on water through judicious use of fertilisers and

pesticides and therefore contributes to P4b.

Measure 16 finances cooperation projects. It finances EIP operational groups, including those focusing on improved land management, including water and contributing to WFD objectives. Eligibility conditions or selection criteria do not make any prioritization of projects in water risk areas. The pilot projects on environment do not appear to support water management related projects. The other measures are not linked to water management

Indicators

The RDP issues the required CMEF indicator to provide the common context indicators to the SWOT. The following context indicators are presented: 20 (surface of irrigated land), 39 (water abstraction in agriculture), 40 (nitrates and phosphorus) and 42 (soil erosion rate through water and surface affected). No programme specific water-related indicators have been added.

In Chapter 11, indicators for FA 4b include the CMEF required impact indicators T10 (% of agricultural land under management contracts improving water management (P4b) and T11 (% of forestry land under management contracts to improve water management) and context indicators 18 (used agri-cultural area) and 29 (total forest area). On their own, these will not be sufficient for monitoring how the water-related measures are contributing to the implementation of the WFD and achieving good ecological and chemical status.

There is no specific mention of monitoring on water saving, morphological alterations or pesticide pollution. There is no mentioning of using WFD monitoring systems.

As not required, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD.

Conclusions

Although the RDP does not provide full information regarding the status of water bodies in Flanders, the SWOT clearly links agriculture activities to specific pressures and the Programme describes well the needs developed for water management.

Most measures to address diffuse pollution are under M10. There are a number of measures specifically designed to contribute to FA 4b and support the implementation of the WFD, but also a number of biodiversity related measures which ban the use of fertilisers and pesticides. It is positive that the Programme offers such a mix of measures to farmers on arable and grasslands, from two different measures to limit pesticide use, to measures eliminating the use of nutrients, to the measure that finances farmers to switch crops to ones requiring less nitrogen. Moreover, groups of farmers can apply these

measures, which could allow for better environmental results. It is also positive that in the livestock sector improvements to manure and wastewater storage has been financed. Although M16 finances support to water management through EIP groups, it would have also been beneficial to include landscape water retention projects within this measures as well. Overall, the measures under FA 4b are not targeted, but since almost no WBs have achieved good ecological status targeting may not be necessary.

Despite having a well-developed strategy for P4b, the target indicator T10 percentage of agricultural land under management contracts to improve water management of 4.68% is very low considering agriculture is main contributor of nutrient pollution in Flanders. In addition, the target indicator for forest land is 0%, which conflicts with the programming of M8 under Priority 4b. Overall it can be said that considerable action outside the RDP (i.e. through strengthened WFD basic measures (reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (measures funded by non-EU funds) will have to be included in RBMPs if the good status objective of the WFD is to be achieved.

Although Focus area 5a has not been programmed, rainwater harvesting and wastewater re-use is financed under M4, which should help with the Flemish goal to reduce groundwater use by the agriculture sector.

There is one concern about the financing of infrastructure such as dams and weirs to support water retention. Although such investments must be sent for approval to the environment agency dealing with river basin management, it is not entirely clear whether sufficient safeguards are in place to ensure that the ecological status of water bodies are not comprised, for example that cumulative impacts of such investments do not lead to deteriorate of water body status (in accordance to an assessment in line with WFD Art. 4(7)).

Recommendations:

1. Provide full information on the status of WBs (ecological, chemical, quantitative) in the SWOT
2. Since none of the WBs in Flanders have achieved good ecological status, the target indicator for P4b is quite low. If Flanders is intending to primarily rely on WFD basic measures (which will not be enough to achieve GS) and measures under the RDP to address agriculture pressures on the environment, the target indicator and the share of budget for Focus 4b for agriculture land would need to increase.
3. Although not required, consider expanding both the context and target indicators to better reflect water management. Despite programming measures to tackle pesticide pollution, the monitoring and evaluation programme in Flanders does

not include a context indicator related to pesticides, which makes it difficult to judge how the implementation of pesticide measures led to change in pesticide pollution from one programme to the next. The target indicator “% of agriculture land under contract to improve water management” does not allow to separate between nutrient and pesticide pollution, making it difficult to evaluate the impact of measures. Especially with constraint budgets, it would be beneficial to have indicators in place that enable the authorities to track whether a measure’s implementation is having a positive effect on the water environment and is therefore worth financing. Here, linking also the monitoring programme to existing programmes under the WFD would be helpful and would not pose any additional administrative or financial burden on the district.

A3 Belgium (Walloon)

The Wallonia RDP is primarily situated in the Meuse river basin, but there are overlaps with the Escaut, Rhine and Seine river basins. The main pressures identified in the RBMPs relate to agricultural pollution (nitrates, pesticides, phosphorous, organic matter), eutrophication, drainage and flood protection issues from intensive agriculture. Abstraction for irrigation is not identified as a significant pressure.

SWOT

The SWOT is mostly in line with the RBMP assessments. The SWOT states that 56% of surface water bodies are in less than Good Ecological/Chemical Status and 40% of ground water bodies are not in Good Quantitative/Chemical Status, with most problems found in the Escaut river basin related to nitrates and pesticides. The SWOT also presents information on groundwater. The target figures for improving water bodies to Good Status included in the 1st or the 2nd RBMPs are not set out in the RDP.

The SWOT in the RDP provides a detailed description of nitrate and phosphorous pollution, including spatial mapping and historical evolution. Nitrate vulnerable zones (representing 60% of agricultural area in the region) and eutrophication are also considered. Soil erosion is examined together with run-off impacts on flood risk, and the loss of organic matter and phosphorous to water bodies. It is indicated that the information comes from the most recent WFD Article 5 assessments. There is no analysis as to the type of sectors and agricultural activities most responsible for the pollution pressures (e.g. crops, livestock).

Flood risk in the region is included, with agricultural land at low, middle, and high flood risk at 5%, 1%, and 1%, respectively. Although not referred to as Natural Water Retention Measures, the SWOT presents a list of relevant measures (e.g. riparian buffers, floodwater storage areas, etc.) which, it notes, can contribute to water quality improvements and reduction of flood risk by tackling pressures from agricultural activities. It highlights that measures may be complemented with additional measures from the implementation of the Floods Directive. The RDP does not highlight the benefit of these measures for restoring the hydro-morphological status of water bodies. Hydro-morphological pressures from drainage and flood protection for agriculture are identified as significant in the relevant RBMPs.

Water consumption volumes in the agricultural sector are considered stable, and represent only 1% of the regions total withdrawals. Wetlands are not mentioned in the SWOT.

The specific Strength, Weakness, Threats, and Opportunities section mention the pressures on water quality mentioned in the more general section. Hydromorphological are not mentioned, and, unlike the general section, flood issues are not mentioned. Under Strength, the SWOT mentions regulatory obligations (e.g. NVZ), voluntary participation to targeted AEM, reduction of nitrogen surplus and effluent discharges, weaknesses

(environmental constraints, intensification of agriculture, high nitrogen concentration, phosphorous saturation, high pesticide loadings, reduction in soil organic matter); opportunities (greening of CAP, organic farming, environmental awareness, payment for ecosystem services) and threats (agricultural competition, risk of not achieving good ecological status, economic loss with environmental degradation).

Needs

There are 18 needs identified in the programme, two of which are directly linked to water: “Reduce the inputs of organic nitrogen, phosphorous and pesticide products (linked to Focus Area 4B: Improving water management, including fertiliser and pesticide management), focused in areas with intensive agriculture, and “Develop efficient water use in agriculture” (linked to Focus Area 5A: Increasing efficiency in water use by agriculture). There are no measures programmed to respond to this need, and the RDP does not activate Focus Area 5A.

Addressing hydro-morphological impacts on water bodies linked to agriculture is not mentioned in the needs, which is coherent with the SWOT but not the RBMP (see section above).

One need is linked to Focus Area 3B “Supporting farm risk prevention and management”, but flood risk is not mentioned.

Strategy

The general strategy includes an objective to reduce the use of organic nitrogen, phosphorous, and pesticide products. The description links to improving WFD water body status. M10 and M11 in particular will be used to reduce fertiliser and pesticide use.

Focus Area 3B is not activated in the RDP.

The strategy for Focus Area 4B is linked to M07, M10, M11 and M12. There are no linkages to the SWOT analysis or how selected measures will contribute to reducing the different types of agricultural pressures. There is no objective to support WFD or RBMP goals. The target indicator T10 for Focus Area 4B indicates that 15.03% of agricultural land will be contracted to improve water management. However, 56% of surface water bodies are not meeting Good Ecologic Status; as such it is unclear if the scale of the measures in the RDP will contribute significantly towards reaching WFD objectives.

In line with the SWOT and the Need section the strategy for Focus Area 5A is not activated.

With regards to the budget, 30.5% of the RDP public support is for P2 “Enhancing farm viability and competitiveness of all types of agriculture” and P3a “Improving competitiveness of primary producers”, compared to 54.3% assigned to P4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry”. It is not clear

how much of the budget in P4 is dedicated to addressing water issues.

Overall the strategy focuses on tackling pesticide, phosphorus and pesticide pollution from agriculture. As for the SWOT, hydro-morphological issues are not tackled.

Ex-ante Conditionalities

EAC 5.2 was assessed by the MS as fulfilled. No action plan was required.

Measures

Focus Area 4B is linked to M07, M10, M11 and M12.

Measure 4: While this measure is not explicitly linked to Focus Area 4B, certain actions within the sub-measures are linked to water management. Sub-measure 4.1 covers, amongst other, investments in agricultural holdings that contribute to the protection of water in line with the WFD, as well as the Nitrate and Pesticide Directives. No specific example is provided. The eligibility conditions state that the farm must demonstrate that it respects regulation of effluent storage. Furthermore, this sub-measure can support investments to develop abstraction from groundwater for new livestock buildings where no existing water supply is available. There is a requirement to be in line with the WFD and requirements of the RBMP. The principles for establishing selection criteria however do not include a targeting of investments to areas with water bodies failing the objectives of the WFD.

Measure 10: Addressing water issues is a priority in the description of the measure, in particular reducing nitrate, phosphorous, and pesticide use in zones with intensive agriculture. In the Wallonia RDP, certain sub-measures are considered “basic” measures (MB), while others are “targeted” measures (MC). The basic measures involve funding which can be applied for by any farmer, regardless of their location. The targeted measures, on the other hand, include specifications for where the measures apply, and who qualifies to apply.

Some sub-measures in M10 are specifically linked to Focus Area 4B, such as those related to grassy headlands (MB5), environmentally-friendly crops including cereal crop requiring less inputs (MB6), crop replacement and non-use of fertilizer or pesticides (MC7), grass buffer strips and extensive, non-fertilised and non-treated (pesticide) crops (MB5, MB7, MC8). All of these measures combine to reduced use of pollutants, while also limiting erosive runoff. The description states that this contributes directly to the goals of the WFD and FD, and will be largely applied in areas with high cropping density and in nitrate vulnerable zones. Other M10 sub-measures are linked to Focus Area 4B which contribute to reducing livestock pressure of farms by reducing livestock density, as well as some which limit the use of fertilisers.

Other sub-measures in M10 will contribute indirectly, such as those to protect natural

grasslands (MB2) and high nature value area (MC4), which includes a restriction to use mineral fertilizers, or those protecting semi-natural elements (MB1) including hedges, trees, shrubs, ponds and groves. WFD or RBMP goals.

Sub-measure MC3 relates to the use of grassland areas and meadows to reduce flood peaks. It encourages farmers to have an area prepared for intentional flooding in the event of heavy rains, which can be created through soft hydraulic development or favourable configuration of the landscape. The primary objective of the measure is to protect water quality from pollution in flood zones, thus meeting the objectives of the WFD and FD. The eligibility conditions do not mention the WFD goals, however an expert opinion is required. Furthermore, the RDP highlights that an additional strategy in Belgium Wallonia (called P.L.U.I.E.S) exists and focus on flood protection by supporting the maintenance of hedges and ponds as natural flood retention measures. It highlights that hedges bordering agricultural land contribute to limit erosive runoff and transport of sediments and nutrients (including phosphorous) to surface water.

Measure 11: This measure covers organic farming. The general description highlights that this can have a positive impact on water quality through limited use of farm inputs, particularly synthetic mineral fertilizers and pesticides as well as a reduced number of livestock per hectare. The principles for establishing selection criteria however do not include a targeting of payments to areas with water bodies failing the objectives of the WFD.

Measure 12: This measure provides Payments for Natura 2000, several of which will implicitly support improvement in water status through reduced use of fertilisers and pesticides. Compensation is also provided for 12m grass strips along water ways which provide high quality habitats for protected species (including pearl mussel).

Indicators

The RDP uses the required CMEF indicators to provide common context to the SWOT and existing issues. Information is provided on water abstraction in agriculture (indicator 39), nitrogen pollution (indicator 40 water quality) and water erosion (indicator 42 soil erosion by water).

Target indicators for Focus Area 4B include impact indicators T10 (% of agricultural land under management contracts improving water management (Focus Area 4B) and T11 (% of forestry land under management contracts to improve water management), as well as context indicators 18 (used agricultural area) and 29 (total forest area). For Focus Area 5A, the impact indicator T14 (“% of irrigated land switching to more efficient irrigation system”) and context indicator 20 (surface of irrigated land) are used.

The RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD. For example, no additional context indicators report WFD monitoring data, the % or number of water bodies at Good Status, pesticide pollution or morphological

alterations.

The indicators currently used will not on their own allow for measuring progress on how the water related measures are contributing to the implementation of the WFD and achieving good ecological and chemical status. This will make it difficult to be able to evaluate the programme's success and what changes should be made in the future.

Conclusions

The RDP has water as a core priority and presents clear data on good ecological status, which RBMPs are relevant and which WFD Article 5 assessments were used. The SWOT provides a good overview of agricultural pollution pressures including nutrients and pesticides, and levels of eutrophication, as well as of flood risk. The SWOT could present in more detail which agricultural activities (e.g. types of crops, livestock systems) lead to water pressures. The SWOT could also present how and which agricultural activities lead to hydro-morphological pressures (i.e. from drainage and flood protection), and how significant these pressures are in the region (they were identified as significant in the RBMPs).

Regarding diffuse pollution, most measures are under M10 and aim to tackle nitrate and fertiliser pollution from livestock systems (grasslands) and arable production, in particular less intensive grassland and cereal production, crop replacement, crop conversion into grasslands. The sub-measures are often targeted to WFD priority areas and nitrate vulnerable zones. M4 could have included principles for establishing selection criteria that would direct investments specifically to areas most beneficial to improve the status of water bodies. M12 also could have been programmed to support the achievement of the WFD, for example in drinking water protected areas.

Regarding flood risk, M10 proposes to support the use of grassland areas and meadows as flood retention areas. In addition, a number of other sub-measures for landscape elements (e.g. hedgerows, ponds), buffer strips, etc. can contribute to reducing flood risk. In that regard, it is positive that many sub-measures include an indirect objective to support the FD. While the RDP aims to reduce erosion, and increase flood storage through in-field measures which is positive, it could be more ambitious in supporting water and river restoration and agri-environment-climate measures in riparian areas that can have beneficial impact on restoring more natural hydro-morphology and also addressing flood risk.

The target indicator T10 for Focus Area 4B indicates that 15.03% of agricultural land will be contracted to improve water management. The RDP provides sufficient targeting of M10 to maximise the environmental benefits of investments with regards to water management. However, the challenge for reaching WFD objectives in the RDP region is high considering that 56% of surface water bodies are not meeting Good Ecologic Status. This will mean that relying on the RDP alone will not be sufficient and considerable action outside the RDP will be needed if the good ecological status objective of the WFD is to be achieved, through strengthened WFD basic measures (e.g. reinforced nitrates directive

measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (i.e. measures funded by non-EU funds).

Finally, the monitoring and evaluation framework on its own does not appear to be able to allow for tracking progress and results of water measures and their contribution toward reaching defined objectives of the WFD and FD.

Recommendations:

1. Improving the SWOT, Needs, Strategy and Measures to improve the consideration of hydro-morphological pressures and restoration measures. The twin pressures arising from land drainage and flood protection from agriculture should be acknowledged, and measures such as river and floodplain restoration could be funded.
2. Increase the target area under contracts to improve water management to better address the magnitude of agricultural pressures on the water environment.
3. Improve the monitoring and evaluation framework to better assess the improvements coming from the implementation of water related measures. The current framework does not enable tracking progress in terms of achieving good status.

A4 Croatia

In Croatia, there are two river basins districts: the Danube and the Adriatic. The main agriculture pressures identified in the national River Basin Management Plan (RBMP), which covers both river basin districts, are diffuse pollution from mineral fertilisers (nitrates) and pesticides, soil erosion, and point source pollution from livestock (nitrates). Water use for irrigation is considered only as a minor pressure. Diffuse pollution from phosphates and morphological alterations are not identified as significant pressures.

SWOT

The SWOT refers to the two river basins districts found in the territory of Croatia, but it does not clearly state whether the latest WFD Article 5 assessment has been used. Information on the status of water bodies appears to be based on the first national RBMP adopted in 2013. According to the SWOT, Croatia has a very high quality of surface water bodies (SWBs) with only 14.8% of poor quality. 51% of water bodies are in good or very good status.

It further states that the classification of water bodies' status has been based on physical-chemical indicators and hydro-morphological pressures only and does not include an assessment of ecological status due to insufficient monitoring. The SWOT notes that the assessment of water status cannot therefore be deemed as fully compliant with the WFD.

No figures are provided on chemical status of surface waters. The SWOT states that there are no poor quality groundwater bodies (GWBs); however, figures from the national RBMP published in 2015 show that 12.5% currently have poor chemical status. No figure is provided in the SWOT on the quantitative status of groundwater bodies, while the information presented in the RBMP from 2015 shows that 9.4% have poor quantitative status.

The main pressures identified in the SWOT include mineral fertiliser use, lack of adequate disposal of manure and soil erosion, which is coherent with the WFD Article 5 assessment. However, the SWOT does not mention pesticide pollution, which is mentioned in the WFD Article 5 assessment.

With regard to water quantity, the SWOT mentions insufficient irrigation (only 1.1% of agricultural land is currently irrigated in Croatia) and underdeveloped irrigation systems, distinct spatial and temporal unevenness in the distribution of water resources and frequent droughts (which impedes production capacity). Improvement of the irrigation system is foreseen against the risk of droughts. In addition, the SWOT refers also to poorly drained soils on 17.6% of the territory which were designated as areas facing significant natural constraints and outdated and ineffective drainage systems (older than 30 years). Positive is that the need to intensify agricultural production through additional and modernised irrigation is planned with appropriate environmental safeguards. This contributes to the need to maintain or secure a balance between agricultural production

and the protection of water resources and meeting WFD objectives.

The SWOT mentions that the flood risk management plan is under preparation in line with the Floods Directive and will be adopted by the end of 2015 as an integral part of the first amendment of the RBMP. No any other information on the implementation of the Flood Directive or flood risk management is included in the RDP. And so it would appear that the RDP is not envisaged to contribute to the implementation of land management measures to contribute to the FD in this programming period.

The strengths as identified in the Croatian RDP include the availability of sufficient quantities of good quality water and a very high quality of SWBs; the weaknesses - outdated drainage systems, underdeveloped irrigation systems infrastructure and increasing frequency of drought, significant soil erosion, insufficient adequate manure disposal on agricultural holdings; the opportunities - large availability of water and very favourable water use opportunities (allowing to meet the national 2020 target for irrigation, also given the very unfavourable conditions due to extreme events); and the threats - natural disasters such as floods and lack of awareness of the public and economic operators towards sustainable and environmentally efficient management in agriculture.

Needs

Six Needs have been linked to Focus Area 4B “Improving water management, including fertiliser and pesticide management”: 01 Increasing the degree of professional competence, awareness and knowledge transfer; 03 Fostering cooperation between the research system and rural economy to develop, implement and disseminate innovation; 04 Improving management of forests in private ownership; 10 Increasing the efficient use of water in agriculture and adapting to climate change; 15 Maintenance of water, soil and air quality; and 18 Reforestation of areas by forest conversion and plant breeding.

Two of the above Needs in their descriptions are clear in their link to water: 10 and 15. Need 10 addresses water efficiency pressures identified in the SWOT and the need for environmental safeguards linked to water status under the WFD. Need 15 clearly mentions intensive agricultural practices and over-usage of fertilisers and pesticides with a consequent significant environmental impact; and states that inappropriate levels of fertilisation and improper manure storage are the main ground water nitrates polluters. Need 15 links to the objectives of the WFD. Needs 01, 03, 04 and 18 do not link to water issues.

Three needs have been linked to Focus Area 3B “Supporting farm risk prevention and management”: Need 03 Fostering cooperation between the research system and rural economy to develop, implement and disseminate innovation; Need 11 Better risk management in agriculture; and Need 21 Restoring the agricultural potential of the mined land. Need 11 identifies insurance measures to address floods and droughts but no flood prevention measures.

Three needs have been linked to Focus Area 5A “Increasing efficiency in water use by agriculture”: Need 03 Fostering cooperation between the research system and rural economy to develop, implement and disseminate innovation; Need 06 Strengthening the sustainability of farms with structural and why changing the agricultural production structure; and Need 10 Increasing the efficient use of water in agriculture and adapting to climate change. Need 06 identifies practices and technologies needed to address phosphorus pollution and heavy metals content.

All pressures except erosion and flood risk identified in the SWOT have been turned into needs.

Strategy

The general description of the Strategy links the findings of the SWOT analysis with the needs, overall goals and the RDP Priorities. It highlights the importance of agri-environment-climate measures to protect the numerous sources of good quality water.

The Strategy aims to promote environmentally sound farming, but this is not specifically linked to water management issues. It identifies the importance to address a lack of awareness on benefits of sustainable management of ecosystems and use of fertilisers and to underpin it by the dissemination of knowledge on agri-environmental practices. Investments in greener technologies and practices for the rational utilisation of fertilisers and pesticides are also planned.

The Strategy indicates that drought should be dealt with through the establishment of new irrigation systems on agricultural land. Complementary to it, the importance to modernise the existing irrigation system is highlighted with the main aim to improve economic efficiency and competitiveness as well as to ensure a positive environmental impact.

Focus Area 3B is linked to two measures M05 and M17 directly; and in a secondary way to M01 and M02. Investments contribute to risk management related to agricultural production and are not linked to flood prevention and management measures, though floods are identified as a pressure in the SWOT.

Priority Focus Area 4B is linked to 6 measures: M01, M02, M04, M10 and M11. M16 will have a secondary contribution. The description is very general. It states that improvements in water management will be achieved by means of investments on farms and focuses on protection of the natural and unpolluted water resources against any possible pollution. Measures proposed include: improved agri-technical interventions, including fertiliser and pesticide management and proper manure management. The activities are combined with support by specific knowledge transfer and advisory services. The description further focuses on the reconstruction and building new irrigation systems, and a targeted and controlled use of water in agriculture.

27% of the RDP’s total budget is allocated to P04; the target indicator for Focus Area 4B

is 5.18% of agricultural land under management contracts to improve water management. Given that half of WBs have a good or very good chemical status and agriculture in Croatia is quite extensive, the target indicator appears appropriate.

Although Focus Area 5A is not financially programmed, the RDP has identified measures and operations with a relevant secondary contribution to increasing efficiency in water use in agriculture: M01, M02, M04, M10, M16 and M17. Specific operations include: investments in irrigation infrastructure and efficiency (M04) – which has been programmed under Focus Area 4B - and the agri-environmental operations (M10) that support continuation of agricultural practices and improve water retention. Knowledge transfer (M01) and advisory services (M02) will foster the efficient use of water in agriculture through specific workshop content and tailored advice.

Ex-ante Conditionalities

EAC 5.2 was assessed by the MS as fulfilled.

Measures

Focus Area 4B is linked to 6 measures: M01, M02, M04, M10, and M11.

M01 finances knowledge transfer, information actions and demonstration activities. It is seen as a horizontal measure that has an impact on all priorities. Attendance to specific training and knowledge transfer courses and demonstration activities are obligatory to those receiving support under agri-environment-climate (AEC) and organic farming (OF) measures. The general description states that the increasing level of knowledge should contribute to improving the protection of waters. Several topics of training courses could contribute to water protection: cross-compliance obligations, water efficiency, manure management practices, sustainable fertilisers and pesticides practices and use, principles of integrated/organic farming and risk management and mitigation. Only the description of sub-measure on Vocational training for farmers refer to Focus Area 4B; others generally to P4.

M02 finances advisory services and is designed to complement M01. It is seen as a horizontal measure; and advisory services are included in the obligatory package for beneficiaries of AEC and OF measures. The topics of advice include, for example: cross-compliance, advice on types of operations under AEC and OF measures, measures to increase resistance against erosion, floods and droughts, minimum requirements for fertilisers (nitrates and phosphorous) and pesticide use close to water, codes of good practice for farms outside NVZ, and water protection in accordance with the WFD Art.11.3, irrigation techniques for water management, and manure storage and management. Only the sub-measure on Advice for young farmers links to Focus Area 4B; others generally to P4.

M04 finances modernization of existing farms. Linked to Focus Area 4B, M04 supports the

establishment of new and/or modernization of existing irrigation infrastructure, the construction or reconstruction of manure and digestate storage capacities, and improvement of the efficiency for fertilizer use (machinery and equipment). A positive aspect is the clear link to Article 4 of the WFD and the requirement to consider cumulative impacts and mitigation measures, as well as soil suitability and economic sustainability. Regarding investment in fertilizer and manure equipment, selection criteria prioritize investments in nitrate vulnerable zones (NVZ). M04 also finances the construction and restoration of green infrastructure and restoration of derelict ponds for livestock and protection of water-related ecosystem. This is however linked to Focus area 4a, but not to Focus Area 4B.

M07 is not linked to Focus Area 4B as it is not addressing agricultural water pollution but is related to rural water and wastewater management.

M10 finances agri-environment-climate measures. Focus areas for operations include biodiversity protection and climate adaptation, but not water management issues. However, specific commitments of Operations 01-05 and 07-08 may contribute to improved water quality status and protect against erosion. For example: crop rotation plan to ensure plant coverage during the year, tilling and sowing across the slope, fertilisation plan with the maximum amount of nitrogen, green cover with grass-clover mixture, prohibition to apply mineral fertilizers, livestock manure and pesticides, and maximum and minimum livestock density on grassland. The description of all these operations only indicates a secondary contribution to Focus Area 4B. Their selection criteria propose to prioritize Natura 2000 areas and areas with constraints (M13), but do not link to priority areas as identified in the RBMPs.

M11 finances organic farming. It mentions that it can reduce erosion, as well as synthetic fertilisers and pesticides use. The two sub-measures indicate only a secondary contribution to Focus Area 4B. The principles for establishing selection criteria do not include a targeting of investments to areas with water bodies failing the objectives of the WFD.

Indicators

The RDP uses the required CMEF indicators to provide common context to the SWOT and existing issues. Information is provided on water abstraction in agriculture (indicator 39), nitrogen pollution (indicator 40 water quality) and water erosion (indicator 42 soil erosion by water).

Target indicators for Focus Area 4B include impact indicators T10 (% of agricultural land under management contracts improving water management (Focus Area 4B) and T11 (% of forestry land under management contracts to improve water management), as well as context indicators 18 (used agricultural area) and 29 (total forest area). For Focus Area 5A, the impact indicator T14 (“% of irrigated land switching to more efficient irrigation system”) and context indicator 20 (surface of irrigated land) are used.

The RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD. For example, no additional context indicators report WFD monitoring data, the % or number of water bodies at Good Status, water savings, pesticide pollution or morphological alterations. There is no indicator on area of land under drainage.

The indicators currently used will not on their own allow for measuring progress on how the water related measures are contributing to the implementation of the WFD and achieving good ecological and chemical status. This will make it difficult to be able to evaluate the programme's success and what changes should be made in the future.

Conclusions

The Croatian RDP adequately identifies nutrient pollution from mineral fertiliser use and inadequate manure management, as well as soil erosion as key issues in the RDP area. No description is provided on the type of agriculture most leading to pressures. The SWOT links with the WFD Article 5 assessment, however further information could be presented (e.g. chemical status, groundwater at risk, quantitative status).

The Needs and Strategy reflect the pressures identified in the SWOT, provide a general description and list several commitments, but do not link clearly to specific sub-measures or operations or how they will contribute to achieving WFD objectives.

The operations under M04 and M10 can contribute to support WFD implementation; however, it is not clearly stated that these measures have specifically been designed with the objective of improving the ecological status of water bodies. While the targeting of M04 operations to tackle nutrient pollution appears appropriate (focusing on NVZ), M10 does not appear targeted to contribute to WFD objectives. Several M10 operations can contribute to reducing nutrient and pesticide pollution both on arable and livestock land (e.g. tilling and sowing across the slope, maximum and minimum livestock density on grassland). However, all operations only present secondary contribution to Focus Area 4B and there is no requirement to target their implementation in areas which can contribute to reaching WFD objectives.

Under M04, the primary target is modernization of existing farms and introduction of new technologies and innovations with a focus on construction of manure storage facilities, machinery for efficient use of nitrogen and investments in irrigation systems. The eligibility conditions require establishing safeguards in terms of environmental impacts; they refer to RBMP and WFD requirements for irrigation infrastructure and to requirements of Nitrates Directive for manure management. It is positive that compliance with Article 4 of the WFD is listed in the eligible criteria together with a consideration of cumulative impacts and mitigation measures.

The use of M07 is positive as it will directly contribute to achieving WFD objectives by prioritizing investments into wastewater infrastructure and equipment in priority areas for water quality issues. However, it is to be noted that this does not address agricultural

impacts but those arising from rural population.

Hydro-morphology is not directly addressed in RDP, and the RDP does not finance measures that are specifically targeted to address deficits in ecological status linked to morphological alterations. M04 finances green infrastructure, which is positive, but it is not linked to water management improvements.

Implementation of the Floods Directive is mentioned in the SWOT, but it is not considered in the rest of the RDP. Risk management measures related to flood management link with insurance schemes, but not Natural Water Retention Measures, which can contribute to reducing flood risk.

27% of the RDP's total budget is allocated to P04; the target indicator for Focus Area 4B is 5.18% of agricultural land under management contracts to improve water management. Given that half of WBs have a good or very good chemical status and agriculture in Croatia is quite extensive, the target indicator appears appropriate. In addition, safeguards to ensure no deterioration are apparently developed which in sum can improve the agricultural production sustainably. The RDP should further ensure that the safeguards exist to link new investments or modernisation with a need to ensure no deterioration occurs.

However, given that the RDP did not include additional programme specific indicators to adequately measure the results of the measures in terms of achieving ecological and chemical status, it will be difficult to discern its contributions to WFD objectives at the end of the programming cycle and to inform future revisions.

Recommendations:

1. Expand the description of agricultural pressures in the SWOT by describing the significance of pesticide pollution in the RDP region. Information could be provided on the specific agricultural sectors leading to pressures. More information could be provided chemical status and quantitative status.
2. Improve the linkage of measures (in particular M10, but also M11 and the green infrastructure operation in M04) to WFD priorities by better targeting implementation areas where water bodies fail good status objectives of the WFD as identified in the RBMP.
3. Improve the monitoring and evaluation framework to better assess the improvements coming from the implementation of water-related measures. The current framework does not enable tracking progress in terms of achieving good status.

A5 Cyprus

The whole of Cyprus is one RBD. According to the first RBMP, the main pressures from agriculture regarding quantity are water abstractions from groundwater and surface water (dams used of irrigation) which are mentioned in various points of the RBMP and its annexes. Regarding quality/diffuse pollution, the main pressures resulting from agricultural activity are nutrients pollution (nitrogen and phosphorus), oxygen demands (BOD, COD), salinity and pesticides. "Diffuse sources from agriculture" are mentioned as the main pressures. In addition, livestock facilities are reported as a significant point source, but without mentioning what pollutants are linked to this. Regarding eutrophication, this is seen as relevant for groundwater only. Regarding hydromorphological alterations, pressures from agriculture include dams for irrigation, and drainage works (e.g. at Lake Paralimni). The SWOT overall covers the agricultural pressures identified in the RBMP, yet does not go into detail regarding the hydromorphological pressures.

SWOT

The SWOT provides a summary of the status of water bodies (acc. to water body types, so river, lake, coastal, groundwater) using WFD-terminology, both based on the information of the first RBMP as well as for the second RBMP (draft at the time the RDP was adopted). The information provided is total number of WBs and not %, making the extent of the problem not completely clear. This information is based on the more recent/updated Art.5 analysis of the second RBMP. In the overall situation description, the SWOT then goes into detail linking water quality/quantity and agricultural use.

It is stated that agricultural activities affect the largest number of water bodies with status less than good. Hydromorphological alterations/pressures are linked to water abstraction for irrigation (e.g. small dams etc.) also affect a large percentage of water bodies in less than good status. The RDP does not provide information regarding the number of surface water bodies (SWBs) negatively affected by agriculture water abstraction. Rather, the SWOT states that 237 abstraction points for agricultural use have been identified, affecting "210 parts of SWBs".

The RDP does not provide numbers on the number of SWBs failing good ecological status. Instead, the SWOT mentions that monitoring samples point to 17.4% of groundwater being of low quality due to excess nitrogen and phosphorus linked to the application of chemical fertilizers; WFD terminology is not used and it is not clear what "low quality" of monitoring means in terms of good status. The use of fertilisers in excess of the actual needs have resulted in an increase of surface run-off into surface and ground water bodies, leading to their degradation. At the same time, the recent institutional arrangements (definition of a unified water authority but also the full implementation of the WFD), in conjunction with the provisions of the Common Agricultural Policy (CAP) and the implementation of agri-environmental measures, are expected to reduce the negative

impacts on water quality.

Based on the intensification of agriculture and the introduction of new plant varieties and animal breeds, demands for agricultural inputs have increased, leading to an increased degradation of the quality of Groundwater Bodies (GWBs) and SWBs where there is an intensive crop cultivation (as also seen in the RBMP). The SWOT, however, does not make a clear indication of where pollution issues are more a result of arable farming or livestock farming.

In addition, the general description mentions that one of the most significant diffuse soil pollution causes identified is the increased use of pesticides, especially when their application is not made in a sustainable way. Adopting practices that reduce soil and water pollution by chemicals, is identified as an opportunity to contribute to the protection of soil and water management, maintenance of biodiversity and improve the balance of carbon dioxide produced by agriculture.

Regarding water quantity, agriculture is the largest consumer of water in Cyprus (70 % of total consumption). This is linked to over abstraction of groundwater bodies. High agricultural abstraction and together with the reduction in average rainfall in Cyprus over the last 40 years has led to depletion of aquifers and /or seawater intrusion in coastal aquifers. Saline intrusion is one of the main reasons for poor quantitative status (76% of all GWBs), largely due to over-pumping, agriculture and livestock. It is noted that the abstraction of groundwater for water supply and irrigation needs are considerable pressures to GWBs.

Today (2015), 95 % of the irrigated agricultural area is covered by improved irrigation systems (drip irrigation). It is identified that most farmers already apply irrigation plans, taking into account the weather conditions in the area and trying to reduce moisture loss due to evaporation. Due to the major efforts already made to save water, the scope for high rate of potential water saving is identified as being limited, but small savings and avoidance of further extension of irrigated areas is identified as being essential, especially where water bodies are degraded either quantitatively or qualitatively and must be protected in order to recover in the longer term. Finally, the objectives of the RDP regarding water savings through improved water-saving irrigation systems, use of recycled water, increase of organic farming etc. are described in the SWOT. Regarding the use of recycled water and as part of measure 4, the creation of infrastructure for the inclusion of recycled water (after tertiary treatment) in order to improve the water balance and for use in agriculture will be supported.

Regarding the increase of organic farming, the development of organic agriculture in Cyprus, although still relatively low, has rapidly increased over the last fifteen years. The measure 11 of the RDP aims to encourage conversion to and maintenance of organic farming practices and is provided with a view to encourage farmers to participate in such

schemes, thus answering society's demand for the use of environmentally friendly farming practices. The envisaged increase of organic farming will contribute to the preservation of water quality, prevent soil degradation, support the preservation of biodiversity and reduce greenhouse gas emissions (CH₄, NO₂ and CO₂ emissions).

Regarding the issue of floods, a summary of the Floods Directive implementation is given.

Needs

Out of the 17 needs developed based on the SWOT, two are specifically related to water and linked to Focus area 4b ("improving water management, including fertiliser and pesticide management") and Focus area 5a ("Increasing efficiency in water use by agriculture"):

1. "Need to prevent deterioration of water resource and soil quality";
2. "Rational management of water resources".

In addition, increasing efficiency in water use by agriculture/improving water management, including fertilizers and pesticide management and similar issues are mentioned also under some of the other needs identified under separate priorities

The descriptions of the two needs specifically related to water generally take up the main water pressures as described in the SWOT (that is, quantity issues related to over-abstractions, diffuse application of chemical fertilizers (in excess of the real needs) and increased (and esp. not sustainably applied) use of agrochemicals). Addressing morphological pressures however is not explicitly mentioned in the needs descriptions. A short summary of the measures/actions linked to these needs is provided. The links to the WFD are of general nature (e.g. briefly mentioning the pressures being identified in the RBMP, the need to protect water resources etc.), but not specified further (e.g. by explain the need of reaching the environmental objectives of the WFD by using its terminology).

No reference to floods issues can be found in the needs section.

Strategy

The general strategy states the "sustainable management of natural resources" as one of its three specific objectives, thus putting a substantial financial weight on P4 and P5. While better water management is mentioned therein as an objective to be met, no specific reference to the WFD or the FD is given, even if "serious shortcomings" regarding water quality/quantity are acknowledged under these priorities based on the SWOT analysis. The FD is not mentioned at all, also in the priority-specific strategies.

With regards to the budget, 111,66 million EUR is assigned to P4, and 26,22 million EUR is assigned to FA 5a. Combined, this constitutes approx. 60% of the budget, compared to 21,4% for P2 and FA 3a, though it is not clear what percentage of this is dedicated to addressing water issues or to other environmental issues.

Focus area 3b (“Supporting farm risk prevention and management”) is not activated in the RDP, with the explanation given that 3b activities remain in the jurisdiction of the Agricultural Insurance Organisation and the necessary requirements are fully covered by the annual national budgets. There is no information as to whether flood risk prevention in Cyprus is covered by other programmes.

In general, Focus area 4b aims at better management of water resources, and especially GWBs, which are deteriorated due to the current agricultural practices. Measures mentioned (in relation to agricultural land) are M01, M10 with M10.1.5 at the aquifer level), M11, M16, as well as M08 related to forests. The strategy mentions briefly the 2nd RBMPs under the WFD and that agriculture poses considerable pressures to the WBs. The focus area includes actions of extensification of farming and livestock, reduction of inputs of chemicals and pesticides on crops and sound management of animal waste from farms, especially in areas declared vulnerable to nitrate pollution. In particular, for the first-time inclusion of a specific agri-environmental action regarding decreasing irrigation water requirements at the level of the aquifer is noted, as well as the creation of infrastructure for a more effective management of water resources. It is important to note that a general measure regarding activities in NATURA2000-sites linked to the 2nd RBMP-measures (since the areas in which RBMP-measures will be taken are considered to often coincide with NATURA2000-sites) has been included; the specific activities will be complemented in early 2017 through an amendment of the RDP. The link between the overall WFD objectives and the measures of this priority is provided.

The target indicator for Focus area 4b states only 9% of agricultural land under management contracts to improve water management. Given the high number of WBs failing GS (approx. 60% of SWB and 80% of the GWB) and agriculture being an important factor for these problems, it is clear that additional programmes beyond the RDP will be needed to address agriculture pressures on the water environment in order to achieve WFD objectives.

The Strategy for Focus area 5a includes measures M01, M04, M10 and M16. The P5a refers to chapter 4 regarding the 2nd RBMPs and the often bad status of water bodies. The Strategy for Focus area 5a focuses on improving irrigation efficiency, increasing the use of recycled urban waste water, innovative monitoring etc. and not on expanding water storage capacities or competitiveness gains. In general, P5a mentions promoting the use of recycled water and construction of distribution networks for it, thus reducing water abstraction from boreholes. At the same time, an innovative technology in irrigation water consumption monitoring should contribute to a more efficient use of the available water for

irrigation. For the same objective, the strategy for replacing water-intensive irrigation systems for intensive crops (potatoes) with less-water intensive systems can contribute to better use of irrigation water. The link between the overall WFD objectives and the measures of the focus area is given, while there is only limited targeting of measures to WB in “not good” status (probably due to their high number).

The target indicator for FA 5a states 41% of irrigated land switching to more efficient irrigation system, which is an ambitious target, especially considering that modern irrigation techniques are already used often in Cyprus.

Ex-ante Conditionalities

In general, it is stated that the coordination of the assessment of the applicability of ex-ante conditionalities in Cyprus is performed by the Directorate-General for European programmes, coordination and development.

Regarding EAC 5.2, it is assessed as “not fulfilled” by Cyprus.

As actions to be taken in order to fulfil this EAC, it is mentioned that the gradual implementation of the regulations regarding pricing policies (by the Water Development Department and the local authorities) with a general deadline of 31.3.2016 will be done through: the completion of informing/consultation with the local authorities on the new water pricing policy and their obligations (completed by 31.1.2015); calculation of new water prices and preparation of a proposal to the Council of Ministers (completed by April 2015); decision of the Ministerial Council regarding the new water prices (by 31.12.2015); full implementation of the regulation by the local authorities (31.3.2016).

Measures

Focus area 4b is linked to 7 measures: M1, M8, M10, M11, and M16.

Focus area 5a is linked to 4 measures: M1, M4, M10 and M16.

Measure 1: While this measure is mentioned as of relevance for both Focus area 4b and 5a, the measure description mentions a (secondary) contribution only for 5a. The description of this measure mentions water related knowledge (both related to water quantity use/irrigation and to water quality, that is proper application of e.g. pesticides) as one out of many topics for knowledge transfer and information actions. Training related to the rational use of water will be for specific industries, e.g. management of glasshouses, outdoor vegetables or sheep/goats. Since actions regarding water quantity and quality are proposed, a link to reaching the WFD-objectives is given, even if WFD-implementation is

not a specific focus.

Measure 4: This measure “investments in physical assets” has a strong focus on water-related issues, mentions the WFD but without providing a specific link on what WB-improvements this measure is expected to deliver. The measure contributes to the three horizontal objectives and (inter alia) primarily to P5a; a table is given regarding the contribution of the sub-measures to the different priorities, showing that for 5a the relevant sub-measures are 4.1, 4.3.2 and 4.3.3. A summary is given regarding the laws and regulations an investment under measure 4 needs to fulfil (e.g. environmental assessment/permit) and it is mentioned that these needs to be “in line” with the WFD but without mentioning specifically reaching WFD-objectives or the need to apply Art 4.7 in case of negative effects of a measure to WB status.

In its general description, details regarding the water management situation over the years in Cyprus are given, a summary of the role of the different sub-measures as well as the overall horizontal objective throughout the programme area of potential water savings of 10 %. Investments in irrigation are expected to be implemented in m4.1 relate to improved irrigation systems which contribute to potential savings of 10 % compared with an existing irrigation system in the agricultural holdings. The description of the measure explicitly refers to addressing the Needs and Priority Areas identified as related to water.

Sub-measure 4.1 - Investments improving the overall performance and sustainability of agricultural holdings: Payment is proposed for investments in agricultural and livestock holdings, aimed at modernising, improving competitiveness and environmental performance (contributing inter alia to 5a). The eligible investment types of relevance for water are e.g. investments which contribute to saving water and the sustainable management of the resource (specified as: “establishment or modernisation of irrigation systems to contribute to efficient use and saving of water”), including water storage; infrastructure investments associated with livestock waste treatment/management, investments which contribute to more efficient use of fertilisers and plant protection products in accordance with the Directive on nitrates and use of plant protection products The investments in agricultural holdings with irrigation has to be fully compatible with Art. 46 and the RBMP. However, the sub-measure is not specifically designed to contribute to WFD implementation; the eligibility criteria do not prioritise implementation in areas where water bodies fail WFD objectives. Some of the supported activities (e.g. water storage) can have adverse effects to the WB status, yet the Art. 4.7-requirement of the WFD is not explicitly mentioned.

Art.46 Rural Development Regulation (RDR) is reflected in the eligibility conditions for investments in irrigation, which reflect the criteria to be fulfilled. The RDP demonstrates consistency with the WFD in that there is a requirement to have a WFD water permit for the required quantities and a minimum of 10% potential water savings. In addition, new irrigated areas related to water bodies in less than good status are only possible (under

the condition that no surface or groundwater body will be affected) for using recycled water. It is to be noted that Art. 46(5) has been interpreted in the sense, that extension of the irrigation systems to plots that have been irrigated in the recent past is possible if the plot has been reported as irrigated at least once since 2004.

Sub-measure 4.3.2 - Use of recycled water in agriculture: this sub-measure aims at creating infrastructure to support the use of recycled water by agriculture in order to enable the savings of freshwater (sole beneficiary being the Water Development Department of the Ministry of Agriculture). These savings will remain in water bodies that are in “less than good” status according to Art. 46. This includes placing new primary and secondary pipelines, distribution networks in plots, but also construction of reservoirs/dams store excess recycled water over the winter period for use in agriculture in the summer. As part of the eligibility criteria, an environmental impact study is required, demonstrating that the investment will not affect negatively any water body and that there will be no other significant negative impacts. This sub-measure is in support of achieving the WFD-objectives. While the WFD-Art. 4.7 regarding new modifications is not mentioned, the requirement is in place that an investment does not deteriorate water body status.

Sub-measure 4.3.3 - Implementation of innovative technologies in irrigation: this sub-measure concerns the installation of intelligent software systems on a pilot basis for monitoring/evaluation of the functioning of the largest water project in Cyprus, the Southern pipeline project (comprising dams, water treatment facilities, irrigation networks etc. in various municipalities of the provinces of Limassol, Larnaca and Famagusta), the sole beneficiary of the sub-measure being the Water Development Department of the Ministry of Agriculture). Regarding agriculture, it will focus on the Southern Kokkinochoria irrigation project, containing various measures (reduction of leakages, better management, identification and prohibition of unlicensed water withdrawals etc.) For the latter, the systems/technologies implemented through this sub-measure will be able to identify cases where a farmer has water needs/water consumption in excess of the authorised quantities of water. Such cases will then be specifically investigated and in case it is proven that unlicensed quantities of water from private wells are used, the farmer will be obliged to stop this practice.

This sub-measure will lead to an expected potential reduction of the average irrigation water quantity used per hectare by 10%. This saving will be partly used to improve the status of WBs by not using it, but also a certain part will be re-distributed for agricultural use. While the WFD is generally mentioned, the specific contribution of effective water savings to the achievement of the WFD objectives by reducing abstraction pressures is not quantified.

Measure 8: The measure aims at establishing forests and wooded land in agricultural and non-agricultural land and should help to improve/protect the natural environment,

increasing the wooded area and maintaining/enhancing biodiversity. Regarding water, it is stated that this measure should also improve and protect water resources (no specific WFD-link provided), thus contributing to the achievement of the objectives outlined (inter alia) in 4B. At the same time, the various sub-measures do not have any specific eligibility/selection criteria linked to water, thus not targeting the measures in a way that would ensure the delivery of multiple benefits.

Measure 10: 11 sub-measures comprise Measure 10, of which 4 are directly linked to the described water management issues related to agriculture (the entire measure 10 is linked to P4 and P5, no specification for 4b and 5a). These are: 10.1.5. Reduction of pressures in groundwater (by reducing irrigation needs at the level of the aquifer through replacing crops with others that have lower water needs); 10.1.1. Ban of the use of chemical pesticides and as well as fertilisers application according to the crop needs (as described in the table prepared by the Department of Agriculture); 10.1.2. Implementation of crop rotation in the cultivation of potatoes and cereals (reducing irrigation and fertilisation needs of potato crops); 10.1.3. Integrated production management in the cultivation of potatoes and citrus fruits (reducing the application of plant protection products through the implementation of various preventive and cultivation measures).

The overall needs regarding water management are repeated for this measure also mentioning the WFD-implementation. The sub-measures will contribute to the WFD-objectives achievement, even if this contribution is not fully specified.

Overall, it is stated that the 2nd RBMP will be completed in the coming months and will include a comprehensive framework of actions focusing on mandatory (m12) and voluntary measures (M10) for high nature value areas that coincide with Natura 2000 network sites and action areas of the RBMP. This would further enhance the contribution towards WFD objectives to be delivered by the RDP

Regarding the eligibility and selection criteria related to water in the 4 sub-measures, for 10.1.1 and 10.1.2 (which is expected to “contribute significantly to the WFD-implementation”, but without providing further details) and 10.1.3, the selection/scoring criteria if the applications exceed the available budget will be to “maximize the environmental benefits (taking into account the achievement of WFD-objectives and prioritising parcels adjacent to surface water bodies which are below “good status”). Thus, these sub-measures are “focussed” regarding WB status if more applications are submitted than budget available. Sub-measure 10.1.5 can be applied in areas of relevance for 2 GWBs that face severe water stress; in addition, the “needs resulting from the 2nd RBMP as well as the magnitude of water savings of a specific application” will be taken into account in the selection criteria.

Measure 11: This measure to support organic farming helps meet the needs that have been highlighted by the SWOT analysis for the Cypriot agriculture and in particular (inter

alia) the preservation of water quality and is (also) in support of Focus area 4b. At the same time, the two sub-measures do not propose eligibility or selection criteria relevant to water management (not required by the EAFRD).

Measure 16: This measure supports activities that promote cooperation of actors in the agri-food and forest sectors to work jointly in innovation projects for the circumstances in Cyprus. It is linked to P4b since it includes the management of fertilizers and pesticides, as well as to P5a since it contributes to increasing efficiency in agricultural water use (no specific reference to the WFD). No eligibility or selection criteria relevant to water management can be found, just the general reference that actions of M16 give the possibility of carrying out pilot research applications for solving problems in terms of savings and proper management of water resources.

Indicators

The RDP uses the CMEF/the water relevant context and impact indicators required. No additional indicators have been included in the RDP (not required by the EAFRD). No monitoring of morphological alterations or pesticide pollution based on the information on the context and impact indicators.

The following context indicators are presented: 20 (irrigated land), 39 (water abstraction in agriculture, 40 (water quality: here, the potential surplus of N and P on agricultural land are given, as well as N in freshwater, divided in SWB and GWB, indicating the % of monitoring sites that are in high-moderate-poor quality). Context indicator 42 (soil erosion) is blank.

The target indicators focus on the percentage of agricultural land under management contracts to improve water management (T10), the percentage of forestry land under management contracts to improve water management (T11) and the percentage of irrigated land switching to more efficient irrigation system (T14). The description of the evaluation system does not mention using WFD monitoring data.

As not required, RDP has not expanded on the existing CMEF framework (not required by EAFRD) to more accurately evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD.

Conclusions

The RDP has a well-structured SWOT, with a clear explanation of the main water-related pressures coming from agriculture; it provides up to date information as regards to the ecological, chemical, and quantitative status of water bodies in Cyprus. The needs description is logically built on the SWOT, yet it does not give attention to morphological

issues related to agriculture. In addition, it does not provide specific links to the WFD-implementation by indicating the exact needs related to reaching the WFD-objectives. The RDP Strategy and selected Measures generally are coherent with this analysis and focus on water quantity and pollution issues.

The measures of relevance to water are generally positive, aiming at water quantity (here, with a focus on water savings e.g. through switching to less-water consuming crops and not increasing water supply through new infrastructure) and quality improvements. Focus area 4b addresses both livestock pollution (through M4) and arable land (through M10). The targeting of sub-measure 10.1.5 to specific GWBs is positive. The RDP indicates that 10.1.1 and 10.1.2 are expected to “contribute significantly to the WFD-implementation”: this seems to be the case, but this contribution is not fully specified.

Not included in the RDP are measures to address hydromorphological issues related to agriculture due to drainage and irrigation.

Regarding the strategy for Focus area 5a, while the focus of Measure 4 is on water savings, there are possibilities for reactivation/ expansion of irrigated areas as well as the creation of new reservoirs (linked to recycled water). A number of constraints/preconditions are indicated for such activities, while the links to Art.46 are applied in a positive/rather restrictive way. The need to apply Art 4.7 is not mentioned explicitly for investments that may deteriorate water status. Although not required under the EAFRD, as mentioned above, reference to Art. 4 (7) WFD under the eligibility criteria would help to clarify to local authorities the legal requirements in light of the on-going challenges many authorities are facing with proper application of Art. 4 (7) WFD.

Issues related to floods are not covered/integrated into the RDP, thus missing a possibility of achieving support for the implementation of the Floods Directive in regards to agricultural measures. In addition, there is no mention of supporting natural water retention measures which could reduce flood risk (but also reduce drought risk and help address desertification).

Regarding indicators/targets, no additional programme specific indicators to accurately measure the results of the measures in terms of achieving ecological and chemical status/WFD-implementation are included. Overall the target indicator for Focus area 4b seems low compared to the severity of water issues related to agriculture. The target indicator for P5a is ambitious, especially considering that modern irrigation techniques are already often used in Cyprus.

Recommendations:

1. Improve the focus on addressing morphological issues associated with agriculture in the RDP, and provide sufficient funding to measures supporting river and

floodplain restoration/NWRM.

2. Although not required, consider expanding both the context and target indicators to better reflect water management. The context indicators of nitrogen and phosphorus pollution do not cover two important water management issues, namely pesticide pollution and morphological alterations. These missing aspects do not enable obtaining a full picture of the environment in the territory. Moreover, the target indicators do not enable to track the impact these measures have on improving the water environment. Especially with constraint budgets, it would be beneficial to have indicators in place that enable the authorities to track whether a measure's implementation is having a positive effect on the water environment and is therefore worth financing. Here, linking also the monitoring programme to existing programmes under the WFD would be helpful and would not pose any additional administrative or financial burden on the district

3. Improve the relevance of certain measures linked to 4b and 5a in relation to water by including more specific eligibility and selection criteria oriented towards water management objectives/WFD-implementation. Although this is not required by the EAFRD, it would help to further refine the strategy as regards water management.

A6 Czech Republic

In the Czech Republic, there are three river basins (RBs): Oder, Danube and Elbe. The main agriculture pressure identified in the respective RBMPs is diffuse pollution from in particular nitrogen and pesticides. Point source pollution from agriculture is not considered as significant, neither is agriculture water abstraction. Soil erosion is identified as a pressure, though the role of agriculture is not explored in detail in RBMPs.

SWOT

The SWOT in the RDP does not refer to WFD Art. 5 analysis of pressures and impacts, thus it is not clear whether the SWOT provides up to date information on the status of water bodies in Czech Republic (provide data for 2007-2011 and the role of agriculture in affecting water status). Figures on the agricultural impact on the water environment are drawn from a variety of other documents. Both the RDP and RBMP identify diffuse pollution in particular from nitrate and pesticides as a major issue; though soil erosion and low water retention capacity are additionally identified as important issues in the RDP. The SWOT does not refer to the River Basins and RBMPs found within its territory.

Quantified figures on good ecological status and WFD objectives are not provided in the SWOT. Information on Nitrogen concentration (in mg of N/l) in surface and groundwater is provided and water quality is categorised along good, middle and poor quality. However, it is not clear whether this categorisation is consistent with the WFD status classification. High levels of nitrogen and phosphorus are also identified as causing deterioration in the quality of drinking water. Organic farming is identified as contributing to reduced inputs of chemical substances. 40% of agricultural land is identified as at risk of water erosion; and arable land has been classified into different erosion risk categories. With regard to water quantity, investigations predict water deficits, in particular surface water, on the majority of the territory as a possible effect of climate change; this information is not linked to how this will affect the status of WBs in accordance to the WFD. Low water retention in the landscape is indicated as a problem for farming in relation to drought and flood risk. Irrigation and water consumption in general in the agriculture sector represent a small share of overall water use. The SWOT does not spatially locate the pressures, with exception of nitrate vulnerable zones (NVZ), which have been extended in 2011 comparing with 2008.

The strengths as identified in the programme include an increase in organically farmed land (2011); and long-term decline in animal stocks and consequent decline in ammonia emissions (climate change issue but not water quality). Significant impact of agricultural activity on water quality is identified as weakness including eutrophication of water caused by nutrients in eroded topsoil; GW affected with nitrates, ammonium and pesticides; Hydrological drought and low water retention in the landscape have adverse effects on, among others, water resources. As an opportunity, the programme identifies the growing

interest in agri-environment-climate and organic farming measures, which can contribute to enhancing water retention properties of soil and the landscape; this is of particular importance for flood protection which as indicated in the programme are a frequent issue. Low water retention in the landscape and repeating flood events are indicated also as a threat, which has an impact on farming; as well as increasing surface water scarcity due to climate change. Another indicated threat is the potential risk of historical contamination (e.g. from DDT).

All the pressures from the RBMP have been included in the RDP SWOT analysis.

Needs

Four Needs have been linked to Focus Area 4B: Need 2 “to strengthen water retention capacity of the soil and the landscape (reducing the risk of flood and soil erosion)”, Need 5 “to promote environmentally friendly farming systems (minimising the use of chemicals)”, Need 7 “to prevent degradation of aquatic ecosystems (reducing the risk of water erosion of soils and run-off of this soil and the nutrients and pesticides in it into nearby water bodies)”; and Need 13 “to strengthen the resilience of health and protection of forests”.

The needs descriptions are clear in their link to the pressures identified in the SWOT and types of measures necessary to address the needs. All pressures identified in the SWOT have been turned into need. Need 2, in addition to the agricultural management methods (not specified), foresees technical measures (not specified) for water retention in the landscape. Need 7 is directly linked to the implementation of the WFD and Focus Area 4B “Improving water management, including fertilizer and pesticide management”. Aiming to improve water quality, it emphasizes the necessity to maintain sustainable farming in areas at risk of erosion, reducing inputs of nitrates vulnerable zones and in the areas of water resources. It also mentions that promoting sustainable farming is important now to also address past land drainage and straightening of rivers on the water environment, which was not discussed in the SWOT. Need 13 focuses on forestry sector and technical preventative measures in river basins should be foreseen.

Not linked to Focus Area 4B but to water issues: Need 14 (water retention capacity and water erosion on forest road network), 19 (increasing quality of life in rural areas - improving basic infrastructure - water supply systems).

Need 20 (decrease in water consumption in agriculture and forestry) has been linked to Focus area 5a “Increasing efficiency in water use by agriculture”. It focuses mainly on energy efficiency in building, technology and agricultural machinery. Need 21 was linked to Focus area 3b “Supporting farm risk prevention and management”. It focuses on settlement of non-insurable risks (drought, a pattern of continuous rain during the harvest, price volatility). However, measures have not been programmed under Focus area 3b nor

5a.

Strategy

The general description of the RDP Strategy reiterates the water management problems identified in the SWOT. It distinguishes three key areas, according to which the Needs and Priorities were grouped: ensuring sustainable management of natural resources and climate action; increasing competitiveness of agriculture, forestry and food production sectors; and balanced territorial development of rural economies and communities. The first two key areas address water issues. The Strategy further briefly describes how specific pressures will be addressed, though does not link to measures included in the RDP. The first key area (environment) receives the largest part of the budget (approx. 60%, of which 22% for the support of farming in less-favoured areas); the second (competitiveness) approx. 32% and the third (territorial development) approx. 7%. Although the overall budget of P4 (60%) is higher compared to P2 and Focus area 3A (32%), it is not clear what allocation goes to water issues, which was not required under the EAFRD.

The Strategy includes tables linking focus areas to specific RDP measures based on the SWOT analysis and indicates whether these measures will have primary or secondary effect. The table for Focus Area 4B is linked to 4 measures (M01, M02, M10, M11) for agricultural land; and 2 measures (M1 and M8) for forestry land. The description clearly identifies that the agri-environment-climate and organic farming measures will have a primary effect, and specific sub-measure of M4 on investments in physical assets will have a secondary effect. M8 and M15, both for forestry land, are considered to have a secondary effect.

The description concretely focuses on which pressure will be addressed by which RDP measure. For example, M4 on physical investments will contribute to technical solutions for water pollution and land erosion, M8 on forest management will contribute to natural water retention, M10 and M11 promotes farming with minimum or no inputs of fertiliser and pesticides on grassland and arable land.

While 60% of the RDP's total budget is allocated to P4 "Restoring, preserving and enhancing ecosystems related to agriculture and forestry", the target indicator for Focus Area 4B is only 11,38% of agricultural land under management contracts to improve water management. As the RDP indicates that 16.9% and 70.3% of SWBs have achieved good ecological and chemical status in 2009 and a very slight or no increase is expected by 2015, the target could be set higher. In any case, appropriate environmental safeguards have to be designed. While high risk of floods is often mentioned in the programme and is planned to be tackled by increasing water retention capacity in the landscape, Focus area 3b is not programmed. The risk of floods and water retention capacity issues are addressed under other priorities. The Floods Directive is not mentioned as a priority for

<p>the RDP to contribute towards.</p> <p>Focus area 5a is not programmed. Irrigation and water consumption are indicated as minor.</p>
<p>Ex-ante Conditionalities</p>
<p>The Commission assessment has found that EAC 5.2 has not been fulfilled and thus an action plan is required.</p>
<p>Measures</p>
<p>Focus Area 4B is linked to 5 measures (M01, M02, M8, M10 and M11). No measure has been selected for focus area 3b and 5a.</p> <p>M1: contributes to Focus area 4 with support for vocational training, skills acquisition and information events focused on issues of environmentally friendly management in the field of agriculture and forestry, however, only as a secondary issue. Despite being programmed under Focus Area 4B, M1 is not specifically linked to water management issues; water protection is only mentioned under the sub-measure 1.2 as one of the topics of information measures and experience exchange. Sub-measure 1.1 has no mention of water issue; Focus Area 4B is also not mentioned in either.</p> <p>M2: contributes to Focus area 4 by promoting individual advisory services on environmentally sound farming methods to restore, preserve and enhance biodiversity or improve water and soil management; though only as a secondary issue. Sub-measure 2.1 “Support to help benefiting from the use of advisory services” supports the provision of individual consultancy services and focuses on controlling cross-compliance; introduction of innovations; raising the general awareness on organic and agri-environment-climate farming. Eligibility conditions require covering one or more elements, one of which includes the requirements for the implementation of Art.11.3 of the WFD.</p> <p>M4: although M4 on investments in physical assets is not linked to Focus area 3b or 4b, the measure supports land consolidation of parcels under M4.3 to enable measures such as drainage, retention and flood prevention measures. The general description of the measure states side effect to Priority 4, include that: (1) land consolidation aims to increase the retention capacity of the landscape and in this way mitigate the effects of climate change (floods, droughts); (2) implementation of land consolidation takes into account the principles of nature protection and landscape conservation and contributes to biodiversity protection; (3) projects aiming at the protection of soil contribute to the prevention of water and wind erosion, prevent soil degradation and leaching of nutrients; and (4) the measure considers also wastewater management from agricultural production, which contributes to the improvement of water management. Of concern is that all these</p>

aspects are hardly addressed in detail by the M04 sub-measures, which furthermore do not plan strong environmental safeguards. Eligible costs include erosion-control measures for the protection of soils; payment for water management measures for surface waters and the protection against floods, and measures to increase the retention capacity of the landscape to limit the impact of agricultural drought (retention tanks, etc.). It should be noted that the measure description does not indicate whether water retention tanks is associated with the natural retention in the landscape, or a more structural, grey infrastructure type. Eligibility conditions require favourable opinion by the Ministry of Environment for project. However, eligibility conditions for sub-measure 4.3.1 are not linked to WFD Art 4 (7,8,9).

M8: Several sub-measures are linked to water management. Sub-measure 8.1.1 (Afforestation and creation of woodland) contributes to increasing the retention capacity of the landscape and improving water cycle. Sub-measure 8.3.1 (Support for prevention of damage to forests from forest fires and natural disasters and catastrophic events) focuses on prevention of water erosion. Conformity with the RBMP is required. Sub-measure 8.4.1 (Reconstruction of forest stands after disasters) contributes to the timely recovery of the destroyed forest, incl. water regime after natural disasters. Sub-measure 8.5.1 (Investments for the safekeeping of amelioration and stabilisation tree species) also contributes to the recovery of forest as a stable ecosystem, introducing tree species contributing to better water management. No linkage is made with the WFD or Floods Directive and risk areas identified under the WFD are not targeted.

M10: contributes to Focus Area 4B by implementing the WFD and Nitrates Directive, though it is not stated in the description that M10 focuses on water bodies failing good status. To implement the requirements of the WFD and the Nitrates Directive, all 9 agri-environment-climate sub-measures set minimum requirements for fertilisers – nitrogen and plant protection products (e.g. for nitrogen include strips of at least 3 m width measured from the bank line). In addition to this, M10 includes operations financing integrated production (fruit, vegetables and wine), which prohibit or restrict fertilizer (nitrogen), pesticides and other plant protection products use (e.g. herbicides). Sub-measure 10.1.4 on grassland maintenance sets restrictions (nitrogen input limits) on the use of nitrogen fertilisers in the nitrate-vulnerable zones (NVZ) and outside these areas. It further regulates nitrogen inputs by setting grazing (livestock density) limitations on the permanent grasslands (min 0,3 and max 1,5 LU/ha, to be kept from 1.6 to 30.9.); in such cases, the use of fertilisers is prohibited but not animal manure or compost. Erosion-control management also plays an important role on grassland. In addition to the minimum requirements, sub-measure 10.1.5 on conversion of arable land sets the requirement of 15 m width strip along the water course and grass mixture composition (ordinary, species-rich and regional but not specified) which has to be accepted by the regional nature conservation authority; it also set a ban to apply fertilisers. Sub-measures 10.1.1-10.1.3 and 10.1.5.4-10.1.5.4 focus on integrated production; sub-measure 10.1.6 on reduced nitrogen inputs, incl. extensive grazing and conversion of arable land to grassland. In addition to the latter practices, sub-measures 10.1.4.1-10.1.4.5 and 10.1.4.7-10.1.4.10

also focus on leaving of winter stubbles in arable areas; and sub-measures 10.1.5.1-10.1.5.3 and 10.1.8 focus on erosion control measures, including soil cover, ploughing techniques, low tillage and conservation agriculture. Sub-measure 10.1.4.6 focuses on grassland and wetland management and prohibits drainage. The agri-environment scheme, however, not targeted the sub-measures with the eligibility criteria towards water bodies failing good ecological status. There are also no selection criteria (not required under the EAFRD but could be considered good practice) in place to prioritise measures in catchments at risk of failing WFD objectives.

M11: despite being programmed under Focus Area 4B, the description of organic farming does not mention that it will contribute to water management issues; rather, it focuses on the cross-cutting objectives of climate change. Measure foresees innovations and promotion of environmentally sound farming systems; it aims to strengthen the prevention of soil degradation, especially by reducing the risk of water and wind erosion and soil acidification; and to conserve and restore valuable habitats in agricultural and forest land in terms of species diversity and aesthetic value, improve ecological stability and functional links of the landscape. M11 does not specifically target areas with high nutrients and pesticides levels (not required under the EAFRD). Nevertheless, organic farming – through its restrictions on pesticides and nutrients – will contribute to WFD objectives.

Indicators

The RDP uses the required CMEF indicators to provide context to the SWOT and existing issues being faced in Czech Republic. Information is provided on nitrogen pollution in SWBs and GWBs, water erosion and irrigated land. The RDP description does not define good ecological status and the percentage of water bodies failing good ecological status and the role of agriculture in this. Context indicators do not include this information either. Also, there are no context indicators defined for pesticide pollution in water despite being listed as the main pressure from the agriculture sector on water bodies. Morphological alterations are also not considered in the monitoring.

The target indicators focus on the percentage of agricultural land under management contracts to improve water management, which on their own would not allow for monitoring how the water-related measures are contributing to the implementation of the WFD and achieving good ecological and chemical status. The description of the evaluation system does not mention using WFD monitoring data.

The RDP has not expanded on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD.

Conclusions

In the Czech Republic, there is a clear explanation of the main pressures coming from agriculture; however, these are not linked to specific agriculture production types, and it is not clear in the SWOT whether it provides up to date information on the status of water bodies in Czech Republic, based on the most recent WFD Art. 5. Analysis. The Needs defined reflect the pressures identified and priority areas have been assigned to individual Needs. The Strategy developed for Focus Area 4B for the most part indicates which measures will contribute to water protection and management; and indicates whether these measures will have primary or secondary effect.

Overall there is a lack of specific linkages to the WFD and the Flood Directive: the SWOT does not mention them, nor does it make a clear linkage to the Art. 5 assessments carried out for the RBMPs or the objective of the RBMPs themselves. The Strategy does not identify as an objective the need to help deliver WFD good status of waters.

M10 particularly address diffuse pollution pressures from nitrate and pesticides. The type of measures proposed are diverse: reduction of inputs, but also conversion from arable to grassland or to fewer livestock), changed ploughing techniques, and application of soil cover practices. Targeting is linked to nitrate-vulnerable zones (NVZ), but not on areas where there are pesticide issues or water bodies failing good ecological status. Other measures programmed under Focus Area 4B such as M1, M2 and M11 provide complementary means to tackle diffuse water pollution.

Measure 4 on investments in physical assets is not linked to Focus Area 4B, but as a secondary effect to protection of surface waters and the protection against floods and agricultural drought through the measures to increase the retention capacity of the landscape in the sub-measure 4.3.1 on land consolidation. Of concern is the unclear definition of "retention capacity" which appears to be linked to the building of reservoirs (which can have negative impact on the water environment) and not to the implementation of Natural Water Retention Measures (e.g. wetland creation, blocking drainage, reducing run-off on agricultural land, etc.). Furthermore, given the potential for M04 to finance potentially harmful activities for water management, M04 does not present sufficient strong environmental safeguards (e.g. requirement for new infrastructure and modifications to water bodies to meet Article 4.7 of WFD). While not specifically required by the EAFRD, such a link to Art. 4 (7) WFD is important given the Commission assessment that many MS are not fully clear on the application of Art. 4 (7) and have called for guidance. A reference to Art. 4 (7) WFD under the eligibility criteria would help to clarify to local authorities the legal requirements.

While water retention in the landscape is a strong component of the RDP from SWOT to measures (M4 promotes water on agricultural land for droughts and floods while M8 on forestry land), it is not clear how much agricultural land use is responsible or can

contribute to flood risk reduction and implementation of Floods Directive.

The RDP did not include additional programme specific indicators to adequately measure the results of the measures in terms of achieving ecological and chemical status, it will be difficult to discern its contributions to WFD objectives at the end of the programming cycle and to inform future revisions.

Overall, the RDP presents a clear intervention logic as regards addressing pressures related to water management issues, however, there are measures that have a potential to pose a threat meeting EU water objectives, if not designed with appropriate environmental safeguards. 60% of the RDP's total budget is allocated to P4. However, the target indicator indicates that only 11,38% of agricultural land will be under management contracts to improve water management and many of the measures programmed under Focus Area 4B are only secondarily or not at all linked to water management. However, as the RDP does not indicate a number or % of SWBs, which have achieved good ecological status, it is difficult to judge the relevance of the target. Nevertheless, the contribution of the RDP towards addressing agriculture pressures to reach the WFD and FD objectives could only be considered as minor. This will mean that considerable action outside the RDP (i.e. through strengthened WFD basic measures (reinforce measures of the Nitrates Directive, the Pesticides Directive and the Groundwater Directive) and supplementary measures (funded by non-EU funds) should be included in RBMPs if the Good Ecological Status objective is to be achieved.

Recommendations:

1. Strengthen the description of Focus Area 4B by more concretely linking measures to aspects of improving water management. Improve the targeting of M04 and M10 to prioritise implementation of measures related to water management in areas where water bodies fail good ecological status so as to optimise contribution of the RDP towards achieving WFD objectives.
2. For M04, plan additional safeguards by requirement adequate consideration to the WFD objectives and assessment test (Article 4.7 test), and apply natural water retention measures to increase the natural water retention in the landscape.
3. Increase the target of land under contracts to improve water management to better address the magnitude of agriculture pressures on the water environment. Therein, it may be necessary to increase the budget for Focus Area 4B and water related measures.
4. Improve the monitoring and evaluation framework to better assess the improvements coming from the implementation of water-related measures. The current framework does not enable tracking progress in terms of achieving good

status.

A7 Denmark

Denmark has 4 river basin districts (RBDs): Jutland and Funen, Zealand, Bornholm and International (Vida-Krusa) shared with Germany. Pressures identified in the RBMPs include pollution from agriculture resulting in nutrient and organic enrichment and pesticide contamination; hydromorphological pressures (e.g. barriers, channelization, impoundments, piped streams, drainage) resulting in altered habitats; and water abstraction for irrigation leading to localized water scarcity. According to the 1st RBMPs¹⁶, only 26.9% of natural and only 16.6% of artificial or heavily modified SWBs have achieved good ecological status or better. Good chemical status has only been achieved in 1.2% of natural and 0.2% of artificial or heavily modified SWBs, with over 99.5% of SWBs in unknown chemical status. 72.8% of GWBs have achieved good chemical status, and 54.7% of GWBs have achieved good quantitative status.

SWOT
<p>The SWOT indicates that 51% of Danish water bodies were in good status (not defining whether ecological or chemical) in 2007, with more than half today (year unknown) having achieved good or very good status. The information is not clear if this refers to surface water bodies (SWBs), groundwater bodies (GWBs) or both. It does not appear that the latest data from the (2013) WFD Art. 5 assessment was used. The information provided in the SWOT appears to group SWBs and GWBs together, which conceals somewhat that most SWBs have not achieved good ecological status.</p> <p>The SWOT states that there are many water bodies that are degraded as a result of previous channelization, water course maintenance, physical barriers, water abstraction and waste water discharge. In addition, nutrient leaching from agriculture soils have negatively impacted estuaries and rivers downstream. There is a need to improve the morphological characteristics of river through restoration measures and through reducing waste water discharges (sources not provided). The content of phosphorus and nitrogen in water dropped by 40 and 11%, respectively between 2000 and 2007. Generally speaking, Danish lakes have a much lower concentration of nitrogen and phosphorus compared to 2000.</p> <p>17% of Danish farms can potentially be irrigated. Irrigation is considered essential for farms on sandy soils.</p>

¹⁶ The 1st version of the RBMPs that were submitted and assessed by the EC before being revoked and revised by DK.

There is no information regarding flooding issues in the SWOT.

Strengths identified include efficient nitrogen use, the lack of fertiliser and pesticide input in the forestry sector and woodland cover to protect groundwater. Weaknesses include the delay in positive results regarding water quality despite reduction in agriculture inputs. Opportunities include permanent forest cover to benefit surface and ground water quality. Threats include flooding, intensive crop and livestock production could put pressure on the aquatic environment.

Needs

2 Needs are linked to Focus area 4b “Improving water management, including fertiliser and pesticide management”: Green transformation and green jobs; Promote organic farming; and Clean water. The need “Increase resource efficiency and exploiting the potential of the bio-economy” is linked to Focus area 5a “Increasing efficiency in water use by agriculture”. The need “Supporting farm risk prevention and management” is linked to Focus area 3b “Supporting farm risk prevention and management”.

The need “Green transformation and green jobs” applies to all priorities and its description focuses on sustainable production and competitiveness and does not provide specific information regarding water management.

The need “Supporting farm risk” includes flooding issues following heavy rainfall. Wetlands can help with water retention.

The need “Clean water” focuses on supporting the WFD, the Nitrates and Pesticides Directives and the need to maintain positive trends in the agriculture and forestry sector. The description mentions the need for proper regulation of nitrogen fertiliser consumption and targeted support for measures such as wetlands and forest creation. The description lists a number of needs in the field of water: continue establishing and maintaining wetlands to reduce nitrogen and phosphorus emission; promote environmental concerns on agriculture land; maintain grassland and semi-natural land; permanent extensification of agriculture and forestry and include wetlands; conversion to organic farming or pesticide free management; continued promotion of afforestation on agricultural land to increase water retention; construction of buffer strips along lakes and rivers; improving the physical conditions in rivers; and the creation of areas that could support adaptation to climate change.

Through the need “Clean water”, all pressures from the agriculture and forestry sector have been fully covered.

Strategy	
<p>The Strategy reiterates the needs identified and also mentions that the programme should contribute to improving the aquatic environment through promoting environmentally sustainable agriculture and forestry production and extensification of production in designated areas. The programme will support the implementation of the Water Framework Directive.</p> <p>The strategy strongly emphasizes environmental protection, as can be seen by the division of the total public budget. 64.8% has been allocated to Priority 4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry” compared to 11.8% to Priority 2 “Enhancing farm viability and competitiveness”. Focus area 3a “Improving competitiveness of primary producers has not been programmed.</p> <p>The strategy for Focus area 4b “Improving water management, including fertiliser and pesticide management” focuses on specific areas targeted under the WFD rather than the whole agricultural areas. Actions are both geographically and thematically targeted in order to achieve the greatest possible improvement in water quality for the budget allocated. This will be supported through advice, facilitating the use of new technologies, establishing wetlands, extensification of agriculture and forest areas and organic farming. The following measures have been programmed under Focus area 4b: M1, M4, M8, M10 and M11. The target indicator for Focus area 4b is 15.94% (agriculture land and agriculture holdings under contracts to improve water management). Given that over 70% of SWBs have not achieved good ecological status, this target could be considered quite low.</p> <p>Focus area 5a “Increasing efficiency in water use by agriculture” has not been programmed. The RDP mentions that M1, M4 and M16 will have secondary effects on the Focus Area.</p>	
Ex-ante Conditionalities	
EAC 5.2 is not mentioned in the RDP.	
Measures	
<p>The following measures have been programmed under P4b: M1, M4, M8, M10, and M11.</p> <p>Measure 1 finances knowledge transfer and information actions. The measure includes grants for the conversion to organic food in commercial kitchens. This is linked to Priority 4b but there is no specific training in relation to water pollution issues.</p>	

Measure 4 finances investments in agriculture holdings.

- Sub-measure 4.1 support investments in 1) environmental technologies; and 2) organic farming; Environmental technologies include, among others, equipment to reduce pesticide use and for improved nutrient use efficiency. Selection criteria mention that annual applications will be assessed against selected thematic areas, including water, nutrients and pesticides. It is noted that support for investments in water-saving techniques (presumably under priority 5.2) will not be launched before Denmark has reached an agreement with the COM regarding the assessment of DK compliance with Art. 9 of WFD.
- Sub-measure 4.4 finances investments in nature, environment and climate. The focus is on supporting the WFD and Natura 2000. Support for investment includes: establishment of N and P wetlands; small wetlands to intercept drainage and reduce nutrient loading; land consolidation to enable projects on water retention under M10; projects in lowlands; improving the natural hydrological conditions of Natura 2000 areas; and grassland maintenance in Natura 2000 areas. Eligibility conditions for N and P wetlands and small wetlands include that location needs to comply with areas identified under the WFD. Selection criteria state that N and P wetlands and small wetlands must be located in designated areas according to the WFD and projects will be prioritised from a cost-effectiveness and calculated reduction target perspective.

Measure 8 finances investments in forest area development and improvement of the viability of forests. The measure's primary objectives are to support Priority 4a and Priority 4b. Sub-measure 8.1 finances the creation of forests to help reduce nutrient (nitrogen and phosphorus) pollution to the aquatic environment, increase water retention and contribute to the protection of drinking water/groundwater. The implementation of the WFD is mentioned as a rationale for action. Selection criteria include criteria such as area to be afforested, river basins with defined needs and low water retention, among others.

Measure 10 finances agri-environment-climate measures. 2 measures will be financed: maintaining wetlands and projects to establish natural hydrology in protection areas and maintenance of grasslands (focus on biodiversity objectives). The aim of the measure on wetlands and hydrology is to improve the ecological status of rivers, reduce water run-off to cities, expand extensification in the countryside and reduce greenhouse gas emissions. These measures are linked to operations under M4.4 and commitment is required for a period of 20 years. Selection criteria include for wetlands that the location should comply with designated areas identified in the WFD.

Measure 11 finances on organic farming. It contributes to the improvement of soil management, water management and biodiversity. Its objective is to foster the development of organic farming. It is linked to P4b through improved water management.

Indicators

In the RDP, the CMEF required context indicators are 40 (water quality) and 42 (soil erosion by water) are also listed.

Water-relevant target indicators are T10 (percentage of agricultural land under management contracts to improve water management) and T11 (percentage of forestry land under management contracts to improve water management). In addition, Denmark has included two programme specific target indicators “percentage of agriculture holdings with support for investments that improve water management” and “percentage of forestry holdings with support for investments that improve water management”. These are presumably to track the investments under M4.

There is no specific mention of monitoring on morphological alterations or pesticide pollution. There is no mentioning of using WFD monitoring systems.

Conclusions

The invention logic and strategy of the RDP significantly supports the implementation of the Water Framework Directive towards improving the status of water bodies. Although the SWOT does not provide full details on the percentage of water bodies in which status, and uses out-dated information, the RDP clearly defines water-related needs and the measures offered throughout the programme are very well targeted, which should allow for delivering cost-effective results.

Flood risk management is not fully addressed in the SWOT or in the strategy. Nevertheless, there are measures on wetlands and improving natural hydrology, which should have a positive effect on water retention in the landscape and for flood risk reduction.

The strategy for Focus area 4b focuses on investments in environmental technologies to reduce fertiliser and pesticide applications on the field and on creating and maintaining wetlands to absorb nitrogen and phosphorus loads to reduce pollution resulting from run-off from agriculture fields. These two approaches in combination help to prevent pollution at the source and at the receptor (end-of-pipe). Measures are well targeted, and wetlands must be located in areas designated according to the WFD. This shows a high level of synergy and planning of the RDP with the WFD. However, the target indicator for Focus area 4b is somewhat low (around 16%) considering that over 70% of SWBs and 30% of GWBS have not achieved good ecological status. This will mean that considerable action outside the RDP (i.e. through strengthened WFD basic measures (reinforced Nitrates Directive measures, GWD measures and measures under the Sustainable Use of Pesticides Directive) and WFD supplementary measures (measures funded by non-EU funds) will have to be included in RBMPs if the good status objective of the WFD is to be

achieved.

Finally, it is positive that Denmark has included two additional target indicators, focussing on uptake of investments in agriculture holdings, going beyond the requirement to look solely at agriculture land under contracts to improve water management. Nevertheless, these will need to be supplemented with other indicators to track how the measures included in the programmes will contribute to the improvement in status of water bodies.

Recommendations:

1. Present and use up to date data (from 2013) on the status of water bodies (ecological, chemical, quantitative) in Denmark.
2. Expand the CMEF to include target and/or results indicators that enable to monitor and track the ability of the programme's measures to reduce nitrogen and phosphorus loading in the aquatic environment and how this relates to improving ecological status. In addition, the CMEF does not currently have the means to address morphology, which is especially important in the context of Denmark with the significant financing of wetlands.

A8 Estonia

Estonia is divided into three river basin districts: West Estonia, East Estonia and Koiva. The RBMPs identifies the following pressures: eutrophication, pesticide pollution, soil erosion, and morphological changes due to drainage. Diffuse pollution from agriculture only appears to be a significant pressure when the share of crop cultivation area exceeds 25% of the basin of a surface water body. Overall, 70.7% of surface water bodies (SWBs) have achieved good or high ecological status, and 99.6% have achieved good chemical status. 96.2% of groundwater bodies (GWBs) have achieved good chemical status, and 96.2% have achieved good quantitative status.

SWOT

The SWOT clearly indicates which RBDs are relevant for the Estonian territory. It states that in accordance with the WFD good status should be achieved by 2015, and in accordance with the HELCOM the Baltic Sea must be restored to its ecological and environmental status by 2021. The SWOT makes references to existing water-related legislation like the WFD, the Nitrates Directive and HELCOM, as well as the Industrial Emissions Directive (related to livestock farming emissions). The SWOT also specifies that drainage projects implemented are in accordance with Article 4, paragraphs 7, 8 and 9 of the Water Framework Directive and take into account cumulative effects and the need to consider mitigation measures.

The RDP does not provide specific information on the percentage of surface water bodies (SWBs) and groundwater bodies (GWBs) failing good ecological, chemical or quantitative status. The SWOT only states that none of the water bodies have been assessed as being in very bad condition. Although the SWOT mentions Article 5 of the WFD in the general, it is not clear whether it was used to inform the SWOT. The SWOT does not state whether information on water management issues is from the latest Art. 5 WFD assessment (2013). The pressures identified in the RBMP assessment coincide with those mentioned in the SWOT and all the main problems are reflected.

The SWOT states that agricultural production is of relatively low average intensity, so nitrate pollution in groundwater bodies is not a big problem as a whole in Estonia. Nevertheless, there are nutrient “hot spots” evident in the designated Nitrate Vulnerable Zone (NVZ) covering 7.5 % of Estonia mainland. With respect to pesticides, 20-40% of monitored wells have tested positive for pesticides residues but remain below the maximum levels.

As regards the coastal waters, the SWOT indicates that in general its status is poor; the status is influenced by the pollution load from the river catchment areas and by the general eutrophication level of the Baltic Sea.

As regards surface water bodies (SWBs) the 2008-2011 monitoring results of rivers indicate that in about 25% of the streams the average nitrate concentrations are greater than 10mg NO₃/l, ranging from 10-20mg/l. Most of the higher concentrations are found at the monitoring spots situated in the NVZ or in streams with the source in the NVZ. Pesticide residues have not been detected in the monitoring of SWBs. The RDP states that compared to the EU average, the use of pesticides products is relatively low (0.35 kg/ha). Pollution in lakes has decreased in recent years and conditions have improved.

Although fertilizer use is not high, the application of fertilisers is increasing. The SWOT refers to a 2010 study by Tallinn University of Technology that found that agricultural activities, including losses from manure storage facilities, are responsible for 59% of the total nitrogen and 30% of the total phosphorus load into inland water bodies.

In terms of water use, the SWOT states that Estonia does not have water quantity issues, as due to climate and geographical conditions. Only 0.03 % of the total utilised agricultural area use irrigation systems. The SWOT states that in agriculture and forestry is important to maintain the correct water level in soil, which could be ensured by properly functioning drainage and irrigation systems.

Soil erosion by water is also recognised as a problem. Flooding issues and the implementation of the Floods Directive are not mentioned.

The SWOT points out that for a number of measures foreseen in the RBMPs, (such as renovating manure storage facilities, manure spreading machinery, silo storage facilities and training for farmers) it was possible to receive support under the previous RDP programme.

The SWOT concludes that the intensification of agricultural production, lack of resources to implement the best available technologies and inadequate environmental awareness result in the continued need for additional agricultural water protection measures that would address also the objectives of the WFD, Nitrates Directive and HELCOM. More efforts are still needed to improve manure management and address diffuse pollution. Besides the land improvement techniques, diffuse pollution could be reduced with targeted environmental support, for example with environmentally friendly management. Support for organic production should also be continued.

Under the section on strengths, weaknesses, opportunities and threats, the SWOT points to the poor state of drainage systems as a weakness. Other strengths, weaknesses, opportunities and threats are not directly related to water management.

Needs

One need is linked to Focus area (FA) 3b on supporting farm risk prevention and

management: Need 24 on risk management. However, it does not refer to addressing problems caused by natural disasters such as flooding.

Two needs are linked to FA 4b on improving water management, including fertiliser and pesticide management: Need 32 – Avoiding eutrophication of water bodies and Need 33 - Improvement of water quality.

The description of Need 32 does not provide many details. The RDP only states that in order to prevent eutrophication of water bodies it is important to ensure that drainage systems are functioning properly.

Need 33 concerns environmental pressures derived from agriculture. The RDP states that due to intensification of agricultural production in fertile areas, a lack of resources to implement the best available technologies and inadequate environmental awareness, there is an important need to promote water protection and management measures in the agriculture sector. This includes the improvement of manure storage and diffuse pollution management. The need stresses the importance to foster the implementation of agricultural practices that do not deteriorate water quality.

One need is linked to FA 5a on increasing efficiency in water use by agriculture. Need 19 – Irrigation systems. The description of need 19 is very brief. It only states that due to climate change and the need to avoid water waste, it will be necessary in the future to establish irrigation structures.

For all needs described above, there is no explicit link of the need to meet the WFD's objectives.

Strategy

The strategic objectives for FA 3b on Supporting farm risk prevention and management will be achieved through the following measures: M2 and M5. There is no link to flood risk protection.

The strategy for FA 4b on Improving water management, including fertiliser and pesticide management is linked to the following measures: M01, M02, M04, M10, M11, M12 and M16. The intervention logic promotes the protection of water bodies, such as manure storage facilities, mechanisms to tackle diffuse pollution problem and organic farming. Besides the M10 agri-environment-climate payments for regional water protection and for environmentally friendly horticulture programmed under this FA, also investments in agricultural holdings will indirectly contribute to this FA. The target indicator value (T10) percentage of agricultural land under management contracts to improve water management is set at 63.93% which is an ambitious target.

FA 5a on Increasing efficiency in water use by agriculture is not programmed. However, the description states that M4 - Investments in physical assets will indirectly contribute this priority. The construction and operation of irrigation systems is instead programmed through M4 under FA 2a on Improving the economic performance of all farms and facilitating farm restructuring and modernisation. The strategy for FA 2a does not mention the need to support the implementation of the WFD. There is no indicator to measure progress with regard to water savings.

Ex-ante Conditionalities

The RDP states that the EAC 5.2 has been fulfilled. The RDP present the list of references (legal acts, strategies etc.) of relevance to its fulfilment.

Measures

The measures proposed under FA 2a, 4b and 5a are: M01, M02, M04, M10 and M11.

Measure 1 finances knowledge transfer and information actions. The overall objective of the measure is to support economic competitiveness and contribute to the development of the bio-economy and sustainable use of resources. Investment will be made available for activities related to vocational training and skills acquisition. Among other environmental topics listed, M1 will also support the implementation of the WFD. The general description makes reference to water issues and the WFD, however that is not the case for any sub-measures. All sub-measures have the same selection criterion, namely "coherence with existing development plans, action plans or strategies (for example sustainable plant protection strategy, climate change strategy, development plan for bioeconomy)" as selection criterion.

Measure 2 finances advisory services, farm management and farm relief services. The general description indirectly links the measure to all priority areas. The measures must cover at least the statutory management requirements for good land and agricultural practices also in relation to water management issues, including the WFD. The description of sub-measures does not mention water related activities.

Measure 4 finances investments in physical assets. The general description refers to the pressures identified in the SWOT. It mentions climate change and the need to renovate drainage systems, which is intended to help with adaptation to climate change, preserving the agricultural and forest landscape, ensuring the sustainable use of surface and groundwater resources, satisfying both private and public interest, such as reducing floods risk and increasing the self-remediation capacity of water bodies.

- Sub-measure 4.1 - Support for investments in agricultural holdings is explicitly

linked to water-relevant issues, although it does not specifically mention the WFD. The planned investments include, among others, irrigation infrastructure and water regulation facilities and related equipment for the eligible investments which are not intended for public use. There are no further details to understand what type of irrigation infrastructure will be financed. Eligibility conditions do not mention Article 4.7 of the WFD but do refer to Article 46 of RDP regulation. The requirements of Article 46 are correctly transposed. The selection criteria prioritise nitrogen vulnerable zones for the construction of manure storage facilities.

- Sub-measure 4.3 - Agricultural and forestry infrastructure development and management foresees investments in agriculture and forest land improvements including drainage works and water control interventions. Eligibility conditions include compliance with Article 4.7 of the WFD.

Measure 10 finances payments for agri-environment-climate commitments and is linked to FA 4b. The measure is linked to water related issues, including water protection and promotion of water quality. The objective of M10 is to promote the use of integrated agricultural methods that, coupled with other legal restrictions, will promote a sustainable use of resources and reduce water pollution. The measure compensates farmers who are being negatively affected by such restrictions. The measure contributes to FA 4b via sub-measure 10.1 on support for environmentally friendly production, which includes integrated agricultural practices and via sub-measure 10.2. on regional water protection. Under this sub-measure, winter green cover and buffer zones will be financed. Eligibility conditions state that the applicant must comply with the regional water protection requirements for at least a period of five years. In addition, only farmers who have at least 1 ha of agricultural land in NVZ are eligible and support is paid only for land situated in the NVZ. Selection criteria are not water-specific. Although not required by the EAFRD, prioritising farmers in catchments at risk could be considered good practice from a WFD perspective.

Measure 11 supports organic farming. It contributes to the improvement of soil management, water management and biodiversity. Its objective is to foster the development of organic farming, to preserve and enhance biodiversity, maintain and improve soil fertility and water quality. It is linked to FA 4b and promotes a reduced release of nitrogen in groundwater, which will improve water quality. The description of sub-measures does not provide details on water management issues nor the WFD. Nevertheless, this measure will positively contribute to WFD objectives.

Indicators

The RDP uses the required CMEF indicators to provide context to the SWOT and existing issues being faced by Estonia: Context indicator C20 (surface of irrigated land) and C39 (water abstraction in agriculture), and 42 (soil erosion rate by water and surface affected).

Under indicator C40 on water quality, there are data on nitrates concentration in freshwater (both surface and groundwater), as well as data on (potential surplus of) nitrogen and phosphorus on agricultural land. No additional indicators for pesticide pollution or morphological alternations have been voluntarily included in the RDP.

In Chapter 11 (Indicator Plan), target indicators for FA 4b include T10 (% of agricultural land under management contracts to improve water management) and context indicator C18 (agricultural area). Although not required by the CMEF, the context indicator C40, could be beneficial to include within Chapter 11 to help measure improvement of water quality.

Target indicator T14 (% of irrigated land switching to more efficient irrigation system) is not included because FA 5a is not activated through M4 but only through M4. However, there is no impact indicator under FA 2a to measure the performance of irrigation investments programmed under M4 as well as to measure water savings.

As not required, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD. There is no specific mention of monitoring on potential or effective water savings, morphological alterations or pesticide pollution. There is no mention of using the WFD monitoring systems.

Conclusions

The SWOT clearly indicates which RBDs are relevant for the Estonian territory. It states that in accordance with the WFD good status should be achieved by 2015, and in accordance with the HELCOM the Baltic Sea must be restored to its ecological and environmental status by 2021. However, the RDP does not provide specific information on the percentage of surface water bodies (SWBs) and groundwater bodies (GWBs) failing good ecological, chemical or quantitative status.

The pressures identified in the SWOT are fully consistent to those identified in the RBMP and all pressures in the SWOT have been turned into needs. The need related to irrigation investments is not described in a detailed manner; therefore, it is difficult to understand what it intends to achieve, especially considering the abundance of water in the country and that only 0.03% of the agricultural area use irrigation systems.

As regards the strategy for Focus area 4b, diffuse pollution is directly addressed through measures M10.1 and M10.2 and M11. The description of sub-measures does not provide details on water management issues or the WFD. It is positive that M10 uses eligibility criteria to target NVZs. It is furthermore positive that 24% of the total budget is dedicated to agri-environment-climate measures related to FA 4b and that the target indicator for FA 4b indicates that 63.93% of agricultural land will be contracted to improve water

management. The budget and target indicate strong to address the diffuse pollution and eutrophication problems considering that the majority of WBs have already achieved good status.

Regarding water use, the programme does not identify inefficiency of water use as a weakness and FA 5a is not programmed. Investments in irrigation infrastructure are instead programmed through M4 which is linked to FA 2a. Investments in irrigation infrastructure are aimed at addressing climate change impacts. However, the strategy is not fully clear in this sense.

Regarding morphological alterations, the RDP does not address these problems through M5 or M4.4 which could have an important impact on the quality of soil and water in the country.

The monitoring and evaluation framework does not enable the assessment of water related measures and how they contribute to addressing pressures facing water bodies. As a consequence, it will be difficult to discern the programme contributions to WFD objectives at the end of the programming period and to inform future revisions.

Recommendations:

1. The SWOT should present information on water management in coherence with the WFD terminology.
2. Strengthen the description of FA 4b by more concretely linking measures to aspects of improving water management. Although not required, consider expanding both the context and target indicators to better reflect water management. The context
3. indicators of nitrogen and phosphorus pollution do not cover two important water management issues, namely pesticide pollution and morphological alterations. These missing aspects do not enable obtaining a full picture of the environment in the territory. Moreover, the target indicators do not enable to track the impact these measures have on improving the water environment. Especially with constraint budgets, it would be beneficial to have indicators in place that enable the authorities to track whether a measure's implementation is having a positive effect on the water environment and is therefore worth financing. Here, linking also the monitoring programme to existing programmes under the WFD would be helpful and would not pose any additional administrative or financial burden on the district.

A9 Finland

Mainland Finland is divided into seven river basin districts. The Finnish RBMPs identify pollution from agriculture resulting in nutrient enrichment, eutrophication, pesticide contamination and microbiological pressures from manure-microbes as key water-related pressures.

SWOT	
<p>The RDP states that Water Framework Directive (WFD) and the Marine Strategy Framework Directive (MSFD) are the main drivers for the improvement of water condition in Finland.</p> <p>The SWOT uses the WFD terminology to present the situation of water bodies. SWBs are found to be in high or good ecological status for 85% of the lakes, 65% of the rivers and 25% of coastal waters. Water chemical status is good, with a few exceptions. However, more precise data on the chemical status are not provided. Data on the quantitative status of water bodies are also not presented. Moreover, the reference date is not mentioned, therefore it is not clear if the most recent Art. 5 assessment results have been used.</p> <p>Annual averages of nitrates concentration in drinking water for the period 2004-2007 did not exceed the limit value of 25 mg/l. 88% of GWBs suitable for drinking purposes are classified as good and 2% as in poor state. Elevated nitrate concentrations have been found only in few agricultural areas.</p> <p>Concerning the Baltic Sea, the SWOT explains that agriculture's share of anthropogenic nutrient load into coastal waters originating in Finland is estimated to be around 68,6% for phosphorus and 56,2% for nitrogen concentration. The impact of agricultural pressures is most clearly seen in the Gulf of Finland and the Archipelago Sea, whose catchment area consist in great part of arable land. In particular, nutrient application from manure is a growing problem due to the concentration of livestock production, as well as crop production in a few places. For the 2007-2013 period the phosphorus concentration in water bodies has stabilized at around 4 kg/ha/year and nitrogen concentration at around 47 kg/ha/year.</p> <p>The importance of irrigation in Finland is limited. Irrigation is concentrated only in some regional areas depending on the type of agricultural production. The long winter season and the frozen soil affect water management practices in the country. 58% of arable land is drained to enable farming. The importance of open field irrigation is limited and regionally concentrated. Total irrigated area in mainland Finland in 2010 amounts to less than 3% of the utilised agricultural area and is subject to authorisation in certain circumstances.</p>	

Soil erosion by water and flooding issues are mentioned but it is not clear if the problems are significant.

The pressures analysed in the RDP are consistent with those analysed by the RBMPs.

Among the weaknesses, the SWOT highlights that the condition of river basins is still unsatisfactory and that agriculture is the main source of diffuse pollution. It then reiterates all the descriptive pressure information given above (nutrient pollution due to livestock production, eutrophication, increase in the use of plant protection products, climate change).

Needs

The description of needs points specifically to objectives of the WFD and FD. Three specific water needs were developed out of the SWOT:

Need 23: arable land erosion-reduction linked to Focus area 3b “Supporting farm risk prevention and management” and Focus area 4b “improving water management, including fertiliser and pesticide management”. The SWOT analysis finds that efficient management of soil erosion on the arable lands is an important aspect of the strategy that will contribute to the achievement of the WFD’s objectives (as phosphate is carried in the eroded soil into waters). The impact of erosion can be reduced by setting up multi-annual vegetation-covered headlands and buffer zones. The protection of crop areas is essential to limit run/off.

Need 25: reducing nutrients concentration and management of arable land linked to Focus area 3b and 4b. The work is based on the WFD requirements and the RBMPs. The RDP also links the need to the Flood Directive. It is necessary to reduce the nutrient loads into water bodies. This will be done through soil management practices such as crop rotation, conversion into grassland and winter cover.

Need 31: reducing of nitrogen and phosphorus concentration from agriculture and horticulture into water, linked to Focus area 4b and 3b. the WFD’s objectives are explicitly stated and are the rationale behind this need. The achievement of good water status requires that dry-matter content and soil acidity achieve low levels of total suspended solids. Diffuse pollution from agriculture will be addressed through a broad and diverse range of instruments such as manure handling and riparian margins.

Other needs are linked to water management issues and contribute indirectly to the WFD strategy, such as Need 8 on adaptation to the impacts of climate change, linked to Focus area 3b and 4b; Need 11 on rural infrastructure, linked to Focus area P3b; Need 15 on development of risk management in agriculture; Need 13 on arable land erosion reduction linked to Focus area 3b and 4b, Need 24: Maintaining and increasing the organic matter

linked to Focus area 4b.

Focus area 5a on Increasing efficiency in water use by agriculture is only linked to Need 20 – enhancing knowledge and Need 32 - Doing the job together.

Strategy

The general description of the strategy includes among its key objectives the improvement of water status. The programme prioritises environmental protection as can be seen from the share of the budget dedicated to the different priorities: P4 on Preserving and enhancing ecosystems related to agriculture and forestry is allocated 69% of the total RDP budget, compared to 20% allocated to P2 on Enhancing farm viability and competitiveness and P3a on Improving competitiveness of primary producers by better integrating them into the agri-food chain through quality schemes, together.

Focus area 4b on “improving water management, including fertiliser and pesticide management” is linked to the following measures: M1, M2, M4, M10, and M11. The RDP states that the environmental impact of agriculture on surface water and groundwater can be reduced by promoting the use of environmentally friendly production methods. These include investments in the preservation of wetlands to complement water protection measures. Awareness campaigns on water protection directed at agricultural producers and promotion of co-operation for pilot projects are also mentioned. Investments under P4b also include investments in manure storage, handling and use, as well as the reduction of agricultural drainage and controlled subsurface drainage effluent discharges. The target indicator T10 for P4b indicates that 79.87% of agricultural land will be contracted to improve water management, which is an ambitious target and should contribute towards reaching WFD objectives.

Focus area 3b is not activated because risk management is carried out mainly at national level. However, the strategy states that other measures may have an indirect impact on farm risk prevention and management. There is no mention of flooding issues.

Focus area 5a is also not activated because the need for more efficient use of water is not significant. However, the strategy states that other measures may have an indirect impact on a more efficient use of water: M2 and M16. Training and tutoring activities may be programmed on subject such as a more efficient use of water resources (especially in case of horticultural holdings).

Ex-ante Conditionality

EAC 5.2 was assessed by the MS as fulfilled.

Measures

The following measures are proposed as addressing water management issues under P4b: M1, M2, M4, M10, and M11.

Measure 1: This measure finances knowledge transfer and information actions. In the general description, there is an explicit reference to water management issues and it is considered a cross-cutting measure impacting various priorities, including Focus area 4b and Focus area 3b and 5a, which have not been activated. The achievement of WFD objectives is one of the general objectives of this measure. The descriptions of sub-measures do not refer to water management issues though.

Measure 2: This measure finances advisory services, farm management and farm relief services. The link to Focus area 4b is explicit in the general description. The sub-measures description, however, does not include direct references to water management issues.

Measure 4: This measure finances investments in physical assets, including investments in agricultural holdings (M4.1), agricultural and food processing, and marketing and development (M4.2) and non-productive investments (M4.4). The general description of the measure acknowledges that the sub-measure will indirectly contribute to better management of water resources. For example, M4.1 may include nutrient recycling enhancing investments, investments in drainage and the management of run-off water; M4.2 has an impact on the promotion of the sustainable use of water resources, as it may include investments in sanitation technologies to safeguard water quality. Contrary to the other two sub-measures, M4.4 is explicitly linked to Focus area 4b and is considered as tool for the implementation of the RBMPs and the WFD.

- Sub-measure 4.1 – the description does not include any specific references to water management issues although the general description of M4 indicates that operations under this sub-measure include nutrient recycling and management of run-off water caused by drainage and sealing. The sub-measure does not include water-relevant eligibility criteria. However, the RDP offers a higher investment aid rate to drainage with run-off water recycling.
- Sub-measure 4.2 – Agricultural and food processing, marketing and development promotes the uptake of organic production and well as the development of improved resource efficiency, including water resources. However, there is no link to WFD and water issues in the eligibility conditions and selection criteria to allow for prioritising this where needed most (e.g. catchments draining to the Baltic).
- Sub-measure 4.4 – support for non-productive investments linked to the achievement of agri-environment-climate objectives proposes investment in

wetlands restoration, restoration of floodplains and water control and drainage works using bioengineering techniques. Investments will cover protected areas and will target areas with phosphorus surplus. The description emphasises the ecological function of wetlands which promote water and biodiversity conservation and at the same time can function as reservoir for irrigation. Investments in wetland creation and restoration are eligible only if one of their main objectives is to ensure the reduction of water pollution.

Measure 10 finances agri-environment-climate investments. The primary objective of this measure is to contribute to the implementation of the RBMPs and in particular to tackle water pollution. M10.1.1 – *balanced use of nutrient* promotes commitments to reduce nutrient inputs; M10.1.2 –finances manure management and M10.1.3 - *Recycling of nutrients and organic substances* finance practices that enhances recycling and re-use of nutrients and manure handling. M10.1.5 - *Management of run-off water* focuses on activities, including management and recycling of drainage water, aimed at reducing eutrophication. Measure 10.1.5 is primarily programmed to reduce diffuse pollution into water bodies, but, in conjunction with investments under M 4.1, it also contributes to a more efficient use of water resources thanks to the rainwater collected that can be used for irrigation during dry period of the year. M10.1.6 - *Environmental protection of grassland* includes actions to reduce erosion and nutrient discharges into waterways. This will be implemented in areas covering groundwater. Activities include creation of buffer zones, conversion into permanent grassland as well as commitments to reduce the use of fertiliser and pesticides. M10.1.7 *winter cover* is specifically aimed at reducing erosion by rainwater and water runoff. M10.1.8 - *Organic use of mulch on horticultural plants and seed potatoes* is also specifically aimed at reducing pesticides input and nutrient leaching into groundwater. M10.1.10 - *Horticultural crops and alternative plant protection* measures also aim to reduce the use of pesticides by promoting the use of alternative (organic) control measures. M10.1.11 – *Management of wetlands* is also specifically programmed to improve the status of water bodies and implement the RBMPs in conjunction with wetland creation under M 4.4. Wetland and floodplains restoration measures (including removal of sludge, and chemicals, dams and river bed restoration, channels to control the water flow etc.) are complementary to nutrient load reduction.

Except for M 10.1.7 and M10.1.8 that are targeted by assigning the most vulnerable areas (in particular the catchment areas in South-Western and Western Finland substantially higher aid rates per hectare), the other sub-measures do not propose eligibility conditions to target the measures or selection criteria (not required by the EAFRD for M10) to prioritise measures to better take into account water management issues (e.g. targeting towards specific areas with water bodies at risk of failing WFD objectives), despite being very well oriented toward addressing the main agricultural pressure on water bodies. However, some key operations are targeted by higher aid rates given in areas particularly affected by nutrition leaching.

Measure 11: this measure supports organic farming. It is linked to Focus area 4b and it is

aimed at reducing/banning the use of synthetic chemical fertilisers and plant protection products. Although measure is not targeted in a way to maximize benefits for water management (not required by the EAFRD for M11), it will bring a positive contribution to achieving WFD objectives.

Indicators

The RDP uses the required CMEF indicators to provide context to the SWOT and existing issues being faced by Finland: 20 (surface of irrigated land) and 42 (soil erosion rate by water and surface affected). Indicator 40 on water quality considers potential surplus of nitrogen and phosphorus on agricultural land as well as nitrates concentration in surface and groundwater. There are no additional context indicators defined for pesticide pollution.

In Chapter 11, indicators for P4b include T10 (% of agricultural land under management contracts to improve water management) and context indicator 18 (used agricultural area). Although not required by the EAFRD, it would be beneficial to include context indicator 40 to measure progress improvement of water quality.

As not required, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD. There is no specific mention of monitoring pesticide pollution. There is no mention of using the WFD monitoring systems.

Conclusions

The Finland programme takes an overall logical approach to addressing water management issues in its territory. There are clear explanations of the main pressures coming from agriculture, linking it to specific agricultural activities, and the SWOT provides detailed information as regards to the ecological status of water bodies. However, data on the chemical and quantitative status of water bodies are not available. It is not clear if the latest WFD Art. 5 assessment results have been used. The needs defined, reflect well the pressures identified, and the strategy developed for Focus area 4b clearly indicates which sub-measures will directly or indirectly contribute to the WFD.

The RDP provides detailed explanation of the links between needs, measures, and priorities. Moreover, the implementation of the WFD is clearly a major factor in determining the logic of the RDP.

With regard to the strategy for Focus area 4b, measure 10 and its sub-measures as well as sub-measure 4.4 are considered as key tools for the implementation of the RBMPs to address diffuse pollution problems identified in the SWOT. Natural water retention measures (NWRM) are proposed. However, although vulnerable areas are targeted by

higher aid intensities, eligibility conditions and selection criteria for these sub-measures are not established with specific reference to target areas with identified water bodies at risk of failing WFD objectives. The target indicator T10 is set at 79.87% of agricultural land will be contracted to improve water management, which is an ambitious target to contribute to reaching WFD objectives.

The RDP as a whole is relatively ambitious regarding supporting the objectives of the WFD.

Recommendations:

1. The RDP would benefit from targeting sub-measure 10. Although not required by the EAFRD, WFD could be specifically referenced in eligibility conditions and selection criteria in order to further enhance and target the effort in addressing agricultural pollution in the most vulnerable areas.
2. The programme takes an overall logical approach to addressing water management issues in its territory; however, the budget allocated to Focus area 4b is low at 13% of the overall budget. It is recommended to increase it to ensure that the programmed measures are effective to achieve the WFD objectives in a vast territory and that the 79.87% T10 target is met.

A10 France – Alsace

The Alsace RDP is situated in the river basin of Rhine-Meuse. The RBMP refers to agriculture being a major source of diffuse pollution (nitrogen, pesticides) and erosion (suspended solids, phosphorus). Agriculture also results in point source pollution (e.g. effluents from livestock) and hydromorphological pressures. Water abstraction by agriculture is not considered a major issue.

SWOT	
<p>The SWOT refers to the relevant RBMPs. The SWOT, in line with the RBMP assessment, identifies agricultural pollution as one of the most important pressures in the region. Nitrate pollution is an important factor in groundwater contamination, while pesticide products have a strong impact on both surface and groundwater quality. The driving agricultural sectors are identified (grape/wine production and corn). Pollution from livestock (effluents, nutrients) is mentioned. Drinking water thresholds (50 mg/l) were passed in 10% of points in one region (Rhenane) and 31% of aquifers of another (Sundgau). A 2012 assessment identified 571 communities (60% of the region) as being in nitrate vulnerable zones.</p> <p>The SWOT notes that the majority of water bodies are in a strongly degraded state (either physico-chemical, ecological, or with respect to hydromorphology). The region also suffers a strong decline in aquatic ecosystems and wetlands. Pollution from phosphorous and other organic matters are mentioned as a concern, though one which has seen recent improvement. The SWOT mentions that water quantity issues are not particularly important overall in the region, though there are seven water bodies which experience high withdrawals.</p> <p>Despite a comprehensive review of the pressures in the region, the goals of the RBMP are not included. Figures related to water bodies meeting Good Ecological/Chemical Status are presented in a table format, but the figures are taken from 2009 and not from the latest Art 5 assessment.</p> <p>The SWOT identifies two territories with important flood risk according to the Floods Directive, which will receive specific action plans.</p> <p>WFD Pressures linked to hydromorphology are not taken up in the Strength, Weakness, Opportunities and Threat section.</p>	
Needs	
<p>There are 23 needs identified in the programme, one of which is directly linked to water: “To preserve and restore biodiversity as well as water and soil quality.” This need is linked</p>	

to Focus Area 4B “Improving water management, including fertiliser and pesticide management”, and the description mentions modifying agricultural practices to respond to the identified pressures. Agri-environmental measures and organic farming are both mentioned as appropriate approaches as well as physical investments.

Another need linked to Focus Area 4B, on “developing agri-environment, organic farming, and compensating natural handicaps”, states that improving surface and ground water quality requires the restoration of good ecological status of water bodies through reduced usage of agricultural inputs.

While mentioned in the SWOT, hydro-morphology is not mentioned in the needs.

Strategy

The general strategy mentions water management under the larger topic of natural resource management, highlighting agricultural and industrial pollution as important focus areas. Water is highlighted explicitly in one of the orientations of the general strategy. It is also stated that water management will be incorporated under different measures and priorities. There is no mention of the WFD.

With regards to the budget, 93.5 million EUR is assigned to Priority 4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry”. This constitutes 53% of the budget, compared to 30% for Priority 2 “Enhancing farm viability and competitiveness of all types of agriculture” and Focus area 3a “Improving competitiveness of primary producers” combined, indicating an emphasis on environmental protection.

Focus Area 3B “Supporting farm risk prevention and management” is not activated in the RDP as no measures directly address risk management and prevention, and these issues are said to be organised nationally.

The strategy for Focus Area 4B “Improving water management, including fertiliser and pesticide management” provides an overview of how different measures will be used. Firstly, M10 will aim to reduce emissions from pesticide, avoid nitrate contamination and promote farms with effective management of farm inputs. Secondly, M11 will aim to offer alternatives to the use of synthetic chemicals (fertilisers, pesticides) to preserve water quality – especially for catchments not meeting RBMP goals. Lastly, M04 includes action to preserve water quality through reduction of pesticide and fertilizer pollution and management of livestock manure, increasing agricultural infrastructure for washing areas, and supporting non-production investments fighting point-source pollution. The strategy notes that M10 and M11 will contribute to the RBMP issues. M01, M02, M07, and M16 will have a secondary impact.

The target indicator T10 for Focus Area 4B indicates that 9.59% of agricultural land will be

contracted to improve water management. Although the RDP plans to target investments to maximise the environmental benefits of investments, this appears to be limited considering that 68% of water bodies have not achieved Good Status (on average in the relevant river basins for the RDP area).

The strategy for Focus Area 5A “Increasing efficiency in water use by agriculture” is not activated, as no measures will contribute to this area, and water quantity is not identified as a major issue in Alsace.

Ex-ante Conditionalities

EAC 5.2 was assessed by the MS as fulfilled. No action plan was required.

Measures

Focus Area 4B is linked to the following measures: M01, M02, M04, M07, M10, M11 and M16.

Measures 1 and 2: The two measures cover knowledge transfer and advisory services. The description of M01 states that it will be used to address the needs related to water management and agri-environment/organic farming. The description for Measure 2 mentions water savings, as well as water quality preservation through improved management of effluents. While there is a clear link to the importance of water management in the knowledge transfer and advisory service, neither measure makes explicit reference to the WFD/RBMP.

Measure 4: The general description of the measure stresses the importance of increasing the competitiveness of farms and notes that it will focus most heavily on the modernisation of livestock buildings. M04 will help reduce pesticide and fertiliser pollution, as well as reduce erosion. The description of the measure explicitly refers to addressing the Needs and Priority Areas related to water, though the WFD/RBMP is not mentioned. Of the four sub-measures, only one is mentioned as having a direct impact on Focus Area 4B (Sub-measure 4.4), while another will have a secondary impact (Sub-measure 4.1).

Sub-measure 4.1A covers investments for the modernisation of livestock buildings. The sub-measure covers investment into effluent management. The principles for establishing selection criteria do not include a targeting of investments to areas with water bodies failing the objectives of the WFD.

Sub-measure 4.1B relates to production investments responding to sectoral or territorial strategies. While the description of the measure does not cover water, the selection criteria mention the principle of prioritising investments into degraded catchments according to the

RBMP.

Sub-measure 4.1D explicitly mentions preserving and improving water quality through reduced pesticide and fertiliser pollution and better livestock wastewater management. The eligibility conditions state that projects must be located in zones for interventions against agricultural pollution, which are zones at risk of not reaching the nitrate and pesticide goals of the RBMP. The selection criteria include a prioritisation of projects in water quality priority zones.

Sub-measure 4.3H relates to investment in agricultural infrastructure and will have a direct impact on Focus Area 4B: it focuses on cleaning areas of crop sprayers as well as treatment areas of water contaminated with pesticide products. Livestock wastewater treatment is also included. The eligibility conditions state that projects must be located in zones for interventions against agricultural pollution which are zones at risk of not reaching the nitrate and pesticide goals of the RBMP. The selection criteria include a prioritisation of projects in water quality priority zones.

Sub-measure 4.4I relates to non-production investment which helps reaching agri-environmental and climate objectives. This includes hedge planting, remediation on drainage outlets and wetland restoration. The eligibility conditions state that projects must be located in zones for interventions against agricultural pollution, which are zones at risk of not reaching the nitrate and pesticide goals of the RBMP. The selection criteria include a prioritisation of projects in water quality priority zones.

Measure 7: The measure is linked to water management through its objectives for agri-environmental-climate measures and organic farming. While the description of the measure as a whole states that this links to Focus Area 4B, there is no further mention of water issues. Sub-measure 7.6E – Natura 2000 contracts – mentions wetland restoration and lake and river maintenance. Sub-measure 7.6G – restoration and valuation of natural heritage – mentions water management and reaching good ecological status of rivers, and the selection criteria propose that investments are prioritised in areas with potential for protecting and restoring water resources.

Measure 10: The French agri-environment-climate measure is established at national level supplemented by strategies at regional (RDP level). The national framework establishes the rules and conditions for the implementation of the measure including the full list of sub-measures, including their objectives, targeted operators, funding rates and amount, eligibility and selection criteria, cross-compliance requirements, etc. At regional (RDP) level, the Measure 10 description should describe the regional priorities, the sub-measures from a regional perspective and spatial targeting of sub-measures.

The national framework defines all M10 sub-measures. Sub-measures selected in the Alsace RDP related to water management aim to: 1) optimise pesticide and fertiliser

application (reduction and elimination) and use of alternative products (e.g. biological methods for pest control, 2) diversify crops and encourage their rotation; 3) support the conversion of arable land to grassland, 4) protect landscape elements (e.g. hedgerows), 5) maintain vegetative cover (e.g. field margins, buffer strips), 6) reduce stocking density and 7) maintain and protect wetlands.

One sub-measure is linked to the restoration of grassland after flooding which can implicitly support maintenance of flood expansion areas by reducing the impact of flooding on farming. However the sub-measure does not aim to promote additional flood expansion areas.

The national framework requires that the regional agri-environment-climate strategy is coordinated with other regional and local plans, including RBMPs and other water management related plans in France (e.g. catchment management plans, territorial contracts of the water agency). One main mechanism to increase this coordination is through spatial targeting. Spatial targeting of M10 sub-measures occurs through two mechanisms.

A first level of targeting is presented in the RDP through the M10 agri-environment strategy. In the Alsace RDP, the M10 agri-environment-climate strategy targets water bodies at risk of failing WFD objectives for nitrates and pesticides as identified by the RBMP. This includes also nitrate vulnerable zones and drinking water protected areas. The second level of targeting occurs through “agri-environment-climate projects” (PAEC). Any M10 sub-measure (MAEC) must be implemented in the areas identified in the RDP (above) and covered by a PAEC. PAECs are sub-regional plans that aim to implement M10 sub-measures in a coordinated way in pre-defined sub-regions of the RDP region (e.g. a catchment).

Measure 11: The measure is primarily directed at P4a but will contribute to Focus Area 4B. The measure and sub-measures are defined in the national framework, which highlights that organic farming can contribute to tackling pesticides and fertilizer pollution. The list of selection criteria in the sub-measure supporting maintenance of organic farming indicates that projects protecting drinking water abstraction zones will be prioritised. For the Alsace RDP, the general description of the measure highlights that organic farming can be deployed in degraded catchments according to the RBMP in order to improve water quality.

Measure 12: The measure aims to cover supplementary costs and revenue losses associated with implementation of WFD. M12 will be used specifically for the implementation of measures in drinking water protected areas. It should be used when M10 and M11 (which are of a voluntary nature) are not enough to achieve the objectives, and must be made compulsory. M12 will support actions that contribute to the following: reduced use of fertilisers/pesticide products, maintain or support expansion of beneficial cover and crops, extensification of land use, maintenance of green infrastructures.

Measure 16: the measures support collective projects that promote experimentation and innovation on environmental issues (as well as competitiveness and social performance). The selection criteria propose to prioritise projects which promote preservation of water resources, amongst others.

Indicators

The RDP uses the required CMEF indicators to provide common context to the SWOT and existing issues. Information is provided on water abstraction in agriculture (indicator 39), nitrogen pollution (indicator 40 water quality) and water erosion (indicator 42 soil erosion by water).

Target indicators for Focus Area 4B include impact indicators T10 (% of agricultural land under management contracts improving water management (Focus Area 4B) and T11 (% of forestry land under management contracts to improve water management), as well as context indicators 18 (used agricultural area) and 29 (total forest area). For Focus Area 5A, the impact indicator T14 (“% of irrigated land switching to more efficient irrigation system”) and context indicator 20 (surface of irrigated land) are used.

The RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD. For example, no additional context indicators report WFD monitoring data, the % or number of water bodies at Good Status, water savings, pesticide pollution or morphological alterations. There is no indicator on area of land under drainage.

The indicators currently used will not on their own allow for measuring progress on how the water related measures are contributing to the implementation of the WFD and achieving good ecological and chemical status. This will make it difficult to be able to evaluate the programme’s success and what changes should be made in the future.

Conclusions

The RDP has a well-structured SWOT and includes consideration of the different agricultural pressures and driving sectors in the region, including hydromorphological pressures. While the latest WFD Article 5 assessment is mentioned, the figures reported on Good Ecological Status are from 2009.

The Strategy and Measures are in line with the SWOT and focus on diffuse pollution pressures. Regarding diffuse pollution, the RDP tackles pesticide and nutrient pollution with a large range of measures in M04 and M10 directed to both arable and livestock farming: modernisation of livestock buildings and wash areas, reduced stocking density, expansion of grasslands, changed fertiliser and pesticide application techniques, and green infrastructure (hedgerows, remediation on drainage outlets, wetland restoration). A very

positive aspect of the RDP is the strong targeting in M04, M10 and M11 towards priority areas for water management and the RBMPs, which should help ensure value for money from public and EU funds. It is also very positive that M12 has been programmed. This indicates a commitment to supporting the achievement of the WFD.

While hydro-morphological pressures and flood risks are mentioned in the SWOT, the Strategy and Measures do not consider them and do not highlight other regional programmes that deal with these agricultural pressures.

Only 9.59% of agricultural land will be contracted to improve water management. Despite the intention of targeting payments to areas which will maximise environmental benefits, it is low considering that 68% of water bodies do not reach Good Status. This will mean that relying on the RDP alone will not be sufficient and considerable action outside the RDP will be needed if the good ecological status objective of the WFD is to be achieved, through strengthened WFD basic measures (e.g. reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (i.e. measures funded by non-EU funds).

Finally, the monitoring and evaluation framework largely fail to account for relevant water management indicators, especially those relevant for the implementation of the WFD and FD.

Recommendations:

1. Increase the target area under contracts to improve water management to better address the magnitude of agricultural pressures on the water environment.
2. Increase the consideration of hydromorphological pressures and flood risk in the Strategy and integrate measures that can contribute to reducing these pressures and support the achievement of the Flood Directive, in particular by supporting investments into Natural Water Retention Measures such as riparian forests, river and wetland restoration, removal of bank protection and temporary flood storage.
3. Improve the monitoring and evaluation framework to better assess the improvements coming from the implementation of water related measures. The current framework does not enable tracking progress in terms of achieving good status.

A11 France – Bretagne

The RDP Bretagne is situated in the Loire-Bretagne river basin district. The main agricultural pressures identified in the RBMP include diffuse and point source pollution (nitrogen and phosphorus, and to a less extent pesticides) and soil erosion. Agriculture is identified as a pressure on hydro-morphology, mainly due to livestock farming.

SWOT	
<p>The SWOT focuses on the main agricultural pressures of the region (nutrients). This region has been classified entirely as a nitrate vulnerable zone since 1994. Furthermore, the SWOT points out that the proliferation of green algae continues to be a major problem in the area. It notes the goal to reduce the flow of nitrates by at least 30-40% in the priority transitional water bodies in line with the RBMP. The SWOT notes the significant risk of phosphorus pollution from agricultural soil erosion. The SWOT notes a general reduction in pesticide pollution over the last 10 years but points to strong regional differences.</p> <p>The SWOT states that almost 40% of surface water bodies meet good ecological status (GES). The SWOT does not mention if the information comes from the most recent WFD Article 5 assessment. With regards to groundwater, it is stated that despite improvements over the last 15 years, most groundwater still does not meet GS, particularly with regards to nitrates and pesticides from agriculture. The SWOT does not mention the targets for the 2016-2021 RBMP.</p> <p>Neither flood risk nor morphological alterations are discussed in the SWOT. Wetlands are mentioned for their positive impact on water quality, and that they are under threat in the area due to urbanisation or transformation for large arable crops.</p>	
Needs	
<p>There are 24 needs listed, of which one is specifically linked to water, titled “Improve practices and systems with respect to the environment and water quality.” This need is linked to Focus Area 4B “Improving water management, including fertiliser and pesticide management”. The description highlights that in the face of water quality issues, agricultural practices must be improved to develop systems which are not only better for the environment in general, but specifically improve water management. The description also links to the regional goal of improved nitrate management as highlighted in the SWOT.</p> <p>Another need relates to organic agriculture and is linked to Focus Area 4B and the description mentions reducing chemical use for soil quality.</p> <p>Tackling hydro-morphological pressures is not mentioned (not mentioned in the SWOT but</p>	

mentioned in the RBMP).	
Strategy	
<p>The general strategy refers to water management as one of the five “strategic needs” (“Promote an agronomy and biodiversity of soils and means in service of environmental and economic performance of Brittany’s agriculture”). The importance of water quality issues, especially nitrates and phosphorous, is mentioned. No reference is made to the objective of supporting WFD implementation.</p> <p>Focus Area 3B “Supporting farm risk prevention and management” is not activated in the RDP, as there is a national risk management framework in place which addresses this issue. The Floods Directive is not mentioned.</p> <p>Focus Area 4B is linked to M01, M04, M07, M08, M10, M11 and M12. The strategy for Focus Area 4B does not include an explicit objective to contribute to WFD implementation. It is stated that M10 is the most relevant measure for addressing water quality, specifically through the management of farms and pollutants. Organic agricultural practices (M11) are also mentioned as a measure that contributes to reduce the use of pollutants, particularly pesticides. M12 will support the implementation of obligatory regulation for compliance with the WFD. M1 is also mentioned as contributing to issues surrounding agri-ecology, while M4 and M7 are listed as secondary measures.</p> <p>With regards to the budget, 235 million EUR is assigned to Priority 4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry”. This constitutes 35.9% of the budget, second to Priority 2 “Enhancing farm viability and competitiveness of all types of agriculture”, which received 41.1% of the overall budget. The target indicator T10 for Focus Area 4B indicates that 12.22% of agricultural land will be contracted to improve water management. Despite the intention of targeting payments to areas which will maximise environmental benefits, it is low considering that less than 40% of water bodies are currently reaching Good Status.</p> <p>The strategy for Focus Area 5A ““Increasing efficiency in water use by agriculture” is not activated as the quantity pressure is not considered as relevant in Brittany.</p>	
Ex-ante Conditionalities	
EAC 5.2 was assessed by the MS as fulfilled. No action plan was required.	
Measures	
Focus Area 4B is linked to M01, M04, M07, M08, M10, M11 and M12.	

Measure 1: The description states that the measure will directly address Focus Area 4B, particularly by supporting initiatives linked to agri-ecology, reduction of effluent emissions, and preservation and restoration of the environment.

Measure 4: The description highlights the need for investment in agriculture in line with RBMP to tackle pressures on water quality. Three sub-measures are related to water management: effluent management and storage to reduce nutrient emissions (Sub-measure 4.1.1), investments into the modernisation and development of agricultural products in agri-environmental industries to reduce water use (Sub-measure 4.2.1), and investments to support the traditional agricultural landscape of Brittany based on bocage (large hedgerows with small fields) to reduce erosion and flooding (sub-measure 4.4.1). The principles for establishing selection criteria do not include a targeting of investments to areas with water bodies failing the objectives of the WFD.

Measure 7: The measure aims to contribute to Focus Area 4B in a secondary way and refers to water-related needs and pressures. The measure aims to support RBMP implementation, in particular to restore ecologic continuity and establish “blue corridors”. Sub-measure 7.1.1 establishing and revising management plans for NATURA 2000 sites can be targeted to areas to support RBMP implementation in view of reaching good ecological status of water bodies and restore ecological continuity. Drinking water abstraction zones may also be prioritised. The eligibility criteria state that non-Natura 2000 sites must have been identified by the RBMP. Sub-measure 7.6.2 to support ecological continuity concerns both the creation of action plans and the implementation of measures. While there is a reference to “blue corridors,” there is no further mention of water or the WFD.

Measure 8: Sub-measures contributing to forest development requires that no drainage is used to support plantations. No sub-measures contribute to improve water quality or reduce soil erosion.

Measure 10: The French agri-environment-climate measure in France is established at national level supplemented by strategies at regional (RDP level). The national framework establishes the rules and conditions for the implementation of the measure including the full list of sub-measures, including their objectives, targeted operators, funding rates and amount, eligibility and selection criteria and cross-compliance requirements. At regional (RDP) level, the Measure 10 description should describe the regional priorities, the sub-measures from a regional perspective and spatial targeting of sub-measures.

The national framework defines all M10 sub-measures. Sub-measures related to water management selected in Brittany aim to: 1) optimise pesticide and fertiliser application (reduction and elimination) and use of alternative products (e.g. biological methods for pest control, 2) diversify crops and encourage their rotation; 3) support the conversion of arable land to grassland, 4) protect landscape elements (e.g. hedgerows), 5) maintain vegetative cover (e.g. field margins, buffer strips), 6) reduce stocking density and 7) maintain and

protect wetlands. The RDP highlights the benefits of these measures for water quality and soil erosion (e.g. interception of pollutants –in particular phosphorus- through hedgerows and field margins), wetlands (e.g. protection of aquatic habitats), reduction of pesticides use.

One sub-measure is linked to the restoration of grassland after flooding which can implicitly support maintenance of flood expansion areas by reducing the impact of flooding on farming. However the sub-measure does not aim to promote additional flood expansion areas.

The national framework requires that the regional agri-environment-climate strategy is coordinated with other regional and local plans, including RBMPs and other water management related plans in France (e.g. catchment management plans, territorial contracts of the water agency). One main mechanism to increase this coordination is through spatial targeting. Spatial targeting of M10 sub-measures occurs through two mechanisms.

A first level of spatial targeting is presented in the RDP through the M10 agri-environment strategy. In the Bretagne RDP, the M10 agri-environment-climate strategy focuses on areas identified through the Nitrates Directive, as well as areas identified through the 2016-2021 RBMP. For the former, this includes nitrate vulnerable zones, as well as “priority action zones” which include various water bodies not meeting nitrate quality levels, as well as catchments upstream of drinking water protection areas. In addition, priority areas identified through the RBMP and characterization report from 2013 include catchments of river bodies at risk of not meeting the goals of the RBMP due to phosphorous, trophic status, pesticides, and nitrates; catchments of groundwater bodies at risk of not meeting RBMP goals related to nitrates or pesticides; and catchments of coastal and transitional waters at risk or not meeting RBMP goals due to nitrates and phosphorous. Finally, areas identified in the RBMP as erosion risk zones are targeted.

The second level of spatial targeting occurs through “agri-environment-climate *projects*” (PAEC). Any M10 sub-measure (MAEC) must be implemented in the areas identified in the RDP (above) and covered by a PAEC. PAECs are sub-regional plans that aim to implement M10 sub-measures in a coordinated way in pre-defined sub-regions of the RDP region (e.g. a catchment).

Measure 11: The measure and sub-measures are defined in the national framework, which highlights that organic farming can contribute to tackling pesticides and fertilizer pollution. The list of selection criteria in the sub-measure supporting maintenance of organic farming indicates that projects protecting drinking water abstraction zones will be prioritised.

Measure 12: The measure aims to cover supplementary costs and revenue losses associated with implementation of WFD. M12 will be used specifically for the implementation of measures in drinking water protected areas. It should be used when

M10 and M11 (which are of a voluntary nature) are not enough to achieve the objectives, and must be made compulsory. M12 will support actions that contribute to the following: reduced use of fertilisers/pesticide products, maintain or support expansion of beneficial cover and crops, extensification of land use, maintenance of green infrastructures.

Indicators

The RDP uses the required CMEF indicators to provide common context to the SWOT and existing issues. Information is provided on water abstraction in agriculture (indicator 39), nitrogen pollution (indicator 40 water quality) and water erosion (indicator 42 soil erosion by water).

Target indicators for Focus Area 4B include impact indicators T10 (% of agricultural land under management contracts improving water management (Focus Area 4B) and T11 (% of forestry land under management contracts to improve water management), as well as context indicators 18 (used agricultural area) and 29 (total forest area). For Focus Area 5A, the impact indicator T14 (“% of irrigated land switching to more efficient irrigation system”) and context indicator 20 (surface of irrigated land) are used.

The RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD. For example, no additional context indicators report WFD monitoring data, the % or number of water bodies at Good Status, water savings, pesticide pollution or morphological alterations. There is no indicator on area of land under drainage.

The indicators currently used will not on their own allow for measuring progress on how the water related measures are contributing to the implementation of the WFD and achieving good ecological and chemical status. This will make it difficult to be able to evaluate the programme’s success and what changes should be made in the future.

Conclusions

The RDP has an overall logical approach to addressing water management in its territory. There is a clear presentation of the pressures in the SWOT coming from agriculture, linking with specific agricultural activities and their pressures, and the Strategy and Measures subsequently link with the identified needs and Focus Area 4B.

The SWOT focuses on pollution (nutrient, pesticide) and soil erosion, which represent the largest pressures from agriculture in the territory. It is very positive that M12 has been programmed and indicates a commitment to supporting the achievement of the WFD. The RDP tackles pesticide and nutrient pollution with a range of sub-measures under M04 and M10 (effluent management and storage, changing application techniques, reducing or eliminating applications, reduced stocking density, conversion to grassland) directed to

both arable and livestock farming. However, unlike sub-measures in M10, sub-measures in M04 are not targeted to areas failing Good Status. This may reduce their effectiveness in supporting RBMP implementation.

Regarding hydro-morphology, no attention is given in the SWOT, Needs or Strategy. Nevertheless, the RDP finances habitat restoration under M7 and a range of agri-environment-climate measures in riparian areas under M10. Although biodiversity is the primary focus, especially under M07, these measures will have a beneficial side-impact on the hydro-morphology of water bodies. Furthermore, there is a requirement in M08 that any investment in forest development does not use drainage. The RDP highlights the contribution of these measures to preserving water habitats and sometimes make a direct link with priorities of the RBMP (e.g. M7). This is however not systematic and not a requirement (e.g. under eligibility or selection criteria).

Regarding flood management, several sub-measures may contribute to Natural Water Retention Measures (NWRM) within M04, M07 and M10. However, they are not prioritised for flood management purposes.

The target indicator T10 for Focus Area 4B indicates that 12.22% of agricultural land will be contracted to improve water management. Despite the intention of targeting payments to areas which will maximise environmental benefits, it is low considering that less than 40% of water bodies are currently reaching Good Status. This will mean that relying on the RDP alone will not be sufficient and considerable action outside the RDP will be needed if the good ecological status objective of the WFD is to be achieved, through strengthened WFD basic measures (e.g. reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (i.e. measures funded by non-EU funds).

Finally, more relevant indicators could be used to measure progress on water quality and morphological alterations.

Recommendations:

1. Increase the target area under contracts to improve water management under M10 to better address the magnitude of agricultural pressures on the water environment. Given the significance of nutrient pollution in Brittany, more emphasis could be given to measures tackling pollution from drainage outlets (to catch nutrients), and the RDP could better target sub-measures in M04 to water bodies failing good status due to nutrient pollution.
2. Improve the monitoring and evaluation framework to better assess the improvements coming from the implementation of water related measures, for example by using indicators reporting the % or number of water bodies at Good Status, water savings, pesticide pollution or morphological alterations.

3. Improve the description of morphological problems associated with agriculture in the SWOT, improve the attention to flood risk management plans prepared by the Loire-Bretagne water agency (in particular proposed measures in rural areas such as NWRM), and provide sufficient funding to measures supporting river and floodplain restoration and NWRM under M07 and M10.

A12 France – Bourgogne

The Bourgogne RDP is situated between three river basins: the Loire-Bretagne, the Rhone-Mediterranee and the Seine-Normandie. The main agriculture pressures identified in the respective RBMPs include diffuse pollution from nitrates and pesticides, as well as morphological pressures. Point source pollution and soil erosion are not identified as significant pressures.

SWOT	
<p>The SWOT refers to the relevant three RBMPs and mentions the importance of preserving and restoring water quality in line with the Water Framework Directive. The SWOT identifies the agricultural activities leading to nutrient diffuse pollution, in particular vineyards and grain production areas. 62% of the regional territory is categorized nitrate vulnerable zones, with figures provided on the surplus of nitrates and phosphorous. The SWOT in the RDP does not indicate whether the information on agricultural pressures on the water environment comes from the most recent WFD Art 5 assessments of the three RBMPs.</p> <p>Figures given for good ecological status: the SWOT states that 18.4% of surface water bodies are in Good Ecological or Chemical State, while 27% are not reaching a good state. 48% of groundwater are in good chemical status and refer to the relevant drinking water abstraction zones.</p> <p>Wetlands are mentioned as being at risk of degradation. The SWOT also does not report any flood-related issues.</p> <p>The specific Strength, Weakness, Threats, and Opportunities section mention all the pressures mentioned in the more general section. Hydromorphological issues are discussed in the “threats” section, and are not mentioned in the general SWOT section on water, which focuses solely on pollution issues.</p>	
Needs	
<p>There are 24 needs identified in the programme, one of which is directly linked to water: “To preserve water resources in the context of agricultural activities.” This need is linked to Focus Area 4B “Improving water management, including fertiliser and pesticide management”, and the description highlights the importance of preserving water quality in line with the WFD. As outlined in the SWOT, it is stated that this relates primarily to controlling the use of pollutants in agriculture.</p> <p>While mentioned in the SWOT, hydro-morphology is not mentioned in the needs.</p>	

Certain other needs are linked to Focus Area 3B “Supporting farm risk prevention and management”, Focus Area 4B and Focus Area 5A “Increasing efficiency in water use by agriculture”, on issues such as organic farming and sustainable practices; however, the descriptions do not make any explicit links to water management.

Strategy

The general strategy mentions water resources under the umbrella of agricultural issues and management. The strategy mentions the importance of water quality and the regional action plan on nitrates in the context of meeting the objectives of the WFD.

With regards to the budget, 497.7 million EUR is assigned to P4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry”; this constitutes 60.2% of the budget, indicating a high priority for improving the environment. 65.7% of P4 funding goes to M13 “Payments for areas with environmental constraint”, which does not offer a high potential for improving the quality of water bodies.

Focus Area 3B is not activated in the RDP as no measures directly address risk management and prevention, and these issues are organised nationally. However, it is noted that certain measures will nonetheless contribute to a better management of risk (M01, M02, M04 and M06). The Floods Directive is not mentioned in the strategy.

The strategy for Focus Area 4B explicitly links to the SWOT analysis, and multiple measures are programmed in this area. Firstly, two aspects of M04 are highlighted: investment to preserve water quality through reduced pesticide pollution; as well as non-productive investments (M4.4) such as enclosures near rivers, troughs, new drain outlets and drainage ditches. Additionally, M10 (agri-environment-climate measures) is seen as an important component of the strategy to address water management. Priority action zones are identified including: drinking water catchments; priority zones from the RBMPs including those which were to reach GES by 2015; nitrate vulnerable zones; water bodies identified in the RBMP survey as being at risk from pesticides, nitrates and eutrophication; as well as catchment areas with quantitative shortages. The priority is also linked to M11 in that this will promote organic agriculture and reduce farm inputs, thus improving water management and fertilizer and pesticide use. Finally, M07 and M12 are included in the strategy, but these are more secondary to water management.

The target indicator T10 for Focus Area 4B indicates that 9.58% of agricultural land will be contracted to improve water management. Despite the intention of targeting payments to areas which will maximise environmental benefits, it is a low target considering that only 18% of water bodies are meeting Good Ecological Status.

The strategy for Focus Area 5A is not activated, as no measures will contribute to this area, and water quantity is not identified as a significant issue in Bourgogne.

Ex-ante Conditionalities	
EAC 5.2 was assessed by the MS as fulfilled. No action plan was required.	
Measures	
<p>Focus Area 4B is linked to M04, M07, M10, M11 and M12.</p> <p>Measure 1 and 2: The description of the two measures on knowledge transfer and advisory services do not mention WFD/RBMP or water at all. In both cases, the description states only a secondary link to Priority 4 on water issues.</p> <p>Measure 4: while the description does not explicitly refer to meeting WFD objectives, it does include water quality issues. The description of the measure explicitly refers to addressing the Needs and Priority Areas related to water.</p> <p>Four sub-measures explicitly contribute to water management: construction and equipment to improve effluent management as well as water use in livestock buildings (Sub-measure 4.1.1), investments for production equipment favouring sustainable agriculture (Sub-measure 4.1.2), construction of cleaning, stocking, and treatment facilities for residual agricultural water polluted with pesticides (Sub-measure 4.3.1) and non-productive investments favouring the environment such as fences along rivers and troughs and investment to protect rivers and revitalize the “bocage” landscape (hedgerows) (Sub-measure 4.4.1). Sub-measure 4.4.1 in particular supports investments protecting river banks, riparian vegetation and trees, habitat restoration (such as blocking drainage in wetlands) and the protection of river banks.</p> <p>Selection criteria for some sub-measures target investments to tackle diffuse nitrate pollution in vulnerable zones (Sub-measure 4.1.1), that contribute to meet the objectives of the WFD (Sub-measure 4.1.2), and that have an expected positive impact on water quality (Sub-measure 4.3.1). The description of Sub-measure 4.4.1 highlights the secondary contribution of the investment to the implementation of the Floods Directive.</p> <p>Measure 7: The measure supports animation for Natura 2000 and agri-environment measures and is set at national. It does not refer to water-related needs and pressures or Focus Area 4B or 5A, but implicit benefits can be expected (e.g. protection of wetlands).</p> <p>Measure 10: The agri-environment-climate measures in France are established at national level and are supplemented by strategies at regional (RDP level). The national framework establishes the rules and conditions for the implementation of the measure including the full list of sub-measures, including their objectives, targeted operators, funding rates and amount, eligibility and selection criteria, cross-compliance requirements, etc. At the regional (RDP) level, the Measure 10 description should describe the regional priorities,</p>	

the sub-measures from a regional perspective and spatial targeting of sub-measures.

The national framework defines all M10 sub-measures. Sub-measures selected in the Bourgogne RDP related to water management aim to: 1) optimise pesticide and fertiliser application (reduction and elimination) and use of alternative products (e.g. biological methods for pest control, 2) diversify crops and encourage their rotation; 3) support the conversion of arable land to grassland, 4) protect landscape elements (e.g. hedgerows), 5) maintain vegetative cover (e.g. field margins, buffer strips), 6) reduce stocking density and 7) maintain and protect wetlands. The RDP highlights the benefits of these measures for water management (e.g. reduced need for cereals through grassland extension, interception of pollutants through hedgerows and field margins).

One sub-measure is linked to the restoration of grassland after flooding which can implicitly support maintenance of flood expansion areas by reducing the impact of flooding on farming. However the sub-measure does not aim to promote additional flood expansion areas.

The national framework requires that the regional agri-environment-climate strategy is coordinated with other regional and local plans, including RBMPs and other water management related plans in France (e.g. catchment management plans, territorial contracts of the water agency). One main mechanism to increase this coordination is through spatial targeting. Spatial targeting of M10 sub-measures occurs through two mechanisms.

A first level of spatial targeting is presented in the RDP through the M10 agri-environment strategy. In the Bourgogne RDP, the M10 agri-environment-climate strategy targets the following water priority areas: 1) priority drinking water catchments; 2) catchment areas with water shortages; 3) other priority zones from the RBMP, including those which must reach GES in 2015; 4) nitrate vulnerable zones; 5) other water catchment areas and drinking water catchments; 6) water bodies of catchment areas; and 7) water bodies for which the 2013 characterization report of the RBMP noted risks of pesticide and nutrient pollution. The second level of spatial targeting occurs through “agri-environment-climate projects” (PAEC). Any M10 sub-measure (MAEC) must be implemented in the areas identified in the RDP (above) and covered by a PAEC. PAECs are sub-regional plans that aim to implement M10 sub-measures in a coordinated way in pre-defined sub-regions of the RDP region (e.g. a catchment).

Measure 11: The measure is primarily directed at P4a but will contribute to Focus Area 4B. The measure and sub-measures are defined in the national framework, which highlights that organic farming can contribute to tackle pesticides and fertilizer pollution, and it proposes to prioritise projects supporting maintenance of organic farming in drinking water abstraction zones (selection criteria).

Measure 12: The measure aims to cover supplementary costs and revenue losses associated with implementation of WFD. M12 will be used specifically for the

implementation of measures in drinking water protected areas. It should be used when M10 and M11 (which are of a voluntary nature) are not enough to achieve the objectives, and must be made compulsory. M12 will support actions that contribute to the following: reduced use of fertilisers/pesticide products, maintain or support expansion of beneficial cover and crops, extensification of land use, maintenance of green infrastructures.

Indicators

The RDP uses the required CMEF indicators to provide common context to the SWOT and existing issues. Information is provided on water abstraction in agriculture (indicator 39), nitrogen pollution (indicator 40 water quality) and water erosion (indicator 42 soil erosion by water).

Target indicators for Focus Area 4B include impact indicators T10 (% of agricultural land under management contracts improving water management (Focus Area 4B) and T11 (% of forestry land under management contracts to improve water management), as well as context indicators 18 (used agricultural area) and 29 (total forest area). For Focus Area 5A, the impact indicator T14 (“% of irrigated land switching to more efficient irrigation system”) and context indicator 20 (surface of irrigated land) are used.

The RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD. For example, no additional context indicators report WFD monitoring data, the % or number of water bodies at Good Status, water savings, pesticide pollution or morphological alterations. There is no indicator on area of land under drainage.

The indicators currently used will not on their own allow for measuring progress on how the water related measures are contributing to the implementation of the WFD and achieving good ecological and chemical status. This will make it difficult to be able to evaluate the programme’s success and what changes should be made in the future.

Conclusions

The RDP has a well-structured SWOT, it includes consideration of various threats to water quality in the region including nutrients and pesticides and identifies the driving sectors from crop and livestock farming. Although hydromorphological issues are mentioned, they are not given the same weight as pollution pressures across the SWOT. There is no indication whether the latest WFD Art. 5 assessments were used.

Regarding diffuse pollution, the RDP tackles pesticide and nutrient pollution with a range of measures (effluent management, changed fertiliser and pesticide application techniques, washing areas for pesticide equipment, reduced stocking density grassland conversion, and non-production investments) directed to both arable and livestock farming. The sub-

measures are often targeted to priority areas for water management, as well as for sub-measures specifically to nitrate vulnerable zones and areas to support WFD objectives. It is very positive that M12 has been programmed. This indicates a commitment to supporting the achievement of the WFD.

Most interestingly, regarding hydro-morphology and flooding, the RDP finances, under M4, habitat restoration, protection of river banks and establishment of riparian vegetation and trees. The contribution of the sub-measure to the implementation of the floods directive is also highlighted. It also offers a range of agri-environment-climate measures in riparian areas that can have beneficial impact on hydro-morphology.

While there is a well-developed analysis of the problems and identification of measures that can be targeted to address them, the RDP is likely to have limited effect on improving water due to the budget allocation. The vast majority of the funding in P04 is targeted at M13 (about 65%), which provides limited opportunities for water improvements.

Furthermore, the target indicator T10 for Focus Area 4B indicates that 9.58% of agricultural land will be contracted to improve water management. Despite the intention of targeting payments to areas which will maximise environmental benefits, it is a low target considering that only 18% of water bodies are meeting Good Ecological Status. This will mean that relying on the RDP alone will not be sufficient and considerable action outside the RDP will be needed if the good ecological status objective of the WFD is to be achieved, through strengthened WFD basic measures (e.g. reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (i.e. measures funded by non-EU funds).

Finally, the monitoring and evaluation framework largely fail to account for relevant water management indicators, especially those relevant for the implementation of the WFD and FD. The current framework does not enable tracking progress in terms of achieving good status.

Recommendations:

1. In the SWOT, improve the consideration of hydro-morphological pressures from agriculture (what types, where, from which agricultural activities) and flood risk issues (flood risk areas, link between rural land use and downstream flood risk) in the region.
2. Increase the target area under contracts to improve water management to better address the magnitude of agricultural pressures on the water environment and switch funding to measures more actively tackling water, for example in M04, M10 and M11.
3. Improve the monitoring and evaluation framework to better assess the improvements coming from the implementation of water related measures, for

example through indicators reporting the % or number of water bodies at Good Status, water savings, pesticide pollution or morphological alterations.

A13 France – Midi Pyrénées

Midi Pyrénées RDP is situated in the Adour-Garonne river basin.

SWOT	
<p>The SWOT mentions the previous targets of the 2009-2015 RBMP Adour-Garonne as well as the provisional targets of the RBMP 2015-2021 (69% surface water bodies in GES, 68% of groundwater in good chemical status and 93% in good quantitative status). The SWOT also summarises the main focus points of the new RBMP. The SWOT does not mention if the pressure information comes from the most recent Article 5 assessment. The SWOT also does not refer to the number of water bodies currently meeting Good Status.</p> <p>The SWOT indicates that 58% of surface water and 75% of groundwater contain nitrates, but also that 6.5% of surface water and 8% of groundwater are considered to be in a “bad” state. These figures underplay the significance of nitrogen pollution from agriculture: the RBMP highlights that 37% of surface water bodies and 35% of groundwater bodies are significantly affected by nitrate pollution (that is to a level that it impairs the objective of reaching good ecological status). The SWOT indicates that Nitrate vulnerable zones were recently increased to include an additional 15,000 farms and now cover 34% of UAA. The SWOT indicates that most of the nitrate pressure comes from “grandes cultures” (large arable crops) and polyculture.</p> <p>The SWOT identifies the relevant types of cultures responsible for pesticide pollution (large arable crops, orchards, viticulture). It provides a synthesis of agri-environment action in the previous programme and current policies (e.g. PLAN ECO-PHYTO).</p> <p>On water quantity issues, it is highlighted that 9% of UAA covering 23% of farms are irrigated. Agricultural water consumption for irrigation represents 70% of water use during summer, mainly from individual and collective reservoirs. Water use is monitored and charged, and the SWOT emphasises that irrigation will continue to be necessary for agricultural production. There is no information on how efficient irrigation systems are.</p> <p>While pollution and abstraction pressures are mentioned, the SWOT does not specifically mention the issue of morphological alterations from agriculture. Threats to wetlands are highlighted, highlighting the role of agricultural intensification.</p> <p>The SWOT reports that 10% of the population live in flood risk zones, and four territories have been designated as having “important flood risk” according to the Floods Directive. The SWOT highlights the risk of climate change on drought and water scarcity.</p>	
Needs	

Out of the 17 needs identified in the programme, one is specifically linked to water: “To preserve, restore, and efficiently use water resources, both surface and ground water.” This need is linked to Focus Area 4B “Improving water management, including fertiliser and pesticide management” and Focus Area 5A “Increasing efficiency in water use by agriculture”.

The Need highlights the importance of supporting the implementation of the RBMP. The description emphasises meeting the goals set out in the RBMP with regards to water quality and wetland conservation, and highlights the need to support local and individual action to reduce the use of fertilisers and pesticides. The description also highlights the challenges presented by increased droughts and suggests controlling abstraction and increasing water savings in agriculture to avoid “crisis situations”. Concrete measures suggested in the Needs relate to creating reservoirs and compensating direct withdrawals. The description identifies that advice and awareness-raising with the agricultural sector will be important to tackle issues of water quality and quantity and promote good practice.

Another need relates to managing environmental risk from agricultural incidents, and is linked to Focus Area 3B “Supporting farm risk prevention and management”. No explicit reference is made of water issues or flooding.

Strategy

The general strategy refers specifically to meeting the objectives of the RBMP and puts an emphasis on measures that increase resource use efficiency, improve techniques, and raise awareness.

With regards to the budget, 1,26 billion EUR is assigned to P4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry”, and 47,32 million EUR is assigned to Focus Area 5A. Combined, this constitutes 69.9% of the budget, compared to 20% P2 “Enhancing farm viability and competitiveness of all types of agriculture” and P3a “Improving competitiveness of primary producers”, indicating a high priority for improving the environment. 84% of P04 funding goes to payments for areas with environmental constraint (M13), which does not offer a high potential for improving the quality of water bodies.

Focus Area 3B is not activated in the RDP as the management of risks to agriculture are organised nationally. The Floods Directive is not mentioned in the Strategy.

The strategy for Focus Area 4B states that improved water management is to be based on the objectives of the RBMP and the regional Ecophyto (pesticide) plan. The strategy further indicates that implementation will be primarily based on M10 (agri-environment-climate measures) to promote agri-ecology and resource-efficient agriculture. Restoration of wetlands is also mentioned as a part of this approach. Organic agricultural practices (M11) are also mentioned as a measure that is not explicitly associated with water management,

but could have complementary effects to reduce the use of pollutants. The priority is also linked to M04, M07 and M12, but it is not specified how these will contribute to the RBMP and water management more broadly.

The target indicator T10 for P04B indicate that 4,55% of agricultural land will be contracted to improve water management. Despite the intention of targeting payments to areas which will maximise environmental benefits, it is low considering that 57% of river water bodies are failing good ecologic status.

The strategy for Focus Area 5A highlights that M04 would support investments to reach the objectives of the RBMP. This includes modernisation and building of reservoirs. The target indicator T14 indicates that 5% of irrigated land will move to more efficient water use which is quite low given the importance of tackling water quantity pressures in the RDP region.

Ex-ante Conditionalities

EAC 5.2 was assessed by the MS as fulfilled. No action plan was required.

Measures

The following measures are proposed as addressing water management issues:

Measure 1 and 2: The description of the two measures on knowledge transfer and advisory services mentions an indirect impact on Focus area 1B and Priority 4, and does not refer to water management or the implementation of the WFD.

Measure 4: The description of the measure explicitly refers to addressing the Needs and Priority Areas related to water. Under, sub-measure 4.1.1 (investments into modernisation of farms), payment is proposed for effluent management and improved storage, which can reduce nutrient emission pressures. The principles for establishing selection criteria do not include a targeting of investments to areas with water bodies failing the objectives of the WFD.

Sub-measure 4.1.3 (investments for agri-environmental measures) specifically aims to support productive investment for the achievement of WFD and ND objectives. Pressures to be tackled include: preserving soils and fighting erosion, reducing water pollution from pesticides, reducing water pollution from fertiliser, managing runoff from vineyards and reducing the impact of water withdrawals. While irrigation equipment itself is not eligible (e.g. pipes, etc.), equipment to increase the efficiency of irrigation networks through improved monitoring, collect rainwater, improve treatment of polluted water and implement precision farming (pesticide, fertiliser) is eligible. Eligibility conditions stipulate that the beneficiary must have paid fees to the water agency. In the selection criteria, it is proposed to prioritise projects which are associated with territorial contracts used by water agencies

to achieve RBMP objectives. In this sense, investments should be prioritised in areas relevant for water management.

Sub-measure 4.1.4 (investment for new reservoirs for one beneficiary) aims to secure agricultural production while reducing the impact of abstraction during low flows (the reservoir should collect water during high water flows). The measure can thus potentially reduce the impact of abstraction, although it can also effectively lead to an increase in irrigated areas and water demand. Eligibility criteria do not mention Article 4.7 of WFD especially addressing cumulative effects, but do refer to Article 46 of RDP regulations. The requirements of Article 46 are correctly transposed. As stated in the selection criteria, projects which aim to achieve additional water saving via e.g. changing agricultural practices will be prioritised.

Sub-measure 4.3.1 (investment for collective infrastructure: irrigation networks) relates to modernising and creating irrigation networks, and it emphasises the need to expand irrigation due to climate change. Article 46 is transposed in the eligibility criteria. Projects that will contribute to meet WFD objectives (reduce pressure during low flows so as to not impair good ecological status) will be prioritised which is good (reduction in abstraction, water savings, substitutions, compensation of flow). In the selection criteria, it is proposed that projects which do not increase the surface of irrigated land are prioritised, as well as those that aim for large water savings and promote additional water saving measures through e.g. changing agricultural practices will also be prioritised.

Sub-measure 4.3.2 (investment for collective infrastructure: reservoirs) funds the creation and modification of reservoirs for collective water use, and any associated creation of modification of the distribution network (but not including equipment at farm level).

Sub-measure 4.4.1 (investments for the preservation of biodiversity) includes restoration of various water-related habitats (e.g. wetlands, alluvial zones, swamps, etc.) and areas targeted by water agencies. The sub-measure is specifically targeted to P04A and not P04B. The eligibility criteria specify that projects should be identified as important in any relevant management plans for the catchment / water body targeted. The selection criteria prioritise projects in wetlands, areas targeted by water agencies and catchment / water body management plans.

Measure 7: The measure supports animation for Natura 2000 and agri-environment measure. It is set in the national framework. It does not refer to water-related needs and pressures or Focus Area 4B or 5A, but implicit benefits can be expected (e.g. protection of wetlands).

Measure 8: The measure supports investments in the development of forest zones and improvement of forests. Sub-measure 8.2.1 supports the installation of agri-forestry systems/practices. It is mentioned that this sub-measure can contribute to Focus Area 4B and improved water quality (in particular nitrates). Despite the measure being programmed under Focus Area 4B, the WFD is not mentioned in the legislative acts and there are no

selection criteria developed that would focus this measure towards contribution to WFD implementation.

Measure 10: The French agri-environment-climate measure in France is established at national level supplemented by strategies at regional (RDP level). The National Framework establishes the rules and conditions for the implementation of the measure including the full list of sub-measures, including their objectives, targeted operators, funding rates and amount, eligibility and selection criteria, cross-compliance requirements, etc. At regional (RDP) level, the Measure 10 description should describe the regional priorities, the sub-measures from a regional perspective and spatial targeting of sub-measures.

The National Framework defines all M10 sub-measures. Sub-measures selected in the Midi-Pyrénées related to water management aim to: 1) optimise pesticide and fertiliser application (reduction and elimination) and use of alternative products (e.g. biological methods for pest control, 2) diversify crops and encourage their rotation; 3) support the conversion of arable land to grassland, 4) protect landscape elements (e.g. hedgerows), 5) maintain vegetative cover (e.g. field margins, buffer strips), 6) reduce stocking density, 7) changing crops to reduce water abstraction and nitrogen emissions, and 8) maintain and protect wetlands. The RDP highlights the benefits of these measures for water management (e.g. reduced need for cereals through grassland extension, interception of pollutants through hedgerows and field margins).

One sub-measure is linked to the restoration of grassland after flooding which can implicitly support maintenance of flood expansion areas by reducing the impact of flooding on farming. However the sub-measure does not aim to promote additional flood expansion areas.

The National Framework requires that the regional agri-environment-climate strategy is coordinated with other regional and local plans, including RBMPs and other water management related plans in France (e.g. catchment management plans, territorial contracts of the water agency). One main mechanism to increase this coordination is through spatial targeting. Spatial targeting of M10 sub-measures occurs through two mechanisms.

A first level of spatial targeting is presented in the RDP through the M10 agri-environment strategy. In the Midi-Pyrenees RDP, the M10 agri-environment-climate strategy targets the following water priority areas: 1) catchments experiencing water scarcity resulting in not reaching ecological flow targets, 2) drinking water protected areas, 3) water bodies in bad ecological status identified according to the characterization report from 2013, and strategic zones for future water use (drinking water, bathing water, wetlands). The second level of spatial targeting occurs through “agri-environment-climate projects” (PAEC). Any M10 sub-measure (MAEC) must be implemented in the areas identified in the RDP (above) and covered by a PAEC. PAECs are sub-regional plans that aim to implement M10 sub-measures in a coordinated way in pre-defined sub-regions of the RDP region (e.g. a

catchment).

Measure 11: The measure is primarily directed at P4A but will contribute to Focus Area 4B. It states that organic farming can contribute to protect drinking water zones according to the RBMP with regards to pesticides and fertilizer pollution. The measure and sub-measures are defined in the national framework. The list of selection criteria in the sub-measure supporting conversion and maintenance of organic farming indicates that projects protecting drinking water abstraction zones will be prioritised.

Measure 12: The measure aims to cover supplementary costs and revenue losses associated with implementation of WFD. M12 will be used specifically for the implementation of measures in drinking water protected areas. It should be used when M10 and M11 (which are of a voluntary nature) are not enough to achieve the objectives, and must be made compulsory. M12 will support actions that contribute to the following: reduced use of fertilisers/pesticide products, maintain or support expansion of beneficial cover and crops, extensification of land use, maintenance of green infrastructures.

Indicators

The RDP uses the required CMEF indicators to provide common context to the SWOT and existing issues. Information is provided on water abstraction in agriculture (indicator 39), nitrogen pollution (indicator 40 water quality) and water erosion (indicator 42 soil erosion by water).

Target indicators for Focus Area 4B include impact indicators T10 (% of agricultural land under management contracts improving water management (Focus Area 4B) and T11 (% of forestry land under management contracts to improve water management), as well as context indicators 18 (used agricultural area) and 29 (total forest area). For Focus Area 5A, the impact indicator T14 (“% of irrigated land switching to more efficient irrigation system”) and context indicator 20 (surface of irrigated land) are used.

The RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD. For example, no additional context indicators report WFD monitoring data, the % or number of water bodies at Good Status, water savings, pesticide pollution or morphological alterations. There is no indicator on area of land under drainage.

The indicators currently used will not on their own allow for measuring progress on how the water related measures are contributing to the implementation of the WFD and achieving good ecological and chemical status. This will make it difficult to be able to evaluate the programme’s success and what changes should be made in the future.

Conclusions

The RDP has a well-structured SWOT; it identifies not only pressures but also agricultural drivers behind these pressures (e.g. identifying which agricultural activities create which type of water quality or quantity pressures). The SWOT exclusively focuses on pollution (nutrient, pesticide) and water use. No attention is given to morphological issues outside supporting wetlands. The RDP Strategy and selected Measures are coherent with this analysis and focus on water quantity and pollution issues.

Regarding diffuse pollution, the RDP tackles pesticide and nutrient pollution with a range of measures (increasing manure storage, changing application techniques, reducing or eliminating applications, changing crops, expansion of grassland, reduced stocking density) directed to both arable and livestock farming. The sub-measures are often targeted to priority areas for water management as defined by the water agency, and therefore may contribute to achieve WFD objectives.

Regarding water use, the RDP finances irrigation modernisation and rainwater harvesting, as well as encouraging a switch to crops requiring less water. However, the target indicator T14 indicates that 5% of irrigated land will move to more efficient water use which is quite low given the importance of tackling water quantity pressures in the RDP region. Furthermore, it is important to note that the RDP finances new reservoirs and new irrigation schemes, which can lead to an increase in irrigated area.

Regarding hydro-morphology, the RDP finances restoration and protection of wetlands and other aquatic habitats as well as a range of agri-environment-climate measures in riparian areas that can have beneficial impact on hydro-morphology. However, the RDP finances habitat restoration that primarily contributes to biodiversity protection and the RDP does not finance measures that are specifically targeted to support the achievement of WFD objectives.

Regarding flood management, there are no hard measures on flood management supported by the RDP. Several measures may contribute to NWRM within Measure 8 and 10. However, they are not prioritised for flood management purposes nor do they mention contribution to flood risk management plans under the Floods Directive.

One of the biggest concerns in the RDP is with regards to the budget. The vast majority of the funding in P04 is targeted at M13 (about 84%), which provides limited opportunities for water improvements. Furthermore, the target indicator T10 for P04B indicates that 4,55% of agricultural land will be contracted to improve water management. Despite the intention of targeting payments to areas which will maximise environmental benefits, it is low considering that 57% of river water bodies are failing good ecologic status. This will mean that relying on the RDP alone will not be sufficient and considerable action outside the RDP will be needed if the good ecological status objective of the WFD is to be achieved, through strengthened WFD basic measures (e.g. reinforced nitrates directive measures, GWD

measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (i.e. measures funded by non-EU funds).

Finally, the monitoring and evaluation framework and largely fail to account for relevant water management indicators, especially those relevant for the implementation of the WFD and FD. The current framework does not enable tracking progress in terms of achieving good status.

Recommendations:

1. Improve the description of morphological problems associated with agriculture in the SWOT, and provide sufficient funding to measures supporting river and floodplain restoration.
2. Increase the target area under contracts to improve water management to better address the magnitude of agricultural pressures on the water environment and switch funding to measures more actively tackling water, for example in M04, M07, M10 and M11
3. Improve the monitoring and evaluation framework to better assess the improvements coming from the implementation of water related measures, for example through indicators reporting the % or number of water bodies at Good Status, water savings, pesticide pollution or morphological alterations.

A14 France – Picardie

The RDP Picardie is situated in Artois-Picardie and Seine Normandie river basin districts. The RBMPs identifies agriculture as a significant pressure for diffuse pollution (nitrates, phosphorus and pesticide products) as well as soil erosion. Point source pollution from livestock is also highlighted as well as hydro-morphological pressures from crop and livestock farming. Groundwater abstraction can be significant locally.

SWOT	
<p>The RDP does not clearly identify the two river basin districts in the SWOT. However, it does refer to the RBMP 2016-2021 (not stating which one) and that the data comes from the latest Article 5 assessment. The SWOT states that 75% of surface water bodies are not in Good Ecological Status and 85% of groundwater are not in good chemical status.</p> <p>The SWOT refers to water quality issues, including nitrates, phosphorus and pesticides. It includes a section on reducing pesticide and other agrochemicals, for example through the Ecophyto plan. The amount of information on the scale of the problem is limited; for example, no information is given on nitrate vulnerable zones and the level of nitrogen emissions.</p> <p>Water quantity is not a major issue in the region, with one water body in bad quantitative status. Irrigation covers 2.9% of UAA in the region.</p> <p>Regarding hydro-morphology, the SWOT mentions improvements relating to the protection of riparian areas in agricultural zones over the last 10 years, which have contributed to improved hydro-morphological status. No information is provided on the current scale of the hydromorphological alterations due to agriculture.</p> <p>The Floods Directive is explicitly mentioned, with five territories in Picardie facing high flood risk. The RDP highlights that other strategies exist to handle this risk; they include measures to slow run-off from agricultural areas such as hedges, embankments, and grass strips. It is mentioned that these measures can also have a positive impact on water quality and support the achievement to WFD objectives.</p> <p>In the specific SWOT section, the main pressures mentioned in the general section are outlined (diffuse pollution from pesticide and nitrate, soil erosion, localised severe low flows triggered by abstraction). Hydro-morphology and flood risks are not covered.</p>	
Needs	
<p>There are 11 needs identified in the program. Many of them are linked to Priority 4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry” and</p>	

to water in their description. One need relates to “Supporting farmers towards agri-ecology to preserve natural resources, soils and biodiversity” and mentions reduced synthetic farm inputs in line with the Nitrates Directive and effluent management.

Another need relates to managing environmental risk from agricultural incidents; it links to Focus Area 3B “Supporting farm risk prevention and management”, but there is no explicit mention of flood risk.

Strategy

The RDP Strategy states that one of the objectives is to contribute to the implementation of the WFD and the Nitrates Directive, in particular through agri-environment-climate measures, organic farming and afforestation of agricultural lands. The Floods Directive is not mentioned in the Strategy.

With regards to the budget, 95.5 million EUR is assigned to P4; this constitutes 44.4% of the budget, compared to 26,8% to P2 “Enhancing farm viability and competitiveness of all types of agriculture” and P3a “Improving competitiveness of primary producers”.

Focus Area 3B is not activated in the RDP as the management of risks to agriculture are organised nationally.

The strategy for Focus Area 4B “Improving water management, including fertiliser and pesticide management” states improved water management will be based primarily on agri-environment-climate measures (M10) and organic farming (M11) as these can preserve water resources in general as well as improving its quality with regards to nitrates and pesticides. The strategy indicates that implementation of M10 will occur in priority catchments identified in the RBMP; M08 on afforestation will target catchments of drinking water protection zones. Certain measures under M04 related to non-productive investment will also contribute to Focus Area 4B, as well as measures under M01, M02, M7 and M16.

The target indicator T10 for Focus Area 4B indicates that 3.54% of agricultural land will be contracted to improve water management. Despite the intention of targeting payments to areas which will maximise environmental benefits, it is low considering that 75% of water bodies are failing good ecologic status.

Focus Area 5A “Increasing efficiency in water use by agriculture” is not activated in the strategy, although it is stated that the RDP will contribute in an indirect way through increased awareness and uptake of measures on water quality.

The Strategy appears to focus on diffuse pollution from nitrates and pesticides which is coherent with the SWOT and Needs. The Strategy does not directly tackle the localised severe low flows arising from over-abstraction (highlighted by the SWOT) and the

morphological pressures (highlighted by the RBMPs).	
Ex-ante Conditionalities	
EAC 5.2 was assessed by the MS as fulfilled. No action plan was required.	
Measures	
Focus Area 4B is linked to M01, M02, M04, M07, M08, M10, M11, M12 and M16.	
<p>Measure 1 and 2: The description of the two measures on knowledge transfer and advisory services are linked to Focus Area 4B, but there is no elaboration on environmental or water issues.</p> <p>Measure 4: The description of the measures link to water management issues (both quantity and quality), but the measure does not explicitly aim to support RBMP implementation. Focus Area 4B is only listed as a secondary priority.</p> <p>Sub-measure 4.1 (investment to improve the performance and sustainability of farms) is a fairly broad sub-measure; however, the description explicitly mentions the objective to preserve water resources in line with the WFD and preventing diffuse pollution. It funds effluent stocking and treatment and equipment for water provision for livestock (irrigation is excluded). Equipment is funded to optimise pesticide and fertiliser use, collect and treat rainwater, and reduce erosion (establishment of vegetative cover). The selection criteria establish a principle to prioritise investments in nitrate vulnerable zones, and in areas relevant to support RBMP implementation and reduce flood risk.</p> <p>Sub-measure 4.4 (non-productive investment linked to the realization of agri-environmental objectives) explicitly aims to contribute to achieving the objectives and priorities of the RBMP, especially on nitrate issues. This sub-measure includes fences and troughs linked to defending sensitive areas (rivers, ponds), restoration and creation of ponds, as well as restoration of wetlands. The selection criteria propose to prioritise investments that contribute to the improvement of water body quality.</p> <p>Measure 7: The measure supports animation for Natura 2000 and agri-environment measures. It is set in the national framework. It does not refer to water-related needs and pressures or Focus Area 4B or 5A, but implicit benefits can be expected (e.g. protection of wetlands).</p> <p>Measure 8: The measure supports afforestation where organic farming (M11) is not sufficient to protect drinking water protection zones. Investments are prioritized in areas contributing to the protection of water resources and aquatic habitats.</p> <p>Measure 10: The agri-environment-climate measure in France is established at national</p>	

level supplemented by strategies at regional (RDP level). The national framework establishes the rules and conditions for the implementation of the measure including the full list of sub-measures, including their objectives, targeted operators, funding rates and amount, eligibility and selection criteria, and cross-compliance requirements.

At regional (RDP) level, the Measure 10 description should describe the regional priorities, the sub-measures from a regional perspective, and spatial targeting of sub-measures. The national framework defines all M10 sub-measures. Sub-measures related to water management selected by the RDP Picardie aim to: 1) optimise pesticide and fertiliser application (reduction and elimination) and use of alternative products (e.g. biological methods for pest control, 2) diversify crops and encourage their rotation; 3) support the conversion of arable land to grassland, 4) protect landscape elements (e.g. hedgerows), 5) maintain vegetative cover (e.g. field margins, buffer strips), 6) reduce stocking density, and 7) maintain and protect wetlands

One sub-measure is linked to the restoration of grassland after flooding which can implicitly support maintenance of flood expansion areas by reducing the impact of flooding on farming. However the sub-measure does not aim to promote additional flood expansion areas.

The national framework requires that the regional agri-environment-climate strategy is coordinated with other regional and local plans, including RBMPs and other water management related plans in France (e.g. catchment management plans, territorial contracts of the water agency). One main mechanism to increase this coordination is through spatial targeting. Spatial targeting of M10 sub-measures occurs through two mechanisms.

A first level of targeting is presented in the RDP through the M10 agri-environment strategy. In the Picardie RDP, the M10 agri-environment-climate strategy targets priority drinking water abstraction zones and priority areas identified by the two RBMPs. There is further targeting on priority wetlands (covering 10% of the region). The second level of spatial targeting occurs through “agri-environment-climate projects” (PAEC). Any M10 sub-measure (MAEC) must be implemented in the areas identified in the RDP (above) and covered by a PAEC. PAECs are sub-regional plans that aim to implement M10 sub-measures in a coordinated way in pre-defined sub-regions of the RDP region (e.g. a catchment).

Measure 11: The measure and sub-measures are defined in the national framework, which highlights that organic farming can contribute to tackle pesticides and fertilizer pollution, and which proposes to prioritise projects protecting drinking water abstraction zones (selection criteria). In the RDP, a short overview is provided. While it highlights that M11 will contribute directly to Focus Area 4B and to water management in general, no further linkage is made (e.g. RBMP implementation, protection of drinking water abstraction zones).

Measure 12: The measure aims to cover supplementary costs and revenue losses associated with implementation of WFD. M12 will be used specifically for the implementation of measures in drinking water protected areas. It should be used when M10 and M11 (which are of a voluntary nature) are not enough to achieve the objectives, and must be made compulsory. M12 will support actions that contribute to the following: reduced use of fertilisers/pesticide products, maintain or support expansion of beneficial cover and crops, extensification of land use, maintenance of green infrastructures.

Measure 16: The measure promotes cooperation through support to the establishment of European Innovation Partnership groups on various themes including water management which is seen as a priority. No explicit link is made with the WFD or RBMP implementation.

Indicators

The RDP uses the required CMEF indicators to provide common context to the SWOT and existing issues. Information is provided on water abstraction in agriculture (indicator 39), nitrogen pollution (indicator 40 water quality) and water erosion (indicator 42 soil erosion by water).

Target indicators for Focus Area 4B include impact indicators T10 (% of agricultural land under management contracts improving water management (Focus Area 4B) and T11 (% of forestry land under management contracts to improve water management), as well as context indicators 18 (used agricultural area) and 29 (total forest area). For Focus Area 5A, the impact indicator T14 (“% of irrigated land switching to more efficient irrigation system”) and context indicator 20 (surface of irrigated land) are used.

The RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD. For example, no additional context indicators report WFD monitoring data, the % or number of water bodies at Good Status, water savings, pesticide pollution or morphological alterations. There is no indicator on area of land under drainage.

The indicators currently used will not on their own allow for measuring progress on how the water related measures are contributing to the implementation of the WFD and achieving good ecological and chemical status. This will make it difficult to be able to evaluate the programme’s success and what changes should be made in the future.

Conclusions

The RDP has an overall logical approach to addressing water management in its territory, which primarily aims to tackle diffuse pollution from crop and livestock farming, and point source pollution, as well as to protect wetlands and reduce soil erosion.

The RDP does not provide a detailed assessment of agricultural pressures in the SWOT, in particular with regards to the scale of pollutant emissions and hydro-morphological pressures reduction necessary to achieve the objectives adopted in the RBMPs.

The RDP tackles pesticide and nutrient pollution with a wide range of sub-measures, especially under M04 and M10 directed to both arable and livestock farming. Both measures are prioritised to areas failing good ecological status. It is positive that M08 is used to reinforce the protection of drinking water areas. While M01, M02 and M07 are proposed to support water management in the Strategy of the RDP, no reference is made to water management or RBMP implementation in their detailed description.

Regarding hydro-morphology, the RDP supports investment for wetland restoration and protection of riparian areas under M04, as well as a range of agri-environment-climate measures under M10 which can have some beneficial impact. The emphasis however is to use these measures to reduce pressures on water quality, not to tackle morphological pressures.

Flood risk is mentioned in the SWOT and several related Natural Water Retention Measures (NWRM) are included within M04 (restoration and creation of ponds, as well as restoration of wetlands), M08 (afforestation) and M10 (buffer strips, hedgerows, riparian margins), which can contribute to reduce run-off and store water in the landscape. M4 includes a proposed targeting to areas relevant for flood risk management. However, no measure in the RDP is specifically designed to contribute to reduce flood risk.

The RDP aims to have 3,54% of agricultural land contracted for Focus Area 4B. Despite the intention of targeting payments to areas which will maximise environmental benefits, it is low considering that 75% of water bodies fail good ecological status. This will mean that relying on the RDP alone will not be sufficient and considerable action outside the RDP will be needed if the good ecological status objective of the WFD is to be achieved, through strengthened WFD basic measures (e.g. reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (i.e. measures funded by non-EU funds).

Finally, the monitoring and evaluation framework and largely fail to account for relevant water management indicators, especially those relevant for the implementation of the WFD and FD. The current framework does not enable tracking progress in terms of achieving good status.

Recommendations:

1. Increase the target area under contracts to improve water management under M10 to better address the magnitude of agricultural pressures on the water environment.
2. Improve the description of morphological problems associated with agriculture in

the SWOT, as well as the level of support to flood risk management across the RDP, and provide sufficient funding to measures supporting river and floodplain restoration and NWRM under M04, M08 and M10.

3. Improve the monitoring and evaluation framework to better assess the improvements coming from the implementation of water related measures, for example through indicators reporting the % or number of water bodies at Good Status, water savings, pesticide pollution or morphological alterations.

A15 France – Provence-Alpes-Côte d’Azur

The PACA RDP is situated within the Rhône-Méditerranée river basin. The main agricultural pressures identified in the RBMP include water abstraction and diffuse pollution from agriculture (nitrates, pesticides). Pesticides are identified as the main cause of groundwater degradation. Morphological pressures are very significant in the basin due to a range of sectors, including agriculture (irrigation infrastructure, flood protection). Point-source pollution from agriculture is also identified as a localized pressure.

SWOT

The SWOT in the RDP states that water quality in the basin is generally good upstream, and decreases towards the plains and populated areas. The SWOT lists the number of water bodies at risk of not achieving Good Ecological Status following the latest WFD Article 5 assessment as well as other priority catchments identified in the RBMP for eutrophication and drinking water protected areas. The SWOT refers to the 117 local authorities situated in nitrate vulnerable zones.

While the SWOT is brief regarding pollution pressures, it details the challenges of water scarcity and irrigation. It highlights that the hydraulic network (extensive with 97,790 ha irrigated land, or 42% of farms) is outdated and unable to cope with water scarcity, particularly in the context of climate change. The SWOT provides an assessment of the abstracted volumes, recent water savings, and future savings associated with on-going irrigation modernization projects. It notes the importance of developing integrated management plans at the level of catchments and irrigation areas in order to find a balance between agricultural and environmental needs. The SWOT does not indicate how irrigation affects the achievement of WFD objectives and does not provide information on the water savings that can potentially be achieved in irrigation in the region.

The SWOT does not present any information on the status of wetlands nor on the morphological condition of water bodies. It is mentioned that irrigation can help preserve wetlands. Flood risk is identified as a weakness in the region; however the link between agricultural land use, run-off and flood risk is not described.

Needs

There are 14 needs identified in the programme, one of which is directly linked to water: “Modernisation of water management systems”. This need is linked to Focus Area 4B “Improving water management, including fertiliser and pesticide management” and Focus Area 5A “Increasing efficiency in water use by agriculture”. The description highlights the need for modernising the irrigation network. Diffuse pollution from agriculture, a significant pressure highlighted in the SWOT, is only briefly mentioned. There is a link to the Regional Strategy for Agricultural Hydraulics, co-developed with the agricultural chambers and water

agencies to guide the management of quantitative water resources. Certain other needs are linked to Focus Area 3B “Supporting farm risk prevention and management”, Focus Area 4B and Focus Area 5A, on issues such as innovation and R&D, professional development programs, biodiversity and natural heritage.

Strategy

The general Strategy mentions water resources under the umbrella focus of improving agricultural competitiveness. The focus on irrigation mentions modernisation of infrastructure and more efficient water use. No references are made to the RBMP, WFD or Flood Directive (FD).

With regards to the budget, 526 million EUR is assigned to P4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry” and 33 million to Focus Area 5A; this constitutes 76,4% of the budget, compared to 13.8% for P2 “Enhancing farm viability and competitiveness of all types of agriculture” and P3a “Improving competitiveness of primary producers” combined, indicating an emphasis on environmental protection. M13 “Payments for areas with environmental constraint” – a significant proportion of agricultural area in the region- is associated with Priority 04: therefore 54% of P4 funding goes to M13.

Focus Area 3B is not activated in the RDP as no measures directly address risk management and prevention, and these issues are organised nationally.

The strategy for Focus Area 4B supports M01, M04, M10 and M11 to tackle diffuse nitrate and pesticide pollution. There is no explicit link made in this section to the RBMP objectives. The target indicator T10 for Focus Area 4B indicates that 7.68% of agricultural land will be contracted to improve water management.

The strategy for Focus Area 5A includes M04 and M16, and is linked directly to the Need on water issues. M04 is explicitly linked to improvement of the irrigation system. 4% of irrigated land are planned to be switched to more efficient water use (T11) which appears low given the significance of quantity issues for the region.

While wetlands are considered, morphological pressures and flood risks are not addressed in the Strategy section.

Ex-ante Conditionalities

EAC 5.2 was assessed by the MS as fulfilled. No action plan was required.

Measures

In the measures description, Focus Area 4B is reference under M01, M04, M07, M08, M10,

M11 and 12. Focus Area 5A is linked to M04 and M16.

Measure 1: The measure covers knowledge transfer, and is indirectly linked to water through promotion of agri-environmental practices including improved water management.

Measure 4: Multiple sub-measures explicitly address water management issues. Sub-measure 4.1.1 supports individual investments for livestock building modernisation including effluent management. Its eligibility criteria require that investments linked to meeting the objectives of the Nitrates Directive need to meet regulatory requirements. The selection criteria propose to prioritise projects in nitrate vulnerable zones.

Sub-measure 4.1.2 supports investments into equipment that will reduce pollution by pesticides and nutrients, in particular to optimise product applications, support recycling, use of alternative products, washing areas, implementation of green infrastructure (hedgerows) and green cover. It also supports equipment to reduce water use by irrigation through improved measurements, rainwater harvesting and water efficient machines. Article 46(2), 46(3) and 46(4) of the RDP regulations are included in the eligibility criteria. It is not specified whether water savings should be effective or potential. The selection criteria propose to prioritise projects in nitrate vulnerable zones (for pollution reduction investment) and based on the level of water savings promoted (for those related to water quantity issues).

Sub-measure 4.3.1 aims to support investment into the modernisation of hydraulic infrastructure and the creation of reservoirs and water transfer infrastructure. There is an emphasis on investment that results in reducing abstraction pressure on the water environment. Most of Article 46 is transposed in the eligibility criteria. Compliance with WFD Article 4.7 is not mentioned.

Sub-measure 4.3.2 aims to support investments into the development of new irrigation networks. As for sub-measure 4.3.1, Article 46 is transposed in the eligibility criteria. It is not specified whether water savings should be effective or potential. Compliance with WFD Article 4.7 is not mentioned. The selection criteria propose to prioritise projects based on the level of water savings promoted.

Sub-measure 4.3.4 supports groups of farmers to invest in treatment systems for pesticide pollution and rainwater collection systems. Investments are prioritised in the eligibility and selection criteria in water deficit zones and in pesticide priority zones as identified by the RBMP.

Measure 7: Two sub-measures support animation for Natura 2000 and agri-environment measures. They are set in the national framework. They do not refer to water-related needs and pressures or Focus Area 4B or 5A, but implicit benefits can be expected (e.g. protection of wetlands).

Sub-measure 7.4.2 aims to support investments (equipment, material and work) for the modernisation and extension of irrigation and the creation of reservoir. It will be complementary to sub-measure 4.3.1 and aims to support investments when it includes a non-agricultural component. Article 46 is transposed in the eligibility criteria. The selection criteria propose to prioritise projects based on the level of water savings promoted. However, compliance to WFD Article 4.7 is not mentioned.

Measure 8: The measure description mentions the contribution that preventing and rehabilitating damaged forests can play in supporting flood risk management by re-instating a vegetative cover. The principles for establishing selection criteria do not include a targeting of investments to areas with water bodies failing the objectives of the WFD or areas that can contribute to reduce flood risk.

Measure 10: The French agri-environment-climate measure in France is established at national level supplemented by strategies at regional (RDP level). The national framework establishes the rules and conditions for the implementation of the measure including the full list of sub-measures, including their objectives, targeted operators, funding rates and amount, eligibility and selection criteria, and cross-compliance requirements. At regional (RDP) level, the Measure 10 description should describe the regional priorities, the sub-measures from a regional perspective and spatial targeting of sub-measures.

The national framework defines all M10 sub-measures. Sub-measures related to water management selected in the PACA RDP aim to: 1) optimise pesticide and fertiliser application (reduction and elimination) and use of alternative products (e.g. biological methods for pest control, 2) diversify crops and encourage their rotation; 3) support the conversion of arable land to grassland, 4) protect landscape elements (e.g. hedgerows), 5) maintain vegetative cover (e.g. field margins, buffer strips), 6) reduce stocking density, 7) changing crops to reduce water abstraction and nitrogen emissions, and 7) maintain and protect wetlands.

One sub-measure is linked to the restoration of grassland after flooding which can implicitly support maintenance of flood expansion areas by reducing the impact of flooding on farming. However the sub-measure does not aim to promote additional flood expansion areas.

The national framework requires that the regional agri-environment-climate strategy is coordinated with other regional and local plans, including RBMPs and other water management related plans in France (e.g. catchment management plans, territorial contracts of the water agency). One main mechanism to increase this coordination is through spatial targeting. Spatial targeting of M10 sub-measures occurs through two mechanisms.

A first level of targeting is presented in the RDP through the M10 agri-environment strategy. In the PACA RDP, the M10 agri-environment-climate strategy places a heavy focus on irrigation. Water quality is also mentioned, particularly for drinking water catchments.

Wetlands are also mentioned for their role in quantitative and qualitative water management, but also biodiversity. The role of wetlands in counteracting flood risk is also highlighted. The priority action zones identified for water issues are drinking water protection areas including those identified as priority areas by the RBMP.

The second level of targeting occurs through “agri-environment-climate projects” (PAEC). Any M10 sub-measure (MAEC) must be implemented in the areas identified in the RDP (above) and covered by a PAEC. PAECs are sub-regional plans that aim to implement M10 sub-measures in a coordinated way in pre-defined sub-regions of the RDP region (e.g. a catchment).

Measure 11: The measure is primarily directed at P4a but will contribute to Focus Area 4B. The measure and sub-measures are defined in the national framework, which highlights that organic farming can contribute to tackle pesticides and fertilizer pollution. The list of selection criteria in the sub-measure supporting maintenance of organic farming indicates that projects protecting drinking water abstraction zones will be prioritised. In the PACA RDP, sub-measure 11.2 has additional selection criteria indicating that the priority zones from the RBMP will be considered when selecting projects.

Measure 12: The measure aims to cover supplementary costs and revenue losses associated with implementation of WFD. With regards to water management. M12 in France will be used specifically for the implementation of measures in drinking water protected areas. M12 sub-measures should be used when sub-measures in M10 and M11 (which are of a voluntary nature) are not enough to achieve the objectives, and must be made compulsory. M12 will support actions that contribute to the following: reduced use of fertilisers/pesticide products, maintain or support expansion of beneficial cover and crops, extensification of land use, maintenance of green infrastructures.

Measure 16: Sub-measure 16.5 aims to support collective activities that aim to improve the quantitative management of water resources through improved governance, development of decision-making tools, and development and implementation of collective approaches to water efficient agriculture. The sub-measure will support innovative projects that promote cooperation between water managers, irrigation organisations, agricultural actors and spatial planning actors. The selection criteria propose to prioritise projects based on the level of water savings promoted.

Indicators

The RDP uses the required CMEF indicators to provide common context to the SWOT and existing issues. Information is provided on water abstraction in agriculture (indicator 39), nitrogen pollution (indicator 40 water quality) and water erosion (indicator 42 soil erosion by water).

Target indicators for Focus Area 4B include impact indicators T10 (% of agricultural land

under management contracts improving water management (Focus Area 4B) and T11 (% of forestry land under management contracts to improve water management), as well as context indicators 18 (used agricultural area) and 29 (total forest area). For Focus Area 5A, the impact indicator T14 (“% of irrigated land switching to more efficient irrigation system”) and context indicator 20 (surface of irrigated land) are used.

The RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD. For example, no additional context indicators report WFD monitoring data, the % or number of water bodies at Good Status, water savings, pesticide pollution or morphological alterations. There is no indicator on area of land under drainage.

The indicators currently used will not on their own allow for measuring progress on how the water related measures are contributing to the implementation of the WFD and achieving good ecological and chemical status. This will make it difficult to be able to evaluate the programme’s success and what changes should be made in the future.

Conclusions

The RDP identifies some of the key agricultural pressures of the region including abstraction for irrigation and diffuse pollution by pesticides and nitrates. Nevertheless, the SWOT misses an identification of the drivers behind these pressures (which type of farming leads to each type of pressure). In addition, some important pressures are not covered, in particular morphological pressures from reservoirs and embankments.

The Needs and the Strategy do not refer to all pressures on the water environment and, as for the SWOT, focus on water quantity and abstraction issues. The RDP has prioritised P4 in budgetary terms; however 54% of the funding goes to M13 which has limited benefits for water management.

The target indicator T10 for Focus Area 4B indicates that 7.68% of agricultural land will be contracted to improve water management and only 4% of irrigated land are planned to be switched to more efficient water use (T11). Despite the intention of targeting payments to areas which will maximise environmental benefits, it is unlikely that the RDP will contribute significantly to reduce agricultural pressures and support the reaching of WFD objectives. This will mean that relying on the RDP alone will not be sufficient and considerable action outside the RDP will be needed if the good ecological status objective of the WFD is to be achieved, through strengthened WFD basic measures (e.g. reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (i.e. measures funded by non-EU funds).

Regarding abstraction pressures, the RDP supports mainly investments to modernise irrigation for water savings and create reservoirs (M04). Thus, M04 can potentially support

the expansion of irrigation as well as the building of reservoirs in water bodies, which has a significant potential to cause degradation in status. In addition, the sub-measure could have proposed to review and revise abstraction volume licenses based on the water savings that can be achieved through modernisation. More generally, the RDP emphasise the creation and modernisation of irrigation infrastructure and does not seize the opportunity to largely promote crop substitution for more water efficient ones.

Regarding diffuse pollution, the RDP tackles pesticide and nutrient pollution with a range of measures: increasing manure storage, optimising application techniques, green infrastructures, and organic farming (M04, M10). The sub-measures are often targeted to priority areas for water management, in particular nitrate vulnerable zones. Some sub-measures (e.g. sub-measure 4.1.2) aims to reduce pesticide pollution, but they are not targeted to areas with water bodies failing good chemical status due to pesticide pollution.

One sub-measure of M10 proposes to restore grassland areas after flood events. However, the RDP does not include specific measures to protect or restore the morphology of rivers or reduce flood risk downstream of agricultural areas (i.e. though changes to land use management that reduce run-off). However, some measures can contribute to these goals indirectly, in particular in M04 (e.g. green cover, hedgerows) M08 (e.g. restoration of forests) and M10 (e.g. agri-environment measures in riparian areas). Because benefits are indirect, it is unlikely that the RDP will contribute to RBMP implementation against morphological pressures and to FD implementation.

Finally, the monitoring and evaluation framework and largely fail to account for relevant water management indicators, especially those relevant for the implementation of the WFD and FD. The current framework does not enable tracking progress in terms of achieving good status.

Recommendations:

1. Improving the SWOT, Needs, Strategy and Measures to improve the consideration of WFD objectives, the specific agricultural activities driving pressures, hydro-morphological pressures and flood risk; and incorporate measures to respond to these pressures.
2. Increase the target area under contracts to improve water management to better address the magnitude of agricultural pressures on the water environment and switch funding to measures more actively tackling water, for example in M04, M10 and M11
3. Indicate in M04 and M07 whether water savings should be potential or effective water savings.

A16 France – Poitou-Charentes

The region of Poitou-Charentes is covered by two RBMPs: Adour-Garonne and Loire-Bretagne. The surface and groundwater bodies relevant to Poitou-Charentes in the two RBMPs are under significant agricultural diffuse pollution pressures (nitrogen, pesticides) mostly from large arable crops but also from the use of livestock effluent as fertilisers. Point source pollution from pesticide is a problem associated with the handling of agricultural equipment. Most surface and many groundwater water bodies are also characterised by severe seasonal water deficit, exacerbated by irrigation needs. The impact of agriculture on the hydro-morphology of rivers, through abstraction, reservoirs, drainage and embankment are all identified important issues. Flooding is a problem in lowland areas.

SWOT
<p>The SWOT of the RDP Poitou-Charente does not explicitly list the relevant RBMPs. It mentions the 2009 and 2011 WFD Article 5 assessment of the RBMP, but it is unclear which of the RBMPs the figures are taken from. The SWOT states that the “deadlines” for reaching Good Ecological Status according to the WFD will be difficult to meet, but nonetheless efforts to reduce nitrate and pesticide pollution should be renewed and strengthened. The target values are not included.</p> <p>The SWOT for Poitou-Charentes presents a detailed outline of the water issues in the area. Irrigation is used on 8.6% of agricultural surface area, and accounts for the largest share of water withdrawals in the region (50%). It is stated that this has a strong impact on natural habitats and coastal areas. While irrigated areas have decreased in the last decade, water level problems remain throughout the region.</p> <p>With regards to water quality, the SWOT states that 80% of the region is located in zones vulnerable to diffuse nitrate pollution from agriculture. About 42% and 36% of surface water bodies are in moderate and poor status respectively (so a total of 78% of water bodies not reaching good ecological status). Nitrate pollution is identified as a recurring problem. The source of the pollution is not specified.</p> <p>Morphological pressures are not identified in the SWOT, which is inconsistent with the Art 5 assessment of the RBMP.</p> <p>Flood risk is mentioned briefly in the context of new threats imposed by climate change, though there is no link to the Floods Directive (FD).</p> <p>All pressures mentioned in the general section of the SWOT are taken up in the specific SWOT section, and it highlights the challenges of reaching WFD objectives, with large nitrate vulnerable zones in the region, extensive pesticide pollution and large irrigation water use with abstraction occurring during seasonal low flows. It notes the opportunities</p>

offered by collaborative approaches around reservoirs, policies for reducing pesticide use and the potential of green infrastructure to help tackle water quality issues. No reference is made to morphological pressures which were identified as significant by the RBMP.

Needs

There are 27 needs identified in the RDP, two of which are specifically linked to water.

“Prioritize the development of sustainable agriculture in water supply areas for better water quality” is linked to Focus Area 4B “Improving water management, including fertiliser and pesticide management”. The description mentions the importance to reach the goals of the WFD and highlights reduced pesticide and synthetic fertilizer use, as well as shifting towards cultures which use less water and farm inputs. Increased organic farming in water catchments and sustained livestock farming in prairies and open air are mentioned.

“Disseminate economic water usage techniques in agriculture” is linked to Focus Area 5A “Increasing efficiency in water use by agriculture”. The description mentions that 82% of the region is considered as having recurrent water shortages. It mentions improved water management techniques, and substitution of arable products with those which require less water. Advisory services are also mentioned.

Strategy

The general Strategy is split into six major axes, two of which are linked to Priority 4 and Focus Area 5A. One aims to “Develop sustainable agriculture and forestry, with economical use of inputs and respectful of natural resources and richness”. Many different types of measures are included to address water quality and quantity. This includes developing cultures and practices which require less water and synthetic inputs, as well as physical investments aiming to reduce water withdrawals (efficient irrigation, offline reservoirs). There is no explicit link to the WFD or meeting the goals of the RBMPs.

A second axis of the strategy related to the maintaining a diversified and competitive agricultural sector (particularly livestock farming), and links to Priorities 4 and 5a. The description mentions the reduction of farm inputs.

With regards to the budget, 375 million EUR is assigned to P4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry”, and 60.8 million EUR is assigned to Focus Area 5A. Combined, this constitutes 69.4% of the budget, compared to 16,7% for P2 “Enhancing farm viability and competitiveness of all types of agriculture” and Focus area 3a “Improving competitiveness of primary producers”. Payments for areas with environmental constraint (M13) – a large proportion of agricultural area in the region- is associated with Priority 04: 35% of P4 funding goes to M13.

Focus Area 3B is activated for responses to agricultural disasters in the context of climate change. Measure 05 is highlighted here for the restoration of agricultural production after flooding. There is no mention of the FD.

The strategy for Focus Area 4B aims to provide assistance to farms to move towards sustainable practices and agroecology. It is linked to Focus Area 4B is linked to M04, M07, M08, M10, M11 and M12. Agricultural areas located in priority drinking water catchments are of particular importance. No link is made to RBMP implementation.

The target indicator T10 for Focus Area 4B indicate that 4,23% of agricultural land will be contracted to improve water management. Despite the intention of targeting payments to areas which will maximise environmental benefits, it is low considering that 78% of water bodies do not meet good ecologic status.

The strategy for Focus Area 5A does not make any reference to WFD and RBMP implementation. Measure 04 is highlighted as the key instrument to increase water use efficiency through investment in water infrastructure. The target indicator T14 indicates that 5.39% of irrigated agricultural land will move to a more efficient irrigation, out of a total of 8.6% irrigated agricultural land in the region, addressing thus a high share.

Ex-ante Conditionalities

EAC 5.2 was assessed by the MS as fulfilled. No action plan was required.

Measures

Focus Area 4B is linked to M04, M07, M08, M10, M11 and M12. Focus Area 5A is linked to M04.

Measure 1 and 2: The description of the two measures on knowledge transfer and advisory services refer to support tackling agricultural pressures in “water priority zones”.

Measure 4: The purpose of the measure with regards to water management is to support physical investments to manage livestock effluents, investments into alternative technologies to reduce pesticide and fertiliser use as well as water use (but only equipment to measure optimise water use through improved monitoring), and investment to support green infrastructure. Farms situated in water sensitive areas such as drinking water protected areas are prioritized. The principles for establishing selection criteria do not include a targeting of investments to areas with water bodies failing the objectives of the WFD.

M04 also covers investments into offline reservoirs so as to reduce pressure on surface and groundwater bodies (sub-measure 4.3.1). Reservoirs must be built outside the water bodies and cannot lead to an increase in irrigated areas; they must be accompanied with

metering and the cancellation of the license to abstract during seasonal low flows. As such Article 46(4) applies to these investments; however, the eligibility criteria do not mention the requirement to achieve a reduction in water use of at least 50% of the water saving made possible by the investment, when the investment occurs in water bodies at least than good status for reasons related to water quantity. The sub-measure includes additional requirements: priority will be given to collective projects, projects aiming to reach the goals of the RBMPs and projects which include additional investments to deliver additional water savings and diversify farming to more water efficient crops.

Measure 7: Two sub-measures support animation for Natura 2000 and agri-environment measures. They are set in the national framework. They do not refer to water-related needs and pressures or Focus Area 4B or 5A, but implicit benefits can be expected (e.g. protection of wetlands).

Measure 8: The measure aims to promote agri-forestry practices in drinking water protection zones, so as to reduce fertilizer and pesticide inputs.

Measure 10: The French agri-environment-climate measure in France is established at national level supplemented by strategies at regional (RDP level). The national framework establishes the rules and conditions for the implementation of the measure including the full list of sub-measures, including their objectives, targeted operators, funding rates and amount, eligibility and selection criteria, and cross-compliance requirements. At regional (RDP) level, the Measure 10 description should describe the regional priorities, the sub-measures from a regional perspective and spatial targeting of sub-measures.

Sub-measures related to water management selected in the Poitou-Charentes RDP aim to: 1) optimise pesticide and fertiliser application (reduction and elimination) and use of alternative products (e.g. biological methods for pest control, 2) diversify crops and encourage their rotation; 3) support the conversion of arable land to grassland, 4) protect landscape elements (e.g. hedgerows), 5) maintain vegetative cover (e.g. field margins, buffer strips), 6) reduce stocking density, 7) changing crops to reduce water abstraction and nitrogen emissions, and 7) maintain and protect wetlands.

One sub-measure is linked to the restoration of grassland after flooding which can implicitly support maintenance of flood expansion areas by reducing the impact of flooding on farming. However the sub-measure does not aim to promote additional flood expansion areas.

The national framework requires that the regional agri-environment-climate strategy is coordinated with other regional and local plans, including RBMPs and other water management related plans in France (e.g. catchment management plans, territorial contracts of the water agency). A first prioritisation is presented in the RDP through the M10 agri-environment strategy. In the Poitou-Charentes RDP, the M10 agri-environment-climate strategy targets the following water priority areas: 1) priority drinking water catchment areas, 2) other priority zones from the RBMPs, 3) catchment areas considered

to have a strong quantitative deficit according to both regional water agencies, and 4) catchment areas in quantitative deficit. The second level of spatial targeting occurs through “agri-environment-climate *projects*” (PAEC). Any M10 sub-measure (MAEC) must be implemented in the areas identified in the RDP (above) and covered by a PAEC. PAECs are sub-regional plans that aim to implement M10 sub-measures in a coordinated way in pre-defined sub-regions of the RDP region (e.g. a catchment).

Measure 11: The measure is primarily directed at P4a but will contribute to Focus Area 4B. The measure and sub-measures are defined in the national framework, which highlights that organic farming can contribute to tackle pesticides and fertilizer pollution. The measure and sub-measures are defined in the national framework. The list of selection criteria in the sub-measure supporting conversion and maintenance of organic farming indicates that projects protecting drinking water abstraction zones will be prioritised

Measure 12: The measure aims to cover supplementary costs and revenue losses associated with implementation of WFD. With regards to water management. M12 in France will be used specifically for the implementation of measures in drinking water protected areas. M12 sub-measures should be used when sub-measures in M10 and M11 (which are of a voluntary nature) are not enough to achieve the objectives, and must be made compulsory. M12 will support actions that contribute to the following: reduced use of fertilisers/pesticide products, maintain or support expansion of beneficial cover and crops, extensification of land use, maintenance of green infrastructures.

Indicators

The RDP uses the required CMEF indicators to provide common context to the SWOT and existing issues. Information is provided on water abstraction in agriculture (indicator 39), nitrogen pollution (indicator 40 water quality) and water erosion (indicator 42 soil erosion by water).

Target indicators for Focus Area 4B include impact indicators T10 (% of agricultural land under management contracts improving water management (Focus Area 4B) and T11 (% of forestry land under management contracts to improve water management), as well as context indicators 18 (used agricultural area) and 29 (total forest area). For Focus Area 5A, the impact indicator T14 (“% of irrigated land switching to more efficient irrigation system”) and context indicator 20 (surface of irrigated land) are used.

The RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD. For example, no additional context indicators report WFD monitoring data, the % or number of water bodies at Good Status, water savings, pesticide pollution or morphological alterations. There is no indicator on area of land under drainage.

The indicators currently used will not on their own allow for measuring progress on how the

water related measures are contributing to the implementation of the WFD and achieving good ecological and chemical status. This will make it difficult to be able to evaluate the programme's success and what changes should be made in the future.

Conclusions

The RDP identifies some of the key agricultural pressures of the region including diffuse pollution and abstraction for irrigation and presents an assessment of these pressures. Nevertheless, the SWOT misses some important pressures (in particular morphological pressures from reservoirs and embankments) and the drivers behind these pressures (which type of farming leads to each type of pressure). The SWOT does not refer to the current number of water bodies failing good ecological status and further information on the objectives of the RBMPs.

Regarding diffuse pollution, the RDP tackles pesticide and nutrient pollution with a range of measures directed to both arable and livestock farming: increasing manure storage, optimising application techniques, green infrastructures, afforestation, expansion of grassland, reduced stocking density, and organic farming. The sub-measures are often targeted to priority areas for water management and RBMP, and therefore are likely to contribute to achieve WFD objectives.

Regarding water quantity, the RDP finances offline irrigation reservoirs irrigation that contributes to reduce abstraction pressure on water bodies during the low flow season. It is very positive that investments cannot lead to an increase in irrigated areas and additional requirements are attached to promote irrigation modernisation and switching to more water efficient crops leading to water savings. While the sub-measure is positive overall, it appears that the eligibility criteria does not mention the requirement from Article 46 to achieve a reduction in water use of at least 50% of the water saving made possible by the investment, when the investment occurs in water bodies at least than good status for reasons related to water quantity.

Regarding morphology, the RDP aims to finance green infrastructures (M04) and a range of agri-environment-climate measures (M10) in riparian areas that can have beneficial impact on morphological features. However, these measures are mainly targeted to biodiversity protection or water quality improvements, rather than morphological improvements for reaching WFD objectives. The beneficial impact will thus be indirect.

Regarding flood management, there are no hard measures on flood management supported by the RDP in M05. Several NWRM are included within Measure 04, 08 and 10 although they not designed to maximise benefits for flood risk reduction.

The target indicator T10 for Focus Area 4B indicate that 4,23% of agricultural land will be contracted to improve water management. Despite the intention of targeting payments to areas which will maximise environmental benefits, it is low considering that 78% of water

bodies do not meet good ecologic status. This will mean that relying on the RDP alone will not be sufficient and considerable action outside the RDP will be needed if the good ecological status objective of the WFD is to be achieved, through strengthened WFD basic measures (e.g. reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (i.e. measures funded by non-EU funds).

Finally, the monitoring and evaluation framework and largely fail to account for relevant water management indicators, especially those relevant for the implementation of the WFD and FD. The current framework does not enable tracking progress in terms of achieving good status.

Recommendations:

1. Increase the target area under contracts to improve water management to better address the magnitude of agricultural pressures on the water environment.
2. Improve the description of morphological problems associated with agriculture in the SWOT, and provide sufficient funding to measures supporting hydro-morphological improvements, and river and floodplain restoration. Furthermore, ensure that investment under M04 leads to water savings and meet the requirements of Article 46 from the RDP regulations.
3. Improve the monitoring and evaluation framework to better assess the improvements coming from the implementation of water related measures, for example through indicators reporting the % or number of water bodies at Good Status, water savings, pesticide pollution or morphological alterations.

A17 Germany – Baden Württemberg

In Baden-Württemberg, there are two river basin districts: The Rhine and Danube. The main agriculture pressure identified in the respective River Basin Management Plans (RBMPs) is diffuse pollution from organic substances (nitrates, phosphates)) leading to eutrophication and chemicals (pesticides), Neither soil erosion or water abstraction are mentioned as pressures in either the Rhine or the Danube. In both RBMPs, morphological alterations are identified as significant pressures, but are not linked to agriculture activities.

SWOT

The SWOT in the RDP provides up to date information (using the latest WFD Art. 5 assessment) on the status of water bodies in Baden Württemberg. The pressures identified in the RBMPs are in line with the pressures identified in the SWOT. However, the SWOT does not refer to which River Basins are found within the regional territory of the RDP.

Good ecological status of surface waters has not been achieved in any surface water bodies (SWBs). Figures are included that shows the status across Baden Württemberg for the Biological Quality Elements that comprise Good Ecological Status. The main pressure linked to agriculture is diffuse nutrient pollution, specifically phosphorus. Monitoring has identified phosphorus as a region wide problem (i.e. not just in specific hot spots). The main agriculture activity linked with nutrient pollution are farms with a high number of livestock and less so from farms focusing mainly on arable land management with low livestock density. Monitoring of nitrogen pollution in groundwater bodies indicates continued problems in some areas but overall the trend is decreasing. Good chemical status has been achieved in 97% of rivers. Nevertheless, 8 water bodies are negatively affected by pesticide pollution.

Hydromorphological pressures in rural areas due to dams and other water structures are also identified in the SWOT although they are not linked to agriculture activities. These pressures have negatively impacted river continuity and morphology, as well as lakeshores.

Water erosion of soil was also identified as a significant issue in the SWOT. Arable land has been classified into different erosion risk categories.

9% of groundwater bodies (GWBs) have been designated as at risk, although all GWBs are currently in good quantitative status. It is not clear whether this statement is referring to chemical status.

Flooding issues were not included in the SWOT.

The strengths as identified in the BW Programme include a decrease of pressures on

GWBs but a continued weakness identified is pollution of GWBs from nitrogen and pesticide pollution, as well as eutrophication of SWBs and barriers to river continuity. The programme identifies as an opportunity the possibility to overcome identified pressures through measures to reduce nutrient and pesticide applications and expanding organic farming, as well as measures to improve the morphology of SWBs (taking into account flood protection needs). The programme identifies as a threat intensification of agriculture and climate change impacts that could increase nutrient pollution in surface and groundwater bodies and affect water quantity.

Needs

Three needs have been linked to Focus area 4b: Measures for surface and groundwater protection; Creation of buffer strips; and improving of the ecological status of water bodies (in terms of morphology). The needs descriptions are clear in their link to the pressures identified in the SWOT and types of measures needed to address the needs. All pressures identified in the SWOT have been turned into needs.

Two needs have been linked to Focus area 5a: Advice on expanding irrigated areas and introduction of drought resistant crops. These needs are linked to the threat identified from climate change and focus on adaptation efforts.

Strategy

The general strategy of the RDP reiterates the water management problems identified in the SWOT and mentions that measures to improve water management issues have been included in the RDP and especially within the agri-environment-climate measure. The strategy describes measures supported by the RDP including measures to achieve good ecological and chemical status of water bodies according to the WFD. Neither flood management in general nor the Floods Directive specifically are mentioned in the strategy.

The Strategy includes an overview table linking the needs to the specific strengths, weaknesses, opportunity and threats and whether the measures programmed will have a primary or secondary effect. The table clearly indicates that the need “measures for surface and groundwater protection” is primarily linked to Measure 10.1. The need “construction of buffer strips” is not addressed through the RDP as buffer strips are required in Baden Württemberg under its Water Law. The need “improving ecological status of water bodies (morphology)” will be addressed through Measure 7.6. The need “Advice on extending irrigated areas” is secondarily linked to Measure 2 on farm advisory services, whereas the need “breeding and cultivation of drought resistant crop” will not be addressed through the RDP but rather through research.

Priority 3b on “supporting farm risk prevention and management”, which in general can be used to implement flood prevention measures, is programmed, but only through Measure 1, which focuses on risk prevention (no specifics given) and does not mention flood

management.

Priority 4b on “improving water management” is linked to 5 measures: M4, M7, M8, M10 and M11. The description of Priority 4b distinguishes these measures according to primary and secondary effects. The description concretely focuses on supporting the implementation of the WFD through two primary measures M7 and M10. M7 focuses on improving water morphology. Here, flood protection is briefly mentioned. M10 focuses on nutrient and pesticide pollution through measures that are targeted to specific risk areas, as well as measures available across the whole territory. The description also makes reference to the programme under the Groundwater Regulation – and thus outside the scope of the RDP - that focuses on water bodies especially affected by nitrogen pollution. While 60% of the RDP’s total budget is allocated to P4, the target indicator for P4B is only 4.10% of agricultural land under management contacts to improve water management. Given that none of the SWBs in Baden Württemberg have achieved GES, this target appears low.

M8 and M11 are both considered to have a secondary effect on Priority 4b.

Priority 5a on “increasing efficiency in water use by agriculture” is not programmed. Although water scarcity is mentioned as a threat, it is currently not an issue in Baden Württemberg and hence financing has not been allocated to this priority.

Ex-ante Conditionalities

EAC 5.2 was assessed by the MS as fulfilled. No action plan was required.

Measures

Priority 4b is linked to 5 measures: M4, M7, M8, M10 and M11.

Measure 4: Measure 4 is secondarily linked to Priority 4b. Sub-measures 4.1 and M4.2 on investments in agriculture holdings and marketing are tenuously linked to Focus area 4b in that their support of small farmers inherently supports land of environmental value and therefore should also contribute to water management. Sub-measure 4.4 on non-productive investments focuses on maintaining and creating habitat for biodiversity purposes, but its description includes water relevant activities such as maintaining wetlands and moors; creating small water elements; and re-naturalisation of rivers, which should contribute to realising WFD objectives. Eligibility criteria require that the Nature Conservation Agency confirm that the proposed operations support the public interest of nature conservation and biodiversity, it’s not clear whether the WFD competent authorities are also involved.

Measure 7: The sub-measure “Measures to improve the ecological status of Category I waters” has been specifically designed to support the implementation of the WFD.

Operations under this measure include: re-establishment of river continuity, improving the water structure and creating habitats. The first measure is solely intended to improve the ecological status of water bodies. The latter two operations are intended to optimize the environmental objectives of the WFD while at the same time taking advantages of synergies with flood protection and implementation of the Floods Directive. For example, operations will support the re-connection of floodplains, removal of dams and other natural water retention measures. Measures to improve habitats must take into account flood protection objectives during planning. The RDP clearly states that none of the measures under M7 can lead to a deterioration in flood protection. The plan also states that these measures have been taken from the programme of measures of the river basin management plan. Only Category 1 waters are eligible.

Measure 8: Measure 8.5 on investments improving the resilience and environmental value of forest ecosystems has a direct effect on FA 4a (biodiversity) and has a secondary effect on P4b through operations on creation, development and expansion of forest wetlands less than 1 ha in size and water courses less than or equal to 10m wide. The sub-measure while potentially offering contribution toward WFD objectives, has no eligibility criteria attached and the selection criteria do not make links with WFD which could help in ensuring such measures are targeted where they would deliver multiple benefits

Measure 10: 29 sub-measures comprise Measure 10, of which 8 are specifically programmed under FA 4b. This includes: Forgo chemical, synthetic fertilizers and pesticides; Year-round cover/intercrops on arable land/horticulture; Fall cover crops on arable land/horticulture; Winter cover crops; Direct injection of chemical fertilizer; Precision Farming; Reduced tilling through strip tilling and Nutrient Farm Balance Accounting. For the latter 5 measures, eligibility criteria define the targeted areas for implementation: GWBs failing good status that lie outside of the protected areas designated under the Groundwater Regulation (which finances measures to reduce nutrient pollution). In addition to these measures, 9 further measures focusing on extensive arable and grassland management have a secondary effect on water management through limiting or totally eliminating the use of fertilizers and pesticides. Additionally, the measure on enhanced crop rotation aims to reduce the need for pesticides and the other reduced-tillage measures aim to reduce water erosion of soils. These secondary measures are not targeted to specific WFD related areas through eligibility or selection criteria but are anticipated to contribute to reducing diffuse pollution.

Measure 11: In the Programme, Organic Farming is viewed to have a secondary effect on P4b. The general description states that requirements of Organic Farming aid in reducing impacts to water. This measure is not designed to specifically address water pollution problems as there are no eligibility or selection criteria in place targeting the financing of this measure to WBs failing good status due to diffuse pollution or pesticide problems. Nonetheless, it should help ensure no deterioration objectives.

Indicators

The RDP uses the required CMEF indicators to provide context to the SWOT and existing issues being faced in Baden Württemberg. Information is provided on nitrogen pollution and water erosion. While the RDP clearly defines good status and the percentage of water bodies failing good status, the context indicators do not include this information. Also, there are no context indicators defined for phosphorus pollution (despite being listed as the main pressure from the agriculture sector on water bodies) pesticide pollution or morphological alterations.

The target indicators focus on the percentage of agricultural land under management contracts to improve water management, which on its own will not be sufficient for monitoring how the water-related measures are contributing to the implementation of the WFD and achieving good ecological and chemical status. The description of the evaluation system does not mention using WFD monitoring data.

Although not required, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD.

Conclusions

The Baden-Württemberg programme takes an overall logical approach to addressing water management issues in its territory. There is clear explanation of the main pressures coming from agriculture, linking it to specific agriculture activities, and the SWOT provides up to date information as regards to the ecological, chemical and quantitative status of water bodies in the territory. The needs defined reflect well the pressures identified, and the strategy developed for Priority 4b for the most part clearly indicates which sub-measures will contribute to the WFD.

The sub-measures under M7 and M10 are very well designed to support WFD implementation. These measures have specifically been designed with the objective of improving the ecological status of water bodies by addressing diffuse pollution and morphological alterations. All the pressures identified in the SWOT are addressed through sub-measures contained in M7 and M10. They are targeted through specific eligibility criteria that ensure the measures are taken up where they are most needed. Under M7, the primary target is improving ecological status through natural water retention measures, but flood protection issues must also be taken into account. Under M10, it is positive that there are water-specific measures and also more biodiversity designed measures that nonetheless limit or totally eliminate the use of fertilizers and pesticides. These measures target not only arable land but also livestock farming. They mainly offer measures that work within a farm's existing management structure, but there are a few measures that offer conversion possibilities (conversion from arable to grassland, conversion to fewer livestock). Overall, the approach is diverse, targeting different pressures with multiple different options for farmers to choose from.

M4, M8 and M11 indicate in their measure descriptions that they will have a secondary

effect on P4b, and their operations reflect this. The maintenance of small water elements is financed, which could have an indirect positive effect for WFD objectives.

Largely missing from the RDP is the aspect of flood risk management and implementation of the Floods Directive. Flooding issues are neither mentioned in the SWOT or the Strategy and Focus area 3b does not indicate that flood prevention is an issue. Nevertheless, flood management aspects are taken up in the sub-measures under M7 in that retention measures intended to improve waterbody status for the WFD must consider synergies with the Floods Directive. While it may be possible that Baden Württemberg intends to finance its flood risk management through other programmes, it would be beneficial to indicate this briefly in the strategy of RDP.

Although the Programme overall presents a clear intervention logic as regards water management, and there are no measures that would pose a threat to meeting EU water objectives, the target indicator by end of the programme only indicates that 4.1% of agriculture land will be under contracts to improve water management and many of the measures programmed under P4b were only weakly or not at all linked to water management. Therefore, despite the RDP having a very good intervention logic with regard to the WFD, its contribution toward addressing agriculture pressures to reach the WFD + FD objectives could only be considered as minor. This will mean that considerable action outside the RDP (i.e. through strengthened WFD basic measures (reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (measures funded by non-EU funds) should be included in RBMPs if the good status objective of the WFD is to be achieved.

Given that the Programme did not include additional programme specific indicators to adequately measure the results of the measures in terms of achieving ecological and chemical, it will be difficult to discern its contributions to WFD objectives at the end of the programming cycle and to inform future revisions.

Recommendations:

1. Although not required, consider expanding both the context and target indicators to better reflect water management. The context indicators of nitrogen and phosphorus pollution do not cover two important water management issues, namely pesticide pollution and morphological alterations. These missing aspects do not enable obtaining a full picture of the environment in the territory. Moreover, the target indicators do not enable to track the impact these measures have on improving the water environment. Especially with constraint budgets, it would be beneficial to have indicators in place that enable the authorities to track whether a measure's implementation is having a positive effect on the water environment and is therefore worth financing. Here, linking also the monitoring programme to existing programmes under the WFD would be helpful and would not pose any

additional administrative or financial burden on the district.

2. Increase the target of land under contracts to improve water management to better address the magnitude of agriculture pressures on the water environment. Therein, it may be necessary to increase the budget for water-related measures.

A18 Germany – North Rhine Westphalia

In North Rhine-Westphalia (NRW), there are four river basin districts: The Rhine, Weser, Ems and the Meuse. The main agriculture pressure identified in the respective River Basin Management Plans (RBMPs) is diffuse pollution from organic substances (nitrates, phosphates) leading to eutrophication and chemicals (pesticides). Water abstraction is not considered a significant pressure in any of the RBDs. The RBMP Weser mentions that morphological modifications represent a significant pressure and that those modifications serve (besides other purposes) to “guarantee agricultural activity”. The NRW part of the Ems and Meuse notes morphological alterations due to agriculture activities are a significant pressure.

SWOT	
<p>The SWOT in the RDP provides up to date information (using the latest WFD Art. 5 assessment) on the status of water bodies in North Rhine-Westphalia. The pressures identified in the RBMPs are fully taken up in the pressure analysis in the SWOT, including morphological pressures associated with past agriculture drainage activities. Soil erosion from water is additionally mentioned as a pressure affecting 11.7% of arable land in the territory.</p> <p>According to the SWOT, good ecological status has not been achieved in 67% of surface water bodies (SWBs) due to diffuse pollution, mainly from phosphorus. Pesticide pollution is less of an issue for medium to large SWBs; however, it can be a problem for small SWBs. Poor ecological and chemical status of most SWBs is linked to morphological pressures from transverse structures and drainage (84% of SWB length), diffuse pollution (65% of SWB length) and point source pollution (70% of SWB length). The SWOT does not clarify whether point source pollution is mainly a pressure from the agriculture sector. The SWOT states that agriculture is the biggest driver of water pressures in NRW. The main pressure linked to agriculture is diffuse nutrient pollution. In addition to linking pollution to liquid manure (from livestock farming) and bioproducts from biogas, arable land and horticulture are also identified as main contributors.</p> <p>About 1/3 of groundwater bodies (GWBs), covering 32% of the territory, are failing good chemical status due to nitrates. Achieving good status by 2015 was not possible (claimed to be due to natural conditions, however it is unclear if all possible measures necessary to restore to good status were actually programmed in the first cycle, to substantiate this exemption category)</p> <p>The need to implement the Floods Directive is mentioned in the SWOT, including the need to develop measures that improve flood protection without negatively affecting the hydromorphology of SWBs. Natural water retention is specifically mentioned.</p> <p>Increased precipitation due to climate change is expected in some parts of the region, while in others decreased precipitation is expected. The SWOT indicates that water</p>	

storage possibilities are especially interesting for agricultural water management.

Despite NRW abstracting 18.75 million m³ water for irrigation of fruit, vegetables, ornamental plants and potatoes, the RBMPs have indicated that water abstraction is not a significant pressure.

The strengths, as identified in the NRW Programme, include a decrease of pollutants in groundwater, high acceptance of agri-environment measures and improvements in the quality of SWBs but a continued weakness identified is high pollution into water bodies especially GWBs due to high nitrogen surplus. The programme identifies organic farming as an opportunity (not specifically linked to water management). The programme identifies as a threat intensification of agriculture.

Needs

Two needs have been linked to Focus area 4b: Reduction of organic and chemical substances into biotopes, soil and water through changes in production and Prevent soil erosion risk. The description of the 1st need is clear in its link to the pressures identified in the SWOT, it links specifically to the achievement of the WFD and the types of measures necessary to address the needs, linking also to the WFD Programme of Measures. As regards the need to reduce erosion, the description focuses mainly on stabilizing soils, especially considering increasing strong rain events expected due to climate change. The link to WFD implementation and reduction of pollution of water bodies through eroded soil is not made.

One need has been linked to Focus area 5a: Support water management and erosion prevention. This need is linked to the threat identified from climate change and focuses on more efficient irrigation and water saving production methods.

Neither morphological pressures nor flood risk have been taken up in the needs section.

Strategy

The general strategy of the RDP emphasizes that – rather than using the EAFRD – NRW supports the implementation of the WFD and the Floods Directive through other financial programmes, including the regional programme “Living Water”. This programme supports sustainable water management, the ecological development of water bodies, cooperation measures for drinking water protection and WFD farm advice on nutrient and pesticide pollution and soil protection. €80 million/year from water abstraction charges in NRW have been set aside for the above-mentioned programme. The Strategy mentions that the RDP supports this work at regional level through agri-environmental measures and organic farming. Although many of the measures in the RDP focus on Focus area 4a on protection of biodiversity, often included are strict restriction on nutrient and pesticide applications,

which could incidentally deliver some contribution toward WFD objectives.

Focus area 3b on “supporting farm risk prevention and management”, which in general can be used to implement flood prevention measures, has not been programmed.

Focus area 4b on “improving water management” is linked to 3 measures: M8, M10, and M11. The description of Priority 4b reiterates the statements in the general strategy that the RDP is not the principle source for supporting WFD efforts. The description states that two sub-measures of M10 on “Agri-environment-climate” measures have been specifically designed to support the WFD; details are not given. All other operations under M10 focus on biodiversity but contribute secondarily to water management through restrictions on nutrient and pesticide application. The description does not indicate how the other measures (M7, M8, M11, M12, 13) contribute to the priority’s objectives. 62% of the RDP’s total budget is allocated to P4 and the target indicator for FA 4B is 21.53% of agricultural land under management contracts to improve water management. This is considerably more budget compared to P2 on “Enhancing farm viability and competitiveness” and FA 3a on “Improving competitiveness of primary producers”, which together comprise only 12% of the other budget. As NRW also states that considerable regional funding will be used to support the WFD, the RDP presents an important, albeit less ambitious, contribution to WFD implementation.

Focus area 5a on “increasing efficiency in water use by agriculture” is not programmed. Although decreased precipitation is mentioned in the SWOT and Needs sections, in the short and medium term water scarcity will not be an issue and hence financing has not been allocated to this priority.

In addition to the programme "Living Water", the programme "Clean Ruhr" (Reine Ruhr) started in 2008 and addresses micro-contamination of the river and the drinking water resources.

Ex-ante Conditionalities

EAC 5.2 was assessed by the MS as fulfilled. No action plan was required.

Measures

Priority 4b is linked to 3 measures: M7, M8, M10 and M11.

Measure 8: The primary focus of operations under M8 is P4a on improving biodiversity and P5c on “facilitating the supply and use of renewable sources of energy”. The general description does not mention a contribution to P4b, and the target indicator for percentage of forestry land under management contracts to improve water management is 0. Nevertheless, measure 8.5 on “support for investments to improve the resilience and environmental value of forest ecosystems” finances the design of rivers, standing waters

and wetlands in the forest. The operation states that the following measures to improve the ecology of water may be include:

- measures to improve the connectivity of rivers for micro-organisms
- measures to re-saturate small areas
- separation of standing waters from the main stream of rivers
- creation of standing waters and planting vegetation along water bodies.

The sub-measure while potentially contributing toward WFD objectives, has no eligibility criteria attached and the selection criteria do not make links with WFD which could help in ensuring such measures are targeted where they would deliver multiple benefits.

Measure 10: 8 sub-measures comprise Measure 10, of which 2 are specifically programmed under P4b. This includes: the construction of buffer strips along water courses and for green erosion protection strips; and cover crops in designated areas where GWBs are failing good status due to nitrate pollution. For cover crops, GWBs failing good status due to nitrates pollution are targeted through eligibility criteria. In addition, farmers must take part in specific farm advice to implementation of the WFD (part of a regional programme). For the buffer, eligibility conditions focus on arable land along water courses and grasslands identified by the Ministry as needing water and nature protection. Erosion protection strips are targeted in their eligibility conditions to water erosion risk areas. The remaining 6 sub-measures, focusing on extensive grassland management, crop rotation, flower strips, nature protection on arable or grasslands and maintenance of endangered animal husbandry, have a secondary effect on water management through limiting or totally eliminating the use of fertilizers and pesticides. These secondary measures are not targeted to specific WFD related areas through eligibility or selection but are anticipated to contribute to reducing overall diffuse pollution loads.

Measure 11: In the Programme, Organic Farming is viewed to have a secondary effect on P4b. The general description states that requirements of Organic Farming aid in reducing impacts to water. This measure is not designed to specifically address water pollution problems as there are no eligibility or selection criteria in place targeting the financing of this measure to WBs failing good status due to diffuse pollution or pesticide problems. Nonetheless, it should help ensure WFD no-deterioration objectives.

Indicators

The RDP uses the required CMEF indicators to provide context to the SWOT and existing issues being faced in North Rhine-Westphalia. Information is provided on nitrogen pollution and water erosion. While the RDP clearly defines good status and the percentage of water bodies failing good status, the context indicators do not include this information. Also, there are no context indicators defined for phosphorus pollution) despite

being listed as the main pressure from the agriculture sector on water bodies) pesticide pollution or morphological alterations.

The target indicators focus on the percentage of agricultural land under management contracts to improve water management, which on its own is not suitable for monitoring how the water-related measures are contributing to the implementation of the WFD and achieving good ecological and chemical status. The description of the evaluation system does not mention using WFD monitoring data.

As not required, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD.

Conclusions

The Programme in North Rhine-Westphalia takes an overall logical approach to addressing water management issues in its territory. There is clear explanation of the main pressures coming from agriculture, linking them to specific agriculture activities, and the SWOT provides up to date information as regards to the ecological, chemical and quantitative status of water bodies in the territory. The needs defined reflect well the pressures identified, and the strategy developed for Focus area 4b for the most part clearly indicates which sub-measures will contribute to the WFD.

The Programme is very clear in stating that the RDP will contribute secondarily to the implementation of the WFD, as a separate regional programme focuses exclusively on the WFD. To this end, the Programme is consistent in its emphasis of using mainly M10 and M11 to improve water management. M10 offers two measures specifically designed to support achieving WFD objectives through good targeting and multiple other biodiversity-focussed operations which can contribute positively to reducing pollution by limiting or banning the use of fertilizers and pesticides. M10 sub-measures focussed on biodiversity also address pollution from livestock farming through banning fertilizer use on grasslands. M11 does indeed contribute to water management through reducing fertilizer and pesticide application, but from a WFD perspective, selection criteria could have been included to emphasize financing farmers first in areas where WBs are failing good status.

Overall, the strategy for FA 4b focuses heavily on reducing pollution and erosion issues. Although FA 4b links M08 to water management, the measure itself does not pick this up despite financing an operation that, among others, supports improving SWBs and wetlands. Furthermore, the target indicator for M08 points to 0% of forestry land under water management contracts. It is therefore, unclear, what the intention of the measure is.

Missing from the programme is addressing point source pollution. It is not clear from the SWOT whether arable or livestock farming are the main source (though its assumed this is likely to originate from intensive livestock stables), but none of the measures under the

programme address this pressure.

Flood risk management and implementation of the Floods Directive have not been included in the programme. Flooding issues are not mentioned in the SWOT, flood management is not mentioned in the Strategy and Priority 3b does not indicate that flood prevention is an issue.

Although morphology and flood management are not included in the RDP, the regional programme “Living Waters” intends to spend considerable efforts and funds (€2 billion between 2010-2027) on both of these aspects. The “Living Waters” programme additionally finances WFD specific farm advice and cooperation projects for drinking water protection. The main objectives of this regional programme are clearly on re-naturalisation of water courses and water retention, with the main beneficiaries being communities and water/soil cooperatives. Keeping this in mind, it is unclear to what extent the regional programme provides enough financial support to address specifically the challenges the agriculture sector poses for water management. To recall, the SWOT points out that agriculture is the biggest land user in the State, contributing also the most to water pollution problems. It is positive that the target indicator by the end of programme is to cover 21.5% of agriculture land under water management contracts. But with 67% of SWBs failing good status, this will mean that considerable action outside the RDP (i.e. through strengthened WFD basic measures (reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (measures funded by non-EU funds) should be included in RBMPs if the GS objective of the WFD is to be achieved.

Finally given that the Programme did not include additional programme specific indicators (not required) to adequately measure the results of the measures in terms of achieving ecological and chemical status improvements, it will be difficult to discern its contributions to WFD objectives at the end of the programming cycle and to inform future revisions.

Recommendations:

1. Introduce an intervention logic for point source pollution from agriculture. The SWOT only mentions that livestock raising is an issue for less than good chemical status of water bodies. Improve the information regarding how livestock raising causes point source pollution. The manure measures under M4 focus solely on reducing air emissions and do not account for potential losses from manure storage. It is suggested to include measures to address point source pollution from livestock. Depending on the reason behind the pressure, consider offering measures like reducing runoff from farm buildings or manure storage facilities.
2. Although not required, consider expanding both the context and target indicators to better reflect water management. The context indicators of nitrogen and phosphorus pollution do not cover two important water management issues, namely pesticide pollution and morphological alterations. These missing aspects

do not enable obtaining a full picture of the environment in the territory. Moreover, the target indicators do not enable to track the impact these measures have on improving the water environment. Especially with constraint budgets, it would be beneficial to have indicators in place that enable the authorities to track whether a measure's implementation is having a positive effect on the water environment and is therefore worth financing. Here, linking also the monitoring programme to existing programmes under the WFD would be helpful and would not pose any additional administrative or financial burden on the district.

A19 Germany – Saxony-Anhalt

In Saxony-Anhalt (S-A), there are two river basin districts: The Elbe and the Weser. The main agriculture pressure identified in the respective River Basin Management Plans (RBMPs) is diffuse pollution from organic substances (nitrates, phosphates) leading to eutrophication and chemicals (pesticides). Water abstraction is not considered a significant pressure in any of the RBDs. The RBMP Weser mentions that morphological modifications represent a significant pressure and that those modifications serve (besides other purposes) to “guarantee agricultural activity”. However, it is not certain that morphological alterations related to agricultural activities are a pressure found in the S-A territory. According to data from the WFD, as of 2014 only 5% of SWBs have achieved good ecological status/potential.

SWOT

The SWOT in the RDP provides up to date information (using the latest WFD Art. 5 assessment) on the status of water bodies in Saxony-Anhalt. The pressures identified in the RBMPs are fully taken up in the pressure analysis in the SWOT, including morphological alterations. Soil erosion from wind and water is additionally mentioned as a pressure, affecting 21% of arable land in the territory.

According to the SWOT, good chemical status has not been achieved in 1/3 of GWBs due to nitrogen pollution. Nitrate concentrates in groundwater bodies (GWBs) have exceeded quality norms in 5-10% of monitoring stations, largely in areas with intensive crop production. In general, there is no discernible trend, positive or negative, regarding nitrogen concentrations in groundwater.

86% of surface water bodies (SWBs) achieved good chemical status as of 2009. A clear percentage of SWBs failing good ecological status/potential is not given: it is mentioned that the majority of SWBs have not achieved WFD objectives. The main pressures are lack of river connectivity and high nutrient pollution. Nevertheless, Saxony-Anhalt has the lowest nutrient balance in Germany, mainly due to the lack of organic fertilizers from livestock farming.

Pesticide pollution in both SWBs and GWBs is also highlighted as a pressure, due to leftover residues from pesticides no longer in use but also from currently used pesticides.

Since 2010, high groundwater tables have led to land saturation in the region. A regional fund outside the RDP is being used to address the situation. Flood protection is a significant issue in Saxony-Anhalt, along with the implementation of the Floods Directive. By 2020 every dike along the main water courses will have been restored through measures under the flood protection plan of S-A.

The water-related strengths, as identified in the S-A Programme, include low share of irrigated agriculture and a flood protection plan but continued weaknesses identified are large areas affected by wind and water erosion, significant interventions needed to

achieve the WFD due to nutrient pollution and morphological pressures, significant flood risks and increasing problems associated with a high groundwater table. The programme identifies increasing environmental friendly farming and forestry practices as an opportunity (not specifically linked to water management). The programme identifies as a threat increasing extreme weather events and the intensification of agriculture affecting water, among others.

Needs

5 needs have been linked to Focus area 4b on “improving water management”: focussing agriculture financing on environmental friendly practices implementation of measures to improve water morphology, reduce nutrient pollution into SWBs, support investments in drinking water and sewage systems and increase efficiency of water use. The description of these needs clearly links to the pressures identified in the SWOT, focussing diffuse pollution and morphological pressures, as well as the achievement of the WFD and the types of measures necessary to address the needs, linking also to the WFD Programme of Measures.

The need on reducing nutrient pollution into SWBs highlights that although voluntary measures will support the WFD, achieving the Directive’s objectives will require mandatory restrictions on agriculture land, which will require financial support due to additional costs incurred and income foregone.

In addition, the needs adapting agriculture production processes and maintaining forest land have also been linked to Focus Area 4b, although to a lesser degree. The descriptions of these needs do not fully describe the links to improving water management.

Strategy

The general strategy of the RDP mentions that although the RDP address all 18 focus areas, the region has chosen to focus especially on 9 topics, including focus area 4b on improving water management including nutrient and pesticide pollution.

With regards to the budget, nearly 13% of the total RDP budget is for P2 “Enhancing farm viability and competitiveness of all types of agriculture”, compared to 35% assigned to P4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry”. 13.2% of the total RDP budget (or more than 160 million €) is dedicated to addressing water issues in P4.

Focus area 3b on “supporting farm risk prevention and management”, is programmed through M05. The description notes that at least 2.68% of agriculture farms should benefit of flood protection measures.

Focus area 4b on “improving water management” is linked to 7 measures: M4, M7, M8, M10, M11, and M15. The description also points out that improvement in water management and therein the achievement of WFD objectives are affected by agriculture water use, nutrient pollution and pollution from sewage facilities. The description of Focus area 4b emphasizes the use of M7 and M10 to support the objectives of the WFD, which address nutrient pollution and measures to improve the ecological and/or chemical status of SWBs, as well as drinking and sewage infrastructure. Additionally, positive effects on water protection are expected from measures 4 (land consolidation, hedges), 5 (flood protection), 8 and 15 (strengthening the resilience of forests) and 11 (organic farming).

The focus area description also indicates that improvements in water management will also be achieved through national measures outside of the RDP. This is especially relevant, considering the target indicator for focus area 4b is 0.26% of agriculture lands under contract to improve water management. Therein, the objective is to implement measures to improve ecological and/or chemical status in 700km of SWBs. Although positive effects on water protection are expected from M8 and 15 (forest related), the target indicator for percentage of forest land under contract to improve water management is 0%. This indicates that these measures are minimally linked to focus area 4b.

Focus area 5a on “increasing efficiency in water use by agriculture” is not programmed. However, the RDP mentions that some measures will lead to positive effects, including M4 (reducing water and energy use; farm management of agriculture water resources; investments in drinking water infrastructure).

Ex-ante Conditionalities

EAC 5.2 was assessed by the MS as fulfilled. No action plan was required.

Measures

Focus area 4b on “improving water management” is linked to 7 measures: M4, M7, M8, M10, M11 and M15. Focus area 3b on “supporting farm risk prevention and management”, is programmed through M05.

Measure 4: This measure finances productive investments in physical assets. In Saxony-Anhalt, this measure does not directly benefit improving water management in the sense of focus area 4b (nutrient and pesticide pollution); however, it finances, among others, land consolidation to enable landscape scale measure implementation of retention areas for flood protection; and hedges to prevent erosion, which should help with pollution and/or potential sedimentation issues. In addition, measure 4.3 finances the new construction and the expansion of water-saving systems for the extraction, storage and supply of water for irrigation purposes. It also enables investments to raise the groundwater table and pumping equipment. This measure links to water permitting and mentions in its eligibility conditions Art. 46, although it only references part of the

legislation. Given the investments in pumping stations and raising the groundwater table, adherence to Art. 4 (7) of the WFD should be included in the eligibility criteria as such projects could influence whether a water body can improve its status to good or could potentially lead to a deterioration in status, especially if multiple projects are financed within the same water body catchment.

Measure 5: This measure finances the restoration of existing dikes and other hard defence systems, as well as measures to improve natural retention. Natural retention measures financed under M5 include renaturation of river stretches while at the same time widening the river bed. The RDP mentions that where possible, nature based solutions like green infrastructure will be prioritised over hybrid or purely technical defence measures. The measure description also highlights that technical flood prevention will be financed more through the European Regional Development Fund. Nevertheless, the measure also finances building of dikes and water storage facilities. While the eligibility conditions mention that operations will be financed after negative impacts on the environment are assessed, it does not make clear that any new technical investments must be subject to an Art. 4 (7) WFD assessment. Selection criteria indicate that operations will be decided based on the Elbe Action Plan under the Floods Directive.

Measure 7: This measure finances, among others, investments in drinking and sewage systems and measures to support the implementation of the WFD. Both measures are programmed under focus area 4b. The former will help to reduce rural household pollution into waterways, while the latter focuses on restoration measures largely intended to improve morphology of SWBs. 15 projects to improve the morphological and chemical status of WBs are planned for the programming period, focussing on removal of dams and weirs; restoration of natural water beds (through removal of canalised stretches of water, restoration of river banks and riparian buffer strips); remeandering of rivers; acquiring land to carry out landscape scale projects; and measures to reduce nutrient pollution and to improve water quality in rivers and lakes (larger than 10 ha). Eligibility conditions require that the measures are implemented in line with the WFD. Selection criteria indicate that a ranking system will be used, but it is not clear which criteria are included.

Measure 8: This measure finances investments in forest area development and improvement of the viability of forests. The description of focus 4b indicates that this measure will indirectly support water management; however, the measure's description does not refer to improving water management. Nevertheless, the financing of converting pine forests to mixed deciduous stands should be positive from a water cycle perspective.

Measure 10: The programme states that 34% of EAFRD financing will be for targeted operations under M10. 9 sub-measures comprise Measure 10, of which 1 measure is specifically linked to focus area 4b. The measure "Cover crops in winter" is intended to help with erosion protection and minimising pollution of water bodies. Eligibility criteria target this measure to groundwater bodies at risk. In addition to this water-specific measure, some of the other measures will also contribute to objectives of focus area 4b. One of the 5 sub-operations under the measure "Voluntary Nature protection" prohibits the

use of liquid manure or the application of rodenticides. The measure “Sustainable management to reduce erosion risk” will help to reduce wind and water erosion, leading to reduced sedimentation and pollution of water bodies through fertilizers and pesticides. Eligibility criteria target the measure to areas categorized with a 3-5 risk level of erosion. None of the measures include selection criteria to prioritise financing (e.g. for GWBs in the worst status in the case of the measure “Cover crops in winter” in cases where demand exceeds budget allocated. Such criteria are not required by the EAFRD.

Measure 11: In the Programme, Organic Farming is viewed to have a secondary effect on focus area 4b. The general description states that requirements of Organic Farming aid in reducing impacts to water. This measure is not designed to specifically address water pollution problems as there are no selection criteria in place (which are not required by the EAFRD) targeting the financing of this measure to WBs failing good status due to diffuse pollution or pesticide problems. Nonetheless, it should help ensure WFD no-deterioration objectives.

Measure 15: This measure finances forest-environment payments with the main aim to improve biodiversity and forest ecosystems. The measure pays forest owners not to commercially use their forests and also finances improvement measures, including small water bodies and rock piles for habitats. Eligibility criteria target areas within Natura 200 sites or forests with significant nature protection value. The description of focus 4b indicates that this measure will indirectly support water management. However, the measure’s description does not refer to improving water management. This measure is not designed to specifically address water pollution problems as there are no selection criteria in place (which are not required by the EAFRD) targeting the financing of this measure to WBs failing good ecological status. Nonetheless, it should help ensure WFD no-deterioration objectives.

Indicators

The RDP uses the required CMEF indicators to provide context to the SWOT and existing issues being faced in Saxony-Anhalt. Information is provided on nitrogen pollution and water erosion. While the RDP clearly defines good status and the percentage of water bodies failing good status, the context indicators have not been voluntarily expanded to include this information. Also, there are no additional programme specific context indicators (voluntary) defined for pesticide pollution or morphological alterations.

The target indicators used in the programme are as defined according to the CMEF: percentage of agricultural and forest land under management contracts to improve water management (0.26% or 3000ha). From a WFD perspective, these indicators on their own are not suitable for monitoring how the water-related measures are contributing to the improvement in water bodies as regards good ecological and chemical status. The description of the evaluation system does not mention using WFD monitoring data.

As not required, the RDP did not expand on the existing CMEF framework to better track

and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD.

Conclusions

The Programme in Saxony-Anhalt takes an overall logical approach to addressing water management issues in its territory. There is clear explanation of the main pressures coming from agriculture, linking them to specific agriculture activities, and the SWOT provides up to date information as regards to the ecological and chemical status of water bodies in the territory. The needs defined reflect well the pressures identified, and the strategy developed for focus area 4b clearly indicates which sub-measures will contribute more directly to the WFD and which measures will have a more indirect effect on water management issues.

The Programme emphasises using mainly M7 and M10 to improve water management. M7 focuses on address morphological pressures on water bodies and M10 includes an operation that focuses on nitrogen pollution of groundwater bodies. It is very positive that M7 includes operations to implement the WFD and includes eligibility criteria requiring that the measures are implemented in according with the directive. Although the selection criteria point to a ranking system, details are lacking regarding which criteria will be used. Here, it would be beneficial to clearly indicate whether the measure will focus on water bodies in the worst status. Under M10, it is positive that the sub-measure “Cover crops in winter” targets GWBs at risk through specific eligibility criteria considering that 1/3 of GWBs are failing good status. Should the interest in this measure exceed the budget allocated, it would also be helpful to include selection criteria ranking projects. Although such criteria are not required for M10, it could help to ensure that financing is used for GWBs especially at high risk should budgetary constraints arise. Other operations under M4 (hedges) and M10 address erosion risks will also support focus area 4b through reducing surface-run off.

Overall, few measures that provide benefits to improving fertilizer and pesticide management are included in the programme. None of the measures target pesticide management (only one operation prohibits rodenticides), although the SWOT points out that current pesticide use is also a problem in the territory.

Flood risk management and implementation of the Floods Directive are included the programme under focus area 3b. The main measure is M5, which finances natural flood retention measures, as well as technical defence measures. The programme includes selection criteria that the flood prevention projects will be carried out in line with the Floods Directive. While the eligibility conditions mention that operations will be financed after negative impacts on the environment are assessed, it does not make clear that any new technical investments must be subject to an Art. 4 (7) WFD assessment. While not specifically required by the EAFRD, such a link to Art. 4 (7) WFD is important given the Commission assessment that many MS are not fully clear on the application of Art. 4 (7) and have called for guidance. A reference to Art. 4 (7) WFD under the eligibility criteria

would help to clarify to local authorities the legal requirements.

Although focus area 5a has not been programmed, measure 4.3 finances the new construction and the expansion of water-saving systems for the extraction, storage and supply of water for irrigation purposes. Since it finances investments in irrigation and raising the groundwater table and pumping equipment, this measure should not only fully mention all the criteria under Art. 46 – only parts are references – but also adherence to Art. 4 (7) of the WFD should be included in the eligibility criteria as such projects could influence whether a water body can improve its status to good or could potentially lead to a deteriorate in status, especially if multiple projects are financed within the same water body catchment. Although not required under the EAFRD, as mentioned above, reference to Art. 4 (7) WFD under the eligibility criteria would help to clarify to local authorities the legal requirements in light of the on-going challenges many authorities are facing with proper application of Art. 4 (7) WFD.

To reiterate the comments above in the strategy, the description of focus area 4b highlights that improvements in water management will also be achieved through national measures outside of the RDP. This is especially relevant, considering the target indicator for focus area 4b is 0.26% of agriculture lands under contract to improve water management. This target, which is low considering that 1/3 of GWBs have not achieved good chemical status and the majority of SWBs have not achieved good ecological status, indicates that considerable efforts outside the RDP programme will be needed in order for WBs in Saxony-Anhalt to achieve the objectives of the WFD. This includes strengthening WFD basic measures (reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and including additional measures beyond the AECM found in the RDP with the WFD supplementary measures (measures funded by non-EU funds) if the GS objective of the WFD is to be achieved.

Finally, although no MS or region is required to go beyond the CMEF defined indicators, additional programme specific indicators can be developed. Given that the Programme did not include additional programme specific indicators to adequately measure the results of the measures in terms of achieving ecological and chemical status improvements, it will be difficult to discern its contributions to WFD objectives at the end of the programming cycle and to inform future revisions.

Recommendations:

3. Include clear references to Art. 4 (7) WFD in the eligibility criteria for operations that finance new construction in irrigation, like pumping stations and water storage, and technical flood defence measures.
4. Include measures to address pesticide pollution. Although the SWOT indicates that much of the problems surrounding pesticide pollution is due to previous use, it is also stated that current practice is also a problem. The RDP does not appear to address pesticide pollution.

5. Although not required, consider expanding both the context and target indicators to better reflect water management. The context indicators of nitrogen and phosphorus pollution do not cover two important water management issues, namely pesticide pollution and morphological alterations. These missing aspects do not enable obtaining a full picture of the environment in the territory. Moreover, the target indicators do not enable to track the impact these measures have on improving the water environment. Especially with constraint budgets, it would be beneficial to have indicators in place that enable the authorities to track whether a measure's implementation is having a positive effect on the water environment and is therefore worth financing. Here, linking also the monitoring programme to existing programmes under the WFD would be helpful and would not pose any additional administrative or financial burden on the district.

A20 Greece

The Greek RDP covers the whole territory of Greece and therefore all the 14 River Basin Districts (RBDs) identified for WFD implementation. Regarding the first implementation cycle, 12 RBMP were submitted between 4/2013 and 9/2014, while the last two (Aegean Islands and Crete) were submitted in 2015. Initial documents regarding the revision of the 1st RBMPs are currently under public consultation (June to November 2016).

SWOT

Regarding pressures from agriculture, all RBMPs refer to agriculture as a significant pressure due to diffuse pollution from crops and livestock regarding organic loads, phosphorus/nitrogen, and pesticides. Abstractions are also an important pressure from agriculture (while for some RBDs the issue of abstractions is seen as relevant for only a limited number of water bodies), with this sector's share of water use being approximately 86%. The issue of pressures related to agricultural self-abstractions is not considered in detail. Point source pollution from agriculture is not cited as a significant pressure in general, except regarding to stabled livestock in some RBDs. Regarding hydromorphological pressures from agriculture, these are only mentioned in a general way and as related to “big” construction works for irrigation (e.g. dams). There is no consideration or discussion of “smaller” hydromorphological pressures linked to agriculture, such as bank reinforcements, land reclamation, drainage, etc., nor is there consideration of soil erosion due to agriculture.

The ecological status of natural surface water bodies (SWBs) presented in the RBMPs shows that 49% are in high or good status, another 29% are below good, while 21% remain unknown. With regard to the ecological potential of artificial and heavily modified water bodies, 6% are good status, 51% below good and 43% in unknown status. The chemical status of natural surface water bodies presented in the RBMPs shows that 44% are good status, 6% in poor status, while 51% remain unknown. With regard to the chemical status of artificial and heavily modified water bodies, 13% are in good status, 27% in poor, and 60% in unknown status.

The chemical status of groundwater bodies presented in the RBMPs shows that 83.8 % are in good status, 16.2% in poor, while none remain unknown. With regard to the quantitative status of the groundwater bodies, 83.1 % are considered to be in good status and 16.9% in poor status.

The SWOT in the overall situation description partly picks up this information from the RBMPs. The numbers of SWB and groundwater bodies (GWB) below good status are presented, as well as a summary of the main pressures per RBD including from agriculture.

The RDP states that agriculture is the main water consumer (great pressures on groundwater bodies) and is linked to nitrogen and phosphorous pollution. Morphological

alterations are linked also to dams for irrigation. It is estimated that 30 % of irrigated areas are irrigated with surface irrigation, 50% with sprinkler systems (mostly high pressure) and 20% through drop irrigation systems. There is no clear indication on what agricultural production types are causing the most pressures. The issue of flooding/implementation of the Floods Directive is mentioned only briefly, without links to agriculture and not taken further.

As strengths, the SWOT indicates that Greece overall has annually sufficient surface and under-ground water resources, as well as downward trends in the recent years in the level of Greek agriculture intensification and in the use of fertilisers and plant protection products.

Regarding weaknesses, most important points are mentioned: there is a strong seasonal and spatial distribution of water resources; significant problems to wetlands by point and diffuse pollution, the extension of agricultural crops in those regions linked to over-abstraction; a significant number of nitrate vulnerable zones, acute manifestations of desertification; the agricultural sector being the largest consumer of water resources; lack of rational and efficient use of water for irrigation, mainly in regions that have shortages of water resources; a small proportion of agricultural areas being irrigated with efficient irrigation systems; uneven use of groundwater and surface water resources, leading in several cases to qualitative and quantitative deterioration of GWBs. Issues related to morphology and pesticide use are not mentioned.

Opportunities mentioned is the institutional framework established for integrated water resource management (linked to the RBMPs), an upcoming irrigation water pricing policy design, as well as the great potential for improving the efficiency of irrigation.

The main threats are linked to the worse than projected impacts from climate change, namely the reduction of precipitation and temperature increase especially in the summer, posing a threat to agriculture and livestock farming. This also leads to high requirements already recorded for irrigation water, especially in the Mediterranean countries including Greece, to be further increased due to drought and high temperatures, as well as a risk of soil erosion and loss of fertile soils, due to changing precipitation intensity and frequency of droughts

Needs

Out of the 34 needs developed based on the SWOT and identified in the RDP, only one is specifically related to water and linked to both Focus area 4b (“improving water management, including fertiliser and pesticide management”) and Focus area 5a (“Increasing efficiency in water use by agriculture”), called: “Increase efficiency and effectiveness in water use by agriculture”. In addition, the following need has also a focus on water, linked to FA 4a: “reduce the impact of farming activity on the quality of surface and ground water”.

Both these needs on content are related to the WFD implementation issues identified in the RBMP/SWOT (quantity and quality issues related to agriculture), (without explaining the need of reaching the environmental objectives of the WFD nor using its terminology).

The focus of the first need is on efficiency gains for irrigation but is not linked to improving the status of water bodies. The second need mentions the aim of better implementation of the Nitrates Directive, but does not also refer to support reaching the WFD good status objectives.

The needs “address low levels of professional education, lack of skills of those employed in the agricultural/forestry sector” and “creating/strengthening mechanisms for research-technology-innovation uptake in the agricultural sector” are linked to many focus area, including 4b and 5a. Among many aims, they mention generally the supporting of environmentally-friendly methods climate change mitigation/adaptation, including related to water management, but no specific WFD links are made.

A number of other needs are linked to FA 4b and/or FA P5a, but do not have any real focus on water; these are: “reversing the phenomenon of disinvestment in agriculture”; “protection and conservation of natural forests from fires, diseases and other natural disasters” and “addressing the impact of forest fires and other natural disasters in forests”.

Two needs are linked to the Focus area 3b (“support to the agricultural sector regarding natural disasters” and “support for farmers with modern and effective risk management tools in agriculture”), but there is only a very general mention of flooding in the first one (among many other disasters, including droughts) and no explicit mention of water issues or flooding in the second one.

Overall, the issue of addressing morphological pressures is not explicitly mentioned in any of the needs. This is likely due to such issues not having been identified in the 1st RBMPs.

Strategy

The overall strategy is summarized under three strategic objectives, therein is mentioned the aim of a greater synergy between the RDP and various EU Directives, including the WFD. Within the objective of the management of natural resources, the strategy states that addressing water quality will be conducted based on integrating the findings and recommendations of the RBMPs with other policies. It is stated that in basins in which water abstraction and use is the problem, rationalisation will include interventions such as enrichment of groundwater aquifers and water retention (something that can conflict with the WFD objectives if retention means the funding of new hard infrastructure like dams).

Contributing to the Floods Directive (e.g. by the implementation of natural water retention measures) is not mentioned in the overall strategy or under Priority 3b.

With regards to the budget, 2.471 million EUR is assigned to P4, and 1.366 million EUR is

assigned to P5a. Combined, this constitutes 67% of the budget, compared to 21,9% for P2 and Focus area 3a though it is not clear what percentage of this P4/P5a-budget is dedicated to addressing water issues or to other environmental legislation.

Under each priority, the primary and secondary needs covered through the selected measures are indicated.

In general, the strategy for P4b aims at measures regarding the management of water resources on agricultural land, focussing on point and diffuse pollution of nitrates and pesticides due to agriculture. Measures mentioned (in relation to agricultural land) are M01, M02, M04, M08, M10, M11 and M16, as well as M01, M08 and M12 related to forests. Two measures are considered to be the central ones: the sub-measure 10.1.4, focussing on nitrates and targeting water bodies of not good status, as well as M11, since organic farming is seen as a low-pollution activity. Measure 4.1.2 is seen as the important one regarding support to water saving activities, including precision farming. Overall the P4b-strategy does not mention the RBMPs under the WFD or the need to support fulfilment of its objectives.

The target indicator for P4b states 12,08% of agricultural land under management contracts to improve water management. Given the high number of WBs failing good status and agriculture being an important factor for these problems, the target appears rather low.

The strategy for P5a includes measures M01, M02, M04 and M16. It summarizes the fact that Greece has sufficient water resources but which are distributed unevenly in space and time, efficiency of irrigation being especially low, high pressures on groundwater bodies, and expected increases of droughts and extreme weather events due to climate change. It mentions that the RBMPs will be the basis on which the projects for improving the efficiency of water use in agriculture and rational use of water resources will be prioritised, without providing further details on how this will be done. In addition, it is stated that these interventions will be activated after the fulfilment of the EAC5.2 on water pricing, taking into account the information in the updated RBMPs, which are still in the drafting process.

Agriculture contributes significantly to the quantitative pressures on water bodies, using 86% of water in Greece. The target indicator for 5a however is only set at 4.97% of irrigated land switching to more efficient irrigation systems, which is an unambitious target, especially considering that the use of modern irrigation techniques (depending from the regions) is generally not so widespread, so there is a lot of space for improvement.

Focus area 3b (“supporting farm risk prevention and management”) is activated (through measure M5), including help to farmers to protect themselves from natural disaster risks (including floods and droughts) and compensation to restore damages after disasters. There is no specific link to Floods Directive implementation provided, nor is there a mention of supporting the implementation of natural water retention measures which could

reduce drought and flood risk and help address desertification. The target indicator “Percentage of agricultural holdings participating in risk management schemes” is 0.21%.

Ex-ante Conditionalities

The RDP mentions that EAC 5.2 has not been fulfilled. The RDP mentions the following actions to be completed:

- 1 Development of water pricing policy for the other uses of water (31/12/2015)
- 2 Consultation on the water pricing policy proposal with the Advisory Committee on Water and other authorities (31/03/2016)
- 3 Final formulation and adoption of the pricing policy for water (30/04/2016)
- 4 Final development and adoption of the water pricing policy for the other uses of water (30/09/2016)

Measures

Focus area 4b is linked to 7 measures: M01, M02, M04, M08, M10, M11 and M16.

Focus area 5a is linked to 4 measures: M01, M02, M04 and M16.

Measure 1: This measure is mentioned as of relevance for both P4b and 5a. The description of this measure and of the sub-measures mentions water related knowledge as one out of many topics for knowledge transfer and information actions as part of “efficient/sustainable use of natural resources”; for sub-measures 1.2 (demonstration actions and information), there will be (inter alia) a “particular focus on water”. No specific focus on the WFD.

Measure 2: This measure is mentioned as of relevance for both P4b and 5a and describes various advisory activities. the sub-measure 1.2.1 “Support to help benefiting from the use of advisory services” describes guidance and advice to be given in 6 packages, one of them being focussed on integrated plant protection including pesticide use, and another on sustainable water management in agriculture as linked to WFD implementation at the farm level (including the Art. 46 requirements etc.).

Measure 4: This measure “investments in physical assets” has a strong focus on water-related issues. The measure contributes to various priorities, including to P5a; the latter through sub-measures 4.1.2: “Investments which support water savings at farm level” and 4.3.1: “Land improvement infrastructure”. In the general measure description, a summary is given regarding the water situation linked to agriculture in Greece. Important to note here is the high per hectare water use in Greece due to irrigation systems being old, but also due to private irrigation, which is considered to be less effective than collective one

(due to better control, monitoring and know-how regarding water use). The need for investments in physical assets (e.g. irrigation and dams) is also shared in the RBMPs, which are supplementary WFD measures; these are priorities especially for sub-measure 4.3.1. Unfortunately, there is no projection provided on what WB-improvements this measure (or its sub-measures) will deliver in support of WFD implementation. The restriction regarding the start of projects mentioned in the strategy of P5a (interventions will be activated after the fulfilment of the EAC5.2, taking into account the information in the updated RBMPs, which are still in the drafting process) is not found under the sub-measure descriptions of M4.1.2 and M4.3.1.

Sub-measure 4.1.2: The more rational use of water and the reduction of losses through advanced irrigation systems and practices at farm level will contribute to savings by reducing the quantity of water abstracted from groundwater or surface water bodies and increase water efficiency in agriculture. Support through this sub-measure is provided for investments which contribute to the saving of water at farm level, including water storage. Overall, it is stated that such investments in agricultural holdings with irrigation must be fully compatible with Article 46 as well as the WFD RBMP). The revised RBMPs will be taken into account when they enter into force. Explanations are provided on how “potential” and “effective” water savings are to be calculated.

Art.46 Rural Development Regulation (RDR) is reflected in the eligibility conditions for investments in irrigation, which generally reflect the criteria to be fulfilled. Yet, in the case of a net increase in irrigated area on a water body of “good” status, Art.46(b) inter alia requests that “an environmental analysis shows that there will be no significant negative environmental impact from the investment”; this requirement under 4.1.2 is translated into: “water permit for the water abstraction related to the investment. For the permit issuance, the competent authority will take into account the WFD objectives as well as a study as required by national legislation”; this is of positive interest but does not cover the full requirement. On the positive side, the RDP links to the WFD by requiring in all cases a valid water permit for the required quantities. In addition, and for the case of water bodies at “good quantitative status” a minimum of 10% potential water savings through a substitution of an irrigation system with one of the same technology (due to malfunction of the old one) is required; a minimum of 20% potential water savings for improvement of the irrigation system and for an expansion to previously irrigated areas. In the case of the water body being in “worse than good” status, the minimum percentage of potential water savings for an improvement of the irrigation system is 25%. Also on the positive side, Art. 46 (6) is not used. Finally note that Art. 46(5) has been interpreted in the sense, that extension of the irrigation systems to plots that have been irrigated in the recent past is possible if the plot has been irrigated sometime in the last 5 years.

The following selection criterion of relevance is mentioned (inter alia) which builds a link to the WB status: investments affecting water bodies in “less than good” status, yet without referring to quantitative status.

Overall, this sub-measure shows a good consideration of the need to introduce

measurable water savings/efficiency increases through such investments.

Sub-measure 4.3.1: The main aim of this measure is to achieve a balance between protection of the environment and improvement of competitiveness of agriculture.

Projects supported by this action concern public infrastructure for the agricultural sector and relate to water demand management measures in agriculture as included in the approved RBMPs. Thus, support is provided for: modernisation of existing irrigation networks and the associated supporting infrastructure, renovation and replacement of electrical and mechanical equipment, use of recycled water. Such investments are proposed as eligible only when they are additional to other proposed projects directly targeting the reduction of water consumption.

Art.46 Rural Development Regulation (RDR) is reflected in the eligibility conditions for investments in irrigation, which reflect the criteria to be fulfilled. On the positive side, the RDP requires in the case of a “good quantitative status” water body, a minimum of 10% potential water savings to the entire country for investments in irrigation infrastructure. Yet, for cases of the establishment of a new irrigation installation supplied with water from an existing reservoir approved by the competent authorities before 31 October 2013, one of the criteria, that is, of it having to be identified in the RBMPs is not fully transposed: the criterion in the RDP is that “the investment is included in the RBMPs; if not, it requires a verification of compatibility with the RBMPs by the competent authority.” On the positive side, this “compatibility check” with the RBMPs is a general eligibility criterion that has to be fulfilled for all investments under M 4.3.1.

Investments in new winter-runoff reservoirs are explicitly mentioned as eligible; these need to fulfil the following specific criterion: “the cumulative impacts of the construction of a reservoir will be assessed together with any other interventions in the relevant RBD, so all potential projects in the relevant RBD will be reviewed in the framework of Article 4 (7) of the WFD. An additional environmental impact assessment study will be carried out in order to ensure that a further deterioration of water bodies quality of the RBDs is prevented as well as to prevent an increase in the total consumption of water resources in the wider region including licences for water use.”

The following relevant selection criterion is mentioned that builds a link to the WB status: investments targeting large water savings, especially in areas where good status of water bodies has to be achieved.

Measure 8: The measure aims at investments in forest areas and improvement of the viability of forests. Regarding P4b, 4 out of the 6 sub-measures are shown as having a moderate contribution to this priority. These sub-measures are: 8.1 - afforestation and creation of woodlands; 8.2 - aid for agri-forestry systems; 8.3 - prevention of damage to forests from forest fires, natural disasters and catastrophic events”; 8.4 - restoration of damage to forests from such events. Sub-measures 8.1, 8.2 and 8.3 mention in the selection criteria that priority shall be given to areas that help to prevent the occurrence of

flood events in zones of potentially high flood risk, as defined in the preliminary flood risk assessment. In addition, sub-measure 8.1 additionally has the following selection criteria: priority shall be given to areas where afforestation help to achieve the management objectives for protected areas established under Article 6 of the WFD; which are linked to irrigation, drainage and flood defences and that are vulnerable to desertification. These selection criteria are positive, since they utilize the potential of measure 8 as a multi objective measure.

Measure 10: 12 sub-measures comprise Measure 10, of which one is linked to water (and to P4b), that is 10.1.4: reduction of water pollution from agricultural activity. While the focus is on achieving reductions of pollution through Nitrates (with a focus on Nitrate Vulnerable Zones) and pesticides through e.g. supporting buffer zones of at least 5 meters on parcels adjacent to surface waters, it also is aimed at a decrease on water use from agriculture though set-aside of agricultural areas (of at least 30% of the irrigated area) and “dry” crop rotation (of at least 30% of the irrigated area). The selection criteria indicate that (after prioritizing NATURA2000-sites), priority shall be given to actions affecting surface water bodies in less than good chemical status and groundwater bodies with poor quantitative status which is positive.

Measure 11: This measure to support organic farming generally links to P4b by contributing to the protection of waters through the reduction of pollutants. Neither sub-measure proposes eligibility or selection criteria relevant to water management. Nevertheless, organic farming will contribute to reducing nutrient and pesticide pollution.

Measure 16: This measure supports various cooperation activities. The sub-measure 16.1: “support for the establishment and operation of operational groups of the European Innovation Partnership (EIP) for agricultural productivity and sustainability” is linked to P4b and P5a since it supports (inter alia) the sustainable management of water resources in agriculture (no specific reference to the WFD). The eligibility criteria mention that the activity has to contribute to at least one of various RDP-priorities, including P4b and P5a.

Indicators

The RDP uses the required CMEF/the water relevant context and impact indicators required. No monitoring of morphological alterations, pesticide pollution or water savings based on the information on the context and impact indicators.

The following context indicators are presented: 20 (irrigated land), 39 (water abstraction in agriculture, 40 (water quality: here, the potential surplus of N and P on agricultural land are given, as well as N in freshwater, divided in SWB and GWB, indicating the % of monitoring sites that are in high-moderate-poor quality). Context indicator 42 (soil erosion) provides only the rate of soil loss by water erosion.

The target indicators focus on the percentage of agricultural land under management contracts to improve water management (T10), the percentage of forestry land under

management contracts to improve water management (T11) and the percentage of irrigated land switching to more efficient irrigation system (T14), which by themselves are not suitable for monitoring how the water-related measures are specifically contributing to the implementation of the WFD and achieving good ecological and chemical status for surface water bodies as well as good chemical and quantitative status for groundwater bodies. The description of the evaluation system does not mention using WFD monitoring data.

As not required, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD.

Conclusions

The SWOT provides a general description of agricultural pressures on the environment. The methodology for assessing water pressures from agriculture will be outlined in an Annex to the RDP, after the revision of the RBMPs. In the RDP, no clear indication on what agricultural production types are causing the most pressures is given; the issue of pesticide use from agriculture and related important pressures to the water environment is not presented clearly. Morphological alterations due to dam building and the related reservoirs including for irrigation water, are mentioned only briefly in the overall SWOT-description and not taken further. The issue of flooding/implementation of the Floods Directive is generally mentioned only briefly without links to agriculture, but on the positive side taken on board in the selection criteria for the sub measures of M8.

Regarding water quantity, the focus of the strategy and the related measures are efficiency gains for irrigation with less emphasis on improving the status of water bodies. Here again, there is reference to better utilizing the second RBMPs as main tools in order to establish the quantitative status of SWB and GWB and the pressures from the uses of water, aiming at interventions. The main relevant sub-measure here is M4.1.2 which can contribute positively, especially due to the focus in the selection criteria of WBs in less than good status. Additional contributions can be achieved through M 4.3.1, yet it remains unclear how the construction of new reservoirs will contribute to the water savings aspect of P5a. In addition, both sub-measures (and esp. M4.3.1) have the potential to create additional difficulties with WFD implementation since there are possibilities for reactivation/ expansion of irrigated areas as well as the creation of new reservoirs (even not linked to recycled water). Even if there are a number of constraints indicated for such activities, these possibilities need to be treated with high attention.

It is important to note that while the FA 5a-strategy mentions that interventions for the efficiency of water use in agriculture and rational use of water resources (thus, mainly linked to M4) will be activated after the fulfilment of the EAC5.2 and taking into account the information in the updated RBMPs which are not yet available, this time restriction is not mentioned in the M4-description.

Regarding water quality, the strategy for FA 4b focuses only on the Nitrates Directive and does not consider if additional measures are necessary to reach the WFD objectives. The main positive measure here is M10.1.4, while M11 will also have a positive effect on WFD implementation through its restrictions on fertilizers and pesticides. It is positive that measure 2 includes advice on WFD implementation.

Missing from the RDP are measures to address hydromorphological issues related to agriculture due to drainage and irrigation. Issues related to floods and covered under M8 are positive.

Regarding indicators/targets, no additional programme specific indicators (not required) to fully measure the results of the measures in terms of contributing to achieving good ecological and chemical status for surface water bodies and good chemical and quantitative status for groundwater bodies/WFD-implementation, it will be difficult to discern its contributions to WFD objectives at the end of the programming cycle and to inform future revisions. Overall the ambition of the RDP to address water pollution is low, considering the target indicator for FA 4b seems low compared to the severity of water issues related to agriculture. Thus, considerable action outside the RDP (i.e. through strengthened WFD basic and supplementary measures) should be included in RBMPs if the objectives of the WFD are to be achieved. The target indicator for FA 5a is not ambitious, esp. considering that modern irrigation techniques are not so often used in Greece.

Recommendations:

1. Although not required under the EAFRD, as mentioned above, reference to Art. 4 (7) WFD under the eligibility criteria would help to clarify to local authorities the legal requirements in light of the on-going challenges many authorities are facing with proper application of Art. 4 (7) WFD. M4.12 and M4.3.2. should be revised after the 2nd RBMPs have been developed and approved, so their information can be used for the targeting of interventions. In addition, new reservoirs (if not linked to recycled water) should not be financed through M4 since they do not contribute to water savings.
2. Improve the options for addressing morphological problems associated with agriculture in the RDP, and provide sufficient funding to measures supporting river and floodplain restoration. Furthermore, ensure that Article 46 on irrigation is respected and that new reservoirs/irrigation schemes do not impact negatively the hydro-morphology of rivers, including respective exemptions by Art. 4(7) WFD.
3. Although not required, consider expanding both the context and target indicators to better reflect water management. The context indicators of nitrogen and phosphorus pollution do not cover two important water management issues, namely pesticide pollution and morphological alterations. These missing aspects do not enable obtaining a full picture of the environment in the territory.

Moreover, the target indicators do not enable to track the impact these measures have on improving the water environment. Especially with constraint budgets, it would be beneficial to have indicators in place that enable the authorities to track whether a measure's implementation is having a positive effect on the water environment and is therefore worth financing. Here, linking also the monitoring programme to existing programmes under the WFD would be helpful and would not pose any additional administrative or financial burden on the district.

A21 Hungary

Hungary has one river basin district, the Danube, which is shared by 19 countries. 11.5% of the basin lies within the Hungarian territory. According to the 1st RBMP, only 11% of natural and 8.8% of artificial and heavily modified surface water bodies (SWBs) have achieved good ecological status or higher. A very high percentage of all SWBs are in unknown chemical status, and only 3% of SWBs were indicated to be in good chemical status. 80% of groundwater bodies (GWBs) are in good chemical status and 85% are in good quantitative status. Nitrogen, phosphorous and pesticide pollution from point and diffuse sources were identified as significant pressures. Nitrates are responsible for 20% of GWB being at poor status and 5.25% of Drinking Water Protected Areas. Water over-abstraction and agricultural use related to water transfers were considered as significant pressures. Abstraction including water transfer is a significant pressure for 90 SWBs out of 1082 (8,3%). The problems are concentrated regionally with the highest pressure from irrigation in Northern Great Plain (Eszak-Alfold) and Southern Great Plain (Del-Alfold) regions. Certain hydromorphological modifications (especially at sub - unit level) are directly connected to farming activity as many of the dams, weirs, drainage systems are used for agricultural purposes.

SWOT

The SWOT uses data from the partially updated 2nd RBMPs, stating that 13% of SWBs are in good or better status (not clear whether ecological or chemical) and 22% have unknown status. 12% of lakes are in good ecological status and 34% of natural lakes have unknown status. Less than 10% of GWBs are in poor quantitative status. The chemical status of GWBs is not provided.

Irrigation mainly withdraws water from SWBs. Surface water availability fluctuates greatly due to temporal and spatial distribution. Diffuse pollution (from nitrogen, phosphorus and pesticides) from agriculture is considered a significant issue, although the trend is declining. The nitrogen content of shallow GWBs is significant, affecting partly drinking water supply. Sources of groundwater contamination point to industrial waste water but also from livestock holdings. Nitrate vulnerable zones make up 69% of the territory. The SWOT also mentions heavy storms and flooding affecting about ½ of Hungary, and around 10-15% of arable land is under periodic inland water. Soil erosion from water affects 63% of arable land.

Overall the information provided in the SWOT does not provide a fully comprehensive picture of the pressures the agriculture sector places on the environment as drainage issues and other morphological modifications due to farming activities (as identified in the RBMP) are not mentioned.

Strengths related to water include: substantial water resources and environmental friendly farming methods. Weaknesses include out-dated/not used irrigation systems and inappropriate land use due to a lack of water and nutrient management, erosion, excess water inundation and lack of coastal zone contributing to the unfavourable ecological and

chemical status of surface water bodies. Opportunities include Emerging demand for improving climate resilience, appreciation of the water supply; spreading of up-to-date water management methods (water retention and irrigation), irrigation modernisation and better integration of EU policies to improve water protection. Identified threats include climate change accelerating, extreme weather events spiralling, deterioration of surface and subsurface water bodies, already in worse than good state, or the preservation of the present less-than-good state in default of government measures.

Needs

The RDP includes the following water-related needs: Mitigating the unfavourable impacts of climate change by applying complex water management interventions; adapt to climate change and develop water management based on retention; prevent damage to forests and restoration; encourage reasonable use of pesticides and nutrients; improve water and nutrient management, new water-saving irrigation investments for adapting to climate change. The WFD is specifically mentioned for the need to adapt to climate change and develop water management based on retention. The other needs mention water management in general

In addition to the needs listed above, further needs linked to Focus area 4b “Improving water management, including fertiliser and pesticide management” and Focus area 5a are: Boost innovation and performance of the agriculture sector; improve vertical and horizontal cooperation within the agriculture supply chain; Development of green infrastructure, improvement of the ecological network’s coherence; Risk prevention and management; encourage extensive farming; increase the use of environmentally friendly technologies; strengthen cooperation between actors in rural economy; reduce the environmental impact of natural resources management and improve climate resilience. These needs may be linked to FA4b and/or 5a, but the descriptions do not provide specific information as regards water issues.

It is important to note that the need “new water savings irrigation investments to adapt to climate change” is linked to Focus Area (FA) 2a” and not to FA 5a.

Strategy

The general strategy of the RDP (as outlined in chapter 5.1) mentions that the intervention logic is based on the SWOT and the identification of needs. It recalls the 6 overarching priorities, as outlined in the EAFRD. Chapter 5.1 mentions protecting the environment and resource efficiency, but it does not mention water resource issues or the WFD.

The share of budget for Priority 4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry” (27.8%) is marginally lower than the share of the budget Priority 2 “Enhancing farm viability and competitiveness of all types of agriculture” and Focus area 3a “Improving competitiveness of primary producers”, equalling 37%.

FA 3b “Supporting farm risk prevention and management” is activated through M5 and M17. It focuses on flooding, spring frost and hail damage, as well as the need to adapt to climate change. It does mention the need to support the implementation of the Floods Directive.

FA 4b is linked to M1, M2, M4, M8, M10, M11, M12, M13, M15 and M16. The strategy focuses on the protection of surface and ground water and need for nutrient and pesticide management and the preservation of good ecological status/potential. It mentions the WFD and the Floods Directive, but the link to flood management is not made. The strategy states that forest-environment commitments (M15) will help to increase water retention, but it does not mention how the rest of the measures will contribute to the priority.

The target indicator for FA 4b is 3.57% of total agriculture land and 0.59% of total forestry land under management contracts for to improve water. Considering that 90% of SWBs and 20% of GWBs have not achieved good status (ecological and chemical, respectively), this target appears low.

FA 5a” Increasing efficiency in water use by agriculture” is activated through M4. The strategy identifies three operations: water retention, hydro-melioration activities (drainage), and improving water efficiency, but also mentions the need to increase irrigation areas. It states that the objective is to improve the ecological status. The strategy also details how in the 1st RBMP, hydromorphological pressures in rivers and lakes were identified. 80% of rivers within agriculture areas are subject to hydromorphological pressures; water abstraction for agriculture puts pressures on 10% of SWBs. The strategy also describes the need for irrigation. It not clear, however, how water retention and drainage activities are related to the priority and its emphasis on increased efficiency in water use.

The target indicator for FA5a is 5.75% of irrigated land switching to more efficient irrigation systems. It is not clear whether this target is sufficient as the SWOT did not detail the current efficiency rates of existing irrigation systems in Hungary

Ex-ante Conditionalities

EAC 5.2 was assessed by the MS as not fulfilled. Steps to be taken in the Action Plan with a deadline of July 2016 are:

- Revise the existing national legislation including also the exemptions for agriculture
- Introduce incentive pricing based on metering and volumetric pricing for irrigation (including self-abstraction)
- Abolish the exemption from cost recovery and incentive pricing for irrigation, fisheries and rice production.

Measures

Focus areas 3b, 4b and 5a are linked to M1, M2, M4, M5, M8, M10, M11, M12, M13, M15 and M16.

Measure 1 finances training, demonstration sites and field visits. The measure mentions that it links to FA 4b and mentions climate change adaptation. All farmers applying M10, M11, M12 and M15 must take part in compulsory training. However, the measure description does not mention water management.

Measure 2 finances advisory services. It is linked to FA4b and includes advice on the implementation of the WFD.

Measure 4 finances investments in agriculture holdings. The following sub-measures are linked to water management:

- Sub-measure 4.1 - support for investments in agricultural holdings includes investments to develop the livestock sector and the agricultural water sector. For the livestock sector, the emphasis is on increasing resource efficiency and greenhouse gas emissions, but the support for handling and storing manure will indirectly support the reduction of water pollution. Within the agriculture water sector, operation 4.1.4 will finance water retention, hydro-melioration (drainage), irrigation efficiency and new irrigation infrastructure.

Water retention will focus on rainwater harvesting and collecting water discharged from reservoirs for irrigation (for later use). To this end, the operation finances reservoirs to collect water and developing filtration in the fields. The measure will also finance drainage systems within the design of roads. In addition, the operation finances irrigation efficiency and expansion. For determining the net increase in irrigation area, areas which are not irrigated in the recent past may be considered as irrigated areas. Eligibility criteria state that lands which are not

currently irrigated, but have been equipped with irrigation equipment, or had a valid water rights licence in the past 12 years also qualify as irrigated lands. Eligibility criteria include the full requirements of Art. 46, as well as the need to have a water permit. For drip irrigation, the minimum water savings is set at 5%, for sprinkler installations water saving is set at 10%. However, given that reservoirs can be financed reference should be made to the potential need for an assessment under Art. 4 (7,8,9) of the WFD as eligibility conditions to ensure the measures don't lead to deterioration of status. Selection criteria for the operation on irrigation prioritise farmers that will realize higher savings.

- Sub-measure 4.4 finances non-productive investments like grassland, hedges and pastures, as well as water protection investments (operation 4.4.2) to prevent water pollution and promote water retention, addressing both qualitative and quantitative issues. It will finance the following 1) water retention infrastructure (channels, ponds, reconstruction of structures), 2) erosion prevention infrastructure (terraces, filling gullies) to reduce erosion and nutrient pollution, 3) riparian buffer strips 40 m wide, and 4) wetlands. Within water retention, the aim is to increase inland storage needed in low-lying cultivated areas by constructing localized embankments to reduce drought sensitivity. Reference is made to expanding ecological focus areas, but it appears the operation focuses more on enabling cultivation rather than conservation. The eligibility conditions refer to water sensitive areas for operation on water retention but it is not clear if these are linked to areas identified under the WFD or if they are linked to areas with drought issues for cultivation. No reference to WFD Art 4.7 is made.

Measure 5 finances restoring agricultural production potential damaged by natural disasters and prevention actions. The focus is on hail, heavy rain and frost damage to crops and does not also cover flood risk prevention. There are no links to flood management or the implementation of the Floods Directive.

Measure 7 finances basic services and village renewal in rural areas. It finances small-scale rural settlement waste-water treatment facilities and thereby contributes to FA 4b.

Measure 8 finances investments in forest area development. Sub-measure 8.1 finances afforestation to address water erosion, but an explicit link to water management improvement is not made. Sub-measure 8.5 finances conversion to woodlands to increase ecosystem resilience but there is no explicit link made to improved water management. It can be assumed that afforestation and reduction of erosion are positive from a water protection perspective.

Measure 10 finances agri-environment-climate measures and is linked to FA 4b. The measure is broken down into two types – horizontal and zonal – and covers 8 separate land use categories. The horizontal measures (4), which cover the whole territory of Hungary, focus on arable land, grassland, fruit plantations and reedy areas. The zonal schemes (4 out of 12) cover areas related to water are erosion-sensitive arable land,

water-sensitive arable land, drought sensitive arable land and grassland areas. The measure refers to mandatory and optional standards. Optional commitments refer to specific regulations that aim, among others, for better management of fertilisers and reduced use of pesticides, reduction of drainage, management of wetlands, and water retention. There are no water-related selection criteria in place (not required by the EAFRD).

Measure 11 finances organic farming and therein has a positive effect on water management through reductions in fertilizer and pesticides applications. There are no eligibility or selection criteria (not required by the EAFRD) that target or prioritize areas where water bodies fail good ecological status, or any other water criteria. The selection criteria prioritize Natura 2000 areas.

Measure 12 finances Payments for Natura 2000 grasslands and forests. It is primarily linked to P4a but can indirectly support the objectives of P4b due to the requirements of reduced nutrient and pesticide applications. Overall, the link to improved water management is not strong.

Measure 13 finances less-favoured areas. While general description states that it will contribute to the objectives of the WFD through maintaining farming activity, there are no restrictions on fertilizer or pesticide applications. Thus, it is not clear how this measure will have a positive, even indirect impact on water issues.

Measure 15 finances forest-environment payments. The description states that the measures will contribute to improving water hydrology through supporting permanent forest cover and rehabilitation of forests, which should help reduce soil erosion. The selection criteria (not required by the EAFRD) prioritise Natura 2000 areas and there is no link to areas at risk related to water management. The measure does not describe how the interventions will contribute to water retention, as described in the strategy of P4b. Despite being programmed under P4b, the link to improving water management issues is not strong.

Measure 16 finances cooperation projects. It finances EIP groups, cooperation between businesses for tourism, cooperation to improve the supply chain, as well as cooperation projects at landscape scale to, among others, rehabilitate water systems to improve retention and improve water quality but details are not provided what these projects will fully entail. These are linked to work under the WFD and FD in the general description but not in the eligibility or selection criteria.

Indicators

The RDP uses the required CMEF indicators regarding the state of play in the water environment: context indicators 39 (water abstraction in agriculture), 40 (water quality) and 42 (soil erosion by water) are also listed.

Water-relevant target indicators are T10 (percentage of agricultural land under management contracts to improve water management), and T14 (percentage of irrigated land switching to more efficient irrigation system).

There is no specific mention of monitoring on water saving, morphological alterations or pesticide pollution. There is no mentioning of using WFD monitoring systems.

As not required, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD.

Conclusions

The Hungarian RDP provides information regarding the status of SWBs, does not mention the status of GWBs and provide general links between agriculture activities and pressures. The overall strategy of the RDP emphasizes competitiveness within the agriculture sector but also includes aspects of natural resource conservation.

The strategy for FA 3b mentions that flooding is an issue, but the measures focus on addressing crop losses and miss the opportunity to also address flood risk prevention.

With regard to the strategy for FA 4b, the emphasis is on water retention with some financing also for addressing water quality issues. The priority is mainly addressed through M4.4, M10, M11 and M16. Advice under M1 and M2 related to water is also foreseen. The measure on water retention under M4.4 seems to focus more on ensuring water supply in low-lying areas for future agriculture use as opposed to nature conservation. Under M4.4 and M10 the measures are targeted to water-sensitive areas, but it is not clear whether this refers to water bodies failing good ecological status or some other classification within Hungary. Therefore, the links to the WFD are not always clear.

With regard the strategy for FA 5a, M4 finances drainage activities, irrigation modernisation, new irrigation infrastructure and reservoirs. It is positive that the measure requires a 10% savings for sprinkler systems, going beyond the minimum requirements. Art. 46 is fully included in the eligibility conditions. However, Art. 4. (7,8,9) of the WFD has not been included. Although not required under the EAFRD, reference to Art. 4 (7) WFD under the eligibility criteria would help to clarify to local authorities the legal requirements in light of the on-going challenges many authorities are facing with proper application of Art. 4 (7) WFD.

Overall the targets for both FA4b (3.57% of arable land) and FA5a (5.75% of irrigation area) appear low considering the current status of water bodies in Hungary. This will mean that considerable action outside the RDP (i.e. through strengthened WFD basic measures (reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (measures funded by non-EU funds) should be included in RBMPs if the good status objective of the

WFD is to be achieved.

Given that the Programme did not include additional programme specific indicators, the indicators included in the programme do not enable to track how measures to address measures related to irrigation and its links to water savings and drainage and water retention measures and their links to morphological pressures.

Recommendations:

1. Include complete information on the status of water bodies in the SWOT, including groundwater bodies
2. Although not required under the EAFRD, it would be beneficial to include references to Art. 4 (7) WFD under the eligibility criteria to help to clarify to local authorities the legal requirements in light of the on-going challenges many authorities are facing with proper application of Art. 4 (7) WFD.
3. Under M4 and M10, the RDP should clarify what is meant by “water-sensitive areas” and whether this links back to the WFD or to other areas identified within the country.
4. Although not required, consider expanding both the context and target indicators to better reflect water management. The context indicators of nitrogen and phosphorus pollution do not cover morphological alterations. This missing aspect does not enable obtaining a full picture of the environment in the territory. Moreover, the target indicators do not enable to track the impact these measures have on improving the water environment. Especially with constraint budgets, it would be beneficial to have indicators in place that enable the authorities to track whether a measure’s implementation is having a positive effect on the water environment and is therefore worth financing. Here, linking also the monitoring programme to existing programmes under the WFD would be helpful and would not pose any additional administrative or financial burden on the district.

A22 Ireland

Ireland used to be split into eight RBDs, two of them international (shared with Northern Ireland), with all of them located within the RDP territory. They have been recently restructured, with five RBDs being merged to form a “national River Basin District”, and maintaining international districts separate from this national approach. The National Article 5 report (2005) shows that diffuse pollution from agriculture is the most important pressure on rivers and groundwater affecting non-achievement of WFD good status objectives. Abstraction is in contrast only a minor risk, mostly so for lakes. Morphological alterations (particularly channel drainage associated with rivers, impoundments on lakes and activities associated with ports in transitional and coastal waters) are a major risk for rivers, estuaries and coastal areas, but they are not linked to specific sectors. The 2015 Significant Water Management Issues public consultation document identifies flood protection and land drainage (as well as drinking water provision, hydropower and navigation and transport) as causes of “physical changes” (hydromorphology). Physical modifications affect nearly 40% of Irish rivers. Climate change is a significant threat for WFD in terms of impacts on water availability, flooding, pollution and soil erosion.

SWOT

In the RDP, no reference is made to WFD Art 5 reports (from 2008 or 2013) and the water-related information found in the SWOT makes only sparse mention of the WFD or its requirements. The evaluation of Ireland’s water quality uses EEA data (in terms of a few chemical parameters), as well as summary information from the Irish Environmental Agency summarising water body status. The SWOT highlights that “80% of around 1,500 water bodies have either high/good/moderate status” and “only 20% therefore are seen as either poor or bad”. This is not coherent with WFD classification since moderate status should be grouped with poor and bad status as requiring action to improve the status to good.

There is no clear information on the main water management issues or pressures and the extent of associated water quality problems. There is no information delivered on the importance of diffuse agricultural pollution for failing to achieve GES. Some information is provided on nitrates in surface water (24% of sites of moderate quality and 1% in poor quality) and ground water (15% in moderate quality). Phosphate pollution is not discussed, although the RBMPs identify it as a major issue. No mention is made of the Floods Directive; flooding is mentioned in relation to future conditions under climate change.

Under strengths, the RDP lists low levels of water abstraction for Irish meat and dairy sectors (both traditionally intensive water users): reliance on natural sources (rainfall) means low abstraction pressure overall on water bodies as a result of these sectors. There is a very high level of participation in agri-environment schemes under the RDP. The fact that Ireland’s water quality can overall be considered as “quite good” is also listed as a strength. Under weaknesses, the RDP mentions ongoing water quality issues in certain sensitive catchments and the need to address water quality in sensitive areas. Nitrate

levels are described as low, but not decreasing. It is expected that the number of farmers requiring derogations from the 170 kg/ha application of manure under the ND will increase (meaning more manure will be applied to land). A further weakness listed is scope for improvement in the governance and management of the river basin districts (RBDs). The future need for increased water conservation and efficient use in the future is yet to be fully appreciated by the farming community, and uptake under the Rainwater Harvesting Scheme under the 2007–2013 RDP was low. Opportunities include farmers investing in farm expansion, generating opportunities to encourage investment in improved water efficiency. Measures could be developed to improve fertiliser/manure efficiency to significantly reduce nitrogen fertiliser usage, thus contributing to protecting water quality. Farm nitrogen budgets to improve the use and reduce losses of nitrate and ammonia may be implemented. Opportunities that make an explicit link to the WFD are the proposed introduction of water charges and meters in 2014/2015, which could incentivise the efficient use of water. The RDP lists a general opportunity “to develop in-stream measures to alleviate flooding (this term is not clearly defined in the RDP), reduce soil erosion, improve aquatic quality and combat invasive species (for example riparian planting)”. The only water-related threat listed is that water availability in the longer term may become more limited in some parts of the country.

Needs

The RDP includes two dedicated water needs: j - Protection of high status waters, improvement of water quality and appropriate usage of fertiliser, and l - Better water usage in agriculture. Need k - Improved nutrient management planning and appropriate grazing levels amongst farmers, seems more geared towards reducing agricultural emissions (ammonia). No mention is made of the WFD or FD objectives.

In addition to the needs listed above, further needs linked to Focus Area 4B “Improving water management, including fertiliser and pesticide management” are: a - Effective Mechanism and Structure for Transferring and Sharing of Knowledge Amongst Farmers; b - targeted Training and/or Advisory Services with particular focus on Agri Environment and Animal Health; c - Targeted on Farm Investments; f - Targeted Investment Support to Young Farmers Entering into Agriculture; i - A well targeted and designed Agri Environment Scheme.

However, needs a, c, f make no mention of water, at the most mentioning “environmental actions”. Need e makes mention of investments in rainwater harvesting. Need j mentions water quality issues, need k relates water quality actions to results on soil erosion. Need l is focussed on increasing water use efficiency using rainwater harvesting.

Strategy

The general strategy of the RDP points specifically to the need to address environmental and biodiversity challenges, with the main aim of competitiveness of the country’s agriculture through building on its ‘green reputation’ internationally. The general strategy

however makes only indirect references to the objectives of the WFD, mentioning the “protection and maintenance of high status water areas”, but not the achievement of good status for all waters which should be the target to be aimed at for the “green” claim to be substantiated with EU relevant data. The general strategy makes no mention of FD objectives and the possibility for natural water retention measures to be supported in agricultural areas which could help address flood risk.

The emphasis on environmental topics in general can be seen through the share of budget for Priority 4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry” (about 71% of the overall budget), compared to 10% for Priority 2 “Enhancing farm viability and competitiveness of all types of agriculture” and Focus area 3a “Improving competitiveness of primary producers”.

Focus Area 4B is linked to M1, M4, M10, M11, M12 and M16. M10 will support riparian margins, high status water areas, protection of water courses, and low emission slurry spreading. M11 will contribute through crop rotation, use of organic fertiliser, improvement to soil organic matter, and no use of synthetic plant protection products or synthetic fertilisers. M04 will include investments into farm nutrient storage strands, rainwater harvesting, precision fertiliser and pesticide application. The strategy for 4b makes no direct mention of the WFD and no mention, direct or indirect, to the FD or its objectives. The target indicator for Focus Area 4B is 21% of total UAA under land management contracts for Focus Area 4B. The focus is on maintaining high status water bodies (see also description of Measure 10).

The strategy for Focus Area 3B is activated, but makes no mention of environmental issues; it is focused on animal health and welfare.

Focus Area 5A is not programmed.

Ex-ante Conditionalities

EAC 5.2 was assessed by the MS as fulfilled.

Measures

Focus Area 4B is linked to M1, M4, M10, M11 and M16.

Measure 1 finances knowledge transfer and information actions. The measure supports training for M10 by providing information on environmental benefits arising from the implementation of agri-environment measures and provides clarification on requirements at individual farm level. The measure includes no direct link to WFD or water management.

Measure 4: this measure finances investments in agriculture holdings. The following sub-measures are indirectly linked to water management (none however have explicit link with

Focus Area 4B):

- Sub-measure 4.1 - support for investments in agricultural holdings Targeted Agricultural Modernisation Schemes II (TAMS II) includes funding of nutrient storage facilities, water meters (for pig and poultry farms), as well as low emission spreading equipment and tillage equipment, and mentions the need to take account of requirements including those derived from the WFD.
- Sub-measure 4.4 - Non-Productive Investments (delivered via GLAS) finances non-productive investments programmed under Measure 10. Relevant to water management, the operation finances landscape features (e.g. planting new hedgerows, traditional orchards, laying hedgerows) and establishment of fences (integrated actions, with the establishment of fencing ensuring that the desired habitat/margin is created/maintained, e.g. riparian margins). Water equipment is also financed for the Burren area, specifically troughs, pumps, storage tanks and piping. This is used for fencing off sensitive water bodies to avoid pollution by cattle and instead pumping the water to nearby storage tanks and troughs. Under the description of the general conditions applied to more than one measure, the RDP states that Article 46 on investments “is not applicable because no irrigation measures are proposed in the draft RDP”. There is no mention of flood or flood risk in the measure description.

Measure 10: This measure finances agri-environment-climate measures and is linked to Focus Area 4B. Three operations are programmed: The Green Low Carbon Agri-Environment Scheme (GLAS), the Burren Programme, and the Beef Data and Genomics Programme (BDGP). Only the first two are linked to water issues.

Sub-measure 10.1 finances commitments under G.L.A.S. (Green Low-Carbon Agri-Environment Scheme) and GLAS+. This is the main Irish implementation of agri-environmental measures, and it ties in with a ‘green vision for Irish agriculture’, focused on greenhouse gas emissions and animal health. The sub-measure does not make reference to meeting WFD objectives, but only “aims to work within the framework for environmental sustainability” as set down by inter alia the WFD, the Groundwater Directive and the Nitrates Directive.

The sub-measure’s main element is Tier 1 (80-90% of funds). Tier 1a targets Priority Environmental Assets (vulnerable landscapes, species at risk, high-quality watercourses). The focus on high-quality watercourses occurs in the context of a strong reduction over the last decades in the number of high quality water areas in Ireland – the sub-measure would aim to stop this deterioration in status, rather than addressing the improvement of water bodies to GS (which should presumably then be delivered through WFD basic measures – to be seen in the 2nd RBMPs). Tier 1b identifies Priority Environmental Actions for intensive farmers (having a whole farm stocking rate exceeding 140kg Livestock Manure Nitrogen per hectare or more than 30 hectares of arable crops), targeting climate change mitigation and farmland birds. Although not focused on water, Tier 1b aims to reduce ammonia emissions and in the process reduces nitrate emissions. Tier 2a will focus on water quality through protection of predetermined vulnerable watercourses. The actions to be

implemented are compulsory mid-cycle review of Nutrient Management Planning or reactive review should the farming system intensify at any time, and one or more of the following measures: 1) Livestock farming: a) low-emission slurry spreading, b) wild bird cover; 2) Arable farm (>30 ha): a) minimum tillage, b) catch crops. Tier 3 includes actions for water quality and include potentially beneficial measures such as arable margins, catch crops, low-emission slurry spreading, planting hedgerows, minimum tillage, protection of watercourses from bovines, riparian margins.

M11: This measure finances organic farming and therein has a positive effect on water management through reductions in fertilizer and pesticides applications. The description of the measure links to Focus Area 4B. The principles for establishing selection criteria do not include a targeting of payments to areas with water bodies failing the objectives of the WFD.

Indicators

The RDP uses the required CMEF indicators to provide common context to the SWOT and existing issues. Information is provided on water abstraction in agriculture (indicator 39), nitrogen pollution (indicator 40 water quality) and water erosion (indicator 42 soil erosion by water).

Target indicators for Focus Area 4B include impact indicators T10 (% of agricultural land under management contracts improving water management (Focus Area 4B) and T11 (% of forestry land under management contracts to improve water management), as well as context indicators 18 (used agricultural area) and 29 (total forest area).

The RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD. For example, no additional context indicators report WFD monitoring data, the % or number of water bodies at Good Status, pesticide pollution or morphological alterations. There is no indicator on area of land under drainage.

The indicators currently used will not on their own allow for measuring progress on how the water related measures are contributing to the implementation of the WFD and achieving good ecological and chemical status. This will make it difficult to be able to evaluate the programme's success and what changes should be made in the future.

Conclusions

The Irish RDP has a strong environmental orientation and is geared towards the stated objectives. The logic is in general coherent. The resources invested in environmental actions are very significant (72% of the RDP budget under Priority 4).

From a water perspective, however, linkages with the WFD are limited. The SWOT does not adequately refer to the status of the waters and does not provide an analysis of the

pressures leading to failure to reach GES. The Needs and Strategy also describe only broadly and in generic terms the links with water.

Despite the significance of nutrient diffuse pollution from agricultural in Ireland (especially phosphorus), the RDP offers a limited range of measures to tackle nutrient emissions from livestock farming (focusing on nutrient management plan) and arable farming (focusing on minimum tillage and catch crops).

Whereas the measures listed above can reduce nutrient pressure on water bodies, they are not geographically targeted to address water bodies failing to achieve GES but to watercourse in high status; this appears to be a potential limitation for contributing to WFD implementation, though if the basic measures are ambitious this approach may deliver. The target area of land under water contracts (21% of the agricultural area) is a positive attempt at tackling water issues, but remains low in view of the scale of the impact of agricultural pressures on the non-achievement of WFD objectives. This will mean that relying on the RDP alone will not be sufficient and considerable action outside the RDP will be needed if the good ecological status objective of the WFD is to be achieved, through strengthened WFD basic measures (e.g. reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (i.e. measures funded by non-EU funds).

Water abstraction is not mentioned as a pressure, due to Irish livestock farming's reliance on rainfall. Although hydromorphology and flooding are significant issues in Ireland (e.g. agricultural drainage and flood protection), they are not addressed in the RDP's measures. The Plan does not include funding for natural water retention measures (NWRM), which can provide multiple benefits on hydro-morphology and flooding issues but also water quality.

Given that the Programme did not include additional programme specific indicators to adequately measure the results of the measures in terms of achieving good ecological and chemical status, it will be difficult to discern its contributions to WFD objectives at the end of the programming cycle and to inform future revisions.

Recommendations:

1. To incorporate information of the relevant RBMPs into its SWOT and Needs, in particular from the latest Article 5 assessments. Pressures from diffuse pollution especially phosphorus should be better quantified and linked to specific sectors. The RDP should consider hydro-morphological pressures and flood-protection measures.
2. To consider a larger range of more ambitious measures on farming for reducing diffuse pollution from livestock and arable farming, and to integrate measures to tackle hydro-morphological pressures from farming (especially land drainage), in particular through NWRM which can lead to achieving multiple benefits including

with diffuse pollution pressures.

To consider targeting RDP measures (in particular M04 and M10) to water bodies failing to achieve GS (as well as high status sites), and improve the monitoring framework to track progress towards WFD objectives and the reduction of agricultural pressures on the water environment, for example through indicators reporting the % or number of water bodies at Good Status, pesticide pollution or morphological alterations

A23 Italy – National

In Italy there are 8 RBD: Eastern Alps, Po, Northern Apennines, Serchio, Central Apennines, Southern Apennines, Sardinia and Sicily. The pressures from agriculture identified in all RBMPs are: climate change impacts, in particular droughts, abstractions for agriculture and water scarcity, with groundwater abstraction exceeding sustainable recharge rate and diffuse source pollution. 15.7% of GWBs are in poor quantitative status and for 31.7% the status is unknown. 14.6 % of SWB are in worse than good status and for 56.2% the status is unknown.

SWOT

Consistently with the RBMPs, the national RDP identifies climate change and the widespread use of irrigation in agriculture as significant pressures. Diffuse source pollution is not analysed in the SWOT because the national RDP only focuses on three priorities: risk management, investments in irrigation infrastructure and genetic improvement of livestock and animal biodiversity. Diffuse pollution is instead addressed through the regional RDPs.

The reason why irrigation investments are programmed at the national level, in complementarity with the regional level, is that some irrigation schemes of significant size are located at interregional level, and some reservoirs and some distribution networks serve different regions.

The SWOT specifies that climate change is shown by increase in average temperatures, less water availability (reduction in summer precipitation in particular in southern Italy), increase in extreme events (2007-2012 increase in pluvial flooding) and increase in droughts.

The SWOT provides specific contextual information with regard to water use for each of the eight RBD. While the WFD's objectives are well explained and form part of the intervention logic of the programme (i.e. improve efficiency, increase water availability by reducing abstractions and avoiding leakages), the SWOT does not use the WFD terminology and does not provide average data with regard to the quantitative status of water bodies.

The strengths identified include: the significant environmental role played by irrigation in areas with good water availability, thanks to the presence of large aqueducts networks that, besides distributing water, also ensure the ecological function for groundwater recharge; widespread use of more efficient irrigation systems, hydrogeological functions played by irrigation works and the widespread practices for collective management of irrigation that have ensured a better rationalisation of water resources and an effective response to the climatic-environmental crisis.

The weaknesses related to the use of water for irrigation are: excessive exploitation of deep groundwater resources, inefficient responses to climate trends in areas served by private irrigation networks, excessive pumping leading to falling groundwater levels, in particular in coastal areas, where salinization occurs, obsolete distribution and supply networks, inefficient irrigation systems in a few parts of the country, low use of irrigation infrastructure sometimes due the fact that the infrastructure is not functioning because it is incomplete and low reuse of treated urban wastewater.

Opportunities identified include: economic incentive to invest in irrigation infrastructure, given that crops that rely on irrigation are considered more profitable; reduction in the exploitation of groundwater resources and the presence of a large number of artificial reservoirs that can be modernized and reactivated.

Finally, the threats mentioned relate to the increase in the frequency and scale of droughts and water scarcity phenomena as well as extreme events such as floods and the high water demand for irrigation purposes to respond to climate change impacts.

While flooding issues are briefly mentioned in association with the strategic objective for risk management, the objectives of the Flood Directive are not taken into account in the SWOT.

Needs

One water specific need was developed out of the SWOT: Need 8 - Restructuring, modernization and construction of new supply and distribution systems, and dams, linked to Focus area 5a on Increasing efficiency in water use by agriculture.

The description of the need refers to each RBD's specific needs in order to ensure the efficient use of water resources for agriculture. However, the WFD is mentioned as specific objective and it is not explained how the needs would contribute to it.

Po district: given agriculture heavily relies on irrigation, there is the need to integrate and adapt collection and distribution systems (storage systems, distribution networks in areas already irrigated and move away from open channels to covered channels) and the need to enhance the ecological function of channels (water removal, maintenance of aquatic ecosystems, groundwater recharge, recreational and landscape functions).

Eastern Alps: need to reduce areas with unstructured irrigation and convert the main supply pipelines to reduce water losses due to evaporation as well as need of a more efficient control of non-authorised withdrawals.

Northern Apennines: need to increase the use of collective irrigation.

Central Apennines: need to increase the use of collective irrigation schemes and their adaptation and need to modernise the supply systems (especially pressure pipes) and re-activate some artificial reservoirs (dams) constructed in the 50s and not currently in operation.

Southern Apennines: need to improve the efficiency and modernise artificial reservoirs which are the exclusive water source for irrigation as well as restructure the supply systems, mainly consisting of pressurized pipes.

Sicily: given the presence of large reservoirs and storage tanks for mixed use and / or irrigation, there is the need to enhance efficiency given the silting problems and the problems caused by an incomplete and obsolete network in some areas.

Sardinia: there is widespread presence of reservoirs that need improvement in efficiency given the silting problems as well as need for greater efficiency in the supply and distribution network.

In particular, the needs assessment emphasises that, considering central and southern part of the country heavily rely on water from dams, there is a great need to improve their efficiency in order to increase water availability of irrigation systems. The degree of utilisation of irrigation infrastructure is still quite low in the south of the country and in the islands (31-50%) compared to the national average (71%). The national programme will therefore prioritise interventions in dams of national significance that serve the largest irrigation schemes.

Other needs are linked to FA 3b on supporting farm risk prevention and management. However, the focus is on the need to improve the Italian approach toward risk management practices (mutuality, assurance schemes) and there is no specific reference to flooding risks.

Strategy

The strategy starts by explaining why a national RDP is necessary: to overcome regional fragmentation and support operations of national significance to be implemented on an interregional level. With regard to irrigation infrastructure, the national measure will finance interregional irrigation schemes to address the problems identified in the RBMPs to respond to the requirements of the WFD. The rationale behind this is that the RBD boundaries do not always coincide with the regional administrative territory.

While describing the RDP strategic objective 1 - Promote the availability and use of risk management tools in agriculture, the strategy refers to risks caused by natural phenomena and climate change but does not specifically refer to flooding issues. The ultimate goal linked to Focus area 3b is improving competitiveness of the agricultural

sector. The RDP prioritises intervention under Focus area 3b on risk management. This can be seen by the share of the budget allocated to this Focus area (EUR 1.590.800.000) against the share of the budget allocated to Focus area 5a (EUR 291.000.000). Under Focus area 3b, the target indicator T7: percentage of farms participating in risk management schemes is set at 5.55%.

Strategic objective 2 consists of improving the efficient use of water resources through irrigation infrastructure. It contributes to Focus area 5a on Increasing efficiency in water use by agriculture and responds to need 8 - Restructuring, modernization and construction of new supply and distribution systems, and dams. Under this Focus area, the restructuring, modernization and streamlining of existing facilities will be prioritised over the construction of new infrastructure.

The description of the general strategy goes on by explaining that investments are necessary for reservoirs, the main water supply pipes and the distribution network. Achieving the objectives for the WFD is clearly mentioned. With this strategic objective, the RDP aims to improve the efficiency of water use and in consequence increase of water availability by ultimately reducing water losses along the network and reducing water abstractions in general. In this way, it will contribute to the achievement of the good status of surface and groundwater bodies in line with the objectives of the WFD. In the short term, programmed investments will contribute to improving the water retention capacity of river bed (not explained how) and ensuring a minimum water flow, which is important for the survival of aquatic biological communities and the preservation of the water body and the ecological flow (necessary to achieve the values of the biological elements related to good ecological status). In the long term, they will help to reduce groundwater withdrawals and facilitate their natural recharge capacity.

The description of the strategy for Focus area 5a goes into more details with regard to the measures that will be implemented. Sub-measure 4.3 is programmed to address the needs to support irrigation infrastructure. More concretely, the strategy outlines the different types of interventions that will be selected, depending on the different RBDs' needs as identified in the needs assessment. The listed interventions are: conversion of main open water supply pipes to pressurised pipes or at least covered pipes that allow the reduction of water losses due to vaporisation and a more efficient control of non-authorized withdrawals; where the water supply network is already efficient, interventions will focus on restoration of the network systems to avoid water leakages or modernisation of the measuring systems (central Italy); in areas where irrigation infrastructure was recently constructed, interventions will be implemented to expand the collective irrigation network; in southern Italy and in the Islands, interventions will be prioritised to modernise and make artificial reservoirs for water storage more efficient, which also ensure the ecological and recreational functions, protection of migratory species and protection of biodiversity.

The strategy clearly states that priority will be given to restructuring existing infrastructure over new construction. Any increases in the net irrigated area will only be permitted if water savings are ensured in compliance with Art. 46 of the RDP regulation and in compliance with specific environmental constraints in the area.

The sub-measure is activated in synergy and complementarity with measures implemented at regional level that can operate both in relation to efficiency of individual irrigation systems and in relation to the development of agricultural practices with reduced environmental impact and the extension of less water demanding crops, resistant to water scarcity condition.

The target indicator for Focus area 5a T14: percentage of irrigated land switching to more efficient irrigation system is set at 18%. This seems quite low, considering that for 15.7% of GWBs the quantitative status is poor and for 31.7 the status is unknown and that the promotion of more efficient irrigation system is one of the key priority of the RDP.

Focus area 4b on Improving water management, including fertiliser and pesticide management is not activated.

Ex-ante Conditionality

EAC 5.2 was assessed by the MS as not fulfilled.

The RPD proposes a roadmap for fulfilment of ex-ante conditionality by the end of 2016 with the following action points:

- Implementation at regional level of national guidelines regarding water pricing
- In the case of water supply, expansion of the use of incentive prices based on volumes used.
- In the case of individual water extraction, expansion of use of incentive pricing based on volume used (requirement to be included in the river basin management plans by 12.22.2015).
- Implementation at regional level of national guidelines for the definition of environmental and resource costs related to water abstraction.
- Implementation of adequate mechanisms for the recovery of operating costs (including maintenance costs), environmental and resource costs (requirement to be included in the river basin management plans by 12.22.2015).

Measures

Measure 4 on “investments in agriculture holdings” is the only measure programmed under Focus area 5a. It is linked to Need 8 - Restructuring, modernization and construction of new supply and distribution systems, and dams. While recognising that the measure contributes to the environmental horizontal objective (because it promotes water savings through the reduction of losses, the accumulation of water and the diversification of sources of water supply), the objective of the WFD are not specifically mentioned in the general description of the measure and sub-measure.

The measure finances only collective interventions and not intervention at the agricultural holding level. Under sub-measure 4.3 – Investment in irrigation infrastructure, the following activities will be financed:

- improving the efficiency of reservoirs for water supply with capacity of more than 250,000 cubic meters and the related supply and distribution works;
- construction of collective reservoirs for collective management with capacity of more than 250,000 cubic meters and related works of supply and distribution;
- completion of existing irrigation schemes and new irrigation infrastructure;
- improvements in supply systems and distribution networks of existing irrigation systems (restoration of deteriorated pipelines deteriorated, installation of meters);
- adjustment of the distribution networks of existing irrigation systems;
- investments in irrigation systems with drainage and irrigation purposes, which may include hydraulic works in the territories controlled by the water boards;
- investments for the production of small hydroelectric plants used for lifting the water for irrigation;
- investments in remote monitoring systems; and
- investments for using treated wastewater for irrigation to replace withdrawals from surface or groundwater bodies.

The sub-measure also explains in more detail the complementarity between the national and regional programmes. Under the NRDP, investments in reservoirs under 250,000 cubic meters and / or related conveyance, distribution, monitoring and control systems are not allowed. Works on infrastructure in individual farms are also not allowed. These operations will be financed, where applicable, under the regional RDPs.

The specifications regarding the beneficiaries require that, in the case of irrigation modernisation, they need to have permits according to the situation previous to the investment. In the case of new irrigation, these areas and their corresponding water rights shall be recognised within the River Basin Management Plans.

Eligibility conditions do not mention Article 4.7 of the WFD, while they do mention Article 46 of the RDP. The requirements of Article 46 have been correctly transposed as part of the eligibility conditions and delineated in details.

In the case of investments that may have adverse effects on the environment and, in particular, on the status of water, the intervention is eligible only if an environmental impact assessment is undertaken in accordance with specific regulations for the type of investment; the assessment will take into account cumulative effect of irrigation investments.

The conditions specify different indications for water savings for different types of irrigation investments, with the minimum potential water savings set at 5%, and the legal and administrative specifications to explain how and by when effective water savings will be undertaken.

The principles with regards to the setting of selection criteria are identified in line with the SWOT and the emerging needs, taking into account any specific regional problem highlighted.

The basic principle is to give priority to investments that guarantee a greater increase in efficiency in the use of the resource, evaluated in terms of potential water savings made possible by the investment. Water savings realized in surface water bodies (rivers) located in protected areas or in groundwater or surface water bodies (lakes), where these are associated with surface and / or groundwater ecosystems will be evaluated positively. However, water bodies in worse than good status are not prioritised.

Prioritisation will be given also to areas that are historically unequipped with irrigation infrastructure but are at risk of droughts and therefore need to ensure the availability of so-called 'rescue' irrigation (autonomous and unplanned).

Priority is also given to projects that ensure higher water savings in the absence of an increase of the irrigated area.

Indicators

The RDP uses the required CMEF indicators to provide context to the SWOT and existing issues being faced by Italy: 20 (surface of irrigated land), 39 (water abstraction in agriculture), 40 (potential surplus of phosphorus and nitrogen on agricultural land, and the

% of surface water bodies failing GS with regard to nitrates concentration) and 42 (soil erosion rate by water and surface affected), although these two context indicators are not relevant for the programme since Focus area 4b is not activated.

In Chapter 11, indicators for Focus area 5a include impact indicator T14 (% of irrigated land switching to more efficient irrigation system) and context indicator 20 (surface of irrigated land). None of these are relevant for measuring the progress on water quality or water use. Furthermore, although not required by the EAFRD, the RDP does not use relevant context indicators (e.g. 39) to measure progress, which would be helpful for understanding how the investments leads to reducing water abstraction.

The RDP did not expand on the existing CMEF framework (not required under the EAFRD) to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD. There is no specific mention of monitoring potential or effective water savings. There is no mention of using the WFD monitoring systems.

Conclusions

The Italian national programme focuses on addressing water management issues related to irrigation in its territory. The SWOT clearly refers to the need to achieve the WFD objectives and takes into account the RBMPs. It explains what the main gaps in terms of efficient use of water resources in each RBD are. However, it does not use the WFD terminology and does not provide average data with regard to the quantitative status of water bodies.

The needs assessment is consistent with the SWOT analysis and specific to each RBD. This enables that different types of interventions are targeted to specific areas of the territory.

The strategy under Focus area 3b on supporting farm risk prevention and management focuses on the need to improve the Italian approach toward risk management practices (mutuality, assurance schemes). It refers to risks caused by natural phenomena and climate change but does not specifically refer to flooding issues.

Regarding water use, the RDP finances through M4.3 investments in irrigation infrastructures.

Different types of interventions will be targeted to different areas of the territory depending on the specific needs of each RBD. The requirements of Art. 46 have been well delineated and explained as part of the eligibility conditions, and specific selection criteria are established to ensure water savings and to prevent any potential negative impact on water bodies. While these sub-measures have specifically been designed keeping in mind the

WFD objectives, investments have not been targeted to water bodies in worse than good status due to quantitative reasons and therefore might not be effective in terms of ensuring water savings. Moreover, while it is stated several times throughout the RDP that priority is given to projects that ensure higher water savings (effective savings over potential are not mentioned) in the absence of an increase of the irrigated area, it is also stated that the programme will prioritise interventions in dams of national significance (especially in the south of the country and in the Islands) that serve the largest irrigation schemes. Reservoirs and new irrigation network which may impact negatively the hydromorphology of river can still be financed but only following an environmental impact assessment according to article 45 of Reg. (EU) 1305/2013. The programme has not included the need to take into account Art. 4 (7) of the WFD and any cumulative impacts of such investments in the eligibility criteria. Although not required under the EAFRD, as mentioned above, reference to Art. 4 (7) WFD under the eligibility criteria would help to clarify to local authorities the legal requirements in light of the on-going challenges many authorities are facing with proper application of Art. 4 (7) WFD. The EAC 5.2 was not yet fulfilled at the time when the programme was adopted.

The monitoring and the evaluation framework does not include relevant management indicators, especially those relevant for the implementation of the WFD (to measure water savings) and, as a consequence, it will be difficult to discern the programme contributions to WFD objectives and the end of the programming period and to inform future revisions.

Recommendations:

1. The SWOT should use the WFD terminology and provide average data with regard to the quantitative status of water bodies.
2. Considering the increasing hydrogeological instability and flooding risks on the Italian territory caused by climate change, the strategy under P3b could propose a common national approach to implement flood risk prevention measures in addition to measures related to risk management practices (mutuality, assurance schemes etc.).
3. M4 could be designed in a more ambitious way and specifically target water bodies in worse than good status due to quantitative reasons and ensuring the highest effective water savings.
4. Although not required, consider expanding both the context and target indicators to better reflect water management. To ensure water savings, context indicator 39 should be linked to the target indicator for Focus area 5a. Indicators should be developed to track the achievements in potential and effective savings required under Art. 46 for irrigation investments. Moreover, the target indicators do not enable to track the impact these measures have on improving the water environment. Especially with constraint budgets, it would be beneficial to have

indicators in place that enable the authorities to track whether a measure's implementation is having a positive effect on the water environment and is therefore worth financing. Here, linking also the monitoring programme to existing programmes under the WFD would be helpful and would not pose any additional administrative or financial burden on the district.

A24 Italy – Friuli Venezia Giulia

The Friuli Venezia Giulia region is almost entirely within Italy's Eastern Alps RBD. In addition, a very small part lies in the Danube IRBD. The respective RBMPs indicate diffuse pollution (mainly nutrients) and water abstractions from agricultural abstractions as significant pressures for both surface water bodies (SWBs) and groundwater bodies (GWBs). According to the 2012 RBMP assessment, of ITA (Eastern Alps), which includes territory beyond Friuli, 55.3% of GWBs are in good quantitative status, 1.6% are in poor status and for 43.1% the status is unknown.

SWOT	
<p>The SWOT general description includes a specific section that shortly describes how the region performs in terms of water use for irrigation, while detailed information regarding water management and the status of water bodies is provided in a separate document attached to the RDP. This document clearly refers to the RBD and the respective RBMP. It also explains that an update of the RBMP was ongoing at the time of drafting the RDP and would have been available by December 2015 as well as the Regional plan for the protection of waters. The objectives of the WFD are clearly mentioned several times throughout this document. The information presented is for the region specifically.</p> <p>The background document refers to the WFD Art. 5 assessment of 2013. The most recent available information regarding the chemical status of water bodies is dated 2010 and 2011 with the exception of information regarding the ecological status for which data from 2012 – 2013 are available.</p> <p>While the bodies of the mountain area are affected by hydro-morphological impacts mainly related to alterations of rivers for hydroelectric purposes, water bodies in the plain areas are affected by diffuse pollution by nitrates due to agricultural activities and point source pollution due to discharges from treatment plants out of operation, which is also a widespread problem in the region and influences the ecological status of water bodies.</p> <p>The background document indicates that only ½ (173 out of 336) of the WBs have achieved good or better status according to the WFD (36 high status and 137 good status) while 111 have sufficient status, 34 poor status and 19 bad status. It notes that nitrates pollution is an issue. The RDP notes that fertiliser use is high and livestock farming is important in the region but does not, however, directly identify in the SWOT analysis the types of agricultural activities that are the most important sources of this pollution and that would allow for the targeting of measures. This is done in sections 5 (description of the strategy) and 8 (description of the measures) of the RDP, where specific agri-environment-climate operations are targeted to specific agricultural sectors and contribute directly to FA 4B (water management – quality).</p>	

The region's agriculture is intensive. 92% of the UAA is affected by a high and medium intensity of inputs. The region is among the greatest users of fertilizers in Italy, although for the period 2001-2011 it has recorded the largest reduction in the use of fertilisers compared to the other Italian regions. The use of pesticides has also decreased in the same fashion and the region records average values compared to the other Italian regions.

The description explains that nitrates and pesticides from agriculture are a significant presence in groundwater bodies in the high plains and near the springs. However, the concentration of nitrates in groundwater overall only occasionally exceeds the limit of 50 mg/l (2% of water bodies), while it exceeds more often 25 mg/l (35% of surface water bodies and 54% of groundwater bodies, especially in aquifers near the surface). An increase has been observed in the concentration of nitrates in the deeper layers of nitrates vulnerable areas. Similar data regarding pesticides pollution are not available.

With regard to the full chemical status of groundwater (concerning parameters other than nitrate), monitoring data are not available for all identified bodies. According to data from 2010, of the 61 GWBs identified 11 water bodies are at risk, of which 9 WBs have been classified with poor chemical status and only 2 WBs with good status but at risk of deterioration. There is no further information regarding the remaining GWBs.

With regard to water use, data on the quantitative status of water bodies are not reported in the SWOT. The RDP highlights the importance of irrigation in the region due to the prevalence of arable crops (mainly maize) in the plains and woody crops (vines) in the hilly area. The RDP identifies water availability as a strength. However, the description also indicates inefficient irrigation systems as a pressure. The withdrawal of water in agriculture amounts to 110,352,000 m³. Water withdrawals for irrigation purposes amount to 18% of the total use, the majority of which feeds the collective irrigation network. The ratio of irrigated area and equipped area is 97%, which shows a high degree of utilization of the infrastructure for irrigation.

Climate change is indicated as a threat in the RDP. This includes the risk of landslides and floods. Rising demand of water for irrigation is a threat due to climate change.

With regard to morphological alterations, the SWOT description mentions a strong risk of soil compaction caused by tractors, soil processing and grazing. This may lead to increases in surface runoff and soil erosion phenomena. The estimated agricultural areas affected by moderate or severe erosion by water are 27,900 ha (13% of the total UAA), of which 26,200 are in arable land and permanent crops land and 1,700 ha in permanent grassland.

The Floods Directive is mentioned together with the respective hazards and damage maps and the flood risk management plans. However, the description does not summarise the information and it is not clear if there is a high risk of flooding in the region and whether there is a role for the RDP in mitigating flood risk. It is however explained that the region

finances with own resources erosion and flood risk measures. Moreover, the document clarifies that several measures of the RDP (M10, 12, 13, 4.4.1, 8.5 and 8.6) will tackle soil erosion risks in an indirect manner.

The strengths identified in the programme include good availability of water and the presence of well-coordinated irrigation consortia, but a weakness identified includes the inefficient management of water resources and non-innovative irrigation systems that lead to high water consumption, together with high input intensive agriculture and the deterioration of the status of mountain rivers. The introduction of new technologies to improve the efficiency in the use of irrigation water resource is mentioned as an opportunity, especially with regard to more localised irrigation systems and system for the reuse of water. Threats identified include the rising costs connected to the massive use of irrigation and increased water demand for irrigation due to climate change.

Needs

Two needs have been linked to Focus Area 4b (FA4b) on improving water management, including fertiliser and pesticide management: Need 14 - To encourage innovative agronomic methods of environmental value, including organic farming and sustainable forest management and Need 16 - To improve land management and organic carbon storage in soils also through input reduction, which is also linked to Focus Area 4c (FA4c).

Need 14 emphasizes the role agriculture can play in protecting the environment and natural resources. However, the need descriptions are not clear in their link to the pressures identified in the SWOT. There is no explicit mention of the need to improve the management of water resources.

While Need 16 seems to be more focused on soil management rather than water management, it recognizes the key pressures mentioned in the SWOT such as intensive and high input agriculture, high water demand and identifies measures that could help tackling these pressures: prioritisation of rotations and forage crops, cover crop, better management of manure and the reduction of plant protection products. However, for both needs there is no explicit link to the need to meet the WFD's objectives.

Irrigation investments are planned under FA2a on improving the economic performance of all farms and facilitating farm restructuring and modernisation, which is linked to Need 06 - improve irrigation systems at agricultural holding level, promote water conservation and water use efficiency. The description of the need also refers to the bad status of water bodies together with the problems related to the inefficient use of water. The measure identified to address these needs is the modernisation of irrigation infrastructure which is proposed to be beneficial both in environmental terms and in terms of economic development of the single agricultural enterprises.

Two water relevant needs are linked to FA4c on Preventing soil erosion and improving soil management: Need 12 - To protect the mountain areas, forest ecosystems and areas with agri-climatic and environmental fragility, and Need 15 - To improve the management of natural resources and the infrastructure network of roads and agri-forestry-pastoral. These needs recognise the problem of an inadequate management of water resources and propose measures to address it.

Focus Area 3b (FA3b) on supporting farm risk prevention and management and 5a on increasing efficiency in water use by agriculture have not been activated.

Strategy

The general description identifies among the general objectives of the programme: competitiveness, environmental protection and tackling climate change and territorial development. In particular, it also explains that climate change affects agriculture and there is the need to adapt irrigation techniques and improve efficiency in water use in order to pursue the objectives of the WFD. It reiterates the water management problems identified in the SWOT, including flooding risk and lists the measures that have been included in the RDP to improve water management, especially within the agri-environment-climate measure. The RDP prioritises competitiveness, as can be seen from the fact that irrigation infrastructure is planned under FA2a as opposed to FA5a. The share of EAFRD budget (on the total EAFRD allocation to the RDP) dedicated to P2 is 34.5% compared to 29.8% dedicated to P4. However, when considering the additional national financing included in the RDP, these shares change into 32.9% for P2 and 35.4% for P4.

The strategy includes an overview table linking the selected measures to each focus area.

FA4b is linked to six measures: M01, M02, M04, M10, M1 and M16. The strategic objective of FA4b is to disseminate and support good agricultural and silvicultural practices to protect water quality and improve water management. The descriptive text, and the table mentioned above, explains that M10.1.2 - integrated management of arable, horticultural, orchards and vineyards land, M10.1.3 - permanent grassing of orchards and vineyards and M11 – organic farming are directly linked to this FA, while M1 and M2 are indirectly linked. There is no further explanation of the types of interventions that will be implemented through these measures, nor an explanation of how these measures will contribute to the implementation of the WFD and the RBMPs. The target indicator for FA4b is 5,31% of agricultural land to be under management contracts to improve water management. Given the diffuse pollution problems mentioned in the SWOT, this target appears low.

FA2a is linked to five measures: M1, M2, M4, M6 and M16. Two of the specific objectives for FA2a are related to water: increasing and supporting the efficiency of irrigation systems at agricultural holding level and facilitating water saving and promoting more sustainable irrigation practices. Only M4, and more precisely its sub-measure M4.1.2 – *improving the*

efficiency of water use in farms, is planned to achieve these specific objectives, while M1 and M2 will indirectly contribute to them.

Moreover, it is explained that FA5a is not activated and that the needs linked to this focus area and the objectives of the WFD are addressed through the national programme and indirectly through measures 1.1, 2.1, 4.1.2, 4.4.1, 10, 11, 12 and 16.5. The strategy for FA2a does not mention the need to support the implementation of the WFD and appears to emphasise the need to improve irrigation efficiency for competition purposes instead. There is no indicator to measure progress with regard to water savings.

FA3b on supporting farm risk prevention and management is also not activated.

Ex-ante Conditionalities

EAC 5.2 for IT has not been complied with. In section 5.2, it is stated that in the context of the national RDP, Friuli will provide evidence of fulfilment of EAC 5.2 in order to be able to participate in the national irrigation measure, to which EAC 5.2 applies.

Measures

FA4b is linked to six measures: M01, M02, M04, M10, M11 and M16. FA 2a is linked to five measures: M1, M2, M4, M6 and M16.

Measure 1: This measure finances knowledge transfer and information actions. There is an explicit link to the priorities on environmental and water issues. Under sub-measure 1.1, training activities on environmental thematic such as the efficient use of resources and climate change are financed. Water is included in the reference to natural resources but no further details are provided.

Measure 2: This measure finances advisory services, farm management and farm relief services. The link to FA4b is made explicit in the general description which also explains that advisory services must be linked to themes such as environmental sustainability, climate change adaptation and adoption of practices with less impact on the soil, air and water resources. WFD requirements, among others, must be the object of advisory services targeted to forest areas managers.

Measure 4 finances investments in physical assets. The general description of the measure refers to addressing Need 6, which is related to water; however, the description does not refer specifically to meeting the WFD's objectives. Although there is a table acknowledging an indirect link of sub-measures 4.1.1, 4.1.2 and 4.1.3 to FA 4b, the main priority for this measure is to contribute to FA2a and to improve competitiveness.

M4.1.1 – improvement of performance and global sustainability of farms has, among its objectives, the adoption of environmentally sustainable production processes and mitigation/adaptation of the production system to climate change. It is indirectly linked to FA4b. Planned interventions include: the improvements of agri-hydraulic systems aimed at reducing soil erosion and terracing, embankment and ditching works for the retention of surface water. In addition, the construction of ‘micro’ hydroelectric plants is also foreseen. While the eligibility conditions mention that if an intervention is likely to have negative effects on the environment it will be subject to an EIA, it does not make clear that any new technical investments must be subject to an Art. 4 (7) WFD assessment. It does however state that hydroelectric plants must comply with the WFD requirements. Selection criteria prioritise interventions that improve fertilisers and pesticides distribution techniques, encouraging more effective input; better management of nitrogen present in manure and better management of waste water treatment processes.

M4.1.2 – improving the efficiency of water use in farms is explicitly dedicated to water management. The sub-measure description reiterates the link to the pressures identified in the SWOT. It is directly linked to FA2a with the ultimate aim to improve the farms performance and global sustainability and indirectly linked to FA4b and to FA5a. It supports operations aimed at the realization, modernization and improvement of irrigation systems in agricultural holding, the reuse of wastewater for irrigation and the implementation of reservoirs to collect rainwater at agricultural holding level and the installation of metering and automotive systems for monitoring the use of water. Such investments may include the extension of irrigated area. The explanation refers to Article 11 of the WFD and explicitly states that only the type of operations identified in the RBMP can be selected under this sub-measure. All the requirements of Article 46 are correctly transposed, but eligibility conditions do no mention considering the need for a WFD Article 4.7 assessment to determine if the operation (e.g. expanding the irrigated area) would cause a deterioration in water body status. Selection criteria prioritise interventions that best respond to the need for an effective use of resources in terms of environmental sustainability and climate change by ensuring water savings, but do not refer to water bodies in less than good status due to quantitative reasons as to be targeted which would be a good practice.

M4.4.1 – non-productive investments connected to conservation and protection of the environment is explicitly aimed at improving the quality of water, although it is only indirectly linked to FA4b. This will be achieved through the creation of riparian buffer zones with phytoremediation functions to remove nutrients (nitrogen and phosphorus) from agricultural soils and in groundwater. No water-specific eligibility conditions are established, while selection criteria prioritise most vulnerable areas (NVZ).

Measure 10 finances agri-environment-climate measures. Eight sub-measures comprise Measure 10, of which two are specifically programmed under FA4b. The RDP also states that M10 is indirectly linked to FA5a through interventions such as *conservative agriculture* (10.1.1) and *crop diversification to reduce environmental impact* (10.1.4), increase water retention capacity and reduce the presence of high water demand crops such as maize.

The objectives of this sub-measure include, among others: sustainable management of water resources, improvement of water quality, lower use of fertilisers. The agronomic practices encouraged under this measure (conservative management of the arable crops, integrated farming and crop rotation) intend to promote, at the regional level, a better management of natural resources (both water and soil). However, contribution to WFD objectives is not explicitly acknowledged which would be a good practice.

Although M10.1.1 on conservative agriculture is neither directly nor indirectly linked to FA4b, it is linked to water-relevant needs 14 and 16. The description states that it will contribute to the reduction of water erosion phenomena and increase infiltration of excess water into soil as well as to the improvement of water quality and increase of water savings. The reduction of percolation and runoff, together with the reduction in the use of pesticides and fertilizers, should lead to an improvement of the efficiency of water use and water quality. Selection criteria prioritise intervention in nitrate vulnerable areas (NVZ).

Measure 10.1.2 on *integrated management of arable, horticulture, orchards and vineyards* and Measure 10.1.3 on *permanent grazing of orchards and vineyards* are both directly linked to FA4b and water-relevant needs 14 and 16. They both aim at minimising the use of synthetic chemicals, pesticides and fertilisers (M10.1.2 only). Two additional measures – crop diversification and sustainable pasture management for climate protection – are indirectly linked to FA4b. Crop diversification focuses on adapting to climate change and reducing water demand, while pasture management aims to mitigate the risk of hydrogeological instability and soil erosion, maintaining an adequate level of soil organic substance and preserving water resources through the containment of productive inputs. All four measures are targeted to nitrate vulnerable zones (NVZs) in their selection criteria.

Measure 11 finances organic farming. This measure is directly linked to FA4b and to water-relevant needs 14 and 16. The introduction and maintenance of organic production techniques will reduce the levels of contamination and pollution of water and soil resulting from the input of agricultural origin. The description of the measure explicitly states that organic farming allows a greater qualitative and quantitative protection of surface and groundwater thanks to the reduction of environmental impact due to the use of fertilizers and synthetic chemical pesticides. Selection criteria (although not required for M11 by EAFRD Regulation) to prioritise catchments at risk or NVZs have not been included.

Measure 16: this measure relates to cooperation. This measure is linked to water-relevant need 14 and is cross-cutting all focus areas. Under sub-measure 16.1 *support for the establishment and operation of operational groups of the EIP for agricultural productivity and sustainability*, cooperation activities are promoted on subjects such as optimization of plant protection products; techniques for the conservation of soil fertility and water resources. Under sub-measure 16.5, collective agri-climate-environment approaches the sustainable management of water resources is promoted. Collective projects are promoted on subjects such as: construction of agri-ecological infrastructure to act on microclimate,

water and soil protection, integrated water and soil protection. Support to M4.1.2 – improving the efficiency of water use in farms is also mentioned. No water-specific eligibility conditions are established (although not required by EAFRD Regulation). The selection criteria take into account the findings of the SWOT analysis and the identified Needs but it is not clear whether waterbodies identified as at risk in the RBMP will be prioritised.

Indicators

The RDP uses the required CMEF indicators to provide context to the SWOT and existing issues being faced by Friuli Venezia Giulia: 20 (surface of irrigated land) and 39 (water abstraction in agriculture), and 42 (soil erosion rate by water and surface affected). Under indicator 40 on water quality, there are data on nitrates concentration in freshwater (both surface and groundwater). No indicator is available on phosphorus. There are no context indicators defined for pesticide pollution or hydromorphological alterations (e.g. % of waterbodies with hydromorphological pressures). Although these are not required by EAFRD Regulation, it would be beneficial to have them in order to have a full picture of water issues in the region.

In Chapter 11, indicators for FA4b include T10 (% of agricultural land under management contracts to improve water management) and context indicator 18 (used agricultural area). Context indicator 40 is not used to measure progress improvement of water quality. Although these are not required by EAFRD Regulation, it would be beneficial to have them in order to have a full picture of water quality issues in the region.

Impact indicator T14 (% of irrigated land switching to more efficient irrigation system) is not included because FA5a is not activated. However, there is no impact indicator under FA2a to measure the performance of irrigation investments programmed under M4 as well as to measure water savings. Context indicators 39 is not used to measure progress on water use. Although this is not required by EAFRD Regulation, it would be beneficial to have it in order to have a full picture of water quantity issues in the region.

As not required, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD. There is no specific mention of monitoring on potential or effective water savings, hydromorphological alterations or fertilisers and pesticide pollution. Although not required by EAFRD Regulation, it would be beneficial to use the WFD monitoring systems to measure progress on water issues.

Conclusions

The pressures identified in the SWOT are consistent with those identified in the RBMP. The background document to the SWOT provides information as regards the ecological and chemical status of water bodies and it seems that the most recent data from the WFD Art. 5

assessment regarding the ecological status of water bodies have been used. Data on the quantitative status of water bodies, however, are not reported which is a significant omission especially as it is possible to extend the irrigated area. Although this is not required by Art. 46, it would be a good practice in order to have a full picture of water quantity issues in the regions and related needs. The SWOT does not directly identify the types of agricultural activities that are sources of the pollution problems, although this is delineated in section 5 (description of the strategy) and section 8 (description of the measures) Data on pesticides pollution are also not available. It is not clear if flooding is an issue in the region.

As regards the strategy for FA4b, diffuse pollution is directly addressed through M10.1.2 and M10.1.3 and M11. It is positive that all M10 measures are targeted to NVZs. The share of the budget allocated to these measures is 12% of the total RDP budget. The target indicator for FA4b states that only 5.31% of agricultural land under management contracts to improve water management. No other indicators are in place to measure the reduction of fertilisers and pesticides use, which, although not required by EAFRD Regulation, would be a good practice. Therefore, the RDP contribution toward addressing agriculture pressures to reach the WFD objectives could only be considered as minor. This will mean that considerable action outside the RDP (i.e. through strengthened WFD basic measures (reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (measures funded by non-EU funds) should be included in RBMPs if the Good Status objective of the WFD is to be achieved.

Regarding water use, the programme identifies inefficiency of water use as a weakness, however, the programme does not activate FA5a on increasing efficiency in water use by agriculture. However, the RDP explicitly states that the Region will pursue this FA by participating in the national RD programme, which includes an irrigation measure under FA 5a. Investments in the improvement of irrigation infrastructure are programmed through M4.1.1 and M4.1.2 which are linked to FA2a, which does not require having fulfilled EAC 5.2 in order to receiving financing. In order to address inefficiency of water use as identified in the SWOT, irrigation investments should be planned under FA5a and not FA2a. While eligibility conditions and selection criteria for these measures take into account the implementation of the WFD's objectives, these investments, which may also include the extension of irrigated area, are programmed with the aim of improving competitiveness and not at tackling eventual abstraction pressures on water bodies caused by the inefficient irrigation systems. While the eligibility conditions mention that if an intervention is likely to have negative effects on the environment it will be subject to an EIA, it does not make clear that any new technical investments must be subject to an Art. 4 (7) WFD assessment. While not specifically required by the EAFRD, such a link to Art. 4 (7) WFD is important given the Commission assessment that many MS are not fully clear on the application of Art. 4 (7) and have called for guidance. A reference to Art. 4 (7) WFD under the eligibility criteria would help to clarify to local authorities the legal requirements. Moreover, no target

indicators are in place to measure water use and water savings.

Finally, the monitoring and evaluation framework does not enable the assessment of water related measures and how they contribute to addressing pressures facing water bodies. As a consequence, it will be difficult to discern the programme contributions to WFD objectives at the end of the programming period and to inform future revisions.

Recommendations:

5. As stated under Art. 46 which is correctly referenced in the RDP, it is important to ensure waterbody status is known for all WBs before any extension of irrigation is considered. It is suggested to liaise with Water colleagues to get the most current information on waterbody status for all WBs to make sure that quantitative status is known before any extension of irrigation is considered. Under M4, when describing art. 46 requirements, it should be clearly stated that, where the waterbody status is unknown, it is assumed that the status is less than good and therefore 50% of potential savings should go back to the aquifers.
6. A more explicit acknowledgement through the programme on how it contributes to the achievements of the WFD's objectives would help designing more water-relevant measures. While M 10.1.2 and 10.1.3 are well targeted to specific agricultural sectors, the RDP would benefit from better targeting other measures as well. Water-specific eligibility conditions and selection criteria (under M4.4) would enhance the effort in addressing pressures on water bodies even in measure not directly relevant to water management.
7. Increase the target of land under contract to improve water management to better address the magnitude of agriculture pressures on the water environment. Therein, it may be necessary to increase the budget for water-related measures and/or programme other water-relevant measures such as: manure management (modernisation of manure storage and handling facilities), optimising fertiliser use (control/limitation), cover crops or crops rotations and measures to control erosion and run-off (such as: low-no till agriculture, riparian margins, buffer strips, establishment of wetlands).
8. Consider activating FA5a to specifically address water inefficiency problems which are an issue in the region according to the SWOT. This would also entail having to comply with the EAC5.2 on water pricing, which would further drive efficiency.
9. Although not required by the EAFRD, consider expanding both the context and target indicators to better reflect EU water management objectives. The context indicators of nitrogen and phosphorus pollution do not cover two other important water management issues, namely pesticide pollution. Adding indicators for these missing aspects would enable obtaining a fuller picture of the pressures agriculture

is exerting on the environment in the territory and its evolution. The CMEF target indicators do not enable Member State authorities to track the impact the RDP measures have on improving water status. Especially with constraint budgets, it would be beneficial to have indicators in place that enable the authorities to track whether a measure's implementation is having a positive effect on the water status and is therefore worth financing. Here, linking also the monitoring programme to existing programmes under the WFD would be helpful and should not pose any additional administrative or financial burden on the district.

A25 Italy – Lazio

In Lazio there are three river basin districts: Northern Apennines, Central Apennines and Southern Apennines. The main agriculture pressures identified in the respective River Basin Management Plans (RBMPs) are: diffuse source pollution both from arable and livestock farming, water abstraction, high water demand and saline intrusion and hydromorphological alterations. Soil erosion and flooding issues were not specifically mentioned as pressure in the three RBMPs. According to the 2012 RBMP assessment, the quantitative status of groundwater bodies (GWBs) in Lazio varies greatly depending on the river basin district. In Northern Apennines, 70.4% of GWBs are in good status, 26.9% are in poor status and only 2.7% of GWBs have unknown status. In Central Apennines, 44.4% of GWBs are in good status, 15% are in poor status and 40.6% of GWBs have unknown status. In Southern Apennines, 22.3% of GWBs are in good status, 9.4% are in poor status and 68.3% have unknown status.

SWOT

The SWOT in the RDP provides up to date information on the status of water bodies using the WFD terminology and data from the most recent Art. 5 assessment. 60% of water bodies are in less than good ecological status. The situation is less critical for chemical status since 17% of water bodies are in less than good status. The status of about 4% of waterbodies falling in the catchment areas is unknown. Although the current situation (2013) of the water bodies proves problematic, there has been an improvement compared to 2007. The SWOT does not provide information regarding the quantitative status of water bodies.

With regard to the qualitative status of surface water, the situation is variable depending on the monitoring sites. Nitrogen concentration is the principal cause for bad qualitative status. With regard to the qualitative status of groundwater, the situation is critical, though in line with the national average: 29% 'poor' status due to nitrogen concentration. The SWOT also identifies the nitrogen vulnerable areas. The RDP does not, however, directly identify the types of agricultural activities that are sources of this pollution. Monitoring data on pesticides pollution indicates poor conditions but they are not quantifiable because the minimum effectiveness monitoring criteria of the analysis methods have not been met, highlighting some methodological issues in the water monitoring system of the region. With regard to chemical fertilisers, the trend over time shows a substantial stability of the nitrogen phosphorus and potassium inputs which remain of medium-high level, while the use of organic fertilisers has increased.

Soil erosion is also mentioned as a problem and the most vulnerable areas are identified, although the region appears to be less vulnerable compared to national average.

hydromorphological alterations of waterbodies arising from agriculture activities are not

included in the SWOT as being significant.

The pressure on waterbodies exercised by irrigation is not mentioned in the descriptive part of the SWOT but it is described in the Strengths, Weaknesses, Opportunities and Threats section as a weakness as well as flooding risks caused by climate change. However, there is no reference to the Floods Directive. All the descriptive pressures' information is clearly laid out in this section.

The strengths mentioned include: overall reduction in the use of pesticides, medium input of phytonutrients appropriate to the crop types; reduction of nitrogen surplus; reduction of the use of chemical fertilizers, in particular nitrogen fertilizers, thanks to the contraction in livestock numbers.

With regard to water use, the strengths explained that there is a positive trend towards more efficient irrigation systems: more than 80% of the regions irrigated area is managed with medium and high- efficiency methods (sprinkling or drip irrigation). The distribution network is also based on 62.4% of pressurized pipes. Moreover, it is stated that water is used for irrigation in low volumes.

The programme identified all the following pressures as weaknesses: poor quality of surface and groundwater bodies, reduced availability of data on pesticides pollution, and frequent use of medium-high toxicity pesticides, erosion rate above the threshold in hilly and mountainous areas. With regard to water use, the threats highlight a strong competition between agricultural use and residential / industrial use. The irrigated area showed a great decrease (-29%) in the last 20 years. Consequentially irrigation practices are concentrated in more limited areas, where it is practiced more intensively.

The programme recognizes as an opportunity the water filtration potential of forested areas with respect to pollutants, as well as the possibility to optimise the use of nutrient thanks to the implementation of high efficiency irrigation systems.

The threats identified include climate change impacts, for instance reduced rainfall may increase the concentrations of pollutants in groundwater and surface water. Higher temperatures may increase water demand and cause problems for many field crops more vulnerable to water stress, such as wheat and corn, as well as for horticultural and some fruit tree crops. Finally, the water stress may also aggravate pesticides problems.

Needs

Four specific water needs were developed out of the SWOT: Need 22 - Consolidate and expand systems and production methods for greater environmental sustainability and Need 28 - Management and maintenance of the water and drainage networks linked to FA4b "Improving water management, including fertiliser and pesticide management" and Need 30

- Rationalize the use of water resources and promote storage at agricultural holding and collective level and Need 31 - Promote high efficiency irrigation systems linked to FA5a „Increasing efficiency in water use by agriculture”.

Need 22 addresses the pressures on water quality caused by nutrients and pesticides' input, among others environmental problems. Need 28 specifically targets morphological pressures such as hydrogeological instability, landslide and flooding risks.

Need 30 and 31 address the problems caused by climate change, both in terms of increased hydrogeological risks during winter and increased water demand during summer as well as the problem caused by competition for the use of water.

All pressures identified in the SWOT have been turned into need. Pressures from hydromorphology alterations, which have not been identified in the SWOT but are recognised as a pressure in the RBMPs, have not been included. The needs descriptions are clear in their link to the pressures and the types of measures needed to address the needs, although the measures are not yet formulated in a concrete manner. Moreover, the link to the WFD's objectives is not made clear in any of the needs' descriptions.

Other needs are relevant to water management in an indirect manner: Need 23 - Improve and promote sustainable forest multifunctional management and Need 29 - Facilitate the diffusion of agricultural practices to reduce erosion risks and increase soil organic matter. These are instead linked to FA4c.

Strategy

The general strategy of the RDP points specifically to the need to achieve the WFD' s objectives and implement the RBMPs. P4 comprises 26% of the overall budget. A higher budgetary priority goes to competitiveness and knowledge transfer with - 44% for P2 and P3a together. It must be noted, however, that the programmed interventions for knowledge transfer indirectly contribute also to the cross-cutting objectives related to the conservation of the environment and to climate change mitigation and adaptation.

FA3b “Supporting farm risk prevention and management”, which can be used to implement flood prevention measures, is programmed mainly through Measure 5. M1 and M2 also contribute to this focus area. The description of the focus area refers to prevention activities but does not specifically mention land management practises/uses that would contribute towards flood management.

FA4b is linked to five measures: M1, M2, M4, M10, M11. However, the descriptive text explains that Measure 11 on organic farming is directly linked to this focus area with the aim to protect the quality of water through better management of water resources, including the management of fertilizers and pesticides. The strategy also specifies that the

operations will be located primarily in critical areas identified in the RBMPs.

In addition to M11, the general description of the strategy explains that other measures will also indirectly contribute to the reduction of agricultural pressure on water bodies. These are: 10.1.4 - *Preservation of soil organic substance*, 10.1.3 - *Conversion of arable land to grassland* and 8.1.1 *Afforestation of agricultural and non-agricultural areas*. In addition, sub-measure 4.4.1 on *non-productive investments linked to the achievement of agri-environmental-climate* is planned and the strategy explains how this will indirectly contribute to address Need 28 - Management and maintenance of the water and drainage networks to address water quantity pressures identified in the SWOT.

The target indicator T10 for FA4b indicates that 15.06% of agricultural land will be contracted to improve water management. This will be done mainly through M11.

The region does not intend to activate FA5a until the provisions of the EAC 5.2 are fully implemented at national and regional level as well as the conditions established by Art. 46 of the EAFRD Regulation. It is also explained that the region will ensure respect of EAC 5.2 before benefiting of the measures related to irrigation under the National Programme. This is a welcomed indication.

Ex-ante Conditionality

EAC 5.2 was assessed by the MS as not fulfilled.

Although FA5a is not activated, the RPD proposes a roadmap for fulfilment of ex-ante conditionality by the end of 2016 with the following action points:

- Implementation at regional level of national guidelines regarding water pricing
- In the case of water supply, expansion of the use of incentive prices based on volumes used.
- In the case of individual water extraction, expansion of use of incentive pricing based on volume used (requirement to be included in the river basin management plans by 12.22.2015).
- Implementation at regional level of national guidelines for the definition of environmental and resource costs related to water abstraction. Implementation of adequate mechanisms for the recovery of operating costs (including maintenance costs), environmental and resource costs (requirement to be included in the river basin management plans by 12.22.2015).

Measures

FA3b is linked to 3 measures: M1, M2 and M5, while FA4b is linked to 6 measures: M1, M2, M4, M7, M10 and M11.

Measure 1: This measure finances knowledge transfer and information actions. The general description of the measure clearly indicates that knowledge transfer and information actions are instrumental for the purpose of tackle challenges related to climate change and adapt to them and to provide farmers and other operators in rural areas with the necessary tools in terms of knowledge for an efficient management and use of natural resources. However, it does not explicitly mention water resources.

Measure 2: This measure finances advisory services, farm management and farm relief services. It is linked to FA 4b. The sub-measures description state that advisory services must be on specific subjects, among which the implementation of article 11 of the WFD as well as Article 55 of the Plant Protection Product Regulation are mentioned as well as issues relating to climate change mitigation and adaptation, biodiversity and water protection.

Measure 4 finances investments in physical assets. Under this measure, only sub-measure 4.4.1 - *Creation, restoration and rehabilitation of small natural areas for biodiversity, of agricultural facilities and works of natural value* is explicitly linked to water-relevant Need 28, although the description does not consider how this can contribute to the achievement of the WFD's objectives. The planned investments include, among others, the installation and restoration of hedges, tree rows, bushes, thickets; rehabilitation of wetlands also along the river banks and in the agricultural areas; and the restoration of banks protection of minor water courses. One of the eligibility conditions clearly requires that the proposed intervention must be consistent with the objectives of the focus area and with the needs the sub-measure is linked to, including Need 28. Moreover, it is established that in case intervention may have adverse effects on the environment, an environmental impact assessment must be carried out. There are no water-specific selection criteria included.

Measure 5 on restoring agricultural production potential damaged by natural disasters and catastrophic events and introduction of appropriate prevention actions is linked to FA3b. While it addresses climate change impacts, floods, landslides hydrogeological risks, the general description of the measure does not specifically refer to the WFD and the FD's objectives. Under sub-measure 5.1 on *Support for investments in preventive actions aimed at reducing the consequences of natural disasters*, water relevant operations are programmed such as the reshaping and sizing of river hydraulic sections in order to facilitate the water flow. The ultimate objective of this measure, however, is to protect the agricultural production and potentially runs contrary to the objective of the WFD to restore water bodies to good morphological status and to not cause a deterioration in status. However, while it is not clear if these types of interventions include hard measures, the

description specifies that the interventions will be implemented, where possible and affordable, through the use of environmentally friendly natural engineering techniques, which promote optimal re-naturalization of the subject area, mitigating the impact and increasing the conservation of biodiversity. Moreover, the eligibility conditions establish reconstruction of land drainage channels can be financed only after demonstrating compliance to Article 4, paragraphs 7, 8 and 9 of the WFD. Moreover, the actions planned must conform to the flood risk management plans. Selection criteria include hazard and hydrogeological risk criteria in relation to the agricultural potential.

Measure 7 finances basic services and village renewal in rural areas. While the general description does not refer to water management nor the achievement of the WFD's objectives, and the measure is not linked to water-specific needs, its sub-measure 7.6.1 *studies and investments aims at protecting the environment and cultural heritage and the conservation of biodiversity* finances water-relevant activities such as: restoration of the water bodies, river and lake banks, ponds, streams, fountains, springs, etc. through natural engineering techniques with the purpose of maintaining or restoring the ecological continuity of the natural environment and enable a responsible use of natural resources. The eligibility conditions and the selection criteria, however, do not refer to water management. Sub-measure 7.1.1 *Drafting and updating plans for Natura 2000 areas*, proposes a water-relevant selection criteria that prioritise interventions that contribute to the containment and reduction of pollution generated on water courses and that are targeted to achieving the WFD's objectives.

Measure 8 on Investments in forest area development and improvement of the viability of forests. While this measure is not programmed under FA4b, its sub-measure 8.1.1 *Afforestation of agricultural and non-agricultural areas* includes a selection criterion which prioritises critical agricultural areas as identified in the RBMPs.

Measure 10 on agri-environmental-climate is linked to water-relevant need 22 and 29, among other needs. While the general description does not explicitly refer to meeting the WFD objectives, it does include water management issues. The measure indirectly contributes to FA4b in that it encourages extensive agricultural production methods with the aim to protect the environment, and its natural resources, soil, water and biodiversity included.

The general description explicitly states that operations under sub-measure 10.1.3 - *Conversion of arable land into grassland, meadows and pasture* will contribute to the protection of the qualitative status of water bodies, in particular with regard to nitrogen concentration. This objective will be achieved through the complete elimination of use of synthetic chemical fertilizers, herbicides and plant protection products on the surface under commitment. While there are no water specific eligibility conditions (not required by the EAFRD Regulation), the principles for the setting of selection criteria (not required by the EAFRD Regulation) for M10.1.3 prioritise environmentally sensitive areas including NVZs

and critical areas for agriculture identified in the RBMPs.

The other sub-measures 10.1.1 – *grassing of arboreal plants*, 10.1.4 - *Conservation of soil organic matter* and 10.1.5 – *conservative agriculture* also target NVZs in their principles for the setting of selection criteria. In particular, sub-measure 10.1.4 also targets critical areas identified in the RBMPs in selection criteria.

Measure 11 finances organic farming. It is the only measure directly linked to FA4b. The description links it to Need 22 and Need 29, but does not explicitly mention the WFD's objectives. The measure description emphasises that organic farming practices help to improve the quality of water. For both sub-measures on conversion (M11.1) and maintenance (M11.2) there are no water specific eligibility conditions (not required by the EAFRD Regulation), while the selection criteria prioritise environmentally sensitive areas including nitrate vulnerable zones (NVZs) and critical areas for agriculture identified in the RBMPs.

Indicators

The RDP uses the required CMEF indicators to provide context to the SWOT and existing issues being faced by Lazio: 20 (surface of irrigated land), 39 (water abstraction in agriculture), 40 (nitrate, phosphorus and nitrogen, including the % of water bodies failing GS) and 42 (soil erosion rate by water and surface affected). In addition, although not required by the EAFRD Regulation, there are context indicators defined for pesticide pollution (% of water samples exceeding the quality limits for drinking water, both for SWBs and GWBs).

In Chapter 11, indicators for FA4b only include T10 (% of agricultural land under management contracts to improve water management) and context indicator 18 (used agricultural area). None of these are relevant for measuring the progress on water quality or water use. Furthermore, the RDP does not use relevant context indicators (e.g. 40 and the additional pesticide pollution indicator) to measure progress. Although these are not required by EAFRD Regulation, it would be beneficial to have them in order to have a full picture of water quality issues in the region.

With the exception of an indicator on pesticide pollution – and as not required - the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD. There is no specific mention of monitoring on hydromorphological alterations (% of water bodies subject to hydromorphological alterations) or pesticide pollution. Although not required by EAFRD Regulation, it would be beneficial to use the WFD monitoring systems to measure progress on water issues.

Conclusions

The Lazio region programme takes an overall logical approach to addressing water management issues in its territory. There are clear explanations of the main pressures coming from agriculture and the SWOT provides detailed information as regards to the ecological, chemical and quantitative status of water bodies. The SWOT, however, does not directly identify the types of agricultural activities that are sources of diffuse pollution. It is not clear if livestock farming contributes to diffuse or point source pollution.

Data from the WFD Art. 5 assessment are used. Some methodological criticalities in the water monitoring system of the region need to be overcome. Monitoring data on pesticides pollution are not quantifiable because the minimum effectiveness monitoring criteria of the analysis methods have not been met, highlighting some methodological issues in the water monitoring system of the region.

The needs defined reflect well the pressures identified, and the strategy developed for FA4b clearly indicates which sub-measures will directly or indirectly contribute to the WFD. However, the region did not activate FA5a and EAC is not yet fulfilled. Pressures related to water abstraction and high water demand are therefore not covered, while they could have been addressed with other measures (e.g. shift towards lower water demand crops). The region will ensure respect of EAC 5.2 before benefiting of the measures related to irrigation under the National Programme.

As regards FA4b, the RDP directly tackles pesticides and nutrient pollution through M11 exclusively, while M10.1.3 and M4.4 are only indirectly linked to water management. In addition, other measures programmed are water relevant despite not being directly (or indirectly) linked to FA4b in the strategy description. These are: M8, M2 and M7. M7 includes natural retention measures and other interventions that are targeted through specific principles for the setting of selection criteria related to the fulfilment of the WFD objectives. M8, which is not programmed under FA4b, links afforestation interventions to WFD areas but overall it is unclear what pressure it is addressing. M2 is well designed as it finances advisory services on water management. Overall, it is also positive that most of the water relevant measures have been targeted to prioritised areas, often specifically critical areas identified in the RBMP.

The target indicator T10 for FA4b indicates that 15.06% of agricultural land will be contracted to improve water management. This will be done mainly through M11 (and only indirectly through M10.1.3, the budget of which is only 1% of the total RDP). It is positive that the RDP strongly emphasizes the use of organic farming, but given the pressures from nutrient pollution, additional action outside the RDP (i.e. through strengthened WFD basic measures (reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (measures funded by non-EU funds) should be included in RBMPs if the good status objective of the

WFD is to be achieved. Regarding hydromorphological alterations, despite not being included in the SWOT or the Needs section, M5 addresses soil erosion, hydrogeological instability risks identified in the SWOT. The description specifies that the interventions will be implemented, where possible and affordable, through the use of environmentally friendly natural engineering techniques, which promote optimal re-naturalization of the subject area, mitigating the impact and increasing the conservation of biodiversity. In addition, the eligibility conditions clearly foresee that such interventions have to comply with the requirements of the WFD.

With the exception of an indicator on pesticide pollution, the RDP did not expand on the existing CMEF framework. Although not required by the EAFRD Regulation, the monitoring and the evaluation framework does not account for relevant management indicators, especially those relevant for the implementation of the WFD and the FD and, as a consequence, it will be difficult to discern the programme contributions to WFD objectives at the end of the programming period and to inform future revisions.

Recommendations:

1. Strengthen the description of FA4b by more concretely linking measures to aspects of improving water management. The RDP should explicitly acknowledge that, in addition to M11, also M10.1.3 *conversion of arable land into grassland*, M10.1.1 *grassing of arboreal plants*, M10.1.4 *conservation of soil organic matter* and M10.1.5 *conservative agriculture* and M4.4.1 *Creation, restoration and rehabilitation of small natural areas for biodiversity, of agricultural facilities and works of natural value* can play a critical role in addressing the region's water pollution problems. Consequentially there is potential to increase the target of land under contract to improve water management to better address the magnitude of agricultural pressure on the water environment.
2. Improve the monitoring and evaluation framework to better assess the improvements coming from the implementation of water-related measures. The current framework does not enable tracking progress in terms of achieving good status. Especially with constraint budgets, it would be beneficial to have indicators in place that enable the authorities to track whether a measure's implementation is having a positive effect on the water status and is therefore worth financing. Here, linking also the monitoring programme to existing programmes under the WFD would be helpful and should not pose any additional administrative or financial burden on the district.
3. There is potential to programme and prioritise NWRM under M10 and M4.4 in order to achieve multiple benefits including hydrogeological risk reduction, water quality improvement and groundwater recharge.

A26 Italy – Liguria

The region is divided into two river basin districts: Northern Apennines and River Po (which only marginally touches the region). The relevant RBMPs identify the following pressures linked to agriculture: water abstraction from agriculture (a significant pressure for 21.5% of SWB), diffuse source pollution (nitrogen, phosphorus, and pesticides pollution - significant pressure for over 47% of surface water bodies and significant pressure for over 23% of groundwater bodies). No information was found on hydromorphological modifications due to agriculture. For example, while weirs are considered as a significant pressure for 2.22% of SWBs, no information was found to indicate how many are established for agricultural purposes.

SWOT
<p>The SWOT in the RDP provides detailed information on the status of water bodies and water quality using WFD terminology and data from the 2009-2013 period; data from the 2014 monitoring period are not available. The information presented is for the region specifically.</p> <p>90% of SWB are considered in 'good' chemical status. 70% of SWBs are considered in good ecological status, 24% in moderate status and 6% in bad status. Approximately 60% of GWBs are in 'good' chemical status, and 65% of water bodies are in 'good' quantitative status.</p> <p>The RDP reports that the use of pesticides has seen a substantial decline in recent years (especially since 2009), however mainly due to economic slowdown rather than environmental concerns. The RDP confirms the absence of eutrophication in rivers related to agricultural pressure. With the exception of the Plain of Albenga, the number of fertilisers used in agriculture is sufficiently low to avoid any concerns about water pollution.</p> <p>With the exception of the Plain of Albenga, the SWOT estimates that currently the level of fertilisers used in agriculture, for the most part, does not raise concerns for the pollution of groundwater, no specific information is provided for surface water bodies. These results contradict the RBMP for Northern Apennines, where diffuse pollution is identified as an important pressure for over 47% of surface water bodies and significant pressure for over 23% of groundwater bodies.</p> <p>Although specific data are missing in the general description of the programming area, the SWOT indicates that the percentage of water used for agricultural purposes, both from SWB and GWB, is estimated below 10%. This would appear to contradict the RBMPs, which state that agricultural abstractions are significant on 21% of SWB.</p> <p>The SWOT emphasises that crop sustainability is achieved through highly efficient water</p>

irrigation systems. Water demand is mostly linked to floriculture and a few companies producing high quality olive oil and wine. Among all crops, flower production is identified as having a major environmental impact in terms of groundwater overexploitation.

In the Plain of Albenga, where this type of production is more concentrated, the exploitation of groundwater for irrigation purposes leads to higher risk of nitrate pollution and saline intrusion in groundwater.

The region has a very extensive forest land, with 90% of forest subject to hydro-geological constraints. The analysis estimates that roughly 9.5% of the territory is affected by landslides. Notwithstanding the significant risk of flooding and landslides in the region, there is no mention of the flood directive in the SWOT.

The SWOT analysis identifies as strengths the relatively good quality of SWB and GWB and low vulnerability to nitrates from agricultural sources alongside the extensive examples of water efficient solutions adopted at the enterprise level. The programme identifies as weaknesses poor quality and availability of water resources in certain areas, which implies a high proportion of farms practicing irrigation with groundwater sources. The erosion effects related to fire sensitive areas also has a negative impact on water pollution.

The SWOT analysis on strengths contradicts the information found in the RBMPs, which states that nitrates pollution is a significant pressure for almost ½ of the WBs.

Needs

The RDP identifies one water-specific need linked to FA4b “Improving water management, including fertiliser and pesticide management”: Need 11 - Improvement and rationalisation of agricultural infrastructure and collective irrigation systems.

Need 11 addresses the issue of lack of proper infrastructure in a territory mostly covered by forest to support the mechanisation of agricultural activities (and, therefore, the reduction of costs related to agricultural activities). The need specifically mentions the importance to support the implementation and improvement of collective infrastructures to support agriculture and forestry, including the set-up of irrigation systems at the agricultural holding level and increased storage capacity of water resources.

Only Need 31 – Risk prevention is related to FA3b “Supporting farm risk prevention and management”, without any specific link to water-related issues.

To be noted that FA5a “Increasing efficiency in water use by agriculture” is not linked to any need.

Given the situation of Liguria regarding the high level hydrogeological risks, water-related

issues are also addressed through FA4c “Preventing soil erosion and improving soil management”, which is linked to Need 14 - Management and maintenance of the drainage network and drainage networks of rainwater to reduce landslide risk and management of watercourses. This need addresses the issue of erosion and rapid soil degradation. Interventions to address this need are focused on hydraulic hydro-geological works on river beds and slopes functions.

Strategy

The general strategy points specifically to the needs to address environmental challenges, in particular hydro-geological instability and soil erosion. P4 comprises 33% of the overall budget. However, the programme prioritises through budgetary share competitiveness and knowledge transfer with 42% of the overall budget linked to P2 and P3a.

The general strategy does not specifically refer to the WFD and the FD’s objectives. However, while there is no reference to the need to improve water quality status, there is clear reference to the need to tackle soil erosion and to reduce water abstraction as well as reference to the need to prevent floods (as a cause of hydrogeological instability).

While the different water-related needs are listed, these are not clearly linked to water-specific priorities. This is the case both for the general description and the focus area specific description.

FA3b is linked to three measures: M1, M2, and M5. The main objective is to prevent natural disasters and, if needed, restore agricultural production potential. This is expected to be achieved through investments in hydro-melioration activities to prevent hydrogeological instability and to mitigate the effects of climate change. The target indicator (T7) ‘percentage of farms participating in risk management’ is quantified at 0.69%.

FA4b is linked to six measures for agricultural land: M1, M2, M4, M10, M11, and M16 and three measures for forestry land: M1, M2, and M8. The main objective of strategy for FA4b is to improve the overall management of water resources, by incentivising the adoption of sustainable production techniques and reduce the consumption of fertilizers and pesticides. The measure promotes organic farming, agri-environment-climate payments like integrated production and interventions to reduce pollution loads resulting from the use of pesticides (but the measure description does not make any clear reference to the WFD). The target indicator (T10) ‘percentage of farmland subject to management contracts to help improve water management’ is quantified at 11.63%. This target is not negligible but could be more ambitious considering the diffuse pollution problem of the region as identified in the RBMPs.

FA5a has not been programmed. Investments in irrigation infrastructure are instead programmed under FA2a “on improving the economic performance of all farms and

facilitating farm restructuring and modernisation". This focus area is linked to need 11 on Improvement and rationalisation of agricultural infrastructure and collective irrigation systems and to measures: M1, M2, M4, M6, M8 and M16. The description of the strategy for this focus area, however, does not refer to water management issues nor to the need to support the implementation of the WFD. Although not required by the EAFRD Regulation, there is no indicator to measure progress with regard to water savings which would be a good practice.

Ex-ante Conditionalities

EAC 5.2 was assessed by the MS as not fulfilled. The RDP states that EAC 5.2 is not applicable to the region since it has not activated FA5A.

The RPD nonetheless proposes a roadmap for fulfilment of ex-ante conditionality by the end of 2016 with the following action points, based on the national action plan applicable to all Italian Regions:

- Adoption, at regional level of national guidelines regarding water pricing
- In the case of water supply, adoption of specific regulations for the expansion of the use of incentive prices based on volumes used.
- In the case of individual water extraction, adoption of specific regulations for the expansion of use of incentive pricing based on volume used.
- Adoption at regional level of national guidelines for the definition of environmental and resource costs related to water abstraction.
- Implementation of adequate mechanisms for the recovery of operating costs (including maintenance costs), environmental and resource costs.

Measures

The measures that are linked to water issues under FA2a, 3b and 4b include: M01, M02, M4, M05, M08, M10, M11, M16. FA5a is also mentioned in relation to M04, although according to the strategy it was not activated.

Measure 1: this measure supports knowledge transfer and information actions to promote the competitiveness of the agricultural and forestry sector. It is divided into 3 sub-measures (M1.01, M1.02, M1.03) and directly linked to the water relevant priorities 3b and 4b. The measure will finance, among others, demonstration actions and inter-company exchanges which may include topics such as: soil and water resources management strategies and

reducing the use of pesticides and fertilizers (e.g. Nitrates); innovative production techniques for water efficiency and for the protection against pesticide pollution and hydrogeological prevention. Eligibility conditions and selection criteria do not make any clear links to achieving WFD status objectives.

Measure 2: this measure supports advisory services, farm management and farm relief services in order to improve the economic performance of agricultural and forestry operators while also promoting the implementation of measures to tackle climate change impacts. It is divided into 2 sub-measures (M2.01, M2.03) and directly linked to focus area 1a and indirectly also to 3b and 4b. The sub-measure description states that advisory services must be linked to specific needs with regard the protection of water and the implementation of Art.11 of the WFD as well as Art. 55 of the Plant Protection Product Regulation.

Measure 4: this measure supports investment in physical assets for the promotion of competitiveness in the agricultural and forestry sectors. The measure is not directly linked to priorities 3b, 4b and 5a. It must be noted that investments in irrigation infrastructure and facilities are foreseen under FA2a and not 5a, which according to the strategy is not activated. These are justified as contributing to the competitiveness of agricultural holdings. Notwithstanding, reference to FA5a is kept in the sub-measures description because they indirectly contribute to it. The measure responds to needs 11, and 13 identified in the SWOT analysis. M4 contributes to the priorities 2a through sub-measures 4.01 and 4.03. Explicit reference to water management issues are presented below:

- Sub-measure 4.1: support for investment in agricultural holdings, including investments in the construction of water and irrigation systems, and solutions to ensure water control and slopes stability. It is not specified what type of 'water and irrigation systems' are financed. The sub-measure is not directly linked to FA5a, only to FA2a. Eligibility conditions make clear link to irrigation and the water management plans approved for the relevant river basins. Article 46 has been fully transposed into the RDP. The sub-measure is not designed to contribute to the WFD; however, one selection criterion refers to water savings, although an indication of potential water savings targets is not specified.
- Sub-measure 4.02: support for investments in processing/marketing and/or development of agricultural products. The sub-measure is directly linked to FAP3a. Planned interventions include: investments related to improve water efficiency use and wastewater treatment and reuse at enterprise-level. The sub-measure is not designed to contribute to the WFD, however, the eligibility conditions n and selection criteria make reference to reduction of water consumption.
- Sub-measure 4.03: support for investments in infrastructure related to development, modernisation or adaptation of agriculture and forestry, including investments related to irrigation infrastructure. The sub-measure targets FAF2a

only, but provides indirect contribution to FA5A. The measure responds to needs 11. Interventions include the construction or uptake of infrastructures related to water management, including accumulation tanks, reservoirs, wells aimed at improving water efficiency and reducing water dispersion and the adaptation of infrastructure for irrigation and for accessibility to farm and forest land for productive purposes. Although not required by EAFRD Regulation, no reference to the need to conduct an article Art.4(7) WFD assessment is made with regards to these projects, to ensure they do not lead to deterioration in status. Article 46 is fully described in the eligibility conditions. Selection criteria only refer to improved environmental performance and not specifically to water management issues.

Measure 5: this measure supports restoring agricultural production potential damaged by natural disasters and catastrophic events and introduction of appropriate prevention actions to improve natural resources management in relation to climate change issues. It is divided into 2 sub-measures (M5.01, M5.02) and directly linked to FA3b and the cross-cutting objective 'climate change adaptation'. M5 addresses issues related to need 14 identified in the SWOT analysis. Explicit reference to water management issues are presented below:

- Sub-measure 5.1: support for investments aimed at preventing flood damage to agricultural infrastructures and landslide prevention. Interventions include the realisation and improvement of: embankments and channels, including floodgates to control water flow, for the protection of land against floods and the removal of the water; water pumping equipment for flood protection; hydraulic dams to reduce the transport of solid material; monitoring and warning systems (sensors and networks systems and tele or remote control, management software) aimed to activate protection systems such as dewatering, movable bulkheads etc. Although not required by EAFRD Regulation no reference to the need to conduct an Article.4(7) WFD assessment is made with regards to these projects to ensure they do not lead to deterioration in water status, which is cause for concern.
- Sub-measure 5.2: support for investments for the restoration of agricultural land and production potential damaged by natural disasters, adverse climatic events and catastrophic events, including irrigation systems. Eligibility conditions and selection criteria do not refer to water management issues.

Measure 8: this measure supports investments in forest area development and improvement of the viability of forests. The measure responds to need 11, 13 and 17. There is no explicit link to the WFD and water management issues. Sub-measure 8.3 proposes interventions to address hydrogeological instability such as interventions on minor hydrographic network, water control in mountain streams and re-naturalization of water courses. These interventions, where possible, are made with the techniques of bioengineering, which may include NWRM although it is not specified. Sub-measure 8.4 includes interventions for restoration of drainage hydraulic sections and of flood defence works on shore or on river bed in water bodies in wood areas. Eligibility conditions and

selection criteria do not refer to water management issues nor are linked to risk areas identified under the Floods Directive.

Measure 10: this measure supports investment related to agri-environment-climate. It finances integrated farming methods, the maintenance of permanent meadows and pastures, soil conservation and organic matter. One sub-measure out of 4 is specifically linked to the WFD. Measure 10.01A (*integrated agricultural production*), aims to support the adoption of integrated production techniques that reduce the use of agricultural inputs in order to maintain soil fertility and protect the quality of water by reducing the quantities of highly toxic fertilizers and plant protection products. Although not required by EAFRD Regulation, eligibility conditions and selection criteria do not refer to targeting the measure to intensive agricultural areas or where water bodies may be failing good status due to pesticides. The other sub-measures do not directly address water management issues.

Measure 11: this measure supports organic farming. It is linked to FA4b but the measure is not targeted to nitrate vulnerable zones or water bodies failing good status. There is overall no explicit link to the WFD.

Measure 16: this measure relates to cooperation. The objectives include to reduce the risk of hydrogeological instability and soil erosion among others. Within intervention 16.05, cooperation activities are promoted in coordination with M4 for the promotion of innovative practices to foster soil protection and water management (hydraulic and environmental engineering infrastructures). Eligibility conditions and selection criteria do not refer to meeting good water status. .

Indicators

The RDP uses the required CMEF indicators to provide context to the SWOT and existing issues being faced by Liguria: 20 (surface of irrigated land) and 39 (water abstraction in agriculture and 42 (soil erosion rate by water and surface affected). Under indicator 40 on water quality, there are data on nitrates concentration in freshwater (both surface and groundwater). No information on phosphorus and nitrogen is given. Moreover, there are no context indicators defined for pesticides nor for hydromorphological alterations (e.g. % of waterbodies with hydromorphological pressures), which is one of the major pressures of water bodies for the region. Although these are not required by EAFRD Regulation, it would be beneficial to have them in order to have a full picture of water issues in the region.

In chapter 11, indicators for FA4b only include T10 (% of agricultural land under management contracts to improve water management) and context indicator 18 (used agricultural area). Indicators for FA4c include T12 (% of agricultural land under management contracts to improve soil management and/or prevent soil erosion). FA5a is not activated so indicator T11 is not relevant, although some investments in irrigation

infrastructure are programmed through FA2a. The selected performance indicators are of limited use to measure the progress towards achieving the good status of water. Furthermore, the RDP does not use relevant context indicator (39 and 42) to measure progress. Although these are not required by EAFRD Regulation, it would be beneficial to have them in order to have a full picture of water quality issues in the region.

As not required, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD. There is no specific mention of monitoring on hydromorphological alterations. Moreover, there is no mention of using the WFD monitoring systems. Although not required by EAFRD Regulation, it would be beneficial to use the WFD monitoring systems to measure progress on water issues.

Conclusions

The Liguria region programme, despite including some measures that address water management issues in its territory, overall lacks consistency in its intervention logic. The SWOT provides enough information as regards to the ecological, chemical and quantitative status of water bodies and it seems that the most recent data from Art. 5 assessment have been used. However, the pressures identified in the SWOT are not fully consistent to those identified in the RBMP: water abstractions and diffuse pollution are in fact not explicitly recognised as a pressure in the SWOT. However, while these are not identified in the SWOT, they have been taken into account in the needs descriptions. The strategy in general and for FA4b and FA4c. in particular, is not clear enough in indicating which sub-measures will directly or indirectly contribute to the WFD's objectives.

As regards the strategy for FA4b, most of the measures programmed do not have a strong or any link to improving fertilizer or pesticide management. M4 has no explicit link to water management, either in their general descriptions or in any eligibility or selection criteria. Diffuse pollution is only addressed through one measure under M10, which does not provide a strong link to support WFD implementation. The strategy overall relies on farm advice and organic farming, which is not ambitious considering that the RBMP indicates 82,3% of surface water bodies failing good status and 43% of groundwater bodies failing good chemical status and the significance the RBMPs place on agriculture activities in this context.

The RDP is stronger in its intervention logic for addressing soil erosion. M4.4, M5, and M8 address soil erosion and hydrogeological instability and flooding risks and only marginally address diffuse pollution (through M10.1 – integrated production mainly). It is positive that the programme promotes works on river beds and the slopes function, but it is not clear if this consists of waterbody restoration measures and natural retention measures or engineering hard measures, which have the potential to cause deterioration in water status

which should be prevented under the WFD. However, there is the general requirement to comply with art. 45(1) of Reg.1305/2013, whereby investment operations shall be preceded by an assessment of the expected environmental impact in accordance with law specific to that kind of investment where the investment is likely to have negative effects on the environment. Furthermore, the RDP does not link these measures to supporting the implementation of the Floods Directive or flood risk areas.

Regarding water use, the programme identifies as weaknesses poor quality and availability of water resources in certain areas, which implies a high proportion of farms practicing irrigation with groundwater sources. However, the program does not activate FA5a on increasing efficiency in water use by agriculture. Investments in the improvement of the irrigation infrastructure both at agricultural holding and collective levels are programmed through M4.1 and 4.3 which are linked to FA2a, which eludes fulfilling EAC 5.2. programming irrigation investments under FA2a seems a short-sighted approach given the number of surface and groundwater bodies (21 and 35% respectively) in bad status due to abstractions. Moreover, such interventions are not targeted to specific areas where the water availability problem is concentrated, and thus does not support the achievement of WFD objectives. Despite this, the RDP includes an action plan for the compliance with ex-ante conditionality 5.2.

The monitoring and the evaluation framework largely fails to account for relevant water management indicators, especially those relevant for the implementation of the WFD and the FD and, as a consequence, it will be difficult to discern the programme contributions to WFD objectives at the end of the programming period and to inform future revisions.

The target indicator (T10) 'percentage of farmland subject to management contracts to help improve water management' is quantified at 11.63%, while the target indicator (T7) 'percentage of farms participating in risk management' is quantified at 0.69%. These targets could be more ambitious considering the pressures identified in the SWOT and the RBMP, especially with regard to floods risk. No other indicators are in place to measure the reduction of fertilisers and pesticides use, which, although not required by EAFRD Regulation, would be a good practice.

The RDP contribution toward addressing agriculture pressures to reach the WFD and FD objectives could, therefore, only be considered as marginal and minor. This will mean that considerable action outside the RDP (i.e. through strengthened WFD basic measures (reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (measures funded by non-EU funds) should be included in RBMPs if the GS objective of the WFD is to be achieved.

Recommendations:

1. The RDP needs to improve its SWOT by better reflecting the pressures identified in the RBMPs linked to agriculture activities.
2. Although an action plan for the fulfilment of the EAC 5.2 is included in the RDP, the region should consider activating FA5a to specifically address water inefficiency problems which are an issue in the region (agricultural water abstractions are a significant pressure on 21% of SWB and 35% of GWB and an effective agricultural pricing policy would help the sector be more efficient).
3. As stated under Art. 46, which is correctly referenced in the RDP, it is important to ensure waterbody status is known for all WBs before any extension of irrigation is considered. It is suggested to liaise with Water colleagues to get the most current information on waterbody status for all WBs to make sure that quantitative status is known before any extension of irrigation is considered. Under M4, when describing art. 46 requirements, it should be clearly stated that, where the waterbody status is unknown, it is assumed that the status is less than good and therefore 50% of potential savings should go back to the aquifers.
4. Increase the target of land under contract to improve water management and of percentage of farms participating in risk management schemes (to prevent flood damage to agricultural infrastructures and landslide prevention) to better address the magnitude of agriculture pressures on the water environment. Therein, it may be necessary to increase the budget for water-related measures 10, 11 and 5.
5. The RDP would benefit from targeting its water-relevant measures: M4, M5, M8, M10 and M11. Water-specific eligibility conditions and selection criteria would enhance the effort in addressing pressures on water bodies even in measure not directly relevant to water management.
6. There is potential to programme and prioritise NWRM under M10 and M4.4 in order to achieve multiple benefits including hydrogeological risk reduction, water quality improvement and groundwater recharge.
7. Ensure that natural engineering techniques and NWRM are prioritised over hard measures (flood dredging) under M5. Reference should be made to the need to conduct an article 4(7) WFD assessment with regards to the realisation and improvement of: embankments and channels, including floodgates to control water flow, for the protection of land against floods and the removal of the water; water pumping lifting equipment for flood protection; hydraulic dams to reduce the transport of solid material, to ensure they do not lead to deterioration in water status which is cause for concern.
10. Although not required by the EAFRD, consider expanding both the context and target indicators to better reflect EU water management objectives. The context indicators of nitrogen and phosphorus pollution do not cover two other important

water management issues, namely pesticide pollution. Adding indicators for these missing aspects would enable obtaining a fuller picture of the pressures agriculture is exerting on the environment in the territory and its evolution. The CMEF target indicators do not enable Member State authorities to track the impact the RDP measures have on improving water status. Especially with constraint budgets, it would be beneficial to have indicators in place that enable the authorities to track whether a measure's implementation is having a positive effect on the water status and is therefore worth financing. Here, linking also the monitoring programme to existing programmes under the WFD would be helpful and should not pose any additional administrative or financial burden on the district.

A27 Italy – Puglia

In Puglia there is one river basin district: Southern Apennines. The main agricultural pressures identified in the River Basin Management Plan (RBMP) are: diffuse pollution due to nitrogen and phosphorus concentration, water abstraction, in particular self-abstraction on groundwater which leads to progressive aquifer salinization and erosion risk. Morphological alterations and flooding are not mentioned as pressures in the RBMP.

SWOT

The SWOT provides partial information on the status of water bodies. The most recent available information regarding the status of water bodies is dated 2010-2012. The information presented is for the region specifically. The only information available is that 87% of the SWBs are failing good status – it is not specified whether this refers to ecological or chemical - and only 5 GWBs out of the 29 identified have achieved good chemical status.

The quality of surface water is briefly mentioned because monitoring data are not available or are not fully reliable. The available information indicates that surface waters generally show a moderate quality. More information is available for groundwater, which indicates medium values for nitrate concentration generally (with the exception of 2009-2010 when it exceeded the threshold 50mg/l). Moderate or medium values are considered as not in compliance with WFD environmental objectives. At the level of the main single aquifers, nitrates concentration always exceeds 50mg/l. The worst quality is observed in nitrate vulnerable zones.

More recent data (2011-2012) are available regarding pesticides pollution. 3.4% of surface water and 7,7% of groundwater tested positive for pesticides residues. However, these figures reveal only a partial situation because monitoring data are not available for all water bodies.

Nitrogen pollution is mentioned in the SWOT analysis but there is not information provided regarding phosphorus pollution. The RDP does not directly identify the types of agricultural activities that are sources of the pollution problems.

The pressures to the water environment identified in the RDP relate to water abstraction and aquifer salinization. As the irrigation in agriculture conservative agriculture mainly derives from private wells, it is stated that the uncontrolled use of water from the aquifers might have serious consequences on salinization of groundwater. Water use in agriculture is of particular interest as it is estimated that 55% of the total water resources are used by agriculture; therefore, more efficiency in that sector would allow relocating and increasing water used for other purposes. While the SWOT recognised that agricultural activities exercise an important pressure on the quantitative status of groundwater, specific data

using the WFD terminology are not available.

Soil erosion (land degradation due to salinization) and hydrogeological instability (risk of landslides and floods) have also been considered in the RDP SWOT analysis, although there is no mention of the Floods Directive. The SWOT assessment identifies water availability (droughts) as an increasing pressure.

Strengths related to water management identified are the presence of high-efficiency irrigation techniques and systems and the potential use of non-conventional water resources for irrigation.

Weaknesses include irrational use of water resources for irrigation, governance failures and inadequate performance of the collective irrigation network. In addition, this is completed by the insufficient development of the distribution network of treated waste water.

Opportunities identified relate to the use of non-conventional water sources in irrigation and significant yearly production of sludge from wastewater treatment in agriculture to replace chemical fertilisers.

Threats identified include hydrogeological risk and desertification in significant areas of the region; risk of increased water demand for irrigation due to climate change and further deterioration of water quality due to the use of fertilizers and plant protection products.

Needs

Four water-specific needs were developed out of the SWOT: Need 21 - Rationalization of water use, monitoring climate change and water levels by improving the use of non-conventional water resources and Need 22 – Promotion of practices for the rationalisation of chemical input with reference to organic and integrated farming techniques, both linked to FA4b on Improving water management, including fertiliser and pesticide management; Need 25 – Modernisation of equipment and irrigation techniques and reconversion to crops with reduced water needs, linked to FA5a on increasing efficiency in water use by agriculture and Need 23 - Hydrogeological protection through management of forest areas and hydraulic-forest systems, linked to FA4c on Preventing soil erosion and improving soil management.

All pressures in the SWOT have been turned into needs. In addition, diffuse and point source pollution were taken up in the needs although they were not explicitly recognised as a pressure in the SWOT (though are a pressure in the RBMP). The need descriptions are clear in their link to the pressures identified in the SWOT and types of measures needed to address the needs, although the measures are not formulated in a specific manner

Needs 21 and Need 25 address the pressure on water quantity caused by agriculture. The

first one takes up the opportunity to re-use treated wastewater for irrigation purposes and the second one tackles the problem of water scarcity through the modernisation of irrigation techniques and equipment (including infrastructure for the storage of conventional and non-conventional water) and through conversion to crops with reduced water needs. They address the need to address uncontrolled water use from aquifers only in an indirect manner.

Need 22 addresses pressures caused by intensive agricultural practices and the use of fertilisers and pesticides by promoting less input demand practices, including organic agriculture.

Need 23 tackles hydrogeological instability and erosion risks by promoting forest-hydraulic interventions, including natural water retention practices and by maintaining meadows and pastures in the areas where it is agronomically appropriate, although there is no link to the implementation of the Floods Directive and risk areas identified through that.

For all needs, however, there is no explicit reference to the objectives of the WFD.

Strategy

The general strategy points specifically to the need to address environmental challenges; however, it does not refer specifically to the WFD and FD's objectives. It mentions water specific priorities linked to the challenges and needs identified in the SWOT, both to improve the qualitative and quantitative status of water bodies as well as how they will be addressed. P4 and P5 comprise 41% of the overall budget. A higher budgetary priority goes to competitiveness and knowledge transfer with - 46% for P2 and P3a together.

The strategic objectives for FA4b are linked to Need 22 and include: (1) to encourage the dissemination of farming practices (including organic farming) to combat the phenomenon of chemical and physical degradation and to improve the quality of soil, (2) support investments to make more efficient the use of water resources as well as promote networking among institutions, scientific experts, farmers and industry operators etc., in order to enhance the knowledge about the use of non-conventional water resources and regarding practices for an adequate monitoring of water. The following measures are planned under this focus area: M4, M8, M10 and M11. In particular, strategic objective (1) will be achieved through measures M10.1, M11, strategic objective (2) through measures M4.1, M4.3, and indirectly through M16.5.

The target indicator T10 for FA4b indicates that 11,67% of agricultural land will be contracted to improve water management. The target could be more ambitious considering that 87% of the SWBs are failing good status and that 22,78% of the total RDP budget is allocated to this focus area.

FA3b on supporting farm risk prevention and management is programmed through measure 5 but does not address flooding issues, which are instead addressed, together with erosion risk and hydrogeological instability, through FA4c on prevention soil erosion and improving soil management. The following measures are planned under this focus area: M4, M8, M10 and M11. Water management issues are not specifically mentioned under this focus area however, the measures could indirectly contribute to address them. The strategic objective for this focus area, linked to need 23, include: (1) support the afforestation of agricultural land, prevention and restoration damaged forest potential caused by forest fires and other natural disasters and (2) promote conservative agricultural practices to improve soil quality. Strategic objective (1) will be achieved through implementation of measures M5.1, M8.1, M8.2, M8.3, M8.4, M8.5, M16.8, while strategic objective (2) through measures M4.3, M4.4, M10.1. Under this focus area, collective approaches through agri-environmental agreements will be implemented. 1,88% of the total RDP budget is dedicated to this focus area which seems low given the morphological (erosion and flood risk) problems identified in the SWOT.

The strategic objectives of FA5a on increasing efficiency in water use by agriculture, linked to need 25, support the introduction of innovative irrigation systems, promote capacity building for the use of more efficient irrigation technologies as well as promote networking among institutions, scientific experts, farmers and operators to enhance the knowledge about more efficient management of water resources. These will be achieved through measures: M4.1, M4.3, M16.5 and indirectly also M1.1, M1.2 and M1.3.

The target indicator T14 indicated that 12,98% of the irrigated land will switch to a more efficient irrigation system. There are no data available on the quantitative status of GWBs to understand if this target is appropriate to tackle the self-abstraction problems.

Ex-ante Conditionalities

EAC 5.2 was assessed by the MS as non-fulfilled.

The RPD proposes a roadmap for fulfilment of ex-ante conditionality by the end of 2016 with the following action points:

- Implementation at regional level of national guidelines regarding water pricing
- Implementation at regional level of national guidelines for the definition of environmental and resource costs related to water abstraction.
- In the case of water supply, expansion of the use of incentive prices based on volumes used.
- In the case of individual water extraction, expansion of use of incentive pricing

based on volume used

Implementation of adequate mechanisms for the recovery of operating costs (including maintenance costs), environmental and resource costs

Measures

The following measures are proposed as addressing water management issues under FA3b, FA4b, FA4c, and FA5a: M1, M4, M8, M10, M11, M16.

Measure 1 - Knowledge transfer and information actions. It is explicitly linked to FA5a, among other priorities. The measure will finance, among others, training programmes on environmental issues such as mitigation and adaptation to climate change, renewable energy, water management and biodiversity. However, there is no mention of water issues in the description of the sub-measures. The eligibility conditions and the selection criteria do not refer to water management, but generally priority is given for quality of the projects with reference to the objective of the sub-measure.

Measure 4 finances investments in physical assets. The description of the measure explicitly refers to addressing the Needs and Focus Areas related to water, although the greatest part of the budget for this measure (48%) is programmed under FA2a on Improving the economic performance of all farms and facilitating farm restructuring and modernisation and only a very small part is allocated under FA5a (8%). The general description mentions prioritising areas to prevent hydrogeological and natural disasters. The measure promotes the implementation of collective projects carried out by associations of farmers.

M4.1- support for investment in agricultural holdings. Operations under this sub-measure include: purchase or lease of new machinery and equipment that improve the efficiency and / or reduce the amount in the use of fertilizers and / or pesticides, that help improving irrigation efficiency and optimizing the use water and interventions related to the realization of the distribution networks that allow water savings. It also finances the creation of reservoirs for the collection of rainwater (less than 250,000 cubic meters) to increase the availability of water resources in periods of scarcity and higher demand to reduce the pressure on groundwater. The eligibility conditions do refer to Art. 46, with all elements correctly transposed. The selection criteria state that irrigation investments are prioritised if water savings are above the minimum threshold set of 5%, 20% and 25% (depending on the type of investment) as defined under Art.46.

M4.3 - support for investment in infrastructure necessary for the development, modernization and adaptation of agriculture and forestry. Under this sub-measure, intervention M4.3.a on '*support for investments in irrigation infrastructure*' is activated. The measure is explicitly planned to implement the WFD. The description refers to the problems

identified in the SWOT with regard to water availability and use and specifies that these are aggravated by water leakages due to the deteriorated irrigation infrastructure, hence the need for modernisation of the irrigation network to ensure water savings and improve efficiency in the use of water resources.

The interventions focus on the modernization of the supply and distribution networks; the completion of the irrigation schemes and interconnection works and structural improvement of deteriorated networks. It also finances rainwater reservoirs (less than 250,000 cubic meters), which serve to increase the availability of water in times of scarcity and greater demand in order to reduce the pressure on the groundwater. Systems for automation, measurement and remote monitoring of the facilities as well as special meters designed to measure water consumption are also financed. Art. 46 requirements are mentioned in the general description of the sub-measure and under the eligibility criteria. The description also explains that this sub-measure will be implemented in complementarity with the National RDP and the RBMP. Eligible conditions and selection criteria are the same as for sub-measure 4.1.

Under sub-measure 4.3 there is another water relevant intervention programmed: M4.3.C on '*support for infrastructure investments for the supply of agro-meteorological services*'. It consists in investment in forecasting and weather warning systems that will help monitor soil and water quality and ultimately encourages a more efficient and effective use of natural resources and chemical inputs.

M4.4 - support for non-productive investments linked to the achievements of agri-environment-climate objectives. This sub-measure is mainly programmed to address erosion and hydrogeological instability risk and it is relevant for water management; it is linked to FA4c and not FA4b. The sub-measure will finance the following interventions: recovery of dry stone elements to reduce water runoff and soil erosion caused by extreme weather; recovery and restoration of natural and semi-natural habitats such as hedges and buffer strips; and small permanent and temporary wetlands ponds and springs. These elements help to reduce the flow of water by protecting river banks from erosion, promoting the sedimentation of particulate pollutants, reduce the impact of biocides, fertilisers and slurry through water filtration and phytoremediation action, as well as water regulation (control). No water specific eligibility conditions and selection criteria are mentioned.

Measure 8 finances investments in forest area development and improvement of the viability of forests. This measure is only indirectly linked to FA4b. It is directly linked to FA4c and addresses pressures identified in the SWOT such as climate change, desertification, hydrogeological instability and erosion risk. Interventions are prioritised in areas subject to these phenomena. Addressing erosion risk should indirectly help protect water quality,

Under M8.3 - *prevention of forest damage caused by fires and natural disasters*, micro-forest-hydraulic interventions are programmed, including: river bed restoration of minor hydrographic network, water control works, accommodation of slopes subject to landslides

with bioengineering techniques (gabions in calcareous stone, fences and palisades with native shrub species); small works of channelling and retention of rainwater and runoff, to be carried out only within forests.

Under M8.4 – *recovery of forests damaged by fires and natural disasters*, some water related interventions are planned such as: restoration of small water barriers and surface water drainage; restoration of the outflow sections of the river banks or bed protection works through bio-engineering interventions.

For both of these two sub-measures, eligibility conditions are not linked to the Floods Directive and selection criteria do not identify areas of significant flood risk.

Under M8.5 - *Investments aimed at improving the resilience and environmental value of forest ecosystems*, restoration and maintenance of small sewage and water regulation works are foreseen. No water specific eligibility conditions are mentioned. Selection criteria include prioritisation of NVZs.

Measure 10 finances Agri-environment-climate measures. The description of the measure explicitly refers to addressing the Needs and Focus Areas related to water, although only sub-measure 10.1 is directly linked to FA4b. The description refers to the pressures identified in the SWOT, namely: the strong hydrogeological risk, desertification and erosion risk as well as the presence of pesticides in groundwater.

M10.1.1 - Integrated production supports the implementation of a food production system using agronomic methods which aim to eliminate or minimize the use of synthetic chemicals. The description also highlights that, due to the hydrogeological characteristics of the region's territory, the greatest threat is pollution of groundwater aquifers, given the particular permeability of soils in some areas (porous aquifers). However, no water specific eligibility conditions and selection criteria (not required by EAFRD Regulation) are mentioned and GWBs are not targeted.

Sub-measures M10.1.2 and M10.1.6 described below are programmed with a view to reduce soil erosion but are not directly linked to FA4b and do not explicitly address pollution problems by restricting the use of fertilisers and pesticides.

M10.1.2 - Increase in soil organic substance and soil protection and 10.1.3 - conservative agriculture are linked to FA4c and indirectly contribute to FA4b through the improvement of the soil characteristics which increase the water infiltration and retention capacity in the soil and reduce the risk of run-off with polluting substances to nearby waterbodies. No water specific eligibility conditions and selection criteria (not required by EAFRD Regulation) are mentioned.

M10.1.6 - crop conversion from arable to pasture, grass-grazing, and meadow is also

indirectly linked to FA4b. The intervention consists in the conversion of arable land to pastureland and encourages a shift from cereal monoculture with a strong impact on soil and water resources, to extensive practices without tillage. No water specific eligibility conditions and selection criteria (not required by EAFRD Regulation) are mentioned.

Measure 11 finances organic farming. The measure is equally dedicated to P4a, b and c. The water related pressures and needs are taken into account in the general description. The description emphasises that this measure promotes, among others, the better management of water resources, including control on their quality by limiting the use of fertilizers and pesticides. No water specific eligibility or selection criteria (not required by EAFRD Regulation) are mentioned.

Measure 16 - Co-operation. This measure is explicitly linked to all focus areas, although the general description does not explain how it will contribute to improving the environmental sustainability of production processes. Sub-measure 16.5 – *support for joint action undertaken with a view to mitigating or adapting to climate change* is directly linked to FA5a and Need 21 and 23. However, there is no mention of water issues in the description of the sub-measures. The eligibility conditions and the selection criteria do not refer to water management.

Indicators

The RDP uses the required CMEF indicators to provide context to the SWOT and existing issues being faced by Puglia: 20 (surface of irrigated land) and 39 (water abstraction in agriculture), and 42 (soil erosion rate by water and surface affected). It must be noted that there are no indicators as regards water quality: 40 (nitrate, phosphorus and nitrogen) and that the % of water bodies failing good status is not mentioned. Moreover, there are no context indicators defined for pesticide pollution. Although these are not required by EAFRD Regulation, it would be beneficial to have them in order to have a full picture of water issues in the region.

In Chapter 11, indicators for FA4b only include T10 (% of agricultural land under management contracts to improve water management) and T11 (% forestry land under management contracts to improve water management) and context indicator 18 (used agricultural area) and 19 (total forest area). For FA5a the impact indicator T14 (% of irrigated land switching to more efficient irrigation system) and context indicator 20 (surface of irrigated land). These are of limited value in measuring the progress on water quality or water use. Furthermore, the RDP does not use relevant context indicators (e.g. 39 and 40) to measure progress. Although these are not required by EAFRD Regulation, it would be beneficial to have them in order to have a full picture of water quality and quantity issues in the region.

As not required, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD. There is no specific mention of monitoring on potential or effective water savings or fertilisers and pesticide pollution. Although not required by EAFRD Regulation, it would be beneficial to use the WFD monitoring systems to measure progress on water issues.

Conclusions

The pressures identified in the SWOT are largely consistent with those identified in the RBMP. However, the SWOT, while presenting some data on nitrates concentration, lacks data on phosphorus and does not explicitly recognise diffuse and point source pollution as a problem in the region (it is not clear the magnitude of pollution problem in the region as monitoring data are not available or fully reliable). While it seems that the most recent data from WFD Art. 5 assessment regarding the status of water bodies have been used, these are only partial because data on the chemical status of water are incomplete, there is no information provided on ecological status and data on the quantitative status of GWBs are not available. The RDP does not directly identify the types of agricultural activities that are sources of the pollution problems. Data on pesticides pollution are also not available for all GWBs. Notwithstanding this problem with the water monitoring system, the needs defined reflect well the pressures identified, and the strategy developed for FA4b and 5a clearly indicates which sub-measures will directly or indirectly contribute to improve water management, although the achievement of the WFD's objective are not explicitly mentioned neither in the general strategy, nor in the descriptions of the measures.

With regard to the Strategy for FA4b and tackling fertilizer and pesticide, the RDP has programmed M4.1, M4.4, M10.1 and M11. While 22,78% of the total RDP budget is allocated to this focus area, which seems positive, the measures selected do not foresee interventions that limit or ban nutrient inputs, with the exception of M11 and sub-measure 10.1.A. Moreover, the eligibility conditions and the selection criteria (not required by EAFRD Regulation) do not refer to water management, so interventions are not targeted to areas failing good status according to the WFD. Other measures, such as M1 and M16, are indirectly linked to water management, although the description fails to take into account this link in a coherent manner.

Regarding the strategy for FA5a, the RDP finances, through M4.1 and 4.3, support to water supply techniques and infrastructure that ensure more efficiency and water savings. While these sub-measures have specifically been designed with the objective of addressing water pressures caused by irrigation, it must be noted that small reservoirs (for the collection of rainwater) and new irrigation network may be financed, which may impact negatively the morphology of river (for all these measure, however, RDP eligibility criteria establish the obligation of an environmental ex ante analysis in accordance with Art. 46 of R 1305/2013). Moreover, the greatest part of the budget for this measure (48%) is programmed under

FA2a on Improving the economic performance of all farms and facilitating farm restructuring and modernisation and only a small part is allocated under FA5a (8%) with the aim of improving efficiency of water resources.

It is positive that a specific sub-measure M4.3.C is dedicated to the improvement of the water monitoring system in the region, given the lack of monitoring data on water quality.

Regarding soil erosion and flood risk, M4.4 and M8 address well soil erosion and hydrogeological instability risks. This is done through bioengineering interventions which include NWRM avoiding the implementation of hard measures. Moreover, while the measures are designed taking into account water pressures and needs as identified in the SWOT, specific reference to flooding issues and to the implementation of the Floods Directive is missing and specific areas at risk are not prioritised by means of selection criteria in neither M4.4 nor M10.

The target indicator T10 for FA4b indicates that 11,67% of agricultural land will be contracted to improve water management. This will be done mainly through M11. The target seems low considering 9,7% of the total UAA was under organic farming already in 2011. No other indicators are in place to measure the reduction of fertilisers and pesticides use, which, although not required by EAFRD Regulation, would be a good practice. Therefore, given still 87% of SWBs are failing good status, the RDP contribution toward addressing agriculture pressures to reach the WFD and FD objectives could only be considered as minor. This will mean that considerable action outside the RDP (i.e. through strengthened WFD basic measures (reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (measures funded by non-EU funds) should be included in RBMPs if the GS objective of the WFD is to be achieved.

Finally, the monitoring and the evaluation framework largely fail to account for relevant management indicators, especially those relevant for the implementation of the WFD and the FD and, as a consequence, it will be difficult to discern the programme contributions to WFD objectives at the end of the programming period and to inform future revisions.

Recommendations:

1. The SWOT should present information on the quality of water in a more complete manner and in coherence with the WFD terminology.
2. As stated under Art. 46 which is correctly referenced in the RDP, it is important to ensure waterbody status is known for all WBs before any extension of irrigation is considered. It is suggested to liaise with Water colleagues to get the most current information on waterbody status for all WBs to make sure that quantitative status is known before any extension of irrigation is considered.

3. A more explicit acknowledgement throughout the programme on how it contributes to the achievement of the WFD's objectives would help selecting more water-relevant measures.
4. Strengthen the description of FA4b by more concretely linking measures to aspects of improving water management. The RDP should explicitly acknowledge that, in addition to M11, also M10.1.1 integrated production, M 10.1.2 Increase soil organic substance and soil protection, M10.1.3 Conservative agriculture, M10.1.6 Crop conversion from arable to pasture and M4.4 support for non-productive investments linked to the achievements of agri-environmental-climate objectives can play a critical role in addressing the region's water pollution problems. Consequentially there is potential to increase the target of land under contract to improve water management to better address the magnitude of agricultural pressure on the water environment. To improve the efficiency of water resources, the RDP could add a measure to switch agricultural production to less water intensive crops.
5. Although not required by the EAFRD, consider expanding both the context and target indicators to better reflect EU water management objectives. The context indicators of nitrogen and phosphorus pollution do not cover two other important water management issues, namely pesticide pollution. Adding indicators for these missing aspects would enable obtaining a fuller picture of the pressures agriculture is exerting on the environment in the territory and its evolution. The CMEF target indicators do not enable Member State authorities to track the impact the RDP measures have on improving water status. Especially with constraint budgets, it would be beneficial to have indicators in place that enable the authorities to track whether a measure's implementation is having a positive effect on the water status and is therefore worth financing. Here, linking also the monitoring programme to existing programmes under the WFD would be helpful and should not pose any additional administrative or financial burden on the district.

A28 Italy – Sardinia

The RDP territory covers the River basin district of Sardinia. Pressures identified in the RBMP include: diffuse source pollution (nitrogen, phosphorus, and pesticides), water scarcity, water abstraction from coastal aquifers and soil erosion. Morphological alterations and flooding are not mentioned as agriculture-related pressures in the RBMP.

SWOT

The SWOT general description only includes few paragraphs that describe how the region performs in terms of quality of water bodies, while more detailed information regarding water management and water use is provided in a separate document attached to the RDP. This document refers to the objectives of the WFD as well as the first and second RBMP cycle and the Floods Directive.

The RDP does not provide specific information on the percentage of surface water bodies (SWBs) and groundwater bodies (GWBs) failing good ecological, chemical or quantitative status.

The document indicates that the main sources of diffuse pollution are arable and livestock farming. Diffuse pollution is due to the release of organic substances related to extensive livestock activities, the use of fertilizers and synthetic fertilizers; dispersion of organic fertilizers and manure and the use of pesticides. The SWOT identifies the areas of the Sardinian territory that are subject to the different sources of pollution. Moreover, organic and inorganic fertilizers and plant protection products storage centres (warehouses and tanks) constitute a potential point source of pollution. In addition, irrigation also acts as pollution vector into water bodies. However, no data, except for nitrogen (average input below 80Kg/ha/year and, in few cases below 130Kg/ha/year), are available to understand the magnitude of the problem linked to chemical inputs. Results from monitoring sites show that nitrates concentrations are high in 77,7% of monitoring sites, moderate in 19,4% and poor in 2,9%. Nitrates concentrations in GWBs is high in 54,9% of the sites, moderate in 20,4% and poor in 24,7%. The worst quality is observed in nitrates vulnerable zones, although a decreasing trend was observed between 2007-2011 regarding nitrates concentration in these areas. These classifications are not linked to WFD terminology, and do not provide full information as regards water status. No information is included on phosphorus or pesticide concentrations.

In addition, saline intrusion caused by over-exploitation of groundwater is also mentioned as a pressure on water bodies, especially on coastal plains and in the gulf of Cagliari and Oristano.

The SWOT identified issues in relation to hydro-geological instability (linked to floods and landslides phenomena), soil erosion and desertification and mentioned the Floods Directive

and the Flood risk management plans as a means to address them. The RDP reports that 64% of all Sardinian municipalities are prone to landslide risk to varying degrees. With regards to water erosion, 11,3% of Sardinia's agricultural land is classified as having a medium to high risk of water erosion.

Climate change can exacerbate erosion and flood risks and lead to increased risk of desertification. The major problems are attributable to changes in temperature and rainfall regimes with the consequent decline in water supplies and thus availability of water resources. Desertification in Sardinia is caused by a combination of factors: low quality and quantity of water resources, erosion and soil salinization, droughts and floods and soil sealing. 60% of the territory is highly sensitive to desertification, against a national average of 30%.

With regard to water use, Sardinia mainly uses surface water stored and controlled by 34 dams. The system, however, is characterised by low recharge capacity and presents high vulnerability to climatic fluctuations and therefore necessitates more efficient management to ensure water is available also during dry periods. 57% of water is used by irrigation. The increased use of water meters by end-users promotes water savings, allowing reliable estimates of levies and losses and facilitating more efficient economic management.

Strengths related to water management identified are 82,1% of UAA using high-efficiency irrigation techniques, and low use of chemical inputs, such as nitrogen, phosphorus, potassium and pesticides.

The complete monitoring of all water bodies following the requirements of the WFD is also mentioned as a strength. Weaknesses include sensitivity to desertification and the failure to complete primary infrastructure (e.g. roads, energy, waste and water infrastructure) in areas affected by saline intrusion. Opportunities identified relate to wastewater management as governed by the WFD. Threats identified include intensification of the phenomena linked to climate change, such as variations in temperature and rainfall patterns, decrease in water supplies and increased frequency of extreme weather events.

Needs

Two water-specific needs were developed out of the SWOT: Need 27 - Knowledge transfer and functional innovations for the rational use of water resources, linked to FA4b on improving water management, including fertiliser and pesticide management and FA5a on increasing efficiency in water use by agriculture; Need 26 - Promote knowledge and cooperation on efficient use of resources, emissions and carbon sequestration, linked to FA5a; In addition, Need 25: Promote cooperation in the field of desertification and climate change is linked to FA3b on supporting farm risk prevention and management and FA4c on preventing soil erosion and improving soil management.

All pressures in the SWOT have been turned into needs and their descriptions make explicit links to the pressures identified in the SWOT. Need 26 and 27 make explicit reference to water issues, however, for all needs, there is no mention of the objectives of the WFD. Need 25 mentions measures aimed at flood prevention.

Strategy

The description of the general strategy points specifically to needs identified in the SWOT analysis for each priority, without referring specifically to the WFD and FD's objectives. It mentions water-specific priorities linked to the challenges and needs identified in the SWOT. The RDP allocates more budget to the protection of the environment rather than competitiveness (20% of the budget allocated to P2 against 38% allocated to P4), however the budget dedicated to measures that will directly contribute to FA4b (M10.1.2 and M11) appears quite low (only 20% of P4 budget and only 8% of the total RDP budget).

The strategic objectives for FA3b on supporting farm risk prevention and management are linked to need 25 (Promote cooperation in the field of desertification and climate change) and will be achieved through the following measures: M2, M5 and M16. Sub-measure 5.1 *supports investments to reduce risks related to possible disasters, adversity and catastrophic events. M5.2 supports for the restoration of agricultural land and production potential damaged by natural disasters.* Target T7 foresees that 0,82% of the regional agricultural companies will participate to sub-measure 5.1. Considering the territory of Sardinia is at high risk of desertification, this target appears to be incredibly low.

The strategy for FA4b on improving water management, including fertiliser and pesticide management is linked to need 27 (Knowledge transfer and functional innovations for the rational use of water resources). The following measures are planned under this focus area: M02, M10, and M11. The intervention logic strongly promotes organic farming and integrated production in order to promote an efficient use of water resources. The strategy description mentions sub-measures M10.1, 11.0 and 11.2 as directly contributing to its objectives. Target T10 for FA4b is estimated in 14.6% of regional UAA, which seems suitably ambitious given the pollution pressures identified in the SWOT.

FA5a on increasing efficiency in water use by agriculture promotes investments in irrigation infrastructure and technologies and waste water treatment plants as a response to the risks posed by climate change and in order to improve the competitiveness of farms. It is linked to the following measures: M2 and M4. M4.3 supports the modernization of irrigation networks, in complementarity with investments financed by the national programme. Target T14 is fixed at 2.38% (about 1,500 hectares) of irrigated areas moving into more water efficient irrigation. Given data on the quantitative status of water bodies are not available (except for context indicator 39), it is impossible to understand if this is an appropriate target to improve water efficiency in the region.

Ex-ante Conditionalities

The RDP states that ex-ante conditionality (EAC) 5.2 was only partially fulfilled. The RDP outlines the following steps to be taken:

- Implementation at regional level of national guidelines regarding water pricing
- Implementation of adequate mechanisms for the recovery of operating costs (including maintenance costs), environmental and resource costs.
- In the case of individual water extraction, expansion of use of incentive pricing based on volume used.
- Implementation at regional level of national guidelines for the definition of environmental and resource costs related to water abstraction.

Measures

The measures are proposed under FA3b (M2, M5), FA4b (M02, M10, and M11) and FA5a (M2 and M4).

Measure 2: This measure finances advisory services, farm management and farm relief services. There is an indirect link to FA3b, FA4b and FA5a. Ensuring an efficient use of water is mentioned among the overall objectives of the measure. Sub-measure M2.1 and M2.3 state that advisory services must relate to a series of obligatory measures, among which the implementation of article 11 of the WFD.

Measure 4 finances investments in physical assets. The description of the measure explicitly refers to addressing water related needs and FA5a. The measure is linked to the water-related need 27. Explicit reference to water management issues are presented in more details below:

Sub-measure 4.1.1 on support for investment in agricultural holdings promotes investment for water supply infrastructure, rationalization and / or reduction of water consumption; water supply works for irrigation use, water management and water savings systems. The sub-measure does not make clear reference to the WFD or the RBMP. The eligibility conditions do refer to Art. 46 of RDP Regulation. The requirements of Art. 46 are correctly transposed, and set a minimum of 10% potential water savings.

Sub-measure 4.2.1 supports investments in processing/marketing and/or development of agricultural products including investments for the construction of waste water treatment plants. The link to the WFD is not explicit, however the sub-measure has an indirect impact on FA5a since it is linked to water re-use but also contributes to the reduction of the loads

of pollutants.

Sub-measure 4.3.2 on improving network efficiency and water savings is clearly planned to address water management issues identified in the SWOT, both in terms of water quality and quantity of GWBs and SWBs, although this sub-measure is only directly linked to FA5a and not FA4b. The link to the WFD as well as to the RBMPs is explicit. Intervention planned include: improvement of the efficiency of water networks and water savings (repair of existing water infrastructure, ensure efficiency of lifting, transmission and distribution hydraulic systems; replacement of the water delivery system; improve the control and storage capacity of water; monitoring of water consumption), installation of control systems for better water management, sewage treatment systems, systems for the reuse of waste water or desalinated water and improvement of the functionality of electrical devices connected to the irrigation systems. The requirements of Article 46 are correctly transposed as eligibility condition, with a minimum of potential water savings set at a more ambitious 15% (than the min 5%). Selection criteria include prioritisation to less favoured mountain areas to improve irrigation systems (but the target is set to respond to difficult climatic conditions and not explicitly to target water bodies concerned with significant abstraction pressures) and areas at risks of saline intrusion (the latter aspect might target groundwater bodies identified in the SWOT but does not explicitly refer to water bodies in worse than good status due to water quantity).

Measure 5 finances restoring agricultural production potential damaged by natural disasters and catastrophic events and introduction of appropriate prevention actions. This measure is aimed at the prevention of damage caused by natural disasters and extreme weather conditions. It is explicitly linked to FA3b and to the pressures identified in the SWOT such as desertification, hydrogeological instability and the risk of extreme weather conditions. Under sub-measure 5.1 Investments are foreseen for the prevention in hydrogeological risk areas and the adjustment of the river network. Programmed investments include: agri-hydraulic works to avoid erosion, removal of excess water to preserve the agricultural/forest soil, accommodation of slopes to prevent run-off phenomena and landslides, hydraulic interventions on the waterways and works on gutters, including their extension, to ensure the proper flow of rainwater, in order to prevent flooding. However, the WFD and the FD are not mentioned, neither in the measure description, nor as eligibility condition or selection criteria. Since there is no mention of the use of natural engineering techniques, it seems these types of investments consist in hard measures that could increase the deterioration of water bodies.

Measure 10 finances agri-environment-climate investments. The measure is linked to water-relevant need 27. The measure contributes to FA4b via sub-measure 10.1.2 which supports integrated agricultural practices that favour limited use of synthetic fertilizers and pesticides and that reduce the spread of pollutants. The objectives of the WFD, however, are not explicitly stated and the sub-measure is not targeted to WBs failing good status (due to pesticides) in either the eligibility or selection criteria (not required by EAFRD Regulation). Of the other sub-measures under M10, only M10.1.1, which finances the

implementation of soil protection practices, refers to minimum requirements regarding the use of fertilisers and pesticides.

Measure 11 finances organic farming and is dedicated to FA4b and FA4c. The water-related pressures and needs are taken into account in the general description, which is linked to water-relevant need 27. Although not required by EAFRD Regulation, selection criteria indicate that M11 will be promoted in nitrate vulnerable zones.

Indicators

The RDP uses the required CMEF indicators to provide context to the SWOT and existing issues being faced by Sardinia: 20 (surface of irrigated land) and 39 (water abstraction in agriculture), and 42 (soil erosion rate by water and surface affected). Indicator 40 on water quality considers potential surplus of nitrogen and phosphorus on agricultural land as well as nitrates concentration in surface and groundwater. There are no additional context indicators defined for pesticide pollution. Although these are not required by EAFRD Regulation, it would be beneficial to have them in order to have a full picture of water issues in the region.

In Chapter 11, indicators for FA4b include T10 (% of agricultural land under management contracts to improve water management) and context indicator 18 (used agricultural area). Context indicator 40 is not used to measure progress improvement of water quality. Although this is not required by EAFRD Regulation, it would be beneficial to have it in order to have a full picture of water quality issues in the region.

For FA5a the impact indicator includes T14 (% of irrigated land switching to more efficient irrigation system) and context indicator 20 (surface of irrigated land). The RDP does not use relevant context indicators (e.g. 39) to measure progress. Although this is not required by EAFRD Regulation, it would be beneficial to have it in order to have a full picture of water quantity issues in the region.

As not required, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD. There is no specific mention of monitoring on potential or effective water savings, morphological alterations or fertilisers and pesticide pollution. Although not required by EAFRD Regulation, it would be beneficial to use the WFD monitoring systems to measure progress on water issues.

Conclusions

The SWOT directly identifies the types of agricultural activities that are sources of the pollution problems. The pressures identified in the SWOT, however, are not fully consistent

to those identified in the RBMP: water abstraction from coastal aquifers is not explicitly identified as a pressure in the SWOT. The background document to the SWOT provides some information as regards the ecological status of water bodies using the WFD terminology and the most recent Art. 5 assessment data; however, data on the chemical and quantitative status of water bodies are not available. Data on pesticides pollution are also not available.

The RDP provides detailed explanation of the links between needs, measures, and priorities. Moreover, the implementation of the WFD is perceived both as a strength and opportunity in the SWOT which is welcomed. The needs identified correspond mostly to the pressures.

As regards the strategy for FA4b, diffuse pollution is directly addressed through M10.1.2 and M11. The share of the budget allocated to these measures is quite low (8% of the total RDP budget) considering 45,1% of groundwater bodies and 22,3% of surface water bodies are failing to reach good status. It is positive that both measures are targeted to nitrate vulnerable zones.

Regarding water use, the RDP finances various types of infrastructures works through M4 and advisory services through M2 indirectly. While these sub-measures have specifically been designed with the objective of addressing water pressures caused by irrigation, it must be noted that an expansion of the irrigation network may be financed, which may impact negatively the status of waterbodies. It is positive that minimum threshold for water savings under M4.1.1 and 4.3.1 is higher than 5%. However, not all sub-measures make a direct reference to the WFD and eligibility criteria do not always address water management issues, nor selection criteria to water bodies affected by abstraction pressures, although they generally give priority to higher needs or more vulnerable areas.

Regarding soil erosion and flood risk, M5 addresses well soil erosion and extreme climate conditions, which have an important impact on the quality of soil and water in the region. Soil erosion and desertification are identified as important element of the SWOT analysis. However, the WFD and the FD are not mentioned, neither in the measure description, nor as eligibility condition or selection criteria and it seems that hard measures (e.g. dredging) are programmed. Considering the target indicator for FA4b and 5a, considerable action outside the RDP (i.e. through strengthened WFD basic and supplementary measures) should be included in RBMPs if the objectives of the WFD are to be achieved.

Recommendations:

1. As stated under Art. 46 which is correctly referenced in the RDP, it is important to ensure waterbody status is known for all WBs before any extension of irrigation is considered. It is suggested to liaise with Water colleagues to get the most current information on waterbody status for all WBs to make sure that quantitative status is

known before any extension of irrigation is considered.

2. It may be necessary to increase the budget for water-related measures and/or programme other water-relevant measures to ensure that the 14,6% T10 target is met. Additional measures could include: optimising fertiliser use (control/limitation), cover crops or crops rotations and measures to control erosion and run-off (such as: low-no till agriculture, riparian margins, buffer strips, establishment of wetlands). These measures could be programmed through M10 as well as M4.4.
3. There is potential to programme and prioritise NWRM under M10 and M5 in order to achieve multiple benefits including hydrogeological risk reduction, water quality improvement and groundwater recharge, relevant for FA5a.
4. Water abstractions from coastal aquifers are not mentioned as a pressure contrary to what was identified in the RBMP. To improve the efficiency of water resources and reduce water abstractions it is recommended to implement measure that reduce water demand, e.g. switch agricultural production to less water intensive crops.
5. Although not required by the EAFRD, consider expanding both the context and target indicators to better reflect EU water management objectives. The context indicators of nitrogen and phosphorus pollution do not cover two other important water management issues, namely pesticide pollution. Adding indicators for these missing aspects would enable obtaining a fuller picture of the pressures agriculture is exerting on the environment in the territory and its evolution. The CMEF target indicators do not enable Member State authorities to track the impact the RDP measures have on improving water status. Especially with constraint budgets, it would be beneficial to have indicators in place that enable the authorities to track whether a measure's implementation is having a positive effect on the water status and is therefore worth financing. Here, linking also the monitoring programme to existing programmes under the WFD would be helpful and should not pose any additional administrative or financial burden on the district.

A29 Italy – Tuscany

In Tuscany there are four river basin districts: Northern Apennines, which covers most of the region, Serchio, which is entirely in the Region of Tuscany, and the Central Apennines and the Po districts, which only marginally touch the region. The main agriculture pressures identified in the respective River Basin Management Plans (RBMPs) are: water abstraction, diffuse pollution (nitrates) linked to arable and livestock farming, morphological alterations and saline intrusion. Soil erosion is not mentioned as a pressure.

SWOT

The SWOT in the RDP provides up to date information on the status of water bodies, using the WFD terminology and data from the 2010-2012 monitoring period. The information presented is for the region specifically. 37% of groundwater bodies (GWBs) are in 'poor' chemical status, and 39% in 'poor' quantitative status. 54.5% of surface water bodies (SWBs) are considered to be in a 'less than good' ecological status and 17.2% in a 'less than good' chemical status. However, pressures from the agricultural sector have been evaluated in the RDP as 'low' for 79.25% of the GWBs and in 70% of SWBs. This is probably explained by the fact that water pressures come primarily from other sectors.

Diffuse pollution problems are mainly due to arable farming. Agricultural pressure related to the use of pesticides and fertilizers is considered to be of medium intensity for approximately 25% of SWB and 20% of GWB. The SWOT also emphasizes that the use of chemical nitrogen fertilizers had a net reduction in the last decade. This decline is largely due to the decrease in cultivated areas, particularly arable land, but also to a more careful management of fertilization, especially in areas vulnerable to nitrates, and to the increased use of integrated and organic farming and the consumption of organic fertilizers.

Poor quantitative status is due to water abstraction from the agriculture sector. The SWOT highlights that the consumption of water for irrigation in 2010 corresponded to less than 15% of total water resources taken in the region and does not constitute a problem in itself; however, the prevalence of individual groundwater withdrawals (at least two-thirds of the farms use groundwater for irrigation) and water scarcity during summer period make the water supply and the protection of water quality problematic. In Tuscany, the irrigated area is extremely limited (about 32,500 ha) at just over 4% of regional UAA. 70% of irrigation is dedicated to arable open fields, under which horticultural and plant nursery crops prevail. Almost 30% of irrigation is used to support crops such as vines, fruit and olives. In the last 10 years, the use of irrigation has decreased for field crops (corn, tomatoes for industry, tobacco), due, on the one hand, to the reduction in their profitability and, on the other hand, to serious water supply problems in different areas of the region. On the contrary, there is a growing interest in the irrigation of specialized crops (vines, olive trees) as a result of climate change and the need to increase water allocations in hilly areas. The SWOT emphasises that irrigation will continue to be necessary for agricultural production

(especially for horticulture, viticulture and olive).

A large part of the cultivated land is at risk of soil erosion and hydrogeological risk, corresponding to 438,000 hectares of UAA, mostly arable and tree crops.

Flooding issues are not touched upon in the descriptive section, but are identified in the Strengths, Weaknesses, Opportunities and Threats section. All the descriptive pressures are properly translated into this section. The strengths mention the reduced use of regional water resources for irrigation of field crops and the use of irrigation on quality crops. The programme identifies all the following pressures mentioned as weaknesses: soil erosion and hydrogeological risk, deterioration of the quantity and quality of surface and groundwater bodies, and lack of water availability, deficiency and need for modernization of infrastructures for the accumulation and distribution of rain and surface waters and, in certain cases, inefficiency of existing ones. In addition, other weaknesses identified are flooding risks and the lack of knowledge on the part of farmers of issues related to biodiversity, landscape, the water resources management, effluents, soil and climate change.

The programme identifies as an opportunity the possibility to build and maintain agri- and forest-hydraulic systems for soil protection and water control as well as the adoption of and environmentally friendly farming technique for water protection. Another opportunity mentioned is the recovery of small reservoirs for the accumulation of rainwater and surface water, the development of projects for the reuse of treated wastewater for irrigation.

The programme identifies as a threat climate change impacts that could affect water quantity as well as the increased damage to farm structures due to the intensification of soil erosion phenomena.

Needs

Three specific water needs were developed out of the SWOT: Need 12 - Improving the management and protection of water resources linked to FA4b and FA5a; Need 15 - Promote strategies for mitigating and adapting to climate change linked to FA5a; and Need 13: Protect the rural territory from hydrogeological instability, landslides and floods, and desertification, linked to FA4c.

All pressures identified in the SWOT have been turned into needs. The needs descriptions are clear in their link to the pressures identified in the SWOT and the types of measures needed to address the needs.

For Need 12, the link to the WFD exists through reference to the goals of the WFD. This need addresses the pressures on water quality and quantity. The description of Need 13 mentions the link to the objectives of the Floods Directive and specifically addresses the

risk of soil erosion, while Need 15 is linked to the threat identified from climate change and focus on adaptation efforts to protect water resources.

In addition, Need 10 relates to - Improve risk management, and promote the prevention and restoration of damage to production and business facilities, and, while it is linked to FA3b, there is no explicit mention of water issues.

FA4b and FA5a are also linked to other cross-cutting Needs, namely: 1 - Strengthening of the system of knowledge and innovation transfer, 18 - Simplification of the regulatory framework and strengthening administrative capacity, 2 - Promoting innovation through cooperation and collective projects, and 3 - Promotion of training. Of these, only Need 1 specifically mentions protection of water resources.

Strategy

The general strategy of the RDP points specifically to the need to address environmental legislation and specifically to achieve objectives of the WFD and FD. P4 and P5 comprise 32% of the overall budget. A higher budgetary priority goes to competitiveness and knowledge transfer with - 42% for P2 and P3a together.

The strategy for FA4b clearly describes how each measure selected intends to support the implementation of the WFD or the FD. FA4b is linked to 6 measures: M1, M2, M4, M10, M11, and M16. The description distinguishes these measures according to primary and secondary effects. With regards to the measures that will directly support the improvement of the management and protection of water resources (Need 12), the strategy mentions sub-measure 4.4, which includes interventions that can facilitate the collection, storage and natural purification of surface water, as well as the reduction of the impact of fertilizers and pesticides, and sub-measure 10.,1 which aims to implement agricultural practices designed to ensure water savings and qualitative protection of waters to contribute to the objectives the WFD. However, it is not specified what type of 'interventions' (M4.4) or 'agricultural practices' (M10.1).

The strategy for FA4b clearly explains that sub-measures 4.1 and 4.3 will indirectly support the improvement of the management and protection of water resources (Need 12) through investments at agricultural holding level (M4.1) and at the agricultural consortia level (M4.3) for the construction (new, small structures) or restoration of existing reservoirs / tanks and installations for the storage and distribution of rainwater, surface water and wastewater, the acquisition of tools and control equipment and decision support for the rationalization of irrigation. Organic agricultural practices (M11) are also mentioned as a measure that is not explicitly associated with water management, but could have complementary effects to reduce the use of fertilisers and pesticides.

Moreover, the strategy also mentions M1 – Knowledge transfer and information actions and

M2 - Advisory services, farm management and farm relief services to promote projects for the rationalization of water management and the awareness raising of agricultural techniques compatible with the protection of waters against pollution, as well as M16 - Cooperation for the implementation of territorial integrated projects for the improvement of water management and water protection.

The target indicator T10 for FA4b indicates that 10.08% of agricultural land will be contracted to improve water management. Considering that pressure of the agricultural sector is evaluated as low for both GWBs and SWBs and that the pressure related to the use of pesticides and fertilisers is of medium intensity for only a small share of the water bodies, this seems an appropriate target to contribute to reaching WFD objectives.

With regards to FA5a, the strategy also explains how the selected measures will contribute to Need 12 but does not explicitly mention the RBMP and the WFD objectives. Like FA4b, this focus area is linked to M1, M2, M4.1, M4.3, M10.1 and M16, putting more emphasis on the need to increase efficiency of water use in agriculture and increase water savings. M10.1 is specifically aimed at promoting water management techniques that allow the reduction of the irrigation volumes and higher water retention capacity of the soil. FA5a is also indirectly linked to M1, M2 and M16.

The target indicator T14 indicates that 4.94% of irrigated land will switch to a more efficient irrigation system, which seems a fair target considering this will be achieved through M4.1, M4.3 and M10.1 in order to reduce individual groundwater withdrawals which is the main problem in the region.

FA3b on 'supporting farm risk prevention and management' is programmed but does not address flooding issues, which are instead addressed, together with erosion risk and hydrogeological instability, through FA4c on 'Preventing soil erosion and improving soil management'. This focus area foresees M4.1 for the purchase of equipment for reduced-tillage, and M4.4 for the rehabilitation and construction of agricultural hydraulic systems to mitigate the vulnerability of areas subject to hydrogeological risk, contain soil erosion and flooding risk in the cultivated areas and, improve their resilience to climate change. M10.1 is planned under this focus area to promote the use of agronomic practices aimed at reducing erosion through the preservation and the increase of the organic characteristics of the soil as well as the increase soil water retention. M11 is also planned to increase of organic characteristics of the soil as well as the increase soil water retention. M5, M8, M13 and 16 are also planned under this focus area and will indirectly contribute to Need 13.

Ex-ante Conditionalities

EAC 5.2 was assessed by the MS as non-fulfilled.

The RPD proposes a roadmap for fulfilment of ex-ante conditionality by the end of 2016

with the following action points:

- Implementation at regional level of national guidelines regarding water pricing
- In the case of water supply, expansion of the use of incentive prices based on volumes used.
- In the case of individual water extraction, expansion of use of incentive pricing based on volume used (requirement to be included in the river basin management plans by 12.22.2015).
- Implementation at regional level of national guidelines for the definition of environmental and resource costs related to water abstraction.

Implementation of adequate mechanisms for the recovery of operating costs (including maintenance costs), environmental and resource costs (requirement to be included in the river basin management plans by 12.22.2015).

Measures

The following measures are proposed as addressing water management issues under FA3b, FA4b, FA4c and FA5a: M1, M2, M4, M5, M10, M11, and M16.

Measure 1: This measure finances knowledge transfer and information actions. There is an explicit link to the Needs and Priorities on environmental and water issues. The general description of the measure and the sub-measures, in fact explains that it is planned to address the farmer's lack of knowledge regarding water and pollution management practices, among others. The measures will finance, among others, training programmes on the requirements established by Article 11 of the WFD as well as Article 55 of the Plant Protection Product Regulation.

Measure 2: This measure finances advisory services, farm management and farm relief services. The link to FA4b is made explicit in the general description, while the sub-measures description state that advisory services must be linked to the specific needs with regard the protection of water and the implementation of article 11 of the WFD as well as Article 55 of the Plant Protection Product Regulation, among others.

Measure 4: This measure finances investments in agriculture holdings. While the general description does not explicitly refer to meeting WFD objectives, it does include water management issues (both quantity and quality). The description of the measure explicitly refers to addressing the Needs and Focus Areas related to water.

- Sub-measure 4.1.1: Improving the competitiveness of farms. Investments are

proposed for the construction of dry stone walls, terraces, embankments for the retention of surface water and for meters for the withdrawal of water. An eligibility criterion requires that the investments support water savings and the reduction of pollution, and a selection criterion prioritises investments in areas at risk of hydrogeological instability and investments in olive production to counteract the low profitability of the sector as explained in the SWOT.

- Sub-measure 4.1.4: Management of water resources for irrigation. This measure is aimed at a more efficient water use in agriculture and to address the water needs caused by climate change through interventions that improve the system of accumulation, distribution and irrigation. The link to the WFD as well as to the RBMPs is explicit. Investments include: collection and storage of water to be used for irrigation at agricultural holding level and improvement of those already existent; recovery and treatment of waste water; networks for the distribution and use of water including new irrigation systems or improvement of the existing ones; and measuring, remote and automated water control system. Eligibility criteria refer to Article 46 of RDP regulation. The requirements of Article 46 are correctly transposed. There remain some potential issues with their application to some project types. For example, it appears that projects that finance the creation or restoration of a collection and storage system and the recovery, treatment and use of recycled water that have no impact on a body of surface water or groundwater do not need to meet Article 46(c). However, it is not clear how this impact will be evaluated. There are no selection criteria to prioritise implementation in areas where water bodies fail WFD objectives. Selection criteria generally give priority to higher needs or more vulnerable areas.

- Sub-measure 4.3.1: Support for agricultural investment in infrastructure to improve the management of water resources. This measure is clearly planned to address the agricultural pressure on groundwater bodies, both in terms of quantity and quality. The link to the WFD as well as to the RBMPs is explicit. It promotes interventions to support water supply techniques as alternatives to groundwater withdrawals; infrastructure for the collection and storage of rainwater and surface water; support to the construction and modernization of irrigation networks and equipment to facilitate distribution of water at consortium level; and to improve the management and control of water withdrawals, with the introduction of control and measurements systems. Eligibility criteria refer to Article 46 of RDP regulation. The requirements of Article 46 are correctly transposed. As with sub-measure 4.1.4, there remain some potential issues with their application to some project types. For example, it appears that projects that finance the creation or restoration of a collection and storage system and the recovery, treatment and use of recycled water that have no impact on a body of surface water or groundwater do not need to meet Article 46(c). However, it is not clear how this impact will be evaluated. Selection criteria include prioritisation to areas that need more action to achieve a good status of water as required by the WFD as well as areas with specific

environmental problems (areas vulnerable to nitrates).

- Sub-measure 4.3.2: Support for investment in infrastructure to access to farm and forest land. Among the interventions for the improvement of the agri-forestry-pastoral road network, flood control works, storm drains, gutters and crossing pipes are foreseen. There are no eligibility or selection criteria specifically related to flood risk areas. The sub-measure seems to target small-scale adjustments only, which would likely have limited negative impact on water bodies.
- Sub-measure 4.4.2: Non-productive investments for improving the management and protection of water resources. This measure is clearly planned to address the agricultural pressures identified in the SWOT. The link to the WFD as well as to the RBMPs is explicit. Planned investments are aimed at increasing the storage capacity of water during periods of heavy rain through the creation and restoration of structures for the accumulation and exploitation of rainwater and surface water. In addition, operations to improve water quality and protect WBs from widespread pollution (in particular, nitrates and pesticides) from farming will be financed, such as the creation of buffer zones and the creation or restoration of wetlands. The eligibility conditions explicitly refer to the general descriptions where it is explained that these interventions are primarily planned to achieve the WFD objectives. The selection criteria specify that integrated projects aimed at improving the management and protection of water resources are prioritised.

Measure 5: this measure is aimed at the prevention of damage caused by natural disasters and extreme weather and the restoration of agricultural land and production caused by them. It is explicitly linked to FA3b and FA4c and to the pressures identified in the SWOT, such as soil erosion, hydrogeological instability and flooding risks. Investments are foreseen in the improvement of the efficiency of the hydraulic network, construction and improvement of agri-hydraulic systems and water control works (such as convexing, ditches that avoid drainage), river banks consolidation, restoration or expansion of the outflow sections, collection of rainwater, among others. Since there is no mention of the use of natural engineering techniques, it may be that these types of investments consist of hard measures that have the potential to deteriorate water bodies. The eligibility conditions and the selection criteria refer to the findings of the SWOT analysis and the identified Needs but not further details are provided whether this may relate to flood risk areas identified under the Floods Directive.

Measure 10: 6 sub-measures comprise Measure 10 on agri-environment-climate measures, of which 5 are specifically programmed under FA4b. These include: soil conservation, improvement of the management of chemicals and water inputs, improvement of pastures and meadows-grazing with environmental benefits, cultivation of local varieties threatened with extinction, and support for the conservation and sustainable use of genetic resources in agriculture.

The operations contribute to FA4b in that they support agricultural practices (sod seeding, use of cover crops and grassing of specialised tree crops) that favour limited use of synthetic fertilizers and pesticides and that reduce the spread of pollutants. Furthermore, the preservation and the increase of the organic substance leads to a higher capacity of infiltration and retention of water in the soil, reducing the need for irrigation of crops. Indirectly, the operations also facilitate the protection of water quality by reducing transport of soil sediment particles and nitrogen and phosphorus leaching in surface water. The operations also contribute to FA5a by encouraging the implementation of agricultural practices that allow greater water retention capacity and the reduction of the irrigation requirements.

The requirements of the WFD and the RBMPs are explicitly mentioned with regard to sub-measure 10.1.2. *improvement of the management of chemicals* (i.e. for each crop, qualitative selection of pesticides - exclusion or limitation of very toxic and toxic, and their quantitative reduction) and water input (the development of an irrigation plan in relation to the crop water balance that takes account of the phenological stages of the crop, climatic conditions and crop water requirements). The eligibility conditions and the selection criteria take into account the findings of the SWOT analysis and the identified Needs. A selection criterion consists in territorial prioritisation to areas subject to hydrogeological risk, erosion risk and NVZs.

Measure 11: this measure finances organic farming and is equally dedicated to P4a, b and c. The water-related pressures and needs are taken into account in the general description. The text emphasises that organic farming practices promote preventive measures against the use of authorised fertilizers and pesticides, and the responsible use of water resources through appropriate crop rotation. A selection criterion consists in territorial prioritisation to areas subject to hydrogeological risk, erosion risk and NVZs.

Measure 16: M16 on cooperation is explicitly linked to FA4b and FA5a as it aims to improve environmental sustainability of production processes (low impact production techniques, more efficient use of inputs – water, nutrient and plant protection products) and the prevention of hydrogeological risk. In particular, sub-measure M16.5 - *support for joint action undertaken with a view to mitigating or adapting to climate change* foresees specific cooperation action to address hydrogeological risks and for the better management and protection of water resources. No water-specific eligibility conditions are set. A selection criterion states that the activity should explicitly aim at satisfying needs 12, 13 and 15 which are the water-relevant needs identified in the SWOT.

Indicators

The RDP uses the required CMEF indicators to provide context to the SWOT and existing issues being faced by Tuscany: 20 (surface of irrigated land), 39 (water abstraction in agriculture), 40 (nitrate, phosphorus and nitrogen, including the % of water bodies failing

GS) and 42 (soil erosion rate by water and surface affected). However, there are no context indicators defined for pesticide pollution. Although these are not required by EAFRD Regulation, it would be beneficial to have them in order to have a full picture of water issues in the region.

In Chapter 11, indicators for FA4b only include T10 (% of agricultural land under management contracts to improve water management) and T11 (% forestry land under management contracts to improve water management) and context indicator 18 (used agricultural area) and 19 (total forest area). For FA5a the impact indicator T14 (% of irrigated land switching to more efficient irrigation system) and context indicator 20 (surface of irrigated land). These are of limited value for measuring the progress on water quality or water use. Furthermore, the RDP does not use relevant context indicators (e.g. 39 and 40) to measure progress. Although these are not required by EAFRD Regulation, it would be beneficial to have them in order to have a full picture of water quality and quantity issues in the region.

As not required, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD. There is no specific mention of monitoring on water savings, morphological alterations or pesticide pollution. Although not required by EAFRD Regulation, it would be beneficial to use the WFD monitoring systems to measure progress on water issues.

Conclusions

The Tuscany region programme takes an overall logical approach to addressing water management issues in its territory. There are clear explanations of the main pressures coming from agriculture, linking it to specific agricultural activities, and the SWOT provides detailed information as regards to the ecological, chemical and quantitative status of water bodies. The needs defined reflect well the pressures identified, and the strategy developed for FA4b and 5a clearly indicates which sub-measures will directly or indirectly contribute to the WFD.

With regard to diffuse pollution, the RDP tackles pesticide and nutrient pollution through M10 and M4.4 directly and M11 indirectly with a range of interventions (sod seeding, use of cover crops and grassing of specialised tree crops (M10) creation of buffer zones, creation or restoration of wetland (M4.4)). The sub-measures are well targeted to focus areas for water management.

Regarding water use, the RDP finances, through M4, support to water supply techniques in alternative to groundwater withdrawals, infrastructure for the collection and storage of rainwater and surface water; construction and modernization of irrigation networks and equipment to facilitate distribution of water at consortium level. While these sub-measures

have specifically been designed with the objective of addressing water pressure caused by irrigation, it must be noted that reservoirs and new irrigation network may be financed, which may impact negatively the morphology of river and a WFD article 4.7 assessment would need to be considered. Moreover, while the compliance with the requirements of Art. 46 have been mentioned as part of the eligibility criteria, some interventions seem to have been exempted and selection criteria do not prioritise implementation in areas where water bodies fail WFD objectives for all sub-measures.

M5 addresses soil erosion, hydrogeological instability and flooding risks identified in the SWOT. This is done through investments in the agri-hydraulic system. However, since there is no mention of the use of natural engineering techniques and NWRM, it seems these types of investments consist in hard measures that could increase the deterioration of water bodies. Moreover, while the measures are designed taking into account water pressures and needs as identified in the SWOT, specific at risk areas, as identified under the Floods Directive, are not prioritised by means of selection criteria.

On the positive side, other measures programmed under FA4b (M1, M2, M11, M16) are strongly linked to water management even if they will only indirectly contribute to achieving the WFD objectives.

The monitoring and the evaluation framework does not include relevant management indicators, especially those relevant for the implementation of the WFD and the FD and, as a consequence, it will be difficult to discern the programme contributions to WFD objectives and the end of the programming period and to inform future revisions. Only 7% of the M4 budget is actually allocated under FA4b and, looking at the table on agri-environment-climate (Chapter 11.4.1.1), it seems that M10 is planned to only indirectly address water issues (no direct link to FA4b), contrary to what was explained in the text. The low funding of FA4b despite a well-designed intervention logic could necessitate that action outside the RDP (i.e. through strengthened WFD basic and supplementary measures) be included in RBMPs if the objectives of the WFD are to be achieved.

Recommendations:

1. As stated under Art. 46 which is correctly referenced in the RDP, it is important to ensure waterbody status is known for all WBs before any extension of irrigation is considered. It is suggested to liaise with Water colleagues to get the most current information on waterbody status for all WBs to make sure that quantitative status is known before any extension of irrigation is considered.
2. There is potential to programme and prioritise NWRM under M5 instead of hard measures planned for flood protection, as well as under M10 and M4.4. This will enable to achieve multiple benefits including flood risk reduction, water quality improvement and groundwater recharge. Examples of measures that could be added are: recovery of dry stone elements to reduce water runoff and soil erosion

caused by extreme weather; recovery and restoration of natural and semi-natural habitats such as hedges and buffer strips; and small permanent and temporary wetlands ponds and springs. These elements help to reduce the flow of water by protecting river banks from erosion, promoting the sedimentation of particulate pollutants, reduce the impact of fertilisers through water filtration and phytoremediation action, as well as water regulation (flood control).

3. Although not required by the EAFRD, consider expanding both the context and target indicators to better reflect EU water management objectives. The context indicators of nitrogen and phosphorus pollution do not cover two other important water management issues, namely pesticide pollution. Adding indicators for these missing aspects would enable obtaining a fuller picture of the pressures agriculture is exerting on the environment in the territory and its evolution. The CMEF target indicators do not enable Member State authorities to track the impact the RDP measures have on improving water status. Especially with constraint budgets, it would be beneficial to have indicators in place that enable the authorities to track whether a measure's implementation is having a positive effect on the water status and is therefore worth financing. Here, linking also the monitoring programme to existing programmes under the WFD would be helpful and should not pose any additional administrative or financial burden on the district.
4. The programme takes an overall logical approach to addressing water management issues in its territory; however, the budget allocated to FA4b is low. It is recommended to increase it to ensure that the programmed measures are effective to achieve the WFD objectives and that the 10.08% T10 target is met.

A30 Latvia

In Latvia, there are four river basin districts, all of which are international basins: the Daugava, the Lielupe, the Venta and the Gauja. Hydromorphological modifications due to drainage of agricultural lands (melioration) and diffuse pollution (surface waters) are mentioned as significant pressures related to agriculture. Water use for agriculture is not indicated as a significant pressure. Flooding is also mentioned a serious issue in the country. According to the 1st RBMPs, about half of the surface water bodies (SWBs) in the four basins have achieved good ecological status/potential. Only 5.7% of natural SWBs and 13% of artificial and heavily modified water bodies have achieved good chemical status, the rest are in unknown status. All groundwater bodies (GWBs) are in good chemical and quantitative status.

SWOT	
<p>The SWOT in the RDP does provide any data regarding the status of water bodies in the territory. Although not required, the SWOT also does not mention any issues relating the flood management.</p> <p>According to the SWOT, 12.8% of the territory has been designated as nitrate vulnerable zones. During summer and spring season the level of nitrates is not over excessive (2010). It is identified that the main sources of pollution are fertilizers leaching from the soil, transformation processes of organic and non-organic chemicals. The general description in the SWOT does not link diffuse pollution problems to specific agriculture activities. A significant issue is water logged soils, which has resulted in major agricultural land drainage in the past. The SWOT highlights that the renewal and modification of aging drainage systems is an important measure for CO₂ sequestration, reducing GHG emissions and protection of forested areas. The SWOT references the implementation of the WFD and that melioration activities must be done in compliance with the requirements of the Directive.</p> <p>The water-related strengths identified in Programme include high or good ecological status of inland waters with good ecological quality during the summer. Weaknesses identified include outdated drainage systems. No water related opportunities were mentioned but on-going threats include intense use of pesticides and the use of fertilizers, as well as ground water pollution, and that the restoration of drainage systems could affect the quality of water.</p> <p>The water-related strength of high or good ecological status of inland waters appears to contradict the 1st RBMPs, which indicate that only 50% of monitored SWBs have good or high ecological status during summer and autumn (2010).</p>	

Needs

2 needs have been linked to Focus area 4b on “improving water management, including pesticide and fertilizer pollution”: increasing the level of knowledge in the agriculture, forestry and food industry and addressing the risk of environmental pollution and maintaining soil fertility.

The need on increasing the level of knowledge mentions the improving understanding of cross-compliance, organic farming, etc. and references environmental and biodiversity needs but does not make any specific references to a lack of knowledge of farmers or landowners regarding diffuse pollution problems or requirements in relation to the WFD.

The need on addressing risk of environmental pollution focuses on applying environmentally friendly farming techniques for the application of pesticides and fertilizers, promoting organic farming and reducing pollution of surface and groundwater bodies.

While not linked to Focus area 4b, a need has been included regarding the conversion of land reclamation systems on agriculture and forest land, which mentions the need to take into account the potential negative impact of drainage restoration on water bodies at risk.

All the water-related pressures in the SWOT have been turned into needs.

Not included in the needs section are references to flood risk, which was also not included in the SWOT (not required under the EAFRD).

Strategy

The general strategy of the RDP is very short and does not provide a justification of the water needs selection to be addressed by the RDP or any target setting based on evidence from the SWOT and the needs assessment. The implementation of the WFD is partially mentioned. Flooding issues, while not required under the EAFRD, are not mentioned either.

With regards to the budget, 39.5% of the total RDP budget is for P2 “Enhancing farm viability and competitiveness of all types of agriculture” and P3a “Improving competitiveness of primary producers”, compared to 38.6% assigned to P4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry”. It is not provided how much of the budget in P4 is dedicated to addressing water issues (formally, not required).

Focus area 3b on “supporting farm risk prevention and management”, is programmed through M05 and M17. The description mentions issues with rain but there is no mention

of flood risk prevention. This is partially covered by SO 5.1.2. "Decrease flood risks in rural territory" funded by ERDF.

Focus area 4b on "improving water management" is linked to 4 measures: M1, M2, M10 and M11. The description emphasizes organic farming and promoting environmental friendly farming in horticulture and arable farming through limiting excessive use of pesticides and fertilizers and establishing buffer strips along water bodies. Reference is made to taking advantage of greening under Pillar 1. To support the implementation of the WFD, the Programme has included under M10 the sub-measures "Stubble in winter" and "environmental friendly techniques in horticulture". Another emphasis is increasing awareness of production as regards sustainable water and soil management. In addition, the description mentions promoting environmentally friendly drainage systems to mitigate the negative effects on water quality. No new drainage systems will be financed.

The target indicator for focus area 4b is 16.59% of agriculture lands under contract to improve water management. This represents a positive commitment by the programme to tackle agriculture pressures on the water environment.

Information under Focus Area 4c refers to uptake of voluntary environmental commitments in order to improve water quality, protection of water and environmental resources.

Focus area 5a on "increasing efficiency in water use by agriculture" is not programmed. However, the RDP mentions that investments in drainage systems will help to increase the efficiency of water use in agriculture.

Ex-ante Conditionalities

EAC 5.2 was assessed by the MS as fulfilled. No action plan was required.

Measures

Focus area 4b on "improving water management" is linked to 4 measures: M1, M2, M10 and M11.

Measure 1: This measure contributes to Focus area 4 through support for vocational training and skills acquisition, short-term farm visits and exchange in experience regarding environmental aspects. The description of the individual sub-measures does not mention water management issues, rather mentioning the environment in general, so it is not entirely clear what water-related topics or support this measure will provide.

Measure 2: This measure contributes to Focus area 4 through support for the advisory

activities on environmental aspects of environmentally friendly farming methods and cross-compliance requirements. Water management issues are not specifically mentioned.

Measure 4: This measure finances investments in agricultural holdings. While it is not programmed under Focus area 4b, the general description points towards support to restoring drainage systems. In addition, sub-measure 4.1 finances manure storage facilities. While focussed on reducing emissions, this measure will also help to reduce water pollution.

- Sub-measure 4.3: This measure supports the reconstruction of infrastructure for drainage systems. The measure description indicates that aid intensity is greater for environmentally friendly measures like sedimentation ponds, wetlands and rainwater harvesting. It is stated that an environmental impact assessment is only required for projects where the reconstructions of drainage or irrigation systems cover land greater than 500 ha. Eligibility criteria state that financial support will be provided for reconstruction of drainage only if it is in line with Art. 4 (7,8,9) of the WFD, taking into account the cumulative effectiveness of appropriate mitigation measures at river basin level. Selection criteria state that projects will be prioritised in at-risk water bodies that do not lead to any deterioration or negatively affect a positive improvement in water body status.

Measure 10: The programme states that agri-environment-climate measures (AECMs) will be implemented on the basis of the national biodiversity programme. 4 sub-measures comprise Measure 10, of which 2 sub-measures are specifically linked to focus area 4b: “Stubble fields in winter” and “Environmentally friendly horticulture”. The sub-measure “Stubble fields in winter” will protect against nutrient-off and erosion and increase the buffering capacity of soil. Eligibility criteria requires at least 10 ha of agriculture land to be under contract with parcels at least .3 ha in size with the justification that larger parcels tend to be located in wind erosion areas. The sub-measures “Environmentally friendly horticulture” requires farmers to go beyond the Pesticides Directives and use less plant protection products (herbicides, insecticides, fungicides), as well as fertilizers. For both measures, there are no eligibility criteria targeting this measure towards water bodies failing good status. In addition, although not a requirement under the EAFRD, the measures do not have any selection criteria that could prioritise farmers in areas where water bodies are at risk. In addition, the sub-measure “Maintenance of biodiversity in grasslands” prohibits mechanical tillage or the use of synthetic chemical fertilisers or pesticides, and the sub-measures “Environmentally friendly production for bees” prohibits the use of pesticides. This measure will, therefore, also contribute to reducing agriculture pollution.

Measure 11: In the Programme, Organic Farming is viewed to have a positive effect on focus area 4b. The general description states that requirements of Organic Farming reduce nutrient run-off and pesticide pollution. This measure is not designed to specifically

address water pollution problems, as there are no selection criteria in place (which are not required by the EAFRD) prioritizing the financing of this measure to WBs failing good status due to diffuse pollution or pesticide problems. Nonetheless, it should help ensure WFD no-deterioration objectives.

Indicators

The RDP uses the required CMEF indicators to provide context to the SWOT and existing issues being faced in Latvia. Information is provided on nitrogen and phosphorus pollution and soil erosion by water. The context indicators have not been voluntarily expanded to include information on water body status in line with the WFD. Also, there are no additional programme specific context indicators (voluntary) defined for pesticide pollution or morphological alterations. This makes it difficult to understand, for example, the full effects the drainage systems have on the environment.

The target indicators used in the programme are as defined according to the CMEF: percentage of agricultural and forest land under management contracts to improve water management. From a WFD perspective, these indicators on their own are not suitable for monitoring how the water-related measures are contributing to the improvement in water bodies as regards good ecological and chemical status. The description of the evaluation system does not mention using WFD monitoring data.

As not required, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD.

Conclusions

Despite the SWOT in Latvia not providing comprehensive information regarding the water environment and the general information on the strategy not mentioning water management or implementation of the WFD or the FD, the programme developed clear needs and strategy for Focus area 4b. Nevertheless, it would have been beneficial to have clear, up-to-date information (using the 2013 Art. 5 WFD assessment update) regarding the status of WBs in Latvia, as well as linking agriculture activities to water pressures.

The share of the budget within the programme overall shows that promoting competitiveness and environmental protection have an almost equal weight.

Although the assessment of pressures from the 1st RBMP highlighted that flooding is a major issue in the country, flood prevention was not included within the programme. This is partially covered by SO 5.1.2. "Decrease flood risks in rural territory" funded by ERDF.

The needs related to water and Focus area 4b emphasized improving knowledge and reducing pesticide and fertilizer application. These needs are fully taken up within the description of Focus 4b. While both Measure 1 and 2 are linked to improving knowledge on environmental issues and cross-compliance, water specific issues are not explicitly mentioned in either measure description. It is, therefore, not fully clear whether water management topics will indeed be included in trainings or farm advice. It would have been beneficial to include advisory services on Art. 11 (3) of the WFD, considering the low level on knowledge of farmers on environmental issues in general in the country.

The main emphasis of the strategy for Focus area 4b is on measures under M10 and M11. It is positive that not just the sub-measures programmed under Focus area 4b, i.e. “Stubble fields in winter” and “Environmentally friendly horticulture”, target water management issues, but that all four measures under M10 include restrictions on pesticide and fertilizer application. The commitment to reducing pesticide and fertilizer applications is shown through the ambitious target indicator of 16.59% of agriculture lands under contract to improve water management. However, as mentioned above, neither “water programmed measure” include eligibility criteria targeting the measure towards water bodies failing good status. In addition, although not a requirement under the EAFRD, the measures do not have any selection criteria that could prioritise farmers in areas where water bodies are at risk.

Although not programmed under Focus area 4b, sub-measure 4.3 financed the restoration of drainage systems. Across the programme, the emphasis as regards drainage activities have been on the environmental benefits they bring in terms of water quality and CO₂ emissions. However, it is also clear that drainage systems have primarily been designed to enable agriculture activities on land otherwise not suitable for farming. It is positive that clear references to adherence to Art. 4 (7,8,9) of the WFD have been included in the eligibility criteria. Moreover, selection criteria will prioritise projects that do not lead to a deterioration in water body. The sub-measure description also mentions financing more environmentally friendly operations like sediment traps and wetlands, but the selection criteria does not prioritise these operations over others. Overall, it is important this measure has committed to taking into account cumulative impacts of these projects at river basin scale.

The strategy for Focus area 4b addresses well nutrient and pesticide pollution, but despite the positively high target indicator, good ecological and/or chemical status has not been achieved in many water bodies (according to the 1st RBMPs), indicating that considerable efforts outside the RDP programme will be needed in order for WBs in Latvia to achieve the objectives of the WFD. This includes strengthening WFD basic measures (reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and including additional measures beyond the AECM found in the RDP with the WFD supplementary measures (measures funded by non-EU funds) if the

GS objective of the WFD is to be achieved.

Finally, although no MS or region is required to go beyond the CMEF defined indicators, additional programme specific indicators can be developed. Given that the Programme did not include additional programme specific indicators to adequately measure the results of the measures in terms of achieving ecological and chemical status improvements, it will be difficult to discern its contributions to WFD objectives at the end of the programming cycle and to inform future revisions.

Recommendations:

1. Strengthen the potential impact of water-related measures by targeting them to water bodies failing good status or prioritising farmers in catchments with especially poor status.
2. Provide more comprehensive information regarding the status of water environment in the SWOT, including also how rural areas and farmers are negatively impacted by flooding. This would strengthen the intervention logic of the programme.
3. Although not required, consider expanding both the context and target indicators to better reflect water management. The context indicators of nitrogen and phosphorus pollution do not cover two important water management issues, namely pesticide pollution and morphological alterations. These missing aspects do not enable obtaining a full picture of the environment in the territory, which is quite information considering the emphasis the programme has placed on financing measures to reduce pesticide applications and drainage activities. Moreover, the target indicators do not enable to track the impact these measures have on improving the water environment. Especially with constraint budgets, it would be beneficial to have indicators in place that enable the authorities to track whether a measure's implementation is having a positive effect on the water environment and is therefore worth financing. Here, linking also the monitoring programme to existing programmes under the WFD would be helpful and would not pose any additional administrative or financial burden on the district.

A31 Lithuania

In Lithuania, there are four river basin districts (RBDs): Nemunas, Lielupe, Venta and Dauguva. The main agriculture pressure identified in the respective River Basin Management Plans (RBMPs) is diffuse pollution from nitrates in three RBDs and the impact varies depending on the intensity of agricultural activities (production type is not identified). Phosphorus is not mentioned as a significant pressure. For plant protection products (pesticides, herbicides etc.), available information is insufficient to assess the significance. Water use in the agricultural sector is not indicated as a significant pressure (<0.01%-2%). Soil erosion is not mentioned as a pressure in all four RBDs. Morphological alterations in all four RBDs are indicated as a significant pressure and are linked to agriculture activities as they include straightening of rivers for drainage purposes (Nemunas) or land reclamation purposes (Lielupe, Dauguva and Venta). Eutrophication is mentioned as a significant pressure for the transitional waters in Nemunas RBD and Venta RBD (reasons unknown, possibly considerable amounts of phosphorus in sediments).

SWOT
<p>The SWOT refers to the RBDs found within the regional territory of the RDP, but information presented is general. It is not clear whether the SWOT uses the most up to date information from the recent WFD Article 5. The information is dated to 2009-2012.</p> <p>As regards water quality, the SWOT states that the status of rivers has improved over the recent decade in Lithuania, though in the coastal area of the Baltic Sea, two thirds of rivers and one third of lakes do not meet the good water status (GS) requirements. In 2012, 54% of surface water bodies (SWBs) in Lithuania had a good quality according to the WFD. The SWOT states that most of the groundwater bodies (GWBs) are in good quantitative and chemical status; available groundwater resources are higher than their current or expected extraction in Lithuania, however it does not provide numbers. With regard to GW quality status, it states that the regional-scale nitrogen and phosphorus concentrations do not exceed drinking water quality standards; however, in intensive agricultural areas there is a noticeable impact of diffuse pollution (no numbers provided) though localized and episodic. In this respect, the SWOT refers to research results showing that the impact of livestock farming on GW quality is probably less than has previously been assumed. It further states that nitrate concentration in the SW and GW in Lithuania is the lowest in the EU (three times lower than the EU average in 2009-2012). During the same period, the total phosphorus balance was negative on the agricultural land.</p> <p>While the RBMPs identify diffuse nitrate pollution and morphological alterations (straightening of rivers for the drainage and land reclamation purposes) as the main agriculture pressures, the SWOT in the RDP reiterates the problem of diffuse nitrate pollution, but does not mention morphological alterations for agricultural purposes. This is</p>

an important omission.

The SWOT mentions the Floods Directive (2007/60/EC), though flood risk management measures are not addressed in the SWOT.

In relation to agriculture-related pressures affecting water bodies in the programming area, the SWOT indicates (directly and indirectly) two weaknesses: (1) due to agriculture activities, nitrates concentration in a part of WBs does not allow for meeting GES; and there is a lack of SW pollution reduction from diffuse sources, and (2) soil moisture surplus on a part of the agricultural land requires regulating the water regime (though not mentioning how – presumably via drainage)). One opportunity mentioned is that SW protection can be strengthened by the promotion of advanced green technologies and by awareness raising of farmers about the impact of fertilizer and pesticides on the aquatic environment. A strength is the development of ecological and environmentally friendly farming.

Needs

Five needs are linked to Priorities 3b “Supporting farm risk prevention and management” (1, 4, 18 and 23) and 4b “Improving water management, including fertilizer and pesticide management” (1, 4, 16 and 18), none to 5a “Increasing efficiency in water use by agriculture”. Only one Need 16 “To promote environmentally friendly farming and environmental protection innovation” has been linked to water pressures identified in the SWOT: to reduce pollution risk of SW, though no link to pollution with nitrates is indicated. Measures needed to address this Need 16 are not identified in Chapter 4.2. The descriptions of the rest of the Needs (1, 4, 18 and 23) are not clear in their link to water issues and pressures identified.

There are three further Needs not linked to Priorities 3b, 4b and 5a, but consider water issues and pressures identified in the SWOT. Need 21 “To encourage livestock farmers to install farming methods that reduce the impact on the environment and climate change”. The description addresses especially large livestock farmers by introduction of farming methods with minimal detrimental impact on groundwater quality. Need 24 “Streamline land use by updating land reclamation systems and carrying out land consolidation”. The description focuses among others on the task to upgrade deteriorated land reclamation equipment; while investment will be funded only after an environmental assessment is carried out by the Regional Environmental Protection Departments, in particular the compliance with the WFD. Need 27 “Drinking water quality and wastewater management”. The description focuses on the infrastructure improvement.

The Needs are clear in their link to the pressures identified in the SWOT; though measures needed are not identified. Both pressures identified in the SWOT have been turned into needs. Morphological alterations, however, are again not mentioned

Strategy

The description of the general RDP strategy presents very detailed information regarding the implementation of the WFD, namely it:

- states that the prioritisation of the Needs took into consideration the main identified problems in the Lithuanian rural situation analysis, including: pollution of water bodies caused by agriculture activities; soil moisture surplus and obsolete drainage equipment.
- points specifically to the compliance of the RDP with the EU water quality legislation and importance that the RDP Needs are consistent with the Needs and solutions of the RBMPs.
- lists the main agricultural pollution mitigation measures, including: organic and mineral fertilizer use and management, compliance with the maximum allowable amount of nitrogen and phosphorus fertilizers per hectare, implementation of fertilization plans and compliance with manure management requirements, which are most relevant to Nevėžis and to a lesser extent to Šventoji and Šešupė sub-basins.
- points out that the financial support for investments to reconstruct land reclamation systems will be granted only when these investments will comply with the WFD, especially Art. 4.7, 4.8 and 4.9, considering the cumulative impact and when the required mitigation measures will be provided at the RBMPs level.
- highlights that the RDP will reduce negative impacts on fresh waters, transitional and coastal water resources and so will maintain a good or even improved ecological and chemical status of SW as defined in the WFD.

In terms of the RDP's overall budget, the sum of interventions for P2 (Enhancing farm viability and competitiveness of all types of agriculture in all regions and promoting innovative farm technologies and the sustainable management of forests) and P3a (Improving competitiveness of primary producers by better integrating them into the agri-food chain through quality schemes, adding value to agricultural products, promotion in local markets and short supply circuits, producer groups and inter-branch organisations) (42,4% of the total RDP budget) is slightly higher than the sum of P4 (Restoring, preserving and enhancing ecosystems related to agriculture and forestry) (31,8%), indicating that the RDP's focus is orientated slightly more to improving competitiveness than addressing environmental issues. This can be understood given the relatively low level of nutrient pollution in the country as compared to more intensive agricultural regions.

As regards the strategy for Focus Area 3B on "Supporting farm risk prevention and management", the description does not mention flood management measures; rather, it

focuses on covering insurance premiums for crop, animal and plant and, in the event of adverse weather events, facilitating farmers to restore agricultural potential.

Focus Area 4B on “Improving water management, including fertilizer and pesticide management” is linked to 8 measures: M01, M02, M04, M10, M11 and M12 (for agricultural land). Improvement of water management is implemented through the activities of the Measure “agri-environment and climate”, incl. “extensive management of wetlands”, “protection of water bodies against pollution and soil erosion of arable land”, “status improvement of water bodies at risk” and “soil protection”. These activities are related to the implementation of the Nitrates Directive and the WFD, for example, activities related to the protection of water bodies at risk and to the protection of soil. The activities under the Measure “agri-environment and climate” support sustainable use of pesticides, especially in the cultivation of fruits and vegetables. Implementation of these activities will also contribute to the need No. 3 (To promote environmentally friendly farming and environmental protection innovations). Detailed information on how the other measures will contribute to Focus Area 4B are not described in the strategy. Despite developing a strong Strategy to address water management issues, the target indicator T10 for Focus Area 4B is only 1.97% of agricultural land under management contracts to improve water management. Given that 46% of SWBs are still failing to reach good status, the target appears low.

Focus Area 5A on “Increasing efficiency in water use by agriculture” is not programmed.

In addition to the individual priorities, the RDP highlights water-related issues within its chapter on cross-cutting objectives. The RDP states that implementing agri-environmental activities related to water quality improvement targeted to reduce water pollution, the conversion of arable land into permanent grassland and pastures will be carried out as well, as investments in fertilizer spreading technology. In most of the areas with agri-environment activities, the use of plant protection products (for example, pesticides and herbicides) is completely prohibited; in other areas, investments will be done into modern and safe use equipment for pesticides, fungicides and herbicides.

Ex-ante Conditionalities

EAC 5.2 is considered as not fulfilled by the MS. However, the EAC is not applicable as Focus Area 5A is not programmed. The situation of (low) water use in agriculture and high water availability in Lithuania does not require increasing agricultural water use efficiency ().

Measures

Focus Area 4B on “Improving water management, including fertilizer and pesticide management” is linked to 8 measures: M01, M02, M04, M10, M11 and M12 (for agricultural

land).

M01: This horizontal measure is designed to provide vocational training, skills, demonstration projects and outreach/information services. Its description does not link to Focus Area 4B but contributes indirectly to its implementation. Sub-measure 1.1 pays particular attention to training, which introduces, among others, mandatory legislation and agri-environmental requirements. It emphasizes that training related to M10 will promote status improvement of water bodies and reduction of mineral fertilizer use. Sub-measure 1.2 aims to ensure dissemination of scientific knowledge and innovations. It contributes to introduction of new farming methods reducing negative impact on the environment, but does not specifically focus on water issues.

M02: This horizontal measure is designated to provide consultancy services for farmers that, among others, focus on the GAEC standards for cross-compliance, environmentally beneficial agricultural practices and agricultural modernization measures. It will contribute to more environmentally friendly farming, innovations, reduction of farming activities' impact on the environment and the excessive moisture reduction. It is not linked to Focus Area 4B but contributes indirectly to its implementation. Sub-measure 2.1 refers to special consultations on water protection according to the WFD Art. 11.3, with a focus on the application of integrated plant protection measures which reduce pesticides use.

M04: Despite being programmed under Focus Area 4B, the general measure description does not mention water issues, although there are sub-measures addressing them. The measure is aimed at modernization of agricultural holdings and infrastructure improvement in agriculture and forestry (consolidation of land, water management, forest infrastructure) for the purpose of competitiveness strengthening and reduction of environmental impact from negative production activities. Investments support, among others, efficient use of water and its quality assurance measures. Solving the issues of rational land use, investments support updating land reclamation systems and land consolidation. Sub-measure 4.1 and 4.2 aiming to increase competitiveness, supports the investments in agriculture holdings innovations to improve quality of agricultural production. Selection criteria prioritise the projects providing tools and techniques for solving environmental problems (e.g. water and soil pollution reduction). Sub-measure 4.3.1 focuses on land consolidation and infrastructure improvement (contributes to P2a); the selection criteria prioritise projects including environmental protection solutions but water is not mentioned. Sub-measure 4.3.2 focuses on agricultural water management and supports the investments in field drainage engineering infrastructure upgrades (no new installations) to preserve the quality of soil (contributes to P2a). Projects' plans have to provide environmental impact assessment carried out by the LT EPA, and assessment of compliance with the WFD Art. 4.7 (which should ensure that the projects do not cause deterioration of status). Sub-measure 4.4.1 focuses on habitats protection and supports non-productive investments linked to agri-environment-climate objectives, including management of natural and semi-natural meadows and extensive wetlands (contributes to P4c) but should also have a secondary effect on water protection as use of fertilisers and

pesticides is either limited or totally forbidden by extensive management, though this is not included in the description of the measure. However, measure 4.4.1 does not target water bodies identified in the RBMPs in its eligibility or selection criteria, so its contribution to supporting the WFD is limited.

M10: 11 sub-measures comprise Measure 10, of which 7 are specifically programmed under Focus Area 4B. This includes: Sub-measure M10.02 on management of specific meadows (e.g. ban on using fertilisers and plant protection products, ban on installing new drainage and irrigation systems, and limited grazing livestock). Sub-measure M10.03 on extensive management of wetlands (e.g. ban on using fertilisers and plant protection products, ban on installing new drainage and irrigation systems that improves hydrological status). Sub-measure M10.06 on strips or fields of woody plant on arable land (e.g. ban to use mineral and organic fertilizers and PPP). Sub-measure M10.07 on protection of water bodies against pollution and soil erosion on arable land (e.g. expanding water body protection strips by 5-10 m in addition to those required by the national legislation on SWB on arable land by sowing perennial grasses and maintaining, and ban on fertilization and PPP use). Sub-measure M10.08 on supervision of reclamation ditch slopes (e.g. grass mowing). And sub-measure M10.09 on status improvement of at “risk” water bodies, soil protection (e.g. growing perennial grasses, conversion of arable land into grassland, the prohibition of mineral and organic fertilizers and plant protection products in high-risk WB areas will help to prevent water pollution by nitrogen and phosphorus). For the latter 3 measures, eligibility criteria define the targeted areas for implementation: designated habitats and protected species sites, at “risk” water body basin areas and nitrate vulnerable zones (NVZ). In addition to these measures, 3 further sub-measures (not linked to 4B), focusing on extensive management of grassland, natural and semi-natural meadows and wetlands, have a secondary effect on water management through limiting or totally eliminating the use of fertilisers and pesticides.

M11: In its description, the Organic Farming Measure is not linked to Focus Area 4B but to 4a and 4c. There is no link to water management or protection in the measure description, no eligibility or selection criteria. Nonetheless, it should help to support WFD implementation through its restrictions on fertilizers and pesticides.

M12: The description of the measure does not link to Focus Area 4B and 4c but to 4a. It supports the compensation payments for Natura 2000 areas on agricultural and forest land. The Measure requires to set at least one additional restriction to the GAEC, including ban to use fertilisers and pesticides, to lime the soil, to drain or in other way change the hydrological regime of the territory, and limiting grazing livestock number. In this way, the measure could indirectly support improving water management.

Indicators

The RDP uses the required CMEF indicators to provide common context to the SWOT and

existing issues being faced in Lithuania. Information is provided on nitrogen pollution (indicator 40 water quality), water erosion (indicator 42 soil erosion by water) and water use in agriculture (indicator 39 water abstraction in agriculture). While the RDP clearly defines the percentage of water bodies in good status the context indicators do not include this information. Also, there are no context indicators defined for morphological alterations - despite being listed as one of the main pressures from agriculture sector on water bodies in the RBMPs but not in the SWOT. There is an indicator 20 on irrigated land, but not on drained land.

The target indicator focuses on the % of agricultural land under management contracts to improve water management, which on its own will not allow for monitoring how the water related measures are contributing to the implementation of the WFD and achieving good ecological and chemical status. The description of the evaluation system does not mention using WFD monitoring data.

Despite the RDP having defined additional programme specific context, target and output indicators for socio-economic issues, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD.

Conclusions

The Lithuanian RDP takes an overall logical approach to addressing water management issues in its territory. There is an explanation of the main pressures coming from agriculture; however, the type of production contributing to diffuse pollution is not always clear. The SWOT does not mention if the information comes from the most recent Art. 5 results, thus it is not clear how up-to-date the information was with regards to the ecological, chemical and quantitative status of water bodies in the territory. The Needs defined reflect well the pressures identified, and the Strategy developed for Focus Area 4B for the most part clearly indicates which sub-measures will contribute to the WFD.

Both pressures identified in the SWOT (diffuse pollution with nitrates and soil moisture surplus requiring water regime regulation) are addressed through sub-measures contained in M10 and M4. From eight measures that are indicated under Focus Area 4B, only M10 is directly linked to this focus area and the WFD specifically. Other measures either contribute to 4b indirectly. From the three horizontal measures, M01 and M02 address either trainings related to M10 which contribute to status improvement of WB and reduced mineral fertilizer use or special consultations on water protection according to the WFD Art. 11.3. M16 is listed under Focus Area 4B and considers environmental protection activities but does not mention water protection or management issues specifically.

A number of sub-measures under M10 are well designed to support WFD implementation. These measures have specifically been designated with the objective of improving the

ecological status of water bodies by addressing diffuse pollution; they are not specifically targeted to water bodies at risk of deteriorating and NVZ. Under M10, it is positive that there is a mixture of water-specific measures (buffer strips), a soil protection (conversion to grassland, perennial grasses) and also more biodiversity designated measures (mowing, extensive management) that nonetheless limit or totally eliminate the use of fertilisers and pesticides. These measures target not only arable land but also livestock farming. They mainly offer measures that work within a farm's existing management structure, but there are a few of measures that offer conversion possibilities (conversion from arable to grassland). Overall the approach is diverse, targeting different pressures with multiple different options for farmers to choose from.

Sub-measures under M4 target water issues and the WFD implementation indirectly or through specific eligibility criteria that ensure the measure is taken up where they are most needed. Sub-measure 4.3.2 is dedicated to P2a, though it focuses on agricultural water management and supports the investments in field drainage engineering infrastructure upgrades (no new installations) to preserve the quality of soil. Projects' plans have to provide compliance with the WFD Art. 4.7. Nevertheless, caution should be taken financing the sub-measure 4.3.2, as it has the potential to deteriorate water quality. Detailed requirements should ensure that there is no deterioration in water status and that the upgraded drainage systems are accordingly designed with e.g. sediment traps that can remove polluted material.

Largely missing are the aspects addressing morphological alterations and flood risk management and implementation of the Floods Directive. Neither the issue of redressing existing morphological alterations nor flooding issues are mentioned in the SWOT. Flood management measures are not mentioned in the Strategy, and Focus Area 3B does not indicate that flood prevention measures are an issue. Water retention and strengthening of green infrastructure are mentioned in the description of Need 23 aimed for adaptation to climate change; and NWRM are foreseen mainly in M10 (buffer strips, conversion to grassland), though there is no clear link to water management. While it may be possible that Lithuania will prepare its flood risk management plan through other programmes or intends to finance its flood risk management through other programmes, it would be useful to include such information in the RDP.

Although the RDP overall presents a relatively clear intervention logic as regards water management, and the measures that could pose a threat to meeting EU water objectives have safeguards in place (i.e. reference to Article 4 (7)), the target indicator T10 only indicates that 1.97% of agriculture land will be under contracts to improve water management and many of the measures programmed under Focus Area 4B were only weakly or not at all linked to water management. Therefore, the contribution of the RDP towards addressing agriculture pressures to reach the WFD + FD objectives could only be considered as minor. This will mean that considerable action outside the RDP (i.e. through strengthened WFD basic measures (to address soil erosion, nutrients and pesticides) and WFD supplementary measures (measures funded by non-EU funds) should be included in

RBMPs if the Good Status objectives of the WFD are to be achieved.

Given that the RDP did not include additional programme specific indicators to adequately measure the results of the measures in terms of achieving ecological and chemical status, it will be difficult to discern its contributions to the WFD objectives at the end of the programming cycle and to inform future revisions.

Recommendations:

1. Strengthen the description of Focus Area 4B by more concretely linking measures to aspects of improving water management. Link better NWRM to aspects improving water management. Add measures clearly addressing morphological alterations identified in the RBMPs.
2. Improve the monitoring and evaluation framework to better assess the improvements coming from the implementation of water-related measures. The current framework does not enable tracking process in terms of achieving good status.
3. Increase the target of land under contracts to improve water management to better address the magnitude of agriculture pressures on the water environment. It may be necessary to increase the budget for water-related measures.

A32 Luxembourg

Luxembourg is situated over two main river basin districts: The Rhine and the Meuse. The main agricultural pressures identified in the RBMPs include diffuse pollution from nitrates and pesticides, as well as hydro-morphological pressures from a range of human activities including arable farming and livestock farming.

SWOT

The SWOT refers to the latest WFD Art. 5 Assessment and RBMP, although it is unclear whether it refers specifically to the Rhine or Meuse RBMP, or a national synthesis. The SWOT indicates that only two surface water bodies (SWBs) are in good ecological status. 7% of SWBs are in bad ecological status, 19% in unsatisfactory status, and 72% in satisfactory status. The categories mentioned do not follow WFD terminology, and it is not clear whether “satisfactory” status refers to good status under the WFD, or instead to “moderate” status which would therefore fails WFD objectives. The SWOT mentions that 50% of groundwater bodies are in good chemical status and information is given on nitrogen levels. No figure is provided regarding quantitative status. The SWOT refers to the RBMPs objective including the priority to tackle agricultural pressures.

The SWOT of the RDP focuses on pressures from mineral fertilisers and pesticides. For nitrogen pressures, the SWOT provides more detail on loads and their evolution, but does not clearly apportion the pressures to specific agricultural activities (e.g. arable farming, livestock). The risk of eutrophication is assessed (stable to decreasing) but links this to improvements from wastewater treatment rather than agriculture. It states that all of Luxembourg has been classified as a nitrate vulnerable zone since 2009.

The SWOT states that pesticide pollution is an issue in several water bodies, but that the RBMP does not provide a detailed assessment of pesticide pollution due to a lack of data but that research is ongoing.

Hydromorphological issues are included and present a risk to surface water quality. Steps will be taken to improve structures along water bodies, such as grass strips to reduce run off and preventing livestock to access river banks.

Flood risk is mentioned briefly in the context of continued urbanisation and climate change, and is relevant for both urban areas as well as agriculture. flood risk zones have been identified, and measures related to erosion control are outlined (although there is no mention of the Floods Directive). There is no mention of the potential for agriculture to contribute to reduce flood risk downstream through adapted agricultural practices; proposed soil management measures mainly aim to reduce soil erosion and flood related impacts on agricultural land.

The specific Strength, Weakness, Threats, and Opportunities section mention the pressure of diffuse pollution from agriculture and the possible targeting of water measures in protection zones.

Needs

There are 38 needs identified in the programme, some of these are clearly linked to water.

The Need “Reduce diffuse pollution and inputs of nitrates and phosphorous from agriculture into water bodies”, is linked to Focus Area 4B “Improving water management, including fertiliser and pesticide management”. The description links explicitly to the identified pressures on water resources, and the steps to be taken to reduce them, including agri-environmental-climate measures (M10), organic farming (M11), and payments for the WFD and Natura 2000 (M12).

Another need is linked to Focus Area 3B “Supporting farm risk prevention and management”; however, the description states that other national measures cover risk management.

While mentioned in the SWOT, hydromorphology is not mentioned in the needs.

Strategy

The general strategy is structured in line with the six Priority areas. With regards to water, it is stated that the entire country is considered a vulnerable and sensitive zone in light of pollution protection. Because of the unsatisfactory water quality, the measures in the strategy are linked explicitly to WFD objectives and the implementation of the RBMP. These measures include both general measures to be applied across the territory, as well as targeted measures at the farm level.

With regards to the budget, 236 million EUR is assigned to Priority 4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry”; this constitutes 64.7% of the budget, compared to 31.1% for Priority 2 “Enhancing farm viability and competitiveness of all types of agriculture”, indicating a priority towards environment protection.

Focus Area 3B is not activated in the RDP as no measures directly address risk management and prevention.

The strategy for Focus Area 4B identifies diffuse pollution from agriculture from nitrates, phosphorous and pesticides as being the major pressures in the region. It explicitly links to the WFD and the implementation of the RBMP, identifying the three major issues related to water: urbanisation, the structure and hydrology of water bodies and diffuse pollution from

agriculture. The measures outlined include broad support for implementation of water measures at the farm level, measures related to the limitation of farm inputs and plans to support the compulsory implementation of extensive farming in protected zones. M10 on agri-environment-climate measures is an important component for Focus Area 4B. M11, M12 is also linked to Focus Area 4B.

The target indicator T10 for Focus Area 4B indicates that 28.2% of agricultural land will be contracted to improve water management. While the target is ambitious, it is important to note the significant challenge faced on water issues in the RDP area with 2 water bodies meeting Good Ecological Status and 50% of groundwater bodies failing good chemical status.

The strategy for Focus Area 5A is not activated, as water quantity is not a major issue in Luxembourg.

Ex-ante Conditionalities

EAC 5.2 does not appear in Chapter 6.2 on conditionalities.

Measures

Focus Area 4B is linked to M10, M11 and M12.

Measure 4 finances investments in agriculture holdings. Although this measure is not included in the strategy for Focus Area 4B, the general description of the measure states that it will contribute to the Priority. The measure includes support for investments in agricultural holdings (Sub-measure 4.1) and investments in processing/marketing and/or development of agricultural products (Sub-measure 4.2). They are not explicitly linked to water issues, but the principles for establishing selection criteria include projects related to the goals of the nitrates program as well as improved use of natural resources and reduction of the negative effects of environment and climate in general (no explicit reference to the WFD or RBMPs).

Measure 10: The general description of the measure generally mentions that sub-measures can be used across all agricultural surface areas, but especially in specific protection zones for water or Natura 2000 areas.

Sub-measures specifically linked to Focus Area 4B include: improved manure spreading, buffer strips along watercourses. Sub-measures contributing equally to Focus Area 4B as to Focus area 4a or 4c: extensive grass strips near tilling areas, diversification of rural crops (to reduce pesticide use), buffer strips along fields, extensification of arable land (conversion to grassland) and the use of grasslands (reduced grazing and fertilisation), maintenance of landscape and natural features (this is targeted to different types of crop

and support changes in fertiliser or pesticide use or protection against soil erosion), prevention of erosion and nitrate run-off and phasing out of pesticide use. One sub-measure can have beneficial impact on water quality although this is not an explicit aim in the sub-measure description: maintenance of hedges along land plots.

Measure 11 finances organic farming. The measure is primarily directed at P4a but will contribute to Focus Area 4B, through a total ban on the use of synthetic fertilizers, pesticides and phytopharmaceutical products as well as extended crop rotations. The measures are applicable across the entirety of the country. The principles for establishing selection criteria do not include a targeting of payments to areas with water bodies failing the objectives of the WFD.

Measure 12 aims to cover supplementary costs and revenue losses associated with implementation of WFD. Measure 12 will be implemented to protect drinking water protection zones. The restrictions included in the measure are: limited or forbidden use of organic fertilizers, restrictions or forbidden use of certain pesticides, restrictions on the use of sewage sludge and livestock run off, limited periods for spraying, limitations of tilling in certain zones, mandatory soil coverage during winter period, and limitations on grazing.

Indicators

The RDP uses the required CMEF indicators to provide common context to the SWOT and existing issues. Information is provided on nitrogen pollution (indicator 40 water quality) and water erosion (indicator 42 soil erosion by water).

Target indicators for Focus Area 4B include impact indicators T10 (% of agricultural land under management contracts improving water management (Focus Area 4B) and T11 (% of forestry land under management contracts to improve water management), as well as context indicators 18 (used agricultural area) and 29 (total forest area).

The RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD. For example, no additional context indicators report WFD monitoring data, the % or number of water bodies at Good Status, pesticide pollution or morphological alterations. There is no indicator on area of land under drainage.

The indicators currently used will not on their own allow for measuring progress on how the water related measures are contributing to the implementation of the WFD and achieving good ecological and chemical status. This will make it difficult to be able to evaluate the programme's success and what changes should be made in the future.

Conclusions

The RDP has a well-structured SWOT, includes consideration of various threats to water quality in the region including nutrients and pesticides, as well as hydromorphological and flooding issues. However, the types of agricultural activities (drivers) responsible for pollution and morphological pressures are not clearly detailed.

Regarding diffuse pollution, the RDP tackles pesticide and nutrient pollution with a wide range of measures (from support to investment in equipment and infrastructure to crop and soil management techniques, green infrastructure and landscape feature) directed to both arable and livestock farming. It is very positive that M12 has been programmed and targeted in drinking water areas, as it indicates a commitment to supporting the achievement of the WFD. The targeting of M04 to support projects linked to achieving the nitrates directive is positive.

M10 does not specifically target areas with water bodies failing good ecological or chemical status, which can limit the effectiveness of the program to support WFD implementation.

While hydromorphological issues were highlighted in the SWOT, the program does not program measures specifically tackle these pressures. Currently, some operations can provide some side-benefits such as operations related to protecting or creating riparian features (buffer strips, etc.). Wetland creation, afforestation and agri-forestry which can provide multiple benefits on water quality, hydromorphology and forestry are not explicitly supported.

With regards to the budget, a significant portion of the funding in Priority 4 is targeted at M13 (about 30%); however, M13 provides limited scope to support improvement in water status. An effort has been made to target a larger area for management contracts under Focus Area 4B (28,5% of agricultural land). Nevertheless, it is important to note that the RDP area faces significant challenges with regards to water issues, given that only 2 water bodies meeting Good Ecological Status and 50% of groundwater bodies fail good chemical status.

Finally, more relevant indicators could be used to measure progress on water quality and morphological alterations. The current framework does not enable tracking progress in terms of achieving good status.

Recommendations:

1. Improve the targeting of measures under M10 towards water bodies at risk of not meeting RBMP goals in to maximise contribution of the RDP to WFD objectives.
2. To provide a larger range of measures to tackle hydro-morphological pressures from farming, in particular through NWRM (wetland restoration, river restoration, re-meandering, establishment of riparian forests).

3. Improve the monitoring and evaluation framework to better assess the improvements coming from the implementation of water related measures, for example through indicators reporting the % or number of water bodies at Good Status, pesticide pollution or morphological alterations.

A33 Malta

Malta has one river basin district covering its entire territory. In the 1st RBMP, inland surface water bodies (SWBs) were not delineated, and there was not sufficient data to classify the status of coastal waters. Private groundwater abstractions are a major pressure on groundwater bodies (GWBs), and 26% of GWBs are in poor quantitative status. Water abstraction for agriculture was deemed a significant pressure in 5 GWBs. Diffuse pollution was identified as a pressure in 66% of WBs, and point source pollution in 55%; a link to which economic sectors cause these pressures was not made. 87% of GWBs are in poor chemical status.

SWOT

The SWOT refers to the 1st RBMP and does not provide information on the latest WFD Art. 5 assessment or the recent designation of SWB status for the 2nd RBMP. The SWOT indicates that 13 out of 15 GWBs being in poor qualitative status; this is likely an error with the figure actually related to chemical status. 11 GWBs are in good quantitative status and 4 GWBs are in poor status, in line with the information included in the 1st RBMP.

The SWOT states that abstraction by agriculture comprises 68.8% of total water abstraction (2010 data), although farmers used only 7% of billed water consumption. Groundwater is considered a key resource for agriculture. Irrigated land was estimated at 30% of total agriculture land. About 30% of irrigation is done by sprinkler and about 50% is done by drip irrigation.

The whole of Malta is designated as a nitrate vulnerable zone (NVZ). Nitrate pollution due to natural and artificial fertilisers are a major source of groundwater pollution. Data from 2006 suggests that 27% of the nitrogen loading comes from crops and 73% from livestock manure. The SWOT indicates that while little data is currently available regarding the phosphorus balance, attention to the use and need for balance for phosphates is also envisaged during the 2014-2020 programming period. Reference is also made to the RDP supporting the sustainable use of pesticides. Seawater intrusion is another concern for GWBs.

The SWOT briefly mentions that the 2012 Water Policy for Malta includes effective flood management and reducing flooding in line with the EU Floods Directive.

The specific Strength, Weakness, Threats, and Opportunities section mentions the use of fertilisers, manure and pesticides, the cost of energy and water, the inefficient capture, management and use of rainwater, water management, high nitrate levels, waste management and water scarcity as water-related weaknesses. Opportunities include more efficient use of water resources and nutrient inputs to crop farming, and the potential for treated sewage effluent for agriculture purposes. Threats highlight diffuse pollution from

agriculture, increasing water demand and freshwater resources under considerable strain.

Needs

There are 5 needs identified in the programme, some of these are clearly linked to water.

The Need “Landscape and environment: managing habitats and features” is linked to FA4b on “Improving water management, including fertiliser and pesticide management”; however, the description focuses on the lack of water resources as a factor for land abandonment as opposed to pollution issues. The Need “Sustainable Livestock: improving resources efficiency, competitiveness and productivity, and welfare” is linked to FA5a on “Increasing efficiency in water use by agriculture”. It briefly mentions the need for specialist advisers for water management, but it is not clear if this is linked to pollution and or water use. The Need “Water, wastes and energy: improving sustainable use and generating renewable energy” is linked to both P4b and P5a. Here, the emphasis is on moving towards rainwater harvesting to reduce demand for groundwater. Efficiency in water use, encouraged by more effective training, demonstration, skills development and appropriate technology is considered essential. Nutrients are mentioned but in the context of generating energy through biogas installations.

While mentioned in the SWOT’S general description and threats and opportunities section, nutrient pollution is not taken up in the Needs.

Strategy

The general strategy is structured in line with the 5 thematic needs. The general description emphasizes the need to implement measures to reduce pesticide and nutrient pollution and to address groundwater abstraction. The WFD, the Nitrates and the Pesticides Directives are specifically mentioned, focussing on implementing the island’s water policy. Measures under the RDP should complement Malta’s commitment to maximising the use of European Structural funds to address water related issues as outlined in the Partnership Agreement.

With regards to the budget, 52.4 million EUR is assigned to Priority 4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry”; this constitutes 42% of the budget, compared to 25% for Priority 2 “Enhancing farm viability and competitiveness of all types of agriculture”, demonstrating a priority for the environment, though it is not clear what percentage of this is dedicated to addressing water issues.

Focus area 3b on “Supporting farm risk prevention and management” is activated in the RDP and focuses on M17 on risk management. Flooding is briefly mentioned, among other issues like diseases. The focus is on insurance protection and not on measures for flood

risk prevention.

The strategy for FA4b includes 4 measures are specifically detailed as to how they will contribute to the focus area. M4 emphasizes infrastructure development to improve or restore water retention systems, new reservoirs and shared irrigation. It will also indirectly address nitrate pollution by targeting livestock farming and prioritising investments in manure storage. Operations under M10 will focus on integrated pest management and fertiliser application, with two additional measures indirectly supporting nutrient pollution reduction through creation of ecological infrastructure. M1 and M2 include financing for advisory support on fertiliser and pesticide management.

The target indicator T10 for FA4b indicates that 2.98% of agricultural land will be contracted to improve water management. Given that only 2 GWBs have achieved good chemical status, this target is low and will require considerable efforts to be undertaken in other national programmes for objectives of the WFD to be achieved.

The strategy for FA5a focuses on resilience to climate change through measures on water management. M4 will support improvements to existing irrigation, with a minimum potential water savings of at least 5%. Rainwater harvesting is not mentioned. A territorial approach under M16 will focus on water, soil, sustainable use of pesticides and nutrient management. M1 and M2 will focus on training and advice to help farmers and land management using water more efficiently.

The target indicator T14 for FA5a indicates that 2.01% of irrigated land will be contracted to switch to more efficient irrigation systems. The Plan indicates that they have only set a minimum potential water savings of 5% due to previous efficiency improvements. The target is low given that almost 70% of total water use on the island is from agriculture and 30% of irrigation is still done through sprinkler systems.

Ex-ante Conditionalities

EAC 5.2 has not been fulfilled. The RDP points out that the following actions will be taken by December 2015:

- MT is developing its 2nd RBMP according to the requirements of the WFD. This process is on track. MT's 2nd RBMP will take into account the principle of recovery of costs of water services. The 2nd RBMP will incorporate an economic analysis (considered completed).
- The 2nd RBMP will fulfil all the requirements. Specifically, with regards to surface water bodies, discussions are ongoing between the Maltese Authorities (MEPA) and DG Environment on the implementation of the WFD. MT needs to prepare: 1. a monitoring programme for inland surface waters 2. an updated Programme of

Measures and an economic assessment.

Measures

Focus area 4b and Focus area 5a are linked to M1, M2, M4, M10, M11 and M16. In addition, M8 has indirect positive benefits for Focus area 4b.

Measure 1 finances knowledge transfer and information. The measure targets all 5 identified needs. For water, the measure includes nutrient budgeting, waste management, efficient water management and use, less water dependent practices in the agri-food industry, irrigation techniques and more water-conserving alternatives, as well as cropping practices to minimise water use. It additionally includes knowledge and skill development for protection from pollution by nutrients and pesticides/veterinary products at farm and field level. The general description links to FA4b and the need to improve water management, reduce groundwater abstraction and enhance rainwater capture and use. It also links to FA5a and highlights to need to enable farmers to understand the potential for reducing water consumption.

Measure 2 finances advisory services. The measure targets all 5 identified needs. For the need on water, wastes and energy and on landscape and environment, the emphasis on advice on agri-environmental-climate measures (AECM) and less water-dependent practices in the agri-food industry. Farmers receiving support for AECM are required to participate in trainings (M1) and advisory services (M2). Both FA4b and FA5a are specifically mentioned, although there is no link made to implementation of the WFD.

Measure 4 finances investments in agriculture holdings. This measure is linked to both FA 4B and FA 5a. The measure is linked to the need on water, wastes and energy and emphasizes the need for new equipment and infrastructure to help farms improve efficiency of input use on farms (fertilisers, pesticides and water). Investments in water-saving devices and water storage, including rainwater capture, are mentioned. In the general description, the RDP mentions that an updated assessment of the quantitative status of GWBs for the second WFD cycle shows that only 2 GWBS are in poor status. Art. 46 is clearly laid out in the provisions and the RDP indicates that Art. 46 (5) and (6) will apply to irrigation investments located in the catchment area of the two GWBs classified as poor.

- Sub-measure 4.1 focuses on soil management, water capture and improved efficiency of fertilizer and pesticide use. The measure is targeted through selection criteria to livestock and horticulture farming. Under livestock farming, it is highlighted that all of Malta is a NVZ and therefore manure and slurry storage need to be modernised. Under the horticulture sector, targeting focuses on collective investments in water capture and smart irrigation and small farms. Art. 46 is clearly described. The potential water saving impact of irrigation technology will be calculated as the difference between the projected use of irrigation water using the

new or upgraded infrastructure and which would have resulted with the existing infrastructure. The potential water saving impact of irrigation network infrastructure will be calculated as the effective capacity of the network infrastructure to supply alternative water resources in substitution of natural water resources. Malta will use historical data available and crop irrigation demand models. In addition, for investments in existing rainwater harvesting cisterns, there is clear information on how the potential water saving impact is calculated. The potential water saving impact of rainwater harvesting infrastructure is calculated at seven times the storage capacity of the infrastructure. Selection criteria includes, among others, targeting of beneficiaries applying M10. In addition, project proposal that result in a high percentage of effective water savings will be prioritised.

- Sub-measure 4.3 links to FA4b and FA5a and will finance investments in water capture, storage and distribution systems and water treatment and recycling technology for livestock farms. The provisions for Art. 46, the calculation of water savings and selection criteria are the same as for M4.1.
- Sub-measure 4.4 finances capital works within the framework of an agri-environment-climate scheme, including collective landscape management groups as well as individual farm-level contracts and may include, for example, management plans and works, establishing, restoring or re-instating infrastructure needed for management of habitats, like rubble walls, terracing and soil conservation. The link to water is through financing Integrated Pest Management Plans, fencing and other works needed to facilitate conservation management (including protection of water and soil) and restoration costs of wetlands. The principles with regards to the setting of selection criteria are used with no specific link to areas at risk identified in the WFD.

Measure 08 finances investments in forest area development. Despite being programmed under FA4a, it states that sub-measure 8.5 on investments to improve the resilience and environmental value of forest ecosystems will help to reduce soil loss from surface water runoff and assist in the retention and infiltration of rainfall into groundwater. Measure 8.5 focuses on woodland creation. There is no specific mention of the WFD under principles with regards to the setting of selection criteria but the in the relevant section of all 3 operations it is stated that "principles for selection will take into account (...) the project's contribution towards the improvement of (...) sustainable management/use of water (...)".

Measure 10 finances 6 separate agri-environment-climate measures. The general description mentions that uptake of AECMs was very low in the last RDP programme and that AECMs are considered not financially attractive due to the small scale of most farm holdings (less than 1 ha). There are 8 key objectives highlighted in the general description, including reducing contamination of water by pesticides and nutrients and supporting biological and mechanical pest control. The RDP highlights that collective partnerships will be emphasized to ensure area-wide uptake. Two AECM are linked to FA4b: using

mechanical control (rather than herbicides) for weeds in permanent crop production systems and implementing integrated pest management plans for vineyards and orchards. The measure on mechanical control also requires the splitting of fertiliser applications to reduce the impacts of nitrates on groundwater. Selection criteria for both measures targets applicants endorsed by a local area landscape management (as established under Measure 2) and priority will be given to Natura 2000 areas. There are no principles of selection criteria (not required) to target WBs at risk as defined in the WFD.

Measure 11 finances organic farming. The measure is will contribute to FA4b, though the reduced use of pesticides and inorganic fertilisers will benefit local flora and fauna (and soil micro-biology). Reductions in the application of inorganic fertiliser applications will reduce the impact of nitrates on groundwater, and enhance the use of local organic fertilisers, this in turn will contribute to solving the livestock waste problem.

Measure 16 finances cooperation activities. The general description highlights the need to take a territorial approach to address water management needs to enable synergies with Malta's Water Catchment Management Plan. Cooperation on improving efficiency of water use will be financed such as rainwater harvesting and sharing smart irrigation systems to control water use. In addition, collective action through territorial partnerships in valleys or sub-catchments to restore rubble walls will help to control flooding. Cooperation on research for waste and nutrient recycling will also be financed, as well as pilot testing of practices to increase efficiency of input use (including fertilisers, manure, pesticides, water). Only general selection criteria are described with no links to WBs at risk.

Indicators

The RDP uses the required CMEF context indicators: used: 20 (surface of irrigated land), 39 (water abstraction in agriculture), 40 (nitrates and phosphorus) and 42 (soil erosion rate through water and surface affected).

In Chapter 11, indicators for FA4b only include impact indicator T10 (% of agricultural land under management contracts improving water management (FA4b) and context indicator 18 (used agricultural area). These indicators cannot fully monitor the impacts water-related measures have on water bodies and achieving good ecological and chemical status. Additional indicators could be included to better evaluate the water-related measures. Furthermore, the RDP does not use relevant context indicators (e.g. number 39 or 40) to measure progress.

There is no specific mention of monitoring on water saving or pesticide pollution. There is no mentioning of using WFD monitoring systems.

As not require, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations

designed to contribute to the WFD.

Conclusions

The RDP has a well-structured SWOT, includes consideration of various threats to water quality in the region including nutrients and pesticides. As the 1st RBMP in Malta did not delineate inland surface water bodies, the RDP could only provide limited information. Nevertheless, the information on GWBs is clear and the pressures from agriculture are presented and linked to specific agriculture activities.

Regarding diffuse pollution, the RDP tackles pesticide pollution through advice, integrated pest management plan (M4.4) agri-environment-climate-measures, organic farming and pilot testing of new techniques (M16). It is positive that the RDP includes a number of different measures to tackle the problem. However, the monitoring and evaluation framework does not include a context indicator on pesticide pollution, so it will be difficult to track from this programme to the next the trend regarding pesticide pollution into water bodies.

Nutrient pollution is indirectly addressed through manure storage financing (M4.1) and directly through the sub-measure 10 on mechanical weeding that include splitting fertiliser applications as a requirement and organic farming (although its contribution will be minor with a total budget of only €100.000). Fertilizer pollution receives less attention than pesticide pollution does. Measures to address diffuse pollution are not targeted, but since almost all GWBs are failing chemical status, targeting appears to be less needed. Furthermore, the RDP points that they are emphasizing a territorial approach to financing to enable larger-scale results.

Regarding water abstraction, the RDP focuses on advice, rainwater harvesting and smart irrigation. It is positive that operations focus on reducing groundwater use through rainwater harvesting and that projects are prioritised that will achieve a high effective water saving. It is also positive that collective action is financed, including sharing technology for smart irrigation, enabling multiple farmers to track irrigation efficiency. However, it is not clear how much water savings is intended to be achieved and there are no result indicators to measure this; moreover, the target indicator for FA5a is 2%, despite a considerable percentage of farmers (30%) still using inefficient irrigation systems.

Both target indicators for FA4b and FA5a are low considering the pressures identified in the SWOT. This will mean that considerable action outside the RDP (i.e. through strengthened WFD basic measures (reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (measures funded by non-EU funds) should be included in RBMPs if the good status objective of the WFD is to be achieved.

Recommendations:

1. Clarify more concretely the pressures facing water bodies regarding nutrient pollution. It is not clear from the SWOT how considerable the pressure is and whether the limited efforts of the RDP to reduce fertilizer pollution are sufficient to address the problem.
2. At the moment, the indicators included in the programme do not enable to track how measures to address pesticide pollution and their uptake by farmers will lead to a reduced trend of pesticides in WBs. In addition, there are no indicators in place to track whether the measures to reduce water abstraction and increase irrigation efficiency leads to water savings. To ensure transparency of the programme, these types of indicators are important to understand what impact financing of measures is having on pressures.
3. Although not required, consider expanding both the context and target indicators to better reflect water management. The context indicators of nitrogen and phosphorus pollution do not cover pesticide pollution. This missing aspect do not enable obtaining a full picture of the environment in the territory. In addition, there are no indicators in place to track whether the measures to reduce water abstraction and increase irrigation efficiency leads to water savings. Moreover, the target indicators do not enable to track the impact these measures have on improving the water environment. Especially with constraint budgets, it would be beneficial to have indicators in place that enable the authorities to track whether a measure's implementation is having a positive effect on the water environment and is therefore worth financing. Here, linking also the monitoring programme to existing programmes under the WFD would be helpful and would not pose any additional administrative or financial burden on the district.

A34 Netherlands

The RDP of the Netherlands is situated in the river basin districts of the Rhine (Rhine Delta), Maas, Scheldt and Ems. The RBMPs identify as main pressures diffuse pollution for surface and groundwater bodies leading to eutrophication of most water bodies, chemical pollution with pesticides of surface water and groundwater bodies, and hydro-morphological alterations. Agriculture is considered as one of the sources of these pressures.

SWOT

While the RDP does not make an explicit reference to these river basin districts, it reports the relevant pressures and identifies the associated drivers. Diffuse pollution stems mainly from arable and vegetable farming as well as livestock farming. Nutrient pollution stems from both fertiliser use and animal manure. Chemical pollution from pesticides that exceeds existing limit values is mentioned as another major pressure.

Hydro-morphological alterations are mentioned. It is not made clear to which extent this is related to agriculture. Drainage of soils is implicitly mentioned as well as water abstraction for irrigation. Flooding is considered a considerable pressure in the territory. The RDP references the national Delta Programme as the main instrument to address flood risk issues.

The SWOT does not mention whether the information is from the most recent WFD Art. 5 assessments. It mentions that a new RBMP will be published in 2015. The RDP does not present the number of water bodies that reach the good chemical status, the good ecological status or the good ecological potential under the WFD. It discusses the ecological situation with regards to the norm of the WFD for the pesticides (norms are exceeded since 2004 and a plan in 2013 was published to address this issue). It also mentions the amount of surface and ground water bodies with good, moderate and bad quality with regards to nitrates (groundwater: good 81.3%, moderate 7.1%, bad 11.6%; surface water: 7.1%, 92.9%, 0%) - indicating that the aims of the ND are considered more the objective to be met rather than the more demanding objectives of the WFD.

The presented strengths, weaknesses, opportunities and threats refer to the diffuse and point source pollution presented in the general section, but does not include pressures such as flood risks and alterations to hydromorphology.

Needs

7 Needs out of 27 concern water:

- Two needs link to knowledge transfer to strengthen research and innovation and to

foster lifelong learning and vocational training in agriculture. One need calls to support innovation. This is specified as the promotion of innovations that help to reduce the environmental pressure from agriculture, in particular to improve water quality. Furthermore, knowledge transfer to more efficient use of fertilisers is articulated as a need.

- Two needs are linked to P4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry”. They include knowledge sharing and education of farmers about possibilities for agriculture to contribute to the improvement of the water system. This entails e.g. measures with regards to farm management (more efficient use of fertilisers or less harmful pesticides) or end of pipe techniques such as buffer strips. Incentives for farmers to implement measures to reduce the emission of phosphorus and pesticides from agricultural land and to counteract on hydromorphological alterations are needed.
- Three needs are linked to Focus Area 5A “Increasing efficiency in water use by agriculture”. They highlight the need for knowledge sharing and education for farmers on innovation for efficient water use and to promote adaptation of agriculture in the field of water.

Overall, the Needs refer to diffuse pollution and hydromorphological alterations as referred to in the SWOT. Although the SWOT did not identify water abstraction as a significant pressure on Good Ecological Status, one need refers to the need for more efficient water use.

Strategy

The general strategy of the RDP does not emphasise the WFD or FD. Its main focus is on the contribution of agriculture to an environmentally-friendly growth while remaining competitive. The budget allocation shows that the focus of the measures supported by the RDP is given to environmental objectives since, overall, 57% of the overall budget allocation is spent on Priority 4 and 32% of the budget is allocated to fulfilling Priority 2. Regarding flood risk, it was mentioned in the SWOT that all objectives linked to the Floods Directive are tackled by the National Delta Program.

The Strategy for Focus Area 3B “Supporting farm risk prevention and management” focuses on weather insurances for arable farming and therefore focuses on disaster recovery.

The Strategy for Focus Area 4B “Improving water management, including fertiliser and pesticide management” mentions that measures M04 and M10 were selected to support this priority. Focus Area 4B explicitly aims to support the Floods Directive, WFD and Nitrates Directive. Measure M04 focuses on non-productive investment to reduce

<p>emissions and to improve the hydro-morphology of rivers.</p> <p>The target indicator for Focus Area 4B aims in the Netherlands to take 6% of agricultural land under management contracts to improve water management. Despite the intention of targeting payments to areas which will maximise environmental benefits, it is low considering the scale of agricultural pressures in the Netherlands.</p> <p>For Focus Area 5A, no specific measures are foreseen in the RDP, although action on water efficiency was identified in the needs (but not the SWOT).</p>	
Ex-ante Conditionalities	
EAC 5.2 was assessed by the MS as fulfilled	
Measures	
<p>Focus Area 4B is linked to M04 and M10.</p> <p>Measure 4: The description of the measure mentions the need to fulfil the objectives of the WFD with regards to chemical (pesticides) and nutrient pollution, the overuse of the water resources and to restore the hydro-morphology of streams. Several sub-measures of M04 relate to water management:</p> <ul style="list-style-type: none"> • Two sub-measures supporting investments in agricultural holdings address water issues. One addresses innovations in order to reduce nutrient and pesticide pollution of surface waters (e.g. manure separators) or can fund accelerated implementation of measures that are legally required (e.g. basins for collection and treatment of runoff and drainage water to reduce input of nutrient and pesticides to ground and surface water). A second measure finances physical investments in modernisation of agricultural enterprises by young farmers that involve the purchase of more modern facilities and machinery which must contribute to improving the environment such as water. Fulfilling the WFD is not aimed at with this sub-measure. The RDP propose that selection criteria include a prioritisation to finance investments that reduce (nutrients and pesticides) emissions and decrease the over-abstraction of water resources. • One sub-measure supporting investments in infrastructure in agriculture addresses water issues. It finances investment in land in order to reorganise the Dutch farming landscape by joining parcels and in infrastructure (e.g. filling in of ditches, construction of drainage, construction or improvement of dams, adapting the water management) to make the joined parcels manageable for farmers. While it is stated that the actions have directly a positive effect on water quality, it seems that the measure could increase the pressures to the water system (e.g. construction of dams, changes to the 	

water system). Eligibility conditions do not refer to Art. 4 (7) of the WFD and the assessment of cumulative impacts of activities like drainage and dam activity. Selection criteria do not set the principle under which financing should be targeted towards WBs failing good status.

- Two measures supporting non-productive investments linked to the achievement of agri-environment-climate objectives include water management aspects. One measure aims to restore and improve nature, landscape and biodiversity in Natura 2000 areas with landscape features (e.g. hedgerows and ponds) and hydrological measures such as buffer zones, dams and drainage. Another part under the sub-measure is directly related to non-productive investments for water that aim to restore hydro-morphology or to improve water quality and quantity (stream restoration, restoration of meanders, construction of migration paths, rewetting of soils, implementation of riparian buffer zones, measures that increase the water retention of soils and water systems, level-controlling drainage, implementation of wetlands for natural water purification, water management measures). It includes a wide range of green infrastructure and natural water retention measures as well as grey infrastructure. The principles for establishing selection criteria however do not set a targeting of investments to risk areas identified under the WFD or the FD.

Measure 10: The measure makes a specific commitment to water based on the SWOT and aims to address the pressures of chemical (pesticides) and nutrient pollution, as well as water quantity which is mentioned for the first time. In the description of the sub-measure, an explicit link is made to the priorities with regards to water management issues. The effect that will be achieved by M10 is difficult to evaluate due to the short description of actions funded under the measure. The description of Operation 10.1.5 – Water action does not clearly mention the entailed actions. For details on the measures, a report on previous pilot projects is mentioned. The measure aims to achieve optimal water level management, water quality improvement and strengthening of nature and natural biotope of the water, limit/prevent runoff and leaching of nutrients and pesticides to ground- and surface water by better management, reduction of mineral fertilisers and pesticides (including integrated production). The link to the WFD is established. The principles for establishing selection criteria do not include a targeting of these operations to areas with water bodies failing the objectives of the WFD.

Indicators

The RDP uses the required CMEF indicators to provide common context to the SWOT and existing issues. Information is provided on water abstraction in agriculture (indicator 39), nitrogen pollution (indicator 40 water quality) and water erosion (indicator 42 soil erosion by water).

Target indicators for Focus Area 4B include impact indicators T10 (% of agricultural land

under management contracts improving water management (Focus Area 4B) and T11 (% of forestry land under management contracts to improve water management), as well as context indicators 18 (used agricultural area) and 29 (total forest area).

The RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD. For example, no additional context indicators report WFD monitoring data, the % or number of water bodies at Good Status, pesticide pollution or morphological alterations. There is no indicator on area of land under drainage.

The indicators currently used will not on their own allow for measuring progress on how the water related measures are contributing to the implementation of the WFD and achieving good ecological and chemical status. This will make it difficult to be able to evaluate the programme's success and what changes should be made in the future.

Conclusions

Water management is one of the key priorities in the Dutch RDP. Agricultural pressures and the resulting needs are clearly described with quantified figures regarding nitrate and pesticide pressures on the water environment, but the SWOT does not report overall figures on current achievements towards WFD good status. How to tackle the identified pressures and the resulting needs is not always made explicit.

The RDP understands diffuse pollution as the key pressure on water systems. Aspects such as reduction of mineral fertilisers and pesticides (including integrated production) are promoted, which will contribute to reduce diffuse pollution pressure from arable farming. One sub-measure (in M4) focuses on livestock farmers and on technological development (e.g. separation of manure). While M4 is more detailed, M10 remains less detailed as to how it will help contribute to achieving the WFD. In particular, no specific targeting to support achievement of WFD objectives is presented for M10. Eligible areas will be shown in provincial nature management plans; it is thus unclear how the targeted implementation of the measure will match with reducing pressures and achieving WFD objectives.

The measures in the RDP include a broad range of possibilities for improving hydro-morphology. Measure 4.4 focuses on the restoration of Natura 2000 areas and aims to restore the water system in those areas with buffer zones, dams and drainage. For all other areas, the measure finances stream restoration, restoration of meanders, construction of migration paths, rewetting of soils, implementation of riparian buffer zones, measures that increase the water retention of soils and water systems, level-controlling drainage, implementation of wetlands for natural water purification and further water management measures. These measures will not only improve the hydro-morphology but can also be regarded as NWRM. Thus, their implementation will have a positive effect with regards to reducing flood risks. As no target indicator is defined for hydromorphology or flood risks, it

cannot be assessed which effect the measures might have once they are implemented.

One measure (measure 4.3) entails the reorganisation of farmland including filling of ditches, new drainages and dams. This measure unfortunately does not require compliance with WFD Article 4.7.

The monitoring and evaluation framework includes the WFD and the ND in its objective. However, the indicators used do not measure progress towards WFD objectives, and do not cover some of the main agricultural pressures on the water environment in The Netherlands, such as morphological alterations and pesticide pollution.

The targeted area of agricultural land to be contracted to improve water management is 6%. Despite the intention of targeting payments to areas which will maximise environmental benefits, it is low considering that the share of agricultural land on the country's territory amounts to 68.9% and the significance of agricultural pressures on the territory. This will mean that relying on the RDP alone will not be sufficient and considerable action outside the RDP will be needed if the good ecological status objective of the WFD is to be achieved, through strengthened WFD basic measures (e.g. reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (i.e. measures funded by non-EU funds).

Main recommendations:

1. Ensure appropriate targeting of M10 so that the implementation of operations can specifically contribute to achieving the WFD and FD objectives. In addition ensure appropriate use of measures to reduce intensity of land use (e.g. stocking density) and encourage a competitive and environmentally-sound agriculture (e.g. organic farming through M11).
2. Include in the eligibility criteria of the funded measures aspects to ensure that the measures do not act against the WFD and FD, in particular compliance with WFD Article 4.7.
3. Improve the monitoring and evaluation framework to better assess progress with regards to WFD and FD objectives. Include specific indicators linked to the monitoring framework of the WFD and the monitoring of specific agricultural pressures such as pesticide pollution and hydro-morphology.

A35 Portugal

Continental Portugal has 8 river basin districts (RBDs), namely Minho e Lima, Cávado, Ave e Leça, Douro, Vouga, Mondego, Lis e Ribeiras do Oeste, Tejo, Sado e Mira, Guadiana and Ribeiras do Algarve. The River Basin Management Plans (RBMPs) refer to agriculture as a major pressure, mentioning nitrates pollution and hydromorphological pressures due to water storage by dams for agriculture. In terms of overall numbers, 386 surface water bodies and 11 groundwater bodies in Portugal (including the islands) have not achieved good status due to pressures from agriculture (approx. 25%).

SWOT
<p>The RDP does not refer to the individual RBDs. The RDP mentions water is a constraint to agriculture, in particular irrigation. It also refers to an increased efficiency of the irrigation systems (traditional flood irrigation now only covers ¼ of the irrigation areas), and a decline in the overall irrigated areas and the share of water consumption. It also refers to a reduced use of nitrogen fertilizers and phosphorous use, but does not report on the evolution of nitrate vulnerable zones (NVZs). Regarding the status of water bodies, the data refer to the 1st cycle RBMPs and list 57% of natural surface water bodies in good status, 32% of heavily modified water bodies in good status and 97% of groundwater bodies in good status. The RDP does not refer to the differences of these percentages between the RBDs, though in particular Guadiana and Ribeiras do Algarve present a worse status of water bodies in general.</p> <p>The SWOT analysis includes the following elements:</p> <ul style="list-style-type: none"> • Strengths: The forest plays an important role in the water cycle and water quality; Decrease in consumption of water by agriculture and increased efficiency of their use; Relief of pressure on the use of fertilisers on water; • Weaknesses: Water is a limiting factor of agricultural production; Water storage capacity is insufficient for the inter-annual adjustment of their uses and only 15 % of the UAA is irrigated; There are still inefficient irrigation systems in water and energy; Existence of pockets of pollution with nitrates from agricultural sources; • Opportunities: Development of new technologies, practices, timetables and varieties as a solution on adaptation to climate change with a focus on irrigation as a tool for adaptation to climate change; • Threats: None. <p>The Water Framework Directive and the Floods Directive are not explicitly mentioned in the SWOT analysis; however, reference is made to the achievement of the objectives of the</p>

WFD in the RBMPs. The SWOT does not use information from the most recent 2013 WFD Art. 5 assessment.

Needs

The RDP associates 1 Need to Focus area 3b “Supporting farm risk prevention and management”: strengthening mechanisms for risk management.

The RDP associates 8 Needs to Focus area 4b “Improving water management, including fertiliser and pesticide management”: increase the productivity of land, namely improvements in soil fertility and reorganisation activities in forest outputs; increase the production of forest raw materials in a sustainable manner; increase the capacity of innovation in the food industry and forestry, and strengthen the link to the sector of R&I; improve the level of training and advice for agricultural producers and forest owners; promote investment in the agri-forestry sector; protection of groundwater and natural resources; protection and enhancement of biodiversity; strengthening mechanisms for risk management. One of the needs refers explicitly to groundwater protection.

The RDP associates 4 Needs to Focus area 5a “Increasing efficiency in water use by agriculture”: increase the capacity of innovation in the food industry and forestry, and strengthen the link to the sector of RTD; improve efficiency in the use of intermediate consumption in agricultural production; improve the level of training and advice for agricultural producers and forest owners; promote investment in the agri-forestry sector; overcoming the limitations in the availability of water and increasing efficiency in water use.

Only two Needs make an explicit reference to water management (water supply and use efficiency, groundwater protection), but not to the Water Framework, Floods or Nitrates Directives.

As regards the pressures identified in the RDP, the Needs assessment does not address hydromorphological pressures.

Strategy

The general strategy of the RDP aims as an overriding principle to improve the agriculture sector and its production of tradable good and in value creation from agroforestry activities based on efficient management of resources. The strategy objective 2.1 “Overcome the limitations in the availability of water and increasing efficiency in water use” is the most relevant for water, with a focus on improving the exploitation and use (FA2A and FA4B); and the need to improve efficiency in the use of water (FA5A and PFA2A). The Strategy does not mention the aim of contributing to the achievement of the WFD objectives, but refers to the proof of compliance with the objectives laid down in the Water Framework

Directive.

Focus area 3b is activated in the RDP, and its Strategy included the Measures M02, M05 and M17; however, no reference to water is provided.

The Strategy for FA4b includes the following measures: M01, M02, M04, M10 and M11 for agricultural land and M02, M08 and M15 for forestry land. The strategy description of the priority refers explicitly to the SWOT analysis but does not link back to the Needs. It does not mention the need to support the implementation of the WFD. The RDP has a set of actions at the level of the protection and rational use of water, e.g. through support for practices which are more demanding (M10 and M11). Reference is made to minimize flood risks, though these have not been mentioned in the SWOT analysis.

The target indicator for FA4b is 9.8% of agricultural and 1.29% of forestry land under management contracts to improve water management. As some 40% of surface water bodies is not achieving good status in Portugal – out of these almost 400 water bodies due to agricultural pressures - it could indicate an insufficient level of ambition.

The Strategy for Focus area 5a includes M01, M02, M04 and M10. M04 targets the development and competitiveness of agricultural holdings promoted in a sustainable manner or by protecting water quality through efficient water use. M10 supports the adoption of efficient practices in water use by the agricultural sector. M01 and M02 are not specified. It does not mention the need to support the implementation of the WFD.

The target indicator for FA5a, which is the percentage of irrigated land switching to more efficient irrigation system, is 10.24%. Potential or effective water savings are not estimated. The data provided within the RDP do not allow to assess if switching to more efficient irrigation systems will solve the water abstraction pressures in the RDP territory and the impacts on water body status; the Strategy does not refer explicitly to the 11 groundwater bodies in bad quantitative status.

P4 on “Restoring, preserving and enhancing ecosystems related to agriculture and forestry” with 26% and FA5a “Increasing efficiency in water use by agriculture” with 22% – have a higher budget than P2 on “Enhancing farm viability and competitiveness” with 37% and P3 on “Improving competitiveness of primary producers” with 2%, with the majority of the budget associated to P4 indicating there should be a considerable contribution towards the environment, though the focus on water within this is not clear.

Ex-ante Conditionalities

EAC 5.2 was assessed by the MS as fulfilled for all priorities. No action plan is needed.

Measures

The measures and sub-measures that are linked to water issues under Focus area 4b and Focus area 5a: M01, M02, M04, M08, M10, M11 and M15.

Measure 1 on “Knowledge transfer and information actions” includes financing for training on many topics including “water management”. It contributes to FA4b and FA5a. It does not refer to the WFD specifically.

Measure 2 on “Advisory services” invests in the training of farmers as regards requirements at farm level resulting from the implementation of programmes of measures included in the river basin management plans under the Water Framework Directive, as well as relevant obligations covered by the Water Framework Directive for the forestry sector. It contributes to FA4b and FA5a.

Measure 4 on “Investments in physical assets” addresses Focus areas 4b and 5a. It includes the following operations:

- Sub-measure 4.1 — support for investments in agricultural holdings – finances farm investments in efficient water use, including the adoption of production technologies; and the management of water resources, including investment in improvement of irrigation infrastructure. It is stated that the implementation of this action shall ensure compliance with the requirements of Article 46 RDR, which applies the minimum potential water savings of 5%. The time reference for recently irrigated areas refers to the past 5 years. No reference is made to requiring a legal water permit as eligibility criteria. Selection criteria that will be applied will focus on applications which have the greatest potential for water savings levels, but do not refer to where water savings are most needed (e.g. where waterbodies have higher quantitative pressures)
- Sub-measure 4.3 finances irrigation efficiency, the implementation of transport and distribution systems and more appropriate irrigation methods in a manner that is consistent with other infrastructure. Eligible costs include hydraulic works for collection, transport, storage and distribution of water, and flood defence; these might lead to a shift from groundwater abstraction to surface water abstraction. It is stated that the implementation of this action shall ensure compliance with the requirements of Article 46 RDR; but no reference is made to the possible need for carrying out an article 4.7 assessment for the hydraulic works targeting water supply and flood defence, which could pose a risk for deterioration of water status. Selection criteria do not refer to where water savings are most needed (e.g. where waterbodies have higher quantitative pressures).
- Sub-measure 4.4 Non-productive investments finances the installation and

recovery of riparian buffer strip and the eradication of invasive timber species. Selection criteria do not refer to the status of water bodies in the different river basin districts.

Measure 8 on “Investments in forest area development” includes investments for industrial processing including waste water treatment, as well as afforestation. The financing of waste water treatment will have a positive impact on point source pollution from such industrial plants. No reference is made to WFD in the eligibility or selection criteria, e.g. prioritising investments in water bodies especially at risk to point source pollution.

Measure 10 finances “Agri-environment-climate measures”. Relevant for water is the operation “Integrated production”, which requires keeping evidence of plant protection products and fertilisers purchased and analyses of soil and water. The operation on “efficient water use” requires commitments on a plan for irrigation (leading to a more efficient use of water), a fertilisation plan (with positive implications in terms of water quality), regular inspections to the irrigation equipment and implementation of the irrigation plan’s recommendations and the correct irrigation balance. The eligibility conditions refer to metering devices, but not to having a water permit. The selection criteria (not required under M10) do not refer to specific water bodies, e.g. the 11 groundwater bodies in bad quantitative status.

Measure 11 on “Organic farming” contributes to FA4b. The measure aims to increase biodiversity and to reduce pesticides and nitrates, including in water, by complying with the Community rules on organic farming. The selection criteria for both sub-measures (maintenance and conversion) support the national action plan to combat desertification, but no reference is made to the status of water bodies or pressures identified in the development of RBMPs.

Measure 15 on “Forest environmental and climate services and forest conservation” contributes to Focus area 4b. The measure description refers to strengthening the protective functions of riparian buffer strips important for the conservation of water resources. Sub-measure “maintenance and restoration of riparian buffer strips” fosters their maintenance and a 12-meter buffer between water and agricultural land. The eligibility and selection criteria include Natura 2000, but no specific reference to water management or the WFD is made - e.g. to target these to water bodies in less than good status or those affected by diffuse pollution pressure.

Indicators

The RDP provides information regarding the required water-related CMEF indicators (39 on water abstraction, 40 on water quality and 42 on soil erosion) and does not include additional relevant information beyond the water relevant context and impact indicators.

The indicator set does not refer to the WFD objectives for water bodies by 2021.

Morphological alterations, pesticide pollution or effective water savings are not monitored based on the information on the context and impact indicators. As such, there is lack of indicators in the CMEF to fully track progress on water savings and hydromorphology.

The monitoring system does not refer to data reported from the WFD monitoring systems.

As not required, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD.

Conclusions

Regarding the intervention logic for addressing water management issues, the RDP does not present a consistent structure. The information on the status of water bodies has been included, but not the assessment of the specific pressures of agriculture as included in the River Basin Management Plans (RBMPs), which list agriculture as a major pressure, mentioning nitrates pollution and hydromorphological pressures due to water storage by dams, with overall ¼ of water bodies in less than good status. In general, the measures do not aim specifically to contribute to WFD objectives – except M02. Although the WFD is referred to in some of the descriptions, measures in general are not focused on water bodies in less than good status.

As regards pollution, the target indicators for FA4b of 9.8% of agricultural and 1.29% of forestry land under management contracts to improve water management might be appropriate, as 25% of the water bodies are in worse than good status. However, it is not clear if the measures will be effective enough from both the limited requirements of M10 and the lack of geographical focus on water bodies in less than good status due to pollution problems.

As regards FA5a and water quantity, the target indicator is 10.24%, of irrigated land switching to more efficient irrigation system with a minimum of 5% potential savings. However, potential or effective water savings are not quantitatively estimated, and the investments do not prioritise water bodies in less than good status due to quantitative reasons; and in consequence a low effectiveness can be expected.

As regards hydromorphology, the RDP includes measures to preserve and restore riparian vegetation; however, it also finances further water supply investments like dams and flood defences, which might cause deterioration of water bodies without referring to the need for a WFD Art.4(7) assessment to be conducted and mitigate against deterioration of status. Although not required under the EAFRD, reference to Art. 4 (7) WFD under the eligibility criteria would help to clarify to local authorities the legal requirements in light of the on-

going challenges many authorities are facing with proper application of Art. 4 (7) WFD.

The monitoring and evaluation framework in place on its own will not allow for the comprehensive monitoring and evaluating water-related measures associated with water savings or morphological contributions. It also cannot evaluate the contribution of measures to improving water status.

Recommendations:

1. To better develop eligibility and selection criteria to prioritise targeting of water bodies in less than good status. This applies to all measures and priorities.
2. As regards water quantity, to consider a more detailed reference to the 11 groundwater bodies failing good quantitative status, and specify how the planned investments would contribute to improving their status, including a review of eligibility and selection criteria, as well as describing the administrative procedures needed to ensure such contributions. Legality of current water abstractions should also be included as an eligibility criteria. Finally, although not required by the EAFRD the RDP should clearly state that new dams and water storage will require a WFD Art.4(7) screening.

A36 Romania

Romania has one river basin, the Danube. Agriculture is considered one of the main sources of point and diffuse pollution from nutrients, organic and hazardous substances due to the presence of animal farms without waste recycling/storage capacity, as well as the use of fertilizers or pesticides in arable farming. Hydro-morphological alterations are mentioned as significant water management issue in the RBMP, but not in direct connection to the agriculture sector. Significant water abstraction for agriculture is reported for some sub-basins. According to the 1st RBMPs, 64% of natural surface water bodies (SWBs) and 37.5% of artificial and heavily modified SWBs have achieved good ecological status/potential. Over 90% of SWBs and 87% of groundwater bodies (GWBs) have achieved good chemical status/potential. All GWBs are assessed at good quantitative status.

SWOT

According to the SWOT, Romania's freshwater resources are limited and unevenly distributed through the country with significant water scarcity and drought issues. The SWOT mentions the aim to improve the status of SWBs and GWBs through the implementation of the RBMP, to address flood risk management through the Floods Directive and to protect the Black Sea. Water quality is mentioned as very good, good and moderate without using clear WFD terminology. Reference is made to only 2% of water bodies in poor or bad ecological status; it is not stated what percentage of water bodies have achieved good ecological status/potential. 91.6% of WBs were evaluated in 2010 as having good quality with respect to nitrate pollution and 8.4% indicate a moderate quality; it is not clear whether this assessment corresponds to the thresholds of the WFD or to a different directive. 84.4% of GWBs have high quality. The SWOT does not mention the percentage of WBs having achieved good quantitative status. It is not clear whether the updated Art. 5 WFD assessment (from 2013) was used to inform the SWOT.

Since 2013 Romania has applied a nation-wide action programme under the Nitrates Directive. The SWOT links point source pollution from nitrates to animal rearing in individual households, which do not have storage facilities for livestock manure. Pressure on soil and water from the application of fertilisers and pesticides is low, but the use of chemical fertilizers in agriculture has been increasing.

Irrigation infrastructure is overall degraded and non-functional. Agriculture area equipped for irrigation is 3.1 million ha, but the area actually irrigated represents only 1.2% of UAA (2012 data). The SWOT highlights the priority will be given to investments in the irrigation sector for the rehabilitation of existing infrastructure.

The general description in the SWOT fully addresses the significant pressures identified in the Romanian Danube RBMP.

The water-related strengths identified in Programme good chemical quality of water resources and significant area of agriculture land under agri-environmental commitments to promote extensive farming practices. Weaknesses identified include poor waste management, in particular on small-scale farms, poor capacity for training on agri-environment-climate measures (AECMs), irrigation systems mostly degrade and ineffective, and water resources are limited and unevenly distributed, leading to droughts. Opportunities mentioned include the implementation of the EU and national environmental objectives as regarding water and overall good quality of water resources. Continued water-related threats are increase in negative environmental impacts of intensification of agriculture, in adequate use of technologies leading to counter-productive effects on water resources and the risk of point source pollution, eutrophication of water and wetlands due an increase in the number of animals raised.

The section strengths, weaknesses, opportunities and threats reflects will the water-related pressures due to the agriculture sector.

Needs

3 needs have been linked to Focus area 4b on “improving water management, including pesticide and fertilizer pollution”: appropriate knowledge among farmers, maintaining and improving water resources and improved cooperation between rural actors. 2 needs have been linked to Focus area 5a on “increasing efficiency of water use”: appropriate knowledge among farmers, maintaining biological diversity and environmental value of agriculture and forestry land and adapting to the effects of climate change.

The need on appropriate knowledge among farmers is a cross-cutting need across all focus areas and includes the management of water and adapting to climate change.

The need on maintain and improvement water resources (Focus area 4b) highlights that most of water resources in Romania fall into quality classes good and very good, which is not correct as over 30% of natural SWBs and over 60% of artificial and/or heavily modified SWBs have not achieved good ecological status. The need mentions that agriculture is not currently a major pollution of surface and ground water due to fertilisers, pesticides and nitrates, but that intensification of agriculture will pose a serious risk for water pollution. The need does not bring up the issue of poor waste management in relation to livestock and how this poses a major pressure on water issues. The need focuses on the use of organic farming and extensive farming practices to maintain and improve water quality.

The need to adapt to climate change (Focus area 5a) highlights the need to promote efficient irrigation technologies and informing farmers on best agriculture practices regarding water consumption. The need on maintain biological diversity does not mention

how the need is linked to irrigation investments.

Strategy

The general strategy of the RDP mentions that one of the strategic objectives is the sustainable management of natural resource and climate action and includes references to protection against nitrate pollution, water management, pesticide use and adapting to the effects of climate change. It is positive that the general strategy links to the focus areas back to the identified needs (i.e. improving water resources, increasing water use efficiency and climate change adaptation). The general strategy mentions that the need on maintaining and improving water quality will be pursued through the promotion of extensive practices, promoting organic farming and adequate management of manure, thus contributing the Nitrates, Pesticides and Water Framework Directives.

With regards to the budget, 28.7% of the total RDP budget is for P2 “Enhancing farm viability and competitiveness of all types of agriculture” and P3a “Improving competitiveness of primary producers”, compared to 30.4% assigned to P4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry”. It is not clear how much of the budget in P4 is dedicated to addressing water issues. It should also be noted that 48% of the budget for P4 has been allocated to M13 on less-favoured areas, which according to a recent DG Agriculture study¹⁷ has little relevance for improving environmental conditions.

Focus area 3b on “supporting farm risk prevention and management”, is programmed through M01 and M17. There is no link to flood risk prevention.

Focus area 4b on “improving water management” is linked to 4 measures: M1, M2, and M11. The description again highlights that although water bodies are generally in good status and that currently agriculture is not a major water polluter, intensification of the agriculture sector could increase the risk of water pollution. The description also states that improving water management, including fertiliser and pesticide management is programmed through M1, M2 and M11, indicating that M10 is not linked to this focus area. The description states that in relation to the identified needs, the budgetary resources are fully focussed on promoting organic farming (M11). In addition, farmers will receive

¹⁷ A study financed by DG Agriculture, which assessed the relevance of measures as regards environment and climate needs, found that M13 on support for farmers within areas of natural constraints is only partially or indirectly relevant for achieving objectives under priority 4 (biodiversity, water, soils). Rather, the measure appears to be used to address socio-economic needs with indirect or secondary effects on the environment. See DG Agriculture (2016): “Mapping and analysis of the CAP”, page 168

information and advice linked to organic farming under M1 and M2.

The target indicator for focus area 4b is 11.92% of agriculture lands under contract to improve water management. This represents a positive commitment by the programme to tackle agriculture pressures on the water environment.

Focus area 5a on “increasing efficiency in water use by agriculture” is programmed through M1, M2, M4 and M10. The strategy for this focus area concentrates on improving irrigation infrastructure but also on promoting agricultural practices to adapt to climate change under M10. Farmers will also have access to training, demonstration activities and advice on the efficient management water resources.

The target indicator for focus area 5a is almost 300% of irrigated lands switching to more efficient irrigation systems. This a considerable target, which is higher than 100% due to the ambition to upgrade existing irrigation systems not currently in use.

Ex-ante Conditionalities

EAC 5.2 was assessed by the MS as not fulfilled. The action plan mentions the following:

- The analysis of cost recovery for water services was fulfilled in the first RBMPs, according to Art. 9 of the Water Framework Directive.
- The 11 RBMP update will include an analysis on the identification of externalities as part of environmental costs and impacts on water resources. They will include an assessment of the costs of diffuse pollution, on the basis of a methodology that will be finalised by 30.06.2015.

Measures

Focus area 4b on “improving water management” is linked to 3 measures: M1, M2 and M11. Focus area 5a on “increasing efficiency in water use by agriculture” is programmed through M1, M2, M4 and M10.

Measure 1: This measure contributes to Focus area 4b and 5a through support for vocational training and skills acquisition, short-term farm visits and exchange in experience regarding organic farming (fertiliser and pesticide management), irrigation efficiency and planting drought resistant crops.

Measure 2: This measure contributes to Focus area 4b and 5a through support for the advisory activities regarding cross compliance and organic farming techniques (including fertiliser and pesticide management) and solutions at farm level for climate change

adaptation and the protection of water, among others.

Measure 4: This measure finances investments in agricultural holdings. The sub-measures will finance efficient irrigation systems at farm level, investments in manure management and equipment to ensure proper management of the use of fertilisers.

- Sub-measure 4.1: This sub-measure finances manure management and improve fertiliser applications. Although the sub-measure is not linked to Focus area 4b, neither directly or indirectly, it is clear that the modernisation of livestock farms, including pollution abatement technologies and for the storage/proper management of manure will reduce water pollution problems associated with the sector. As this measure was not specifically designed to address water management, there are no eligibility or selection criteria in place to target or prioritise these investments to water bodies failing good ecological status, despite the SWOT indicating that waste pollution from livestock is a significant pressure on the water environment.
- Sub-measure 4.3: This sub-measure finances the modernisation of irrigation facilities to ensure efficiency water use by using new technologies, which will lead to a real reduction in water consumption at farm level. Eligibility criteria in accordance to Art. 46 are fully laid out in the RDP, with a minimum water savings of at least 5% for water bodies in good quantitative status (i.e. all GWBs in the country). It is positive that the measure includes selection criteria such as “the principle of complementarity with investments for modernisation of irrigation systems downstream” and “water supply directly at the source or gravity systems” (as opposed to investments requiring pumping).

Measure 10: In the description of the strategies for Focus area 4b and 5a, the programme indicates that agri-environment-climate measures (AECMs) have been programmed under Focus area 5a but not Focus area 4b. However, the general description of M10 indicates that sub-measures will support the achievement of the Water Framework Directive, the Nitrates Directive and Pesticides Directives by reducing water pollution and mitigating the negative effects of floods. Measure 10 contains 8 packages, which include multiple variations. Package 5 “adapting to the effects of climate change” is linked to Focus area 5a and finances the planting of drought resistant crops. It is positive that a desertification risk map identifying critical areas has been used to target the measure in the eligibility conditions to areas at high risk. Although not specifically linked to Focus area 4b, a number of packages will have a positive impact on the water environment. Package 1 “Pastures with high nature value”, Package 3 “Pasture with importance for birds” and Package 6 “Pasture with importance for butterflies” prohibit the use of chemical fertilisers and pesticides and only allow manure applications at a lower amount than what is allowed under the Nitrates Directive. Package 4 “Green crops” requires winter cover crops and prohibits the use of chemical fertilizers and mentions in its description that it will help to

reduce nutrient leaching and therefore contributes to the WFD.

Measure 11: In the Programme, Organic Farming as the main measure to achieve Focus area 4b. The general description states that requirements of Organic Farming reduce nutrient run-off and pesticide pollution. There are no selection criteria in place (which are not required by the EAFRD) prioritizing the financing of this measure to WBs failing good status due to diffuse pollution or pesticide problems. Nonetheless, it should help ensure WFD no-deterioration objectives.

Indicators

The RDP uses the required CMEF indicators to provide context to the SWOT and existing issues being faced in Romania. Information is provided on nitrogen and phosphorus pollution and soil erosion by water. The context indicators have not been voluntarily expanded to include information on water body status in line with the WFD. Also, there are no additional programme specific context indicators (voluntary) defined for pesticide pollution.

The target indicators used in the programme are as defined according to the CMEF: percentage of agricultural and forest land under management contracts to improve water management. From a WFD perspective, these indicators on their own are not suitable for monitoring how the water-related measures are contributing to the improvement in water bodies as regards good ecological and chemical status. The description of the evaluation system does not mention using WFD monitoring data.

As not required, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD.

Conclusions

Overall, the Romanian RDP provide a clear strategy to address water management issues in the territory. Despite some inconsistencies (i.e. indicating water bodies are most in good status when between 37-64% of SWBs have not achieved ecological status), the SWOT is very clear in linking specific agriculture activities to water pressures, the programme has developed adequate needs and the strategy of the RDP in general and of the two relevant focus areas (4b and 5a) has been designed to properly address agriculture pressures on the environment. The SWOT provides little reference to any flooding issues that may negatively impact agriculture activities. Although the FD is mentioned a few times throughout the document, there are no measures included that address floods. This is not required by the RDP, but it would be beneficial for understanding the pressures facing

rural areas to have information regarding floods in the SWOT.

The share of the budget within the programme overall shows that promoting competitiveness and environmental protection have an almost equal weight. It is important to note that almost ½ of the budget for Priority 4 has been allocated to M13, which has shown to have little relevance to environmental issues. It is not clear how much budget will go to measures addressing water management issues (this is not required under the EAFRD).

The needs related to water and Focus area 4b emphasize relying on organic farming to address fertilizer and pesticide pollution issues in the country. M1 and M2 focus on providing training and advice for organic farming, and the description of M11 on organic farming highlights the benefits this measure brings for water management. Although not specifically tied to Focus area 4b, both M4 through manure storage and M10 through restrictions on chemical fertilizers and pesticides will positively contribute to reducing water pollution and aiding in achieving objectives of the WFD. Nevertheless, it is also clear from the RBMPs and also the SWOT that the likely intensification of agriculture will lead to greater pressures on the water environment. The M10 measures that do provide beneficial restrictions are linked solely to pasture. As such, the programme does not offer any measures to tackle pollution problems from conventional arable farming, which is likely to be a big contributor of water pollution. Organic farming is a very positive measure from a WFD perspective, but it would also be important to have options for conventional farmers who do not plan to convert to organic farming.

The strategy for Focus area 5a takes a multi-pronged approach by focusing not only on the supply side through considerable efforts to modernise irrigation infrastructure but also on the demand side through offering financing to switch to more drought resistant crops (M10). The irrigation investments under M4 have fully applied Art. 46, and it is positive that no net increase in irrigation infrastructure will be financed. It is also positive that selection criteria were developed to prioritise investments that don't require pumping stations. Under M10, the measure on financing drought resistant crops has taken advantage of a desertification map to target areas at high risk within the eligibility criteria. This is a positive application of how targeting can focus measures to areas where they are most needed.

The target indicator for Focus area 4b is 11.92% of agriculture lands under contract to improve water management. As agriculture is currently not the greatest source of water pollution in the country, this represents a positive commitment by the programme to tackle agriculture pressures on the water environment. However, should Romania intend to rely on WFD basic measures and voluntary measures under the RDP to tackle the agriculture sector's share of pollution load, it should be made clear within the RBMPs whether such a target indicator is sufficient for achieving good status by 2021.

The target indicator for focus area 5a is almost 300% of irrigated lands switching to more efficient irrigation systems. This is a considerable target, which is higher than 100% due to the ambition to upgrade existing irrigation systems used in the recent past. Given that the country has significant water scarcity and drought issues, it is important to ensure that this significant effort does not lead to any deterioration in WB status, especially since all GWBs are currently in good quantitative status.

Finally, although no MS or region is required to go beyond the CMEF defined indicators, additional programme specific indicators can be developed. While Romania chose to define a number of additional indicators with the programme, none of these are related to water. Romania could consider developing an indicator to better track pesticide pollution and achievement of good status. Given that the Programme did not include additional programme specific indicators to adequately measure the results of the measures in terms of achieving ecological and chemical status improvements, it will be difficult to discern its contributions to WFD objectives at the end of the programming cycle and to inform future revisions.

Recommendations:

1. Include agri-environment-climate measures focussing on water pollution issues to address intensive conventional arable farming. Although large-scale farming is still not widespread in Romania, a number of very large, intensive arable farms exist. It would be useful to ensure that Romania maintains good status within existing WBs and improves ecological status in others. Depending on the problems, such measures could include financing precision farming equipment (to minimize nutrient run-off) or wide buffer strips along water courses
2. Provide more comprehensive information regarding the status of water environment in the SWOT, including up to date information as regards water body status to avoid contradictory statements to the pressure analysis within the WFD. This would strengthen the intervention logic of the programme.
3. Although not required, consider expanding both the context and target indicators to better reflect water management. The context indicators of nitrogen and phosphorus pollution do not cover two important water management issues, namely pesticide pollution and morphological alterations. These missing aspects do not enable obtaining a full picture of the environment in the territory, which is quite information considering the emphasis the programme has placed on financing measures to reduce pesticide applications and drainage activities. Moreover, the target indicators do not enable to track the impact these measures have on improving the water environment. Especially with constraint budgets, it would be beneficial to have indicators in place that enable the authorities to track whether a measure's implementation is having a positive effect on the water environment and is therefore worth financing. Here, linking also the monitoring

programme to existing programmes under the WFD would be helpful and would not pose any additional administrative or financial burden on the district.

A37 Slovakia

Slovakia has two river basin districts (RBDs): the Danube and the Vistula. The Danube covers 96% of its territory. In the RBMPs, all agricultural activities are considered a significant source of diffuse pollution from mineral and organic fertilisers and plant protection products. Water bodies with an area of agricultural land in their basins of over 40% are considered as being subject to significant pollution from agriculture. Erosion is considered as one of the key sources of organic and nutrient pollution, but no specific reference to agriculture. Hydro-morphological alterations are mentioned in the RBMPs but there is no link to the agriculture sector.

SWOT

The RDP states that 70% of rivers are in good ecological status and 90% are in good chemical status. The latest Art. 5 assessment has been used. There is no information provided regarding the status (quantitative and chemical) of groundwater bodies.

According to the SWOT, around half of the water bodies do not comply with the objective of achieving good water status of the EU Water Framework Directive; however, the major proportion of the pollution in the waters is from industry, transport and urban community. The impact of agriculture is considered marginal compared with other sources of water pollution in the Slovak Republic. Nevertheless, about 60% of the territory has been designated a nitrate vulnerable zone (NVZ). In recent years, the overall trend in the nitrate content of surface and groundwater has been decreasing. It is not made clear which agricultural activities – arable or livestock farming – contribute to diffuse pollution. It is also not clear whether phosphorus pollution is a problem. Information states that the use of pesticides is stable but does not indicate whether there are problems with pesticide pollution.

Water use in agriculture represents only 3% of total water use. From the surface water abstracted in 2010 only 2% was for irrigation. Most of the irrigation systems build on agricultural land is obsolete.

Strengths identified in the programme are low intensity farming (reduced use of agro-chemicals); support to the protection of water through organic farming and agri-environment support; high quality of groundwater; and the nitrogen and phosphorus balance is positive from view of soils. Weaknesses include poor land management leading to soil erosion and sedimentation; a negative balance of nutrients and declining soil fertility; and lack of flood protection. Opportunities include the better protection of water resources from pollution from agriculture; increase water retention and protection against flooding. Threats include floods and lack of water for irrigation but linked to climate change.

Needs

3 Needs have to be linked to Focus area 4b on “improving water management, including fertiliser and pesticide management”: Prevention of floods; Protect soil from degradation and preserving water quality; and Prevention of natural disaster in forests strengthening the protective functions of forests and reconstruction after natural disasters. The Need on the prevention of floods is also linked to Focus area 3b on “Supporting farm risk prevention and management”.

The need on prevention of floods mentions measures to ensure water retention and reducing flooding on agricultural land. To this end, the reconstruction and modernisation of existing hydro-melioration and drainage systems, as well as dykes and deepening water beds will be financed. This water will also serve as an alternative source for local irrigation. It is not clear how this need links to Focus area 4b and its focus on reducing water pollution.

The need to protect soil and preserve water quality mentions that there is risk that water bodies will not fulfil objectives of good water status. It is mentioned that agriculture is a marginal source of pollution overall but important in terms of groundwater pollution. Reference is made to 2,232,810 ha being registered as vulnerable zones under the nitrates action plan, which exceed the UAA of the country. The need description mentions that intensive land management and animal breeding is causing water pollution.

The need related to prevention of natural disasters focuses mainly on forest fires and also mentioned flooding. It is not clear the link to P4b; rather, this need seems more linked to P3b, which is not mentioned.

The need “elimination of impacts and adaptation to climate change” is linked to P2a “Improving the economic performance of farms”, which focuses on water use and irrigation. It is important to note that Focus area 5a “Increasing efficiency in water use by agriculture” has not been programmed.

Strategy

The strategy is based on 3 strategic objectives: strengthening competitiveness; sustainable management of natural resources and adaptation to climate change; and a balanced territorial development of rural economics and job creation. The strategy on sustainable management focuses on identified weaknesses and strengths, namely permanent grassland, poor health of forests, retaining areas of high nature value and the high status of groundwater. Reference is made to supporting investments in storing organic fertilisers, preventing water erosion and groundwater pollution from intensive farming.

Focus area 3b focuses on addressing the need to prevent the negative impacts of floods. The main measure programmed is M5, which will include promote preventive measures like the protection of hydro-melioration (drainage) channels. The description refers to ensuring compliance with the WFD and implementing flood measures in line with flood risk areas identified under the Floods Directive. It is not clear why the target indicator “percentage of farms participating in risk management schemes” has been set to 0, although all of the funding under M5 has been earmarked under Focus area 3b.

35% of the total public budget of the programme have been earmarked for measures contributing to Priority 2 “Enhancing farm viability and competitiveness” and Focus area 3a “Improving competitiveness of primary producers”, while 44.4% of the total public budget has been earmarked for measures contributing to Priority 4. However, it is important to note that 53% of the budget for Priority 4 has been earmarked for M13 on less-favoured areas, which does not place any restrictions on farmers in relation to biodiversity or water-related issues¹⁸.

The strategy for Priority 4b emphasizes that the main measures to address water management are M10 (agri-environment) and M11 (organic farming). Forestry measures under M8 (forestry) and M15 (forest-environment) will also improve water management; not details are provided. Cooperation projects are also foreseen. The measures programmed under P4b include: M1, M2, M4, M8, M10, M11, M12, M13 M15 and M16. The target indicator for P4b indicates that 20.65% of agricultural land and 1.18% of forestry land will be contracted to improve water management. However, many of the drainage measures focussing on flood protection have been programmed under P4b, which makes it difficult to understand what percentage of agriculture land will actually be under contract to address pollution issues. In general, Slovakia has achieved good status or higher in many WBs, so the strategy in the RDP is sufficient.

Ex-ante Conditionalities

The RDP mentions that EAC 5.2 has not been fulfilled. The RDP mentions the following action to be completed by the end of 2014:

- Inclusion of the obligation of reimbursement of the costs of services related to

¹⁸ A study financed by DG Agriculture, which assessed the relevance of measures as regards environment and climate needs, found that M13 on support for farmers within areas of natural constraints is only partially or indirectly relevant for achieving objectives under priority 4 (biodiversity, water, soils). Rather, the measure appears to be used to address socio-economic needs with indirect or secondary effects on the environment. See DG Agriculture (2016): “Mapping and analysis of the CAP”, page 168

water abstraction for irrigation of agricultural land (hereinafter referred to as the “irrigation”) (payments) through an adequate contribution to cost recovery of water services within the meaning of the introduction of incentive pricing policy according to Art. 9 The Water Framework Directive in amendment of Act No 364/2004 Coll. on water (Water Act), as subsequently amended, an amendment to regulation of the Government of the Slovak Republic No 755/2005 Coll., laying down the amount of fees and payment of unregulated particulars relating to charging for use of water (change in regulation of the Slovak Republic Government No. 367/2008 Coll.).

Measures

Focus area 2a (irrigation), 3b and 4b are linked to M1, M2, M4, M5, M7, M8, M10, M11, M13, M15 and M16.

Measure 1 finances vocational training and demonstration activities. The measure links back to the identified needs, including the need on maintaining water quality. The measure description states that it will finance information and awareness about the impact of agricultural practices on water quality and training on the optimal use of fertilisers and pesticides. Demonstration activities will include information on protection of groundwater as well as storage and handling of fertilisers.

Measure 2 finances advisory services. The measure links back to the identified needs, including the need on maintaining water quality. It refers to P4b and mentions that the content of the advisory services will be on improving water management and reducing water pollution from agriculture, including advice on the requirements of Art. 11 (3) of the WFD.

Measure 4 finances investments in agriculture holdings, and will focus on the following needs: irrigation, biomass use, waste treatment, promotion of domestic products, improving energy efficiency, reducing greenhouse gas emissions and protection against water pollution. The following sub-measures are being financed with links to water issues:

- Sub-measure 4.1 finances, among others, investments in existing and new irrigation systems and improved technology for the application of organic and mineral fertilisers. Eligibility criteria refer to Art. 46. Most of the criteria are correctly transposed. However, the RDP does not interpret Art. 46 (4a) correctly. The RDP states that investments have to ensure effective water savings of 50% for existing installations and for creating reservoirs or using recycling water if they have no impact on ground or surface waters. Rather, the criteria should state that investments in improving existing irrigation installations are only eligible if the investments affect surface or groundwater bodies are in less than good quantitative status ensure an effective reduction in water use, amounting to at least 50% potential water saving (Article 46 (4a)). Furthermore, Article 46 (5a) is also not

interpreted correctly. The RDP states that investments leading to net irrigated areas are allowed if environmental analysis demonstrates that that investment does not negatively affect any surface or groundwater bodies. This criterion should also include that an investment resulting in a net increase of the irrigated area affecting a given ground or surface water bodies is only eligible if these water bodies are not in less than good quantitative status. Eligibility conditions have not included the need to adhere to Art 4 (7,8,9) for new irrigation investments. Selection criteria are included that prioritise investments that will result in higher savings.

- Sub-measure 4.3 focuses efforts for land consolidation, financing field and forest roads as well as water and erosion related measures like grasslands, afforestation, riparian buffer strips, terraces, green corridors, irrigation polders, reservoirs and drainage. Despite financing reservoirs and drainage, the sub-measure does not include in its eligibility criteria the need to adhere to Art. 4 (7) of the WFD, taking into account cumulative impacts within a catchment. There are no water-related selection criteria.

Measure 5 finances restoring agricultural production potential damaged, natural disasters and use of events and introduction of appropriate prevention actions. The general description focuses on droughts and flooding impacts. The measure finances the restoration, modernisation and completion of hydro-melioration channels (drainage) on agriculture land and nearby pumping stations. It states that these measures will ensure that they don't compromise existing wetlands and ecosystems. The drainage measures should increase water retention on the field and enable water to be transported to areas experiencing drought. The measure includes in its eligibility conditions that the projects have to adhere to Art 4 (7,8,9) of the WFD and propose relevant mitigation measures, as well as carry out an environmental impact assessment. The projects cannot negatively impact wetlands and other ecosystems. Selection criteria prioritise drainage channels located in areas of intensive agriculture and areas at risk of flooding and waterlogging. It is not clear how these activities are linked with the management of floods risks under the EU Floods Directive.

Measure 7 finances basic services and village renewal in rural areas. In the general description, Focus area 4b is not mentioned; however, sub-measure 7.2 finances the construction and modernisation of water supply, sewage and waste water treatment, as well as drainage channels and deepening of existing village wells. Despite financing drainage, adherence to Art. 4 (7,8,9) and the need to take cumulative impacts into account is not included in the eligibility criteria. There are no water-related selection criteria.

Measure 8 finances investments in forest area development and improvement of the viability of forests. The measure mostly focuses on prevention against forest fires and pests but also flood protection measures will be financed. Sub-measure 8.3 finances the construction and renovation of small dams and stabilising stream beds for flood protection,

mitigate erosion and to store water for fire protection. Despite financing small dams, adherence to Art. 4 (7,8,9) and the need to take cumulative impacts into account is not included in the eligibility criteria. There are no water-related selection criteria and there are no links to risk areas identified in the Floods Directive. It is not fully clear why this measure is programmed under P4b as opposed to P3b.

Measure 10 finances agri-environment-climate measures. The general description links M10 to identified needs, which do not include the need to improve water quality; however, the description also states that particular attention should be paid to the protection of groundwater bodies and to improve the status of WBs in accordance with the WFD. 9 measures are financed, which focus mainly on biodiversity protection, with 1 measure specifically focussing on improving water quality. The operation “Protection of water resources” focuses on one of the largest protection groundwater bodies in Slovakia. The measure requires precision farming to fertilise soils and a fertilisation plan. The biodiversity focussed measures, however, also ban the use of pesticides and limit fertiliser applications to varying extents.

Measure 11 finances organic farming. The measure is primarily directed at P4a but will contribute to P4b, though a total ban on the use of synthetic fertilizers, pesticides and as well as extended crop rotations. The measures are applicable across the entirety of the country, and there are no eligibility conditions and selection criteria targeting WBs failing good status.

Measure 12 finances Payments for Natura 2000 only. It focuses on grasslands and forests. The sub-measure on support to grassland indirectly supports water quality through a ban on fertilisers and pesticides.

Measure 15 finances forest-environment measures. The general description states that the measure will contribute to P4b through the prohibition of the use of pesticides. Overall the measure focuses on biodiversity and nature conservation and indirectly contributes to improving water quality.

Measure 16 finances cooperation activities. The general description highlights all the priorities it supports, Focus area 4b is not included. The measure finances EIP groups, pilot projects, cooperation between micro-businesses and cooperation within the supply chain. There is no link to water management, so it is not clear why this measure is programmed under P4b or why the strategy description of P4b highlighted cooperation activities for water management.

Indicators

In the RDP, the following context indicators are used: 20 (surface of irrigated land), 39 (water abstraction in agriculture), 40 (nitrates) and 42 (soil erosion rate through water and

surface affected).

In Chapter 11, indicators for P4b only include impact indicator T10 (% of agricultural land under management contracts improving water management (P4b) and context indicator 18 (used agricultural area). None of these are suitable for monitoring how the water-related measures are contributing to the implementation of the WFD and achieving good ecological and chemical status. Furthermore, the RDP does not use relevant context indicators (e.g. number 39 or 40) to measure progress.

There is no specific mention of monitoring on water saving or pesticide pollution. There is no mentioning of using WFD monitoring systems.

The RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD.

Conclusions

The RDP provides general information regarding the state of the water environment in Slovakia, emphasizes most of its water-related measures on irrigation and drainage, and to a less extent address water pollution through requirements restricting fertiliser and pesticide inputs under agri-environment measures focussing on biodiversity. Overall, the ecological and chemical status of water bodies in the country is quite good (over 70% have achieved WFD objectives); nevertheless, the RDP provides an incoherent approach to addressing water and flood management.

Drainage can be financed under M4, M5, M7 and M8. Only M5 mentions the need to adhere to Art. 4 (7,8,9) and to take mitigating actions; the rest of the measures do not include any eligibility criteria to avoid negative impacts to the water environment. The main reason for drainage is to address flooding, and the entire budget for M5 has been allocated to Focus area 3b. However, the target indicator for Focus area is 0, which is contradictory to how drainage is programmed within the RDP. In addition, the RDP provides little information regarding the need to implement the Floods Directive, and none of the drainage measures link to the Floods Directive or target areas identified as under flood risk. It is not clear how the operations financed in the RDP will be undertaken in synergy with flood management throughout the country.

With respect to the strategy for Focus area 4b, the RDP finances advice, agri-environment measures and organic farming. The majority of the actions to address fertiliser and pesticide pollution can be seen as secondary effects. Most of the M10 measures and M11 focus on biodiversity and nature conservation, although they include restrictions on inputs and thus contribute to Focus area 4b. It is positive that the RDP has included a measure targeting one GWB at risk with precision farming techniques. Overall, the restrictions on

this measure have a low ambition as fertiliser plans are already quite common throughout Europe. The target indicator for agriculture land under contract for water management is quite high – around 20% - considering the limited pollution problems facing WBs; however, the target is difficult to assess as it appears that the drainage activities under the various measures have been included in this target.

Funding for modernisation and new irrigation infrastructure has been programmed under P2 rather than Focus area 5a, indicating that the emphasis is not on achieving water efficiency. Water use for irrigation is quite low in the country. It should be noted that although investments under P2 are not required to fulfil EAC 5.2 on water pricing, Slovakia has not fulfilled its obligation to introduce adequate water pricing. The investments for irrigation have included Art. 46 criteria but some of these (4a and 5a) have not been correctly transposed. References to water bodies failing quantitative status are missing. Furthermore, new irrigation infrastructure has not included Art. 4 (7,8,9) of the WFD in their eligibility conditions. As irrigation has not been programmed under P5a, there is not target indicator to evaluate the contribution modernisation of irrigation infrastructure has had on increasing water efficiency.

Recommendations:

1. Present a more coherent picture of the water environment in the SWOT, clearly presenting a link between specific agriculture activities and pressures.
2. Article 4 (7,8,9) of the WFD should be included in the eligibility conditions of all measures financing drainage (not just M5) and for new irrigation infrastructure. Although not required under the EAFRD, as mentioned above, reference to Art. 4 (7) WFD under the eligibility criteria would help to clarify to local authorities the legal requirements in light of the on-going challenges many authorities are facing with proper application of Art. 4 (7) WFD.
3. All criteria under Art. 46 RDR must be correctly transposed to properly ensure that irrigation does not lead to negative impacts on water bodies.
4. The invention logic should be improved to make more clear what measures are actually contributing to Focus area 4b. The priority's strategy should not include measures that do have any link to improving water management with regard to pollution (M7, M8, M12, M15, M16).
5. The RDP should be more transparent regarding its target indicators. It is not clear why the target indicator for Focus area 3b is at 0 and why the target indicator for Focus area 4b is so high considering the lack of measures specifically address water pollution.
6. The RDP mentions that droughts are increasingly due to climate change and that is

why irrigation investment is needed. WBs in the Slovakia are currently in good quantitative status, but there are no indicators included in the CMEF that could track the impacts of droughts in the country (as a context indicator) or water savings achieved through modernising irrigation (as a target or results indicator).

A38 Slovenia

The RDP for Slovenia is situated over two river basin districts: the Danube and the North Adriatic. The RBMPs state that 46% of surface WBs (SWBs) are failing WFD objectives due to nutrient and organic enrichments from diffuse pollution from agriculture. Regulation of water flow is also a pressure, as well as hydro-morphological changes of surface water bodies due to hydropower. 30% of SWBs are failing WFD objectives due to altered habitats; flood protection, and physical alteration of riverbeds. Water abstraction is a major pressure, mainly from small hydropower facilities, also from fish farms, for drinking water supply, mills, large hydropower and irrigation.

SWOT

The SWOT refers to both RBDs and the number of SWBs. The SWOT provides up to date information (incl. the year 2013). Figures show SWBs classified in good ecological status as well as in very poor, poor and moderate state categories and those not having good ecological potential. The reasons for not achieving good ecological status are listed, with most pressure coming from nutrient and organic enrichment, and hydro-morphological changes. Figures are also provided on the chemical status of surface and groundwater bodies (GWBs). No mention is made on groundwater quantitative status. The SWOT lists the catchments with most significant issues. The national GWB monitoring shows positive development in nitrate content as a possible result of measures to reduce nitrogen applications.

The SWOT indicates that point and diffuse pollution is due to improper or excessive use of livestock manure (manure and liquefied manure), mineral manure (nitrogen and phosphorus) or inappropriate use of other organic manure (compost, sludge from municipal wastewater treatment plants). Combined with the regulation of agricultural land along water courses (e.g. removal of riparian vegetation) and natural features, these conditions are often the reason for poor water status.

Intensive agriculture is also identified as a source of hydromorphological alterations caused by water abstraction, the construction of water reservoirs for irrigation and intensification of land use in riparian areas. National legislation requires environmental protection permits for water abstraction, which has to comply with the criteria and conditions for allocating water rights in water management plans. The SWOT identifies that the majority of irrigation systems are old and in poor state and that irrigation water use is low. Drainage of agricultural land has not been permitted since 1991.

Water and wind erosion due to intensive farming on arable land is identified as well as increasing frequency of droughts and floods due to climate change. No mention is made of the Floods Directive or the FRMPs.

All pressures mentioned in the general description section of the SWOT are also addressed under the Strengths, Weakness, Opportunities and Threats sections. The main strengths identified in the RDP include: decline in use of mineral fertiliser, plant nutrients, and plant protection products, decline in nitrogen surplus, high amount of natural water sources, high GW quality, 96% of SWBs have good chemical status, good enforcement of water related legislation, good legislation on interventions in the environment (e.g. ameliorations – reducing pressure on hydromorphology), ban on drainage of agricultural land since 1991. The main weaknesses include: many freshwater habitat types in inappropriate or poor status and exposed to the impacts of agriculture; groundwater in some areas experience significant pollution with nitrates and pesticides caused primarily by intensive farming; a good ecological status or potential is not achieved in a great share of SWBs, mainly due to pollution with nutrients; nitrogen surplus in the NE Slovenia; local erosion by wind and water erosion on arable land; higher use of pesticides and herbicides compared to EU average; increased frequency of droughts and heavy rainfall; frequent natural disasters (floods, landslides etc.), low use of irrigation, old systems. The opportunities include: a greater application of agricultural practices with reduced impacts on environment; developing sustainable irrigation systems and renovation of existing; improved methods of manure storage and fertilisation. The threats include: a lack of interest to implement environmental friendly practices leading to excessive input of PPP and fertilisers; land abandonment and conversely further intensification of agriculture; climate change is leading to more frequent and longer droughts and more frequent floods; and inappropriate implementation of agrarian operations (consolidations, irrigation systems) can negatively impact water status.

Needs

Ten Needs have been linked to Focus Area 4B “Improving water management, including fertiliser and pesticide management”: 04-10, 12, 14 and 17. One need has been linked to Focus Area 3B “Support for the prevention and management of risks on farms” and five needs to Focus Area 5A “Increasing efficient water use in agriculture”. However, Slovenia has not programmed measures for Focus Area 3B and Focus Area 5A. The Needs descriptions link to pressures identified in the SWOT and types of measures needed. All pressures identified in the SWOT have been turned into Needs.

Needs 4, 6 and 7 focus on horizontal issues such as: qualification improvement, guaranteeing specialised advisory services, and strengthening the transfer of knowledge and innovation to farmers. Measures for improving qualifications and developing advisory services focus on water protection areas. The transfer of knowledge and innovation focus on reducing the impacts of agriculture on water status (nutrients, pesticides and hydromorphological pressures).

Need 09 is directly linked to water management - it directly addresses quality improvement of SWBs and GWBs by reducing negative impacts of agriculture; and focuses on ecological

conditions of SWBs (nutrients), and the chemical status of GWBs (nitrates and pesticides). It specifically targets intensive agriculture areas in northeast Slovenia in order to attain WFD objectives; and foresees farming practices with reduced inputs (fertilisers and pesticides) and soil cultivation (greening of arable land, enhancing organic farming, and conversion from arable to grassland). It includes investments in more efficient fertiliser use and storage capacities. In addition, Need N10 focuses on soil pollution issue and links to GW quality; it tackles nitrogen surplus, in particular in northeast Slovenia. It foresees farming practices with reduced use of mineral fertilisers and pesticides, and preferable change to organic fertilisers, and appropriate soil cultivation practices (crop rotation, conservation tillage, and the greening of arable land).

Needs 12 and 14 focus on climate change mitigation and adaptation respectively. Mitigation options promote improved animal manure management (reducing intensity and appropriate storage of manure), but the positive impact this could have for water quality is not made. Other mitigation options focus on efficient water management (technological modernisation of existing irrigation systems, use of wastewater or storage of rainwater). Adaptation options focus on appropriate crop rotation (better utilisation of available water, reduced danger of pest and diseases, etc.), drought resistant varieties of agricultural plants or evapotranspiration reducing soil cultivation. Need 08 focuses on biodiversity protection and promotes extensive agricultural practices, while Need 17 promotes organic farming; though both Needs do not link to water management.

Strategy

The general Strategy refers to the results of the SWOT, needs and national strategic documents. Under the priority area of protecting natural resources, it highlights synergies with the European and Investment funds (ESI) funds and the CAP Pillar 1 in connection with the green component (outside the scope of the RDP) for water management measures. For example, it indicates that flood risk prevention measures will be financed from the ESI, which are also relevant to reducing water erosion on agricultural land; it further refers to synergies in reaching the objectives of a good water situation and the preservation of biodiversity, since investments in infrastructure for drainage and treatment of wastewater, the reduction of the hydro-morphological burden, the establishment of the Natura 2000 site management system and green infrastructure will be supported by ESI funds. The description also mentions the importance of agri-environment-climate measure.

The Strategy identifies Priority 4 “Restoring, preserving and enhancing ecosystems” and Priority 2 “Enhancing farm viability and competitiveness” as the most important priorities in the Slovenian RDP in terms of the allocation of funds (52% and 20% respectively) and which are mutually enhancing as they refer to the greater sustainability of agricultural holdings. Although 52% of the RDP’s total budget is allocated to Priority 4, it is important to note that 46% of public funds available for the Priority 4 are anticipated for M13 –although

the measure has unclear benefits for water management.

The Strategy provides an overview of measures to be applied under each focus area and whether the measure programme will have primary or secondary effect; and their indirect impact on other focus areas. The description addresses pressures identified in the SWOT.

Focus Area 3B “Support for the prevention and management of risks on farms” is not programmed. The description of the objectives does not link to the WFD or FD.

Focus Area 4B “Improving water management, including the management of fertilisers and pesticides”, is linked to 6 measures: M01, M02, M10, M11 and M16. The description reiterates the water management problems identified in the SWOT and focuses on measures to reduce the impacts of agriculture on water through two primary measures - agri-environment-climate (M10) and organic farming (M11). The importance of incentives to reduce the use of pesticides and fertilisers and for suitable tillage which prevents surface run-off is highlighted. The description also indicates that part of the requirements will specifically target areas with excessive nutrient leaching in SWBs and GWBs referred to in the Water Management Plan to achieve objectives of the WFD. M1, M2 and M16 related to knowledge transfer, availability of specialised advisory services and cooperation between various stakeholders will support the implementation of both measures M10 and M11.

The target indicator for Focus Area 4B is 24.74% of agricultural land under management contracts to improve water management. This initially appears a quite ambitious target, which is positive.

Focus Area 5A “Increasing efficient water use in agriculture” is not programmed. The description mentions that the objective will be pursued as part of measure M04 (programmed under Focus area 2a “Improving the economic performance of all farms” and Focus area 3a “Improving competitiveness of primary producers”) which will support investments in storing rain water, technological modernisation of existing irrigation systems, reservoirs etc.

Ex-ante Conditionalities

EAC 5.2 is not mentioned in Chapter 6. It is not applicable as irrigation is not programmed under Focus Area 5A.

Measures

Focus Area 4B is linked to 6 measures: M01, M02, M10, M11 and M16.

M01 finances training activities to agricultural holdings located in catchment areas of SWBs

and GWBs referred to in the RBMP, where objectives of the WFD are not be attained, in order to reduce diffuse pollution of agricultural origin in these areas.

M02 finances advisory services on agri-environment-climate (M10) and organic farming measures (M11). M02 places a special emphasis on reducing the impacts of agriculture on the quality of SWBs and GWBs and focuses on catchment areas referred to in the RBMP, where objectives in the WFD will not be attained due to diffuse pollution.

M04 is not programmed under Focus Area 4B but under Focus Area 2a and Focus area 3a. However, the measure supports a range of operations related to water management:

- Operations under sub-measure 4.1: investments to reduce the use of pesticides (e.g. special machinery), purification and savings techniques on agricultural holdings (rainwater, waste, irrigation, etc.), adjusting to the special requirements of farming in environmentally vulnerable areas (drinking water protected areas, Nitrates Directive, etc.), arranging permanent plantations and pastures (meadow orchards, extensive pastures, etc.), and organic food production.
- Operations under sub-measure 4.2: arranging wastewater treatment plants, reducing emissions and saving water, arranging reservoirs for the collection of rainwater.
- Operations under sub-measure 4.3: Land consolidation and improvements; construction of new large irrigation systems; and technological upgrading of existing large irrigation system, agricultural improvements in land consolidation areas.

The sub-measures target areas of water bodies identified as priority in the water management areas. Drainage of agricultural land is not permitted by operations under sub-measure 4.2 and 4.3. Conditions for eligibility require permits for the implementation of agricultural improvements, incl. nature protection consent, water protection consent, environmental permit, etc. Investments should take into account all the guidelines of the RBMPs and follow the supervision requirements in the WFD Article 11.3.e. Article 46 of Regulation (EU) 1305/2013 is applied and presented in detail following the official legislative text for operations under sub-measure 4.3, but not for operations under sub-measure 4.1 (where the requirements are only referred to and not transposed).

M10 finances agri-environment-climate measures and is implemented through 19 operations. The measure does not clearly list operations that are specifically programmed under Focus Area 4B nor is there an overview of sub-measures that can contribute to Focus Area 4B. The general description states that many sub-measures can contribute to reducing water pollution through requirements on reducing or prohibiting the use of fertilizers and pesticides (e.g. in sub-measures targeting crops such as the operation on “fruit growing” or “wine growing”). Other relevant requirements include those on crop rotation and cultivation techniques.

Figures are provided of the necessary % of agricultural land on which the objectives of the WFD are planned to be implemented (28% of agricultural land; 38% of which arable land and 5% grassland); and the greatest effect on improving the chemical state of SWBs and GWBs is expected from the implementation of requirements related to overwintering and non-overwintering cover crops on arable land.

There seems to be only one sub-measure specifically designed for water management. This sub-measure supports two mandatory measures (i.e. greening of arable land and use of approved pesticides) as well as two optional (i.e. non-overwintering honey crops and sowing plants for green manure). It aims to prevent the leaching of nutrients, reduce groundwater pollution and erosion on arable land. This sub-measure prioritizes implementation in areas where water bodies are in less than good ecological or chemical state.

In addition, one sub-measure on “arable farming and vegetable crops” supports reduction in fertilizer and pesticide use, crop rotation and green cover only if applicants also apply for the sub-measure on water management described above.

M11 finances organic farming. The measure is intended for activities related to the use of organic fertilizers; and prohibition to use chemically synthesized pesticides and mineral fertilizers; contributing to the protection of GWBs and SWBs against nitrates and pesticides and preserving sources of drinking water. The principles for establishing selection criteria do not include a targeting of this measure to areas with water bodies failing the objectives of the WFD.

M16 finances cooperation project. Within the scope of Focus Area 4B, M16 contributes to enhancing efficient forms of cooperation among various entities that contribute to water protection and to strengthening innovative approaches and cooperation in the field of improving the condition of SWBs and GWBs. Within this measure, special emphasis is placed on cooperation projects aimed at increasing the sustainability of agriculture in areas that are problematic due to diffuse pollution. These areas include catchment areas of SWBs and GWBs referred to in the RBMPs as not achieving WFD objectives and specific catchment areas of retention basins.

Indicators

The RDP uses the required CMEF indicators to provide common context to the SWOT and existing issues. Information is provided on water abstraction in agriculture (indicator 39), nitrogen pollution (indicator 40 water quality) and water erosion (indicator 42 soil erosion by water).

Target indicators for Focus Area 4B include impact indicators T10 (% of agricultural land under management contracts improving water management (Focus Area 4B) and T11 (% of agricultural land under management contracts improving water management (Focus Area 4B) and T11 (% of agricultural land under management contracts improving water management (Focus Area 4B) and T11 (% of agricultural land under management contracts improving water management (Focus Area 4B).

of forestry land under management contracts to improve water management), as well as context indicators 18 (used agricultural area) and 29 (total forest area).

The RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD. For example, no additional context indicators report WFD monitoring data, the % or number of water bodies at Good Status, water savings, pesticide pollution or morphological alterations. There is no indicator on area of land under drainage.

The indicators currently used will not on their own allow for measuring progress on how the water related measures are contributing to the implementation of the WFD and achieving good ecological and chemical status. This will make it difficult to be able to evaluate the programme's success and what changes should be made in the future.

Conclusions

The Slovenian RDP takes an overall logical approach to addressing water management issues in its territory. There is clear explanation of the main pressures coming from agriculture, linking it to specific agricultural activities, and the SWOT provides up to date information as regards to the ecological, chemical and quantitative status of water bodies in the territory. The needs defined reflect the pressures identified in the SWOT, and the strategy developed for Focus Area 4B for the most part indicates which measures will contribute to the WFD.

Specific operations in M10 and M11 were designed to support WFD objectives by addressing diffuse pollution from nitrogen and pesticides; it is less clear how phosphorous pollution will be tackled. One operation in M10 explicitly targets the areas where a poor chemical and ecological status of SWBs and GWBs has been established in the RBMPs. Other operations primarily focus on biodiversity protection, but can provide side-benefits for WFD implementation, for example when it changes cultivation techniques, reduces livestock density or offers conversion possibilities. There could have been a greater variety of sub-measures specifically designed and targeted to support WFD implementation.

Other measures such as M01, M02 and M16 - programmed under Focus Area 4B – appear targeted and aim to contribute to WFD implementation. However, no eligibility or selection criteria specify this targeting.

Although the SWOT indicates point source pollution as problematic, the RDP does not present a clear strategy to tackle point source pollution in Focus Area 4B. Some investment measures in M04 consist in improving wastewater treatment, but the operations are not clearly linked to point source pollution pressures.

M4 supports the implementation of agricultural improvements in land consolidation areas,

the construction of new large irrigation systems, and technological upgrading of existing large irrigation systems. In addition, it is highlighted that further hydromorphological improvements and flood protection schemes will be supported via the European Structure Funds. Some of these operations are not designed with appropriate environmental safeguards can result in negative impacts on the water environment (agricultural improvements, new irrigation, flood protection), in particular on hydromorphology. Eligibility criteria presented in M04 require extensive compliance with environmental, water and RDP regulations. However, consideration of WFD Article 4.7 assessment is not indicated.

Natural water retention measures could have been better included to address the hydromorphological pressures identified in the SWOT.

The target indicator for Focus Area 4B indicates that 24.74% of agriculture land will be under contracts to improve water management and M10 indicates that 28% of agricultural land (38% of which arable land and 5% grassland) are necessary to implement the objectives of the WFD. Therefore, the RDP's contribution toward addressing agriculture pressures to reach the WFD objectives is quite ambitious, which is positive.

The Programme did not include additional indicators to adequately measure the results of the measures in terms of achieving ecological and chemical status. The current framework does not enable tracking progress in terms of achieving good status.

Recommendations:

1. Strengthen the linkages of some measures (e.g. M04) with Focus Area 4B and the WFD, strengthen the contribution of operations in M4 to reducing pollution (e.g. from livestock production), and expand the range of operations in M10 that can specifically WFD objectives.
2. Strengthen the contribution of the RDP towards hydromorphological improvements, through more operations supporting restoration of habitats and protection of riparian areas and floodplains, as well as promoting NWRM. Clearly require compliance with RDP Article 46 and WFD Article 4.7 for all investments into developments and infrastructures related to agricultural improvements and irrigation.
3. Improve the monitoring and evaluation framework to better assess the improvements coming from the implementation of water-related measures, for example through indicators reporting the % or number of water bodies at Good Status, pesticide pollution or morphological alterations.

A39 Spain – Andalucía

The region covers (almost) entirely several River Basin Districts, namely the Guadalquivir (ES050), Mediterranean Andalusian basins (ES060), Guadalete and Barbate (ES063), Tinto, Odiel and Piedras (ES064); and covers some other basins with a small proportion: ES040 (Guadiana) and ES070 (Segura). The latter are not assessed in this Annex.

SWOT
<p>Within the different RBMPs, the following agriculture-related pressures have been identified: diffuse pollution by nitrates, phosphorous and pesticides of both ground and surface water bodies; Water abstractions, including self-abstraction and illegal abstractions; and hydromorphological pressures such as dams, channels and flood defence infrastructure, though this is not specifically related to agriculture.</p> <p>The RDP identifies in its SWOT analysis diffuse pollution by nitrates and pesticides, increased water demand and flood risks due to climate change. It does not refer to pollution by phosphorous nor to hydromorphological pressures.</p> <p>Overall, water consumption by irrigation is 3,942 Hm³, with an average of 3.563 m³/Ha. 64% uses drip irrigation systems, flood irrigation by 23% and spray irrigation by 13%. Average efficiency of irrigation is at 76% (abstracted vs. used). Between 1995-2008 > 350.000 Ha were modernised, with overall water savings of 720-1235 m³/ha (RDP page 101 vs. Table 36), corresponding to a 9.4% of water consumption in agriculture.</p> <p>Though the Water Framework Directive has been referred to, no information has been provided in the RDP on the status of water bodies or the objectives of the Water Framework Directive, or the role of agriculture in contributing to these. Information to this effect would be found in the Annexes to the RDP There is no information found in the SWOT regarding the current status of water bodies in the region. Information is missing regarding the percentage of surface and groundwater bodies failing good ecological, chemical or quantitative status; however, the information of the RBMPs (not included in the RDP) refers to overall some 30-40% of the water bodies in worse than good status. The SWOT does not mention whether the limited information available is from the most recent WFD Art. 5 assessment. Neither flood management or the implementation of the Floods Directive is mentioned in the SWOT analysis.</p> <p>The SWOT analysis includes the following:</p> <ul style="list-style-type: none"> • Strengths: Under P5, Associations or cooperative models for water management; High share of localised and efficient irrigation systems; Existence of plans for wastewater treatment and reuse; Existence of plans to improve irrigation systems and experience in drought management.

- Weaknesses: Under P4, high nitrate pollution in some areas (Lower Guadalquivir); Overexploitation, pollution and marine intrusion to aquifers. Under P5, Growing water demand due to increased irrigation Surface; Existence of exploitations with low-efficiency irrigation systems.
- Opportunities: Under P4, Existence of approved RBMPs; Existence of dryland areas which can improve farm practices and water quality.
- Threats: Under P5, Irregularity of water resources availability; Climate change effects on droughts and precipitation.

As regards the pressures, the list of strengths, weaknesses, opportunities and threats targets diffuse pollution by nitrates and pesticides, increased water demand and flood risks. Phosphorous pollution and hydromorphological pressures are not targeted.

Needs

The RDP associates two Needs to Focus area 4b “Improving water management, including fertiliser and pesticide management”, which are: Strengthening agricultural practices to support climate change mitigation/adaptation and biodiversity; Support strategies to improve water quality.

The RDP associates three Needs to Focus area 5a “Increasing efficiency in water use by agriculture”, which are: Provide access to financial resources (listed in table, but not in text); Support strategies to improve water quality; Improvement in resource management, improving competitiveness and sustainability.

While two Needs make an explicit reference to water management, and one of them refers additionally to the Water Framework and Nitrates Directives, there is no clear link to either water-related priority for the need on improving resource management.

As regards the pressures identified in the RDP, the Needs do not address Hydromorphological pressures or flood risks.

Strategy

The general strategy of the RDP includes elements both potentially contributing to the WFD objectives as well as to deteriorating the status of water bodies. Overall, P2 on “Enhancing farm viability and competitiveness” and P3a on “Improving competitiveness of primary producers” have a lower budget (32%) than P4 on “Restoring, preserving and enhancing ecosystems related to agriculture and forestry” and P5 “Promoting resource efficiency and supporting the shift towards a low carbon and climate resilient economy in agriculture, food

and forestry sectors” (53%), with P4 covering 37.63% and P5 14%.

Flood risk management and the need to implement the Floods Directive is not mentioned in the Strategy and Focus area 3b “Supporting farm risk prevention and management”, wherein measures to address flood management can be programmed; however, the FA 3b is programmed, and Measure 05 refers to floods.

The Strategy for FA4b includes the following measures: M04, M08, M10 and M11 for agricultural land and M01, M02, M04, M07, M08 and M16 for forestry land. Measures 10 and 11 are specifically linked to the reduction of erosion, fertilizer and pesticide use. Two water-specific Weaknesses of the SWOT analysis are referred to in the Strategy description, namely water quality by fertilizers and pesticides. It does not mention the need to support the implementation of the WFD.

The target indicator for FA4b is 16,27% of agricultural land under management contracts to improve water management, which is quite ambitious though is unlikely to cover all 30-40 % of waterbodies failing to reach good status in the region. The un-ambitious target indicator for FA4b is 0% of forestry land under management contracts to improve water management.

The Strategy for Focus area 5a includes the following measures: M04. It targets infrastructure investments for irrigation optimization and using the irrigation potential. It does not mention the need to support the implementation of the WFD through reducing abstraction pressure in waterbodies.

The target indicator for FA5a is 8.66%. of irrigated land switching to more efficient irrigation system. Potential or effective water savings to waterbodies (at less than good status) are not estimated.

Ex-ante Conditionalities

According to the RDP, EAC 5.2 is not considered fulfilled by the MS. The steps deemed necessary to comply with the EAC are outlined in the Action Plan and include that 2nd cycle RBMPs include a homogeneous estimation of cost recovery, including environmental costs in the agriculture sector; and the commitment to assess a review of cost recovery instruments of the RBMPs in order to contribute to the WFD objectives.

Measures

The measures and sub-measures that are linked to water issues under Focus area 4b and Focus area 5a, whether by reducing the pressures on the water environment or by increasing it include: M01, M02, M04, M08, M10, M11, and M16. M12 has not been

programmed.

Measure 1 on “Knowledge transfer and information actions” includes financing for capacity building and knowledge sharing as well as demonstration actions on many topics to be addressed without a specific reference to water. It contributes to FA4B. It is not targeted towards water management, nor refers to the WFD specifically. The eligibility and selection criteria do not specify clear relations neither to water management nor to the WFD objectives.

Measure 2 on “Advisory services” invests in the assessment of farmers as regards water use efficiency, inputs (such as pesticides) and the requisites to fulfil the WFD. It contributes to FA4BFA5a. It refers to water management generally, with a specific reference to WFD compliance.

Measure 4 on “Investments in physical assets” addresses Focus areas 4b and 5a and refers to water use in terms of assuring supply guarantee to farmers. It includes the following operations:

- Sub-measure 4.1.1 Improvement of competitiveness and sustainability of exploitations (FA2a, contribution to FA5a) is a continuation of measures under the previous programming period, including irrigation modernization and other infrastructures at the holding level. On a positive note, the sub-measure includes a specific reference to the Water Framework Directive through the application of the National Rural Development Framework, which includes eligibility conditions, such as the request for a report from the river basin authority (RBA) which has to specify the water bodies affected by the investment and their status, the existence of a water right, and the compliance with the RBMP as regards water availability including under future scenarios, including climate change. The text refers also to Art.46 RDR and a minimum potential water saving of 5%. The selection criteria do not target/prioritise investments to water bodies failing good status. As the text of the National Rural Development Framework is valid for this RDP, there are some text elements of the Framework which are not aligned with Art.46 RDR, such as the terminology used for allowing net extension of irrigated areas (“irrigable”), the term used to determine certain water bodies where net expansion is possible (“abstraction pressures” instead of “quantitative causes”) and the fact that the calculation of potential water savings is not only based on the technical parameters as requested by Art.46 RDR. This can derive in practice in non-compliance with Art.46, reduced effective savings and larger newly irrigated areas.
- Sub-measure 4.1.2 Improvement of competitiveness and sustainability of olive yards (FA2a, contribution to FA5a) includes investments for irrigation modernization. On a positive note, the sub-measure includes a specific reference to the Water Framework Directive through the application of the National Rural Development Framework, which includes eligibility conditions, such as the request

for a report from the river basin authority (RBA) which has to specify the water bodies affected by the investment and their status, the existence of a water right, and the compliance with the RBMP as regards water availability including under future scenarios, including climate change. The text refers also to Art.46 RDR and a minimum potential water saving of 5%. Furthermore, the eligibility conditions require the beneficiary to review the water right ('regularizar su situación') according to the commitments made. The selection criteria do not target water bodies failing good status. As the text of the National Rural Development Framework is valid for this RDP, there are some text elements of the Framework which are not aligned with Art.46 RDR, such as the terminology used for allowing net extension of irrigated areas ("irrigable"), the term used to determine certain water bodies where net expansion is possible ("abstraction pressures" instead of "quantitative causes") and the fact that the calculation of potential water savings is not only based on the technical parameters as requested by Art.46 RDR. This can derive in practice in non-compliance with Art.46, reduced effective savings and larger newly irrigated areas.

- Sub-measure 4.3.1 Investments into irrigation infrastructure of public interest (FA5a, contributing to focus areas 2A, 4A, 4B, 5B, 5C and 6A) includes the modernization, extension and creation of new irrigation areas, either public or collectively managed. On a positive note, the sub-measure includes a specific reference to the Water Framework Directive through the application of the National Rural Development Framework, which includes eligibility conditions, such as the request for a report from the river basin authority (RBA) which has to specify the water bodies affected by the investment and their status, the existence of a water right, and the compliance with the RBMP as regards water availability including under future scenarios, including climate change. Additionally, the RDP establishes that irrigator communities as beneficiaries are required to have water rights, or alternatively that the RBMP foresees such water allocation. RBMPs are also specifically referred to in the description text as setting the framework for all investments as they define the status of water bodies and allocation of water. Furthermore, the selection criteria apply positive aspects such as the expected water savings, including the water rights review, and the existence of Nitrate Vulnerable Zones (NVZ) – the latter is a relevant criterion assuming less polluting effluents from modernized areas. Support rates increase with higher potential water savings. The selection criteria do not target water bodies failing good status. As the text of the National Rural Development Framework is valid for this RDP, there are some text elements of the Framework which are not aligned with Art.46 RDR, such as the terminology used for allowing net extension of irrigated areas ("irrigable"), the term used to determine certain water bodies where net expansion is possible ("abstraction pressures" instead of "quantitative causes") and the fact that the calculation of potential water savings is not only based on the technical parameters as requested by Art.46 RDR. This might lead to reduced effective water savings in

practice.

Measure 8 finances “Investments in forest area development”. Although it is not directly linked to Focus area 4b or 5a, Operation 8.6.1 support for investments in forestry technologies and in processing includes one selection criteria referring to water savings.

Measure 10 on “Agri-environment-climate measures” refers to FA4b and includes in its objective the improvement of water quality as regards nitrates and pesticides, with a significant contribution to the achievement of the WFD objectives. The following operations aim to contribute to Focus area 4b:

- Sub-measure 10.1.7 Sustainable olive tree farms. This operation promotes green cover to reduce erosion and release of pesticide to water bodies, in particular upstream reservoirs being used for drinking water purposes. The latter is included in the eligibility criteria, which also include watersheds belonging to Natura 200 sites. Nitrate Vulnerable Zones (NVZ) are targeted in the principles for selection criteria. However, no reference is made in the description or the principles for selection criteria to the chemical status of water bodies.
- Sub-measure 10.1.11 Mountain agriculture with ecological consideration on permanent crops, promotes green cover to reduce erosion; and includes NVZ in the principles for selection criteria.
- Sub-measure 10.1.5 on Sustainable extensive irrigation aims to foster integrated production in cotton and sugar beet production by supporting leguminous fertilization. The measure description includes NVZ in the selection criteria. No specific reference is made to the WFD, nor to the fact that both crops have a high per hectare water consumption and contribute negatively to the intensive water use in the basin and thus likely to the deterioration of water bodies in the lower Guadalquivir basin. It is not clear from the measure description how leguminous fertilization is linked with extensive irrigation.
- Sub-measure 10.1.12 Mountain agriculture with organic focus on olive yards promotes green cover (wider than the 1 meter strips as included in cross compliance) to reduce erosion; and includes NVZ in the principles for selection criteria. No specific reference is made to the WFD, or waterbodies under pressures due to erosion.
- Sub-measure 10.1.4 Sustainable dryland farming aims for setting up complementary buffer strips with a minimum of 1.5 meters, in particular in the upstream Ramsar wetland protected areas to reduce erosion and to protect wetlands. The principles for selection criteria include watersheds above reservoirs being used for drinking water purposes.
- Sub-measure 10.1.10 Sustainable systems of chestnut and raisin, includes

amongst other actions the elimination of herbicide use in the chestnut cultivation and thus contributes also to water quality. The principles for selection criteria include watersheds above reservoirs being used for drinking water purposes.

- Sub-measure 10.1.6 Sustainable systems of permanent crops (almonds and vineyards). This operation promotes green cover to reduce erosion and release of pesticide to water bodies, in particular towards reservoirs being used for drinking water purposes. The latter is covered on the principles for selection criteria; NVZ are also targeted in the selection criteria. However, no reference is made to the chemical status of water bodies in the selection criteria.
- Sub-measure 10.1.8 Agrarian systems of interest to steppe birds includes some references targeted to water, such as the maintenance of stubble and the use of less-soluble fertilizers in rice paddies. NVZ are targeted in the principles for selection criteria; however, no reference is made to the status of water bodies in the selection criteria.

Measure 11 on “Organic farming”, contributes to FA4b and Need 18 for agriculture and livestock holding. The measure aims to increase biodiversity and to reduce pesticides and nitrates, including in water. The selection criteria refer to Nitrates Vulnerable Zones and Nature Protected areas. The specific operational criteria of the National Rural Development Framework include a reference that this measure aims to avoid the pollution of water bodies.

Measure 16 on Cooperation promotes innovative projects and targets FA4b and Need 18. Sub-measure 16.1 - support for the establishment and operation of operational groups of the EIP for agricultural productivity and sustainability, promotes such groups on the topic of sustainable water management amongst many others, including one operation targeted on olive yards. The principles for selection criteria include reference to water efficiency and pollution but despite being part of Focus area 4b there is no further link to the pressures, needs, water management or the objectives of the WFD. Sub-measure 16.10.1. – support to feasibility studies.

Indicators

In addition to providing standard information regarding the water-related CMEF indicators (39 on water abstraction, 40 on water quality and 42 on soil erosion), the National Framework requires an additional set of indicators for investments under Measure 04. However, the change in the status of water bodies according to the WFD is not considered.

Morphological alterations, and pesticide pollution are not monitored based on the information on the context and impact indicators.

The monitoring system does not refer to data reported from the WFD monitoring systems.

As not require, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD.

Conclusions

As regards the intervention logic for water management, many problems are targeted mainly in an indirect way. This refers to water pollution by fertilizers and pesticides being addressed by green cover and soil erosion reduction, as well as to water abstractions being partially addressed by (not yet defined) potential and effective water savings. Flood risks and hydromorphological pressures have been mentioned in the SWOT analysis, but not taken forward in the rest of the RDP, or only marginally through M05. Though the Water Framework Directive has been referred to, no information has been provided on the status of water bodies or the objectives.

Given the serious diffuse pollution issues in some areas of the region as identified in the SWOT and the fact that 30-40% of the water bodies are in less than good status, the target indicators for FA4b of 16.27% of agricultural land and 0% of forestry land under management contracts to improve water management will likely be insufficient to contribute significantly – given the agricultural and forestry surface area and the impacts from agriculture and forestry on water bodies - to the WFD objectives. On a positive note, some M10 operations have made use of water-related targeting, for example by targeting areas upstream reservoirs being used for drinking water purposes in the eligibility criteria and description, or targeting nitrate vulnerable zones in the selection criteria. This WFD targeting could be further improved by also including those waterbodies not achieving good chemical status

Not all operations under M10 address pesticide use in a similar and significant way, though it had been identified as a pressure and weakness in the RBMPs and the RDP.

As regards FA5a, the target indicator is the percentage of irrigated land switching to more efficient irrigation system with 8%. On a positive note, the M04 irrigation investments include in their selection criteria the expected water savings, a water rights review, and the fact that support rates increase with higher potential water savings. On the negative side, potential or effective water savings are not estimated, and EAC 5.2 – which applies to a part of the investments - is not yet fulfilled, which can result in lack of alignment with the WFD or its cost recovery regulation. The RDP does not specifically address those water bodies that do not achieve good status due to abstraction pressures. Additionally, the measure description by the National Framework is not aligned with Art.46 RDR and proper safeguards are not in place. It needs to be furthermore added that the RDP includes operations with likely negative effect on water bodies, which are programmed under Priority

P2, including the creation of new irrigation areas.

The monitoring and evaluation framework in place cannot properly monitor and evaluate the contribution of the water-related measures to the WFD and FD. There is no indicator referring to the evolution in the status of water bodies.

Given the limited action, considerable action outside the RDP (i.e. through strengthened WFD basic measures (reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (measures funded by non-EU funds) should be included in RBMPs if the GS objective of the WFD is to be achieved.

Recommendations:

1. To reconsider the operation 10.1.5, which supports crops with a high water consumption in a region with scarce water resources, and likely little environmental benefit compared to cropping alternatives.
2. As regards water quantity, to fully implement the provisions of Art. 46 RDR and also to avoid further pressures on water bodies such as derived from the expansion of irrigated areas; targeting those areas where water quantity is a significant problem due to abstraction pressures; and including also the establishment of appropriate indicators for the effects on the status of water bodies. Given the existence of illegal water abstractions in the region, all irrigation-related investments and supports under the RDP should be linked to a proper water right of the beneficiary.
3. To address hydromorphological pressures on the rivers, groundwater abstractions and invasive species with appropriate measures, such as the restoration of embankments, compensation payments for use limitations in floodplain areas, etc.

A40 Spain – Aragon

The region falls into one large River Basin District, the Ebro (ES091), and has minor shares located in the Júcar basin (ES080) and a very minor part in the Tagus basin (ES030). The main significant pressures identified in the Ebro River Basin Management Plan 2009-2015 refer to diffuse surface and groundwater pollution, specifying nitrates. Groundwater abstractions (252 hm³/yr) are clearly related to agriculture. The Júcar RBMP for 2009-2015 mentions agriculture as a source of diffuse pollution for surface and groundwater bodies; and refers to water abstraction from surface water and groundwater bodies, referring specifically to agriculture for the surface water bodies. In both basins, more than 50% of the surface water bodies were in worse than good status in 2009; however, the quantitative status of groundwater bodies is much better.

SWOT

The SWOT analysis refers to nitrates pollution from livestock holdings (pigs ☺) as the most important source, with an excess of 11 kg/ha N, leading to an increase in nitrate vulnerable zones (NVZ) in the recent past (now 11.15%). Water quality is poor or moderate at approximately 40% of the monitoring stations due to nitrates. The SWOT also refers to water abstraction and associated hydromorphological pressures, e.g. due to dam construction. non-native species are also mentioned, constituting a risk factor for irrigation agriculture. Increasing flooding risk is briefly mentioned, though not further assessed as the competent authority for water management is the National one.

No information has been provided on the status of water bodies or the objectives of the Water Framework Directive. There is no information found in the SWOT regarding the current status of water bodies in the Aragon territory. Information this effect might be found in the Annex to the RDP Information is missing regarding the percentage of surface and groundwater bodies failing good ecological, chemical or quantitative status. The Water Framework Directive and the Floods Directive are not mentioned in the SWOT analysis, despite many Flood Risk Areas being identified in the region.

The SWOT analysis includes the following:

- Strengths: previous experience in reduction of diffuse pollution by irrigation modernization, new reuse and irrigation infrastructures (38); surface water quality improvements due to industrial and urban treatment (39); professional networks like irrigation communities (40); Increase of publicly managed forests (45).
- Weaknesses: Fertilizer and pesticide pollution of water (52); Low water use efficiency in large irrigation areas (53); Scarcity of resources designated to non-infrastructure measures on water efficiency (54).

- Threats: Lack of awareness on efficiency, equity and sustainability of resource use (6); Political and social pressure to internalise social and environmental costs of agriculture (7); Expansion of exotic species (17); Climate change risks, such as reduces snow and glacier availability, increased evapotranspiration, new pests, etc. (18).

As regards the pressures, they can also be grouped in the following way:

- Diffuse pollution, S38, W52
- Abstraction pressures, W53, W54, T6, T18

Other: T17 (exotic species)

Needs

The RDP associates 10 Needs to Focus area 4b “Improving water management, including fertiliser and pesticide management”, including the following: Conservation of extensive agriculture and forestry systems (1); Feasibility of extensive and less-favoured exploitations (2); Maintenance and promotion of extensive livestock holding (3); Support to sustainable exploitations (4); Water use efficiency increase (7); Reduction of diffuse pollution (8); Cooperation in the pig sector and its environmental integration (11); Support to Natura 2000 (30); Support for bird protected areas and biodiversity (32); Improvement of exploitations: experimentation, demonstration, training (33).

The RDP associates 5 Needs to Focus area 5a “Increasing efficiency in water use by agriculture”, including the following: Sustainable intensification, by the creation of new irrigation areas with proper water resources and infrastructure (6); Water use efficiency increase (7); Reduction of diffuse pollution (8); Fostering networking and cooperation (12); Promotion of collective action towards innovation, sustainability and efficiency of resource use (13).

Out of these needs, some descriptions (e.g. 3 and 4) do not refer to water aspects; and for others water is one aspect amongst many others.

As regards the pressures identified in the RDP, the Needs do not address the following: Hydromorphological pressures and Exotic species. As regards Groundwater abstraction pressures, the Need does not specifically refer to groundwater.

The achievement of the objectives of the Water Framework Directive or the Floods Directive are not mentioned specifically in the Needs.

Strategy

The general strategy refers to competitiveness and environment as key elements; and highlights the regional focus on irrigation (new irrigation and efficiency improvements) as an outstanding issue. However, the achievement of the objectives of the Water Framework Directive or the Floods Directive are not mentioned specifically in the Strategy. Overall, P2 on “Enhancing farm viability and competitiveness” and P3a on “Improving competitiveness of primary producers” have a significantly larger budget (50%) than P4 on “Restoring, preserving and enhancing ecosystems related to agriculture and forestry” and FA5a “Increasing efficiency in water use by agriculture” (34%), supporting the focus on competitiveness, with 30% under P4 and 4% under P5.

Focus area 3b “Supporting farm risk prevention and management” is not activated in the RDP.

The Strategy for FA4b includes the following measures: M01, M04, M10, M11, M12, and M16 for agricultural land and M04, M07 and M08 for forestry land. Only one of the three water-specific Weaknesses of the SWOT analysis is referred to in the Strategy description. While water management and the objectives of the WFD are mentioned as cross-cutting objectives there is no explicit objective defined to operationalise the support to the implementation of the WFD. The strategy does not give any indications on what types of operation within the measures it will rely on.

The target indicator for FA4b is 1.53% of agricultural land under management contracts to improve water management, which indicates an insufficient level of ambition given the pressures identified in the SWOT and the high numbers of waterbodies (>50% in the main basins) failing to achieve good status. Despite including forestry measures under this Focus area, the target indicator for FA4b is 0% of forestry land under management contracts to improve water management.

The Strategy for Focus area 5a includes the following measures: M04 and M16. M04 targets infrastructure investments for irrigation efficiency and M16 aims to create Operational Groups addressing irrigation aspects with innovative solutions, though does not mention the need to support the implementation of the WFD as part of this.

The target indicator for FA5a is the percentage of irrigated land switching to more efficient irrigation system with 5.32%. Potential or effective water savings are not estimated.

The strategy description includes clear referencing to the SWOT analysis and the Needs; however, it does not refer necessarily to the pressures identified on water bodies. Thus, hydromorphological pressures, exotic species and groundwater are not specifically targeted.

Ex-ante Conditionalities

According to the RDP, EAC 5.2 is not considered fulfilled by the MS. The steps are outlined in the Action Plan and include that 2nd cycle RBMPs include a homogeneous estimation of cost recovery, including environmental costs; and the commitment to assess a review of cost recovery instruments of the RBMPs in order to contribute to the WFD objectives.

The RDP text argues that cost recovery should be exempt for irrigation agriculture; however, it does not explain how this could be considered to be an "adequate" contribution as required by article 9 of the WFD nor how the environmental objectives can be achieved by putting in place other measures.

Measures

The measures and sub-measures that are linked to water issues under Focus area 4b and Focus area 5a, whether by reducing the pressures on the water environment or by increasing it include: M01, M04, M07, M08, M10, M11, M12, and M16. M12.

Measure 1 on "Knowledge transfer and information actions" includes financing for capacity building and knowledge sharing related to water use efficiency, as one of many topics to be addressed. It contributes to FA4B and potentially to FA5A. It mentions water management generally, with referring to the WFD specifically for the Operation 1.2 on research and innovation. The eligibility and principles for selection criteria do not specify clear relations to water management, the WFD objectives, nor groundwater bodies in worse than good status.

Measure 4 on "Investments in physical assets" includes the following sub-measures:

- Sub-measure 4.1 finances support for investments in agricultural holdings, and is programmed under Priority P2. It includes the following operations:
 - Operation 4.1.a addresses investments in agricultural holdings, for irrigation efficiency. The eligibility and selection criteria do not refer to the WFD; however, the measure description text refers to Art.46 RDR as applicable from the National Rural Development Framework, with the shortcomings listed under Operation 4.3.c.
 - Operation 4.1.b. invests in water efficiency in extensive livestock holdings in nature protected areas.
- Sub-measure 4.3 aims for the support for investments in infrastructure related to development, modernisation or adaptation of agriculture and forestry. The

sub-measure includes a specific reference to the Water Framework Directive. It refers to the National Rural Development Framework's eligibility conditions, such as the request for a report from the river basin authority (RBA) specifying a) the water bodies affected by the investment and their status, b) the existence of a water right, c) the compatibility with the RBMP as regards water availability including under future scenario, including climate change. As many water bodies in the Ebro river basin did not have a known status classification in the first RBMPs, a specific reference is made that operations affecting such water bodies require a specific statement by the RBA; however, it is not clear that for water bodies with unknown status automatically Art.46(5) applies regards effective water savings. The following operations are included under the sub-measure:

- Operation 4.3.a on Land consolidation (drainage, road infrastructure, plot concentration), programmed under FA2a, and covering all related costs to such infrastructure. The eligibility and selection criteria do not refer to the WFD, neither to considering whether this may lead to modification of a waterbody and deterioration of status and therefore the need of an eventual Art.4(7) WFD assessment – however this might be covered by the above-mentioned report of the RBA.
- Operation 4.3.b for the creation of new irrigated areas under FA2a. It targets three types of irrigation areas: a) “social” ones in the whole region, b) the Lower Ebro downstream Pastriz and c) irrigable areas declared of national interest such as Bardenas, Monegros, Canal del Cinca, Civán and Canal Calanda-Alcaniz. As stated above, the eligibility conditions refer to the WFD, and Art.46 RDR is applied with shortcomings as described under Operation 4.3.c
- Operation 4.3.c for the integrated modernization of irrigation areas, targeting Focus area FA2a. Following its description, the measure aims for the modernization including new irrigated areas (net increase), as established by Art.46 RDR. On a positive note, and referring to the beneficiaries, the RDP includes the request for an existing water right and to the need to adjust the water right once the investment has been executed (eligibility). The potential water saving is fixed at a minimum of 10%, which is more ambitious than the minimum setting of Art.46 RDR. Within the principles for selection criteria, it is positive that the RDP requires an increased minimum potential saving (15%) if water bodies are in worse than good status due to quantitative pressures. As the text of the National Rural Development Framework is valid for this RDP, there are some text elements of the Framework which are not aligned with Art.46 RDR, such as the terminology used for allowing net extension of irrigated areas (“irrigable”), the term used to determine

certain water bodies where net expansion is possible (“abstraction pressures” instead of “quantitative causes”) and the fact that the calculation of potential water savings is not only based on the technical parameters as requested by Art.46 RDR.

- Operation 4.3.d for Improvement and adaptation of irrigation areas is programmed under Focus area FA5a. This measure aims to improve existing traditional irrigation areas or those where water-efficient systems have already been implemented. It focuses on the better use of resources as water, energy or fertilizer; including the construction of new water ponds or drainage networks, metering devices or water reuse infrastructure. The rest of aspects is similar to Operation 4.3.c.

Measure 7 on “Basic services and village renewal in rural areas” includes in its sub-measure 7.2 action to renew rural villages basic infrastructure, aiming at a reduction of household water consumption. However, the eligibility conditions or principles for selection criteria do not specify clear relations to water management or to the WFD objectives. The measure is not related to a specific pressure on water bodies identified in the RBMPs or the SWOT analysis.

Measure 8 on “Investments in forest area development” aims for afforestation (sub-measure 8.1) and forest management including climate change adaptation (sub-measure 8.5) and specifies in its objectives the indirect improvement of water quality downstream. Operation 8.3.a includes hydrological correction works, which can include soil and water retention dams, with, depending on the specifics of the design of the measure, either negative or positive impact on water management. It does not refer to the water-specific Needs of the RDP but refers to FA4B, though the target indicator for forest land is set at 0 hectares. No reference is made to considering whether any of these interventions would require a WFD Art.4(7) assessment taking cumulative impacts into account. The eligibility conditions and principles for selection criteria do not specify clear links to water management or to the WFD objectives. It does not refer to the specific water pressures it is aimed at addressing.

Measure 10 on “Agri-environment-climate measures” refers to FA4b and includes in its objective the improvement of water quality as regards nitrates and pesticides. The following operations aim to contribute to Focus area 4b:

- Sub-measure n 10.1.h on integrated farming of vineyards establishing the reduction of pesticide input., while this may help address water quality no references are provided to water management or the WFD nor included in the eligibility or principles for selection criteria.
- Sub-measure 10.1.m for grassland in the surroundings of lagoons of Saladas de Chiprana, aiming for a better water quality of these wetlands, by limiting the

cropping during Spring, and not using fertilizers nor pesticides.

- Sub-measure 10.1.q aims for the maintenance of dryland farming practices in wildlife areas, supporting the cultivation of alfalfa and leaving 4% of cereals without harvesting. The RDP does not specify how this measure will contribute to Focus area FA4b specifically, nor refers to water management or the WFD nor included in the eligibility or selection criteria.

Additionally, Sub-measure 10.1.a Maintenance of stubble contributes to water retention and reduces the need for fertilization. However, this operation is not listed as for contributing to FA4b. The compensation payments do consider the water loss due to maintaining a vegetation structure on the ground.

Measure 11 on “Organic farming”, contributes to FA4B, and to water-specific needs referring to reducing pollution. The measure aims to increase biodiversity and to reduce pesticides and nitrates, including in water. Both sub-measures (maintenance and extension) do not refer to water bodies failing good status or to NVZ in the selection criteria. The specific operational criteria of the National Rural Development Framework include a reference that this measure aims to avoid the pollution of water bodies but the measure is not targeted to achieve specific water objectives in certain areas,

Measure 12 on “Natura 2000 and Water Framework Directive payments”, includes:

- Sub-measure 12.1 - compensation payment for Natura 2000 agricultural areas, which applies only to the Gallocanta lagoon area (as being the only Natura 2000 site with a management plan).
- Sub-measure 12.3 foresees compensation payments to farmers of potentially flooded areas within the irrigation areas of the Ebro river. It refers to those areas that are considered within the RBMP’s Programme of Measure as subject to flooding, obliges to crop only annual crops, and includes a compensation payment of 284.25€/ha; however, it does not refer to the Ebro Flood Risk Management Plan. The measure addresses flood risks and seeks to minimize flood impacts on higher-value urban and industrial areas downstream. However, it is unclear how this measure contributes to the achievement of WFD objectives; it would appear to be more floods directive relevant, though flood risks are not mentioned within the RDP, nor any reference to the Floods Directive is provided.

Measure 16 on Cooperation promotes innovative projects with the topic of a sustainable use of natural resources as water. These projects include water and fertilizer management and target FA4b and 5a.

- Sub-measure 16.1 - support for the establishment and operation of operational groups of the EIP for agricultural productivity and sustainability, promotes such

groups on the topic of water and irrigation, involving irrigators or their communities.

- Sub-measure 16.2 fosters the cooperation between producers on water quality, quantity and institutional aspects of sharing water resources.

However, there is no further link to the pressures, needs, water management or the objectives of the WFD in the description, including the eligibility and principles for selection criteria.

Indicators

In addition to providing standard information regarding the water-related CMEF indicators (39 on water abstraction, 40 on water quality and 42 on soil erosion), the National Framework requires an additional set of indicators for investments under Measure 04. However, the change in the status of water bodies according to the WFD is not considered.

Morphological alterations, and pesticide pollution are not monitored based on the information on the context and impact indicators. As such, there is lack of indicators in the CMEF to fully track progress on hydromorphology.

The monitoring system does not refer to data reported from the WFD monitoring systems.

As not required, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD.

Conclusions

The RDP provides a general description of agriculture pressures on the environment, has developed a number of water-specific needs, but overall has not developed a clear Strategy to significantly contribute to achieving the WFD objectives.

Although the RDP aims for clear links between the different chapters and provides textual presentation of these, within the RDP the intervention logic as regards water management presents several gaps or inconsistencies. Within the SWOT analysis, no information has been provided on the status of water bodies or the objectives of the Water Framework Directive. Information is missing regarding the percentage of surface and groundwater bodies failing good ecological, chemical or quantitative status. The Water Framework Directive and the Floods Directive are not mentioned. Furthermore, while groundwater abstractions as referred to in the Ebro RBMP and the increase of the nitrate vulnerable zones (NVZ) are highlighted, these pressures are not thoroughly considered in the rest of the RDP and translated into measures. The Needs assessment does not address Hydromorphological pressures and Exotic species - pressures relevant for agriculture that

were identified in the SWOT analysis:

Given the serious diffuse pollution issues in the region, as identified in the SWOT, the target indicator for FA4b of 1.53% of agricultural land under management contracts to improve water management is of insufficient level of ambition. Despite including forestry measures under this Focus area, the target indicator for FA4b is 0% of forestry land under management contracts to improve water management. The RDP also presents inconsistencies such as Measure 15 being listed as contributing to FA FA4b under the Strategy, whilst such contribution is no longer maintained in the Measures description. Other measures contributing to the Focus area, like M01, M10.1.q, and M16 lack corresponding descriptive elements in the Measures section of the RDP. There is finally a potential that pressures from livestock farming are not addressed.

As regards FA FA5a, the target indicator is the percentage of irrigated land switching to more efficient irrigation system with 5.32%. Potential or effective water savings are not estimated, and EAC 5.2 is not yet fulfilled. Though groundwater over-abstraction is mentioned in the Ebro RBMP, this particular aspect is not addressed specifically by any of the measures included in the RDP. It needs to be furthermore added that the RDP includes three operations with likely negative effect on water bodies, which are programmed under Priority P2, including land consolidation and the creation of new irrigation areas. The RDP does not make clear that any new technical investments must be subject to an Art. 4 (7) WFD assessment. While not specifically required by the EAFRD, such a link to Art. 4 (7) WFD is important given the Commission assessment that many MS are not fully clear on the application of Art. 4 (7) and have called for guidance. A reference to Art. 4 (7) WFD under the eligibility criteria would help to clarify to local authorities the legal requirements.

On a positive note, the RDP includes several positive aspects in the measure description, like a) referring to the beneficiaries, the RDP includes the request for an existing water right, and b) includes a reference to the need to adjust the water right once the investment has been executed (eligibility); c) the text refers explicitly to the compliance of the investment with the RBMP and the WFD; d) within the selection criteria, the RDP refers to an increased minimum potential saving (15%) if water bodies in worse than good status due to quantitative pressures are affected; and e) the potential water saving is fixed as a minimum of 10%, which is above the set minimum by the RDR.

However, negative aspects are the following: a) crop changes are considered in the calculation of potential water savings, where metering should ideally be used; b) as the RDP applies the text of the National Rural Development Framework, it also applies those text elements which are not aligned with Art.46, such as the extension of area beyond the “irrigable” area, which by itself includes an extension from “irrigated”; c) this also applies to the criteria for the possible expansion, where the Framework refers to “abstraction pressures” instead of “quantitative causes” when referring to the water bodies.

With respect to flood management, M12 has been activated for floodplain areas of the

Ebro river, linked to the RBMP. However, floods have not been identified in the RDP within the SWOT analysis or the Strategy, and the RDP mentions that this measure is a renamed adaptation of another measure already active within the previous programming period.

The monitoring and evaluation framework in place cannot properly monitor and evaluate water-related measures and their contribution to the WFD and FD. There is no indicator referring to the evolution in the status of water bodies.

The budget to address water management (pollution and abstraction), and in particular the target indicators for FA4b and FA5a, will likely not be enough to ensure support for WFD implementation, as e.g. groundwater overexploitation and nitrates pollution seem to be significantly more relevant than the target areas. This will mean that considerable action outside the RDP (i.e. through strengthened WFD basic measures (reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (measures funded by non-EU funds) should be included in RBMPs if the GS objective of the WFD is to be achieved.

Recommendations:

1. To reassess the approach of the RDP on diffuse pollution, where significant problems are reported in the RBMPs and the SWOT analysis, but low ambition is expressed by the target indicators, and where several measures included under the Focus area 4b do not to include proper water-related elements in its description, eligibility and the principles for selection criteria.
2. As regards water quantity, to fully implement the provisions of Art. 46 RDR and also to avoid further pressures on water bodies such as derived from land consolidation, and the expansion of irrigated areas.
3. To address hydromorphological pressures on the rivers, groundwater abstractions and invasive species with appropriate measures, such as river restoration, wetland creation, the promotion of buffer strips, natural water retention measures, etc..

A41 Spain – Catalonia

The region covers two River Basin District, the Ebro (ES091) and the Catalonian River (ES100) which is entirely within the region. The main significant pressures identified in the Ebro River Basin Management Plan 2009-2015 refer to diffuse surface and groundwater pollution, specifying nitrates. Groundwater abstractions (252 hm³/yr) are clearly related to agriculture. The Catalonia River RBMP for 2009-2015 mentions agriculture as a source of diffuse pollution from cattle manure and exceedance of nitrogen (irrigation, farming and livestock); and refers to water abstraction by agriculture. This RBMP also mentions water flow regulation and morphological alterations (flood defence dams, locks, weirs and others are considered together), not necessarily linked to agriculture. Approximately 25% of the surface water bodies were in good status in 2009, 40% of the groundwater bodies were in good chemical status and 85% in good quantitative status.

SWOT
<p>The SWOT analysis refers to agriculture, livestock holding and commercial forestry as a risk factor for erosion, water pollution and eutrophication. Using the data from the RBMP ES100 (only), a list of pressures has been compiled. Overall, the following pressures can be listed; note this list is fully consistent with the RBMPs:</p> <ul style="list-style-type: none"> • Diffuse pollution from agriculture, affecting 20% of water bodies in ES100, with values of 37,7 kg de N/ha and 12,8 kg de P/ha. • Nitrates pollution from livestock holding, affecting 8% of water bodies in ES100, mainly as point source pollution from intensive practices; and particularly relevant in the North-East of the region. • Water abstraction, with a consumption of overall 1.470,76 hm³, mainly within the Ebro basin. • Exotic non-native species. • Hydromorphological alteration of rivers and wetlands. <p>Though the Water Framework Directive has been referred to several times, no information has been provided on the current status of water bodies in the region. Information is missing regarding the percentage of surface and groundwater bodies failing good ecological, chemical or quantitative status. The Floods Directive is not mentioned in the SWOT analysis. Given some data refer to 2005, its unlikely that the most up to date water information has been reflected in preparing the RDP.</p>

The SWOT analysis includes the following:

- **Strengths:** Investments in water supply infrastructure; Water monitoring system under the WFD; Increase of irrigation area by 7,3% in 2008-2011 using the same water quantity as previously; Strategic Plan for Manure management; Water infrastructure for irrigation (dams, channels).
- **Weaknesses:** Increasing costs for water, energy and fertilizers; groundwater nitrates pollution; surface and groundwater pollution by agriculture and livestock holding, infringing the WFD; high livestock density in many areas; Extreme events.
- **Opportunities:** Integrated and organic production can contribute to achieve WFD; Irrigation in Natura 2000 sites might be compatible with the objectives of the protected area; Crop rotation can reduce fertilizer input needs; An improved manure management can reduce mineral fertilizer consumption; Existence of a Strategic Irrigation Plan.

Threats: Fast expansion of invasive species, affecting agriculture e.g. in the Ebro Delta; Restrictions in wetland protected areas; Nitrates pollution without positive trends, hampering the achievement of the objectives of the Nitrates and Water Framework Directives; Negative effects of nitrate pollution on rural water supply; Increase of water costs when applying WFD; Droughts and climate change affecting water supply and dryland farming; Increased erosion due to higher aridity; poor water management in non-modernized irrigation areas; Increase of pesticide use in the past years; Production decrease due to limited water availability.

Needs

The RDP associates 6 Needs to Focus area 4b “Improving water management, including fertiliser and pesticide management”, which are : N01 Promote research and innovation networks in rural areas; N02 Foster knowledge transfer and innovation; N03 support assessment system and institutions in Catalonia; N14 Promote sustainability practices, organic production and protection against invasive species; N17 strengthen prevention and restoration of forests affected by fires; N18 strengthen the planning of protected areas and species.

The RDP associates 4 Needs to Focus area 5a “Increasing efficiency in water use by agriculture”, including the following: N01 Promote research and innovation networks in rural areas; N02 Foster knowledge transfer and innovation; N03 support assessment system and institutions in Catalonia; N06 Investments in infrastructure.

Out of these needs, the majority of the descriptions (Needs 1, 2, 3, 17 and 18) do not refer to water aspects at all; Need 6 refers to water as an essential input for agricultural

development and only Needs 3 and 14 refers properly to some of the water-related pressures identified in the SWOT analysis, namely pollution by pesticides and fertilizers, and invasive species.

As regards the pressures identified in the RDP, the Needs do not address Hydromorphological pressures. Water abstractions are not identified in a way that they should be controlled to support achieving good status of water bodies. The Needs do not specifically refer to groundwater. The achievement of the objectives of the Water Framework Directive or the Floods Directive are not mentioned specifically in the Needs.

Strategy

The general strategy of the RDP includes elements both potentially contributing to the WFD objectives as well as deteriorating the status of water bodies. Overall, P2 on “Enhancing farm viability and competitiveness” and P3a on “Improving competitiveness of primary producers” have a similar budget (45%) compared to P4 on “Restoring, preserving and enhancing ecosystems related to agriculture and forestry” and FA5a “Increasing efficiency in water use by agriculture” (46%), with 40% for P4 and 6% for P5.

Focus area 3b “Supporting farm risk prevention and management” is not activated in the RDP.

The Strategy for FA4b includes the following measures: M01, M02, M04, M07, M10, M11, and M16 for agricultural land and M01, M04, M07, M08 and M16 for forestry land. Two water-specific Weaknesses of the SWOT analysis are referred to in the Strategy description, namely water quality and invasive species. Water management and the objectives of the WFD are mentioned as cross-cutting objectives. M04 and M07 contribute to biodiversity and water quality, e.g. by the establishment of riparian buffers, green filters or wastewater treatment wetlands. M10 and M11 also contribute to water quality objectives by emphasizing measures to address diffuse pollution of fertilizers and pesticides. The target indicator for FA4b is 6,19% of agricultural land under management contracts to improve water management, which indicates an insufficient level of ambition given the pressures identified in the SWOT and the large number of water bodies failing to achieve good status identified in the RBMPs. The target indicator for FA4b is 0% of forestry land under management contracts to improve water management.

The Strategy for Focus area 5a includes the following measures: M01, M02, M4 and M16. M04 targets infrastructure investments for irrigation optimization and using the irrigation potential; and M01, M02 and M16 aims to reduce water consumption. There is no explicit mention to the need to support the implementation of the WFD. The target indicator for FA5a is the percentage of irrigated land switching to more efficient irrigation system with 2.31%. Potential or effective water savings are not estimated.

The strategy description includes clear referencing to the Needs description; however, it does not refer to the pressures identified in the SWOT analysis. Thus, hydromorphological pressures and groundwater (quantity) are not specifically targeted.

Ex-ante Conditionalities

According to the RDP, EAC 5.2 is not considered fulfilled by the MS. The steps are outlined in the Action Plan and include that 2nd cycle RBMPs include a homogeneous estimation of cost recovery, including environmental costs; and the commitment to assess a review of cost recovery instruments of the RBMPs in order to contribute to the WFD objectives.

Measures

The measures and sub-measures that are linked to water issues under Focus area 4b and Focus area 5a, whether by reducing the pressures on the water environment or by increasing it include: M01, M02, M04, M07, M08, M10, M11, and M16.

Measure 1 on “Knowledge transfer and information actions” includes financing for capacity building and knowledge sharing related to good water use management and water use efficiency, as one of many topics to be addressed. It contributes to FA4B and FA5A. It is targeted towards water management generally. The eligibility and principles for selection criteria do not specify clear relations neither to water management nor to the WFD objectives.

Measure 2 on “Advisory services” invests in the assessment of farmers as regards water use efficiency and the requisites to fulfil the WFD. It contributes to FA4B. It is targeted towards water management generally, with a specific reference to WFD compliance.

Measure 4 on “Investments in physical assets” addresses Focus areas 4b and 5a; including the following operations:

- Sub-measure 4.03.01 is for rural infrastructures, including land consolidation and drainage works. The sub-measure includes a specific reference to the Water Framework Directive, through the applicable National Rural Development Framework considerations in the eligibility conditions, such as the request for a report from the river basin authority (RBA) specifying a) the water bodies affected by the investment and their status, b) the existence of a water right, c) the compatibility with the RBMP as regards water availability including under future scenario, including climate change. The eligibility and selection criteria do not however refer to the WFD or to the need to consider an Art.4(7) WFD assessment to determine if the projects (e.g. drainage) could cause deterioration of status.

- Sub-measure 4.03.02 on Irrigation Modernization, aims for significant water savings, to be invested in the region's future societal and economic development; and reduced diffuse pollution load after the modernization investments. It is however unclear how the RDP will ensure these "significant" contributions by investing only in 2.31% of the irrigated area and aiming for minimum savings of 5% as part of the eligibility criteria. On a positive note, the sub-measure includes a specific reference to the Water Framework Directive through the application of the National Rural Development Framework, which includes eligibility conditions, such as the request for a report from the river basin authority (RBA) which has to specify the water bodies affected by the investment and their status, the existence of a water right, and the compliance with the RBMP as regards water availability including under future scenarios, including climate change. Additionally, the principles for selection criteria prioritise those measures included in multi-annual investment plans such as the RBMPs. The text refers also to Art.46 RDR and a minimum potential water saving of 5%. As the text of the National Rural Development Framework is valid for this RDP, there are some text elements of the Framework which are not aligned with Art.46 RDR, such as the terminology used for allowing net extension of irrigated areas ("irrigable"), the term used to determine certain water bodies where net expansion is possible ("abstraction pressures" instead of "quantitative causes") and the fact that the calculation of potential water savings is not only based on the technical parameters as requested by Art.46 RDR. Some parts of the National Framework are conflicting with the RDP text, and the prevailing text shall be clearly indicated to avoid confusion. This can lead to less effective water savings and larger new irrigation areas than stipulated in Art.46 RDR.
- Sub-measure 4.03.04 on New Irrigation Areas of High Efficiency aims to support dryland farmers facing high temperatures during the summer and targets Focus area FA2a. The description text refers in the eligibility conditions to the WFD RBMPs in terms that the measure shall be included within its Programme of Measures and abstractions shall not affect the environment. Art.46 RDR is partially translated into the conditions, similar to Operation 04.03.02.
- Sub-measure 4.04.01 on Non-productive investments - Measures on species, habitats and landscapes targets amongst others 'the problem' to comply with the WFD, such as the establishment of riparian buffers, green filters or wastewater treatment wetlands. However, the eligibility or principles for selection criteria do not refer to the WFD or the RBMP or targeting for water bodies in worse than good status.

Measure 7 on "Basic services and village renewal in rural areas" includes investments in natural capital to support the WFD objectives, such as dune and wetland protection, ex-situ species conservation and others. However, the eligibility conditions or principles for selection criteria do not specifically target the WFD objectives, though wetlands are often

water bodies considered in the WFD directly or as water-dependent ecosystems. It does not refer to specific pressures. The measure is not related to a specific pressure on water bodies identified in the RBMPs or the SWOT analysis.

Measure 8 on “Investments in forest area development” aims for contributing to FA4b and refers in general terms to forests contributing to good water quality, and includes one measure with a more specific water-targeted action 8.5 “support for investments improving the resilience and environmental value of forest ecosystems” which finances the reduction of tree density, aiming for an increase of water availability by up to 15% due to reduced transpiration. Note the target indicator for forestry land is at 0 ha. It does not refer to the water-specific Needs of the RDP. The eligibility conditions and principles for selection criteria do not specify clear relations to the WFD objectives. It does not refer to specific pressures on water.

Measure 10 on “Agri-environment-climate measures” refers to FA4b and includes in its objective the improvement of water quality as regards nitrates and pesticides, with a significant contribution to the achievement of the WFD objectives. The following operations aim to contribute to Focus area 4b:

- Operation 10.01.01 on sustainable wetland conservation includes some specific commitments such as the non-discharge of herbicides directly into the irrigation channels, the use of pesticides according to the product instructions, and the conservation of irrigation infrastructure in rice paddies. The pesticide requirements do not go beyond what is already part of cross compliance. The eligibility conditions and selection criteria do not specify clear relations neither to water management nor to the WFD objectives as regards pesticide-polluted water bodies, targeting the measures to the water bodies where they would be really relevant.
- Operation 10.01.03 on Protection of steppe habitats includes some actions like stubble maintenance and control of pesticides use close to water bodies, which have the potential to contribute to an improved water quality. However, the WFD is not mentioned in the selection criteria.
- Operation 10.01.06 Integrated production refers to Need 14, Focus area 4b and the reduction of fertilizer and pesticide pollution of water bodies. The eligibility conditions and selection criteria do not specify clear relations neither to water management nor to the WFD objectives.
- Operation 10.01.08 Fertilizer management targets groundwater pollution, and targets Need 14 and Focus area 4b. It requires the development of water and soil analysis and to follow the recommendations for applying N, P and K. The eligibility conditions and principles for selection criteria do not specify clear relations to water management or to the WFD objectives.

Measure 11 on “Organic farming”, contributes to FA4B and Need 14 for agriculture and livestock holding. The measure aims to increase biodiversity and to reduce pesticides and nitrates, including in water. Both sub-measures (maintenance and extension) do not refer to nitrates vulnerable zones or water protection areas identified in the WFD. The eligibility conditions do not specify clear relations to water management or to the WFD objectives, nor are these reflected in the selection criteria. The specific operational criteria of the National Rural Development Framework include a reference that this measure aims to avoid the pollution of water bodies.

Measure 16 on Cooperation promotes innovative projects, biodiversity conservation and targets FA4b.

- Operation 16.01.01 - support for the establishment and operation of operational groups of the EIP for agricultural productivity and sustainability, promotes such groups on the topic of sustainable water management amongst many others. The measure description, including eligibility and selection criteria does not include any specific reference to water management or the WFD.

Operation 16.05.01 on Invasive species targets cooperation for eliminating or controlling such species in the Ebro delta.

Indicators

In addition to providing standard information regarding the water-related CMEF indicators (39 on water abstraction, 40 on water quality and 42 on soil erosion), the National Framework requires an additional set of indicators for investments under Measure 04. However, the change in the status of water bodies according to the WFD is not considered.

Morphological alterations, pesticide pollution or water savings are not monitored based on the information on the context and impact indicators. As such, there is lack of indicators in the CMEF to fully track progress on water savings and hydromorphology.

The monitoring system does not refer to data reported from the WFD monitoring systems, even when these are mentioned in the SWOT analysis.

As not required, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD.

Conclusions

The general strategy of the RDP aims to balance competitiveness with sustainability

aspects within its budget allocation. It includes elements both potentially contributing to the WFD objectives as well as deteriorating the status of water bodies, such as new irrigation and drainage areas.

The intervention logic as regards water management is not clearly presented. Although the SWOT analysis captures all the pressures identified in the RBMP (Ebro and Catalonia), it is not possible to fully capture the water situation in the region as it does not provide any information regarding the status of water bodies or the objectives of the Water Framework Directive. This situation is unique to Spanish regions among the EU MS.

Though the WFD is referred to in the SWOT analysis, it is not in the Needs description and the Strategy.

The Strategy for FA4b targets 6,19% of agricultural land under management contracts to improve water management, which indicates an insufficient level of ambition given the pressures identified in the SWOT and the large number of water bodies failing to achieve good status (60-70%). This is particularly relevant as the RDP refers as an aim/objective to making a “significant contribution to the achievement of the WFD objectives”. The target indicator for FA4b is 0% of forestry land under management contracts to improve water management. Though some measures have clear references to water quality and the WFD (e.g. advisory services, establishment of riparian buffers, green filters or wastewater treatment wetlands), in general the descriptions do not refer to specific water aspects and the measures are not targeted towards those water bodies or protected/sensitive areas most concerned about specific pressures from agriculture.

The Strategy for Focus area 5a aims to reduce water consumption, but does not mention the need to support the implementation of the WFD or the RBMPs. The target indicator for FA5a is the percentage of irrigated land switching to more efficient irrigation system with 2.31%, which will not deliver a significant contribution to the WFD; furthermore, potential or effective water savings of the investments are not estimated. As sub-ordinated to the National Rural Development Framework, no safeguard is given for the correct implementation of the Art.46 RDR. EAC 5.2 is not considered fulfilled by the MS, and will not apply to all investments in irrigation as a major part is programmed under P2. This refers also to New Irrigation Areas.

The RDP does not make clear that any new technical investments must be subject to an Art. 4 (7) WFD assessment. While not specifically required by the EAFRD, such a link to Art. 4 (7) WFD is important given the Commission assessment that many MS are not fully clear on the application of Art. 4 (7) and have called for guidance. A reference to Art. 4 (7) WFD under the eligibility criteria would help to clarify to local authorities the legal requirements.

Hydromorphological pressures due to agriculture are not targeted in the Strategy.

The budget to address water management (pollution and abstraction) and in particular the target indicators for FA4b and FA5a will likely not be enough to ensure support for WFD implementation, as the % of waterbodies at less than good status seem to be significantly greater than the target areas, and many pressures in the RBMP are linked to agriculture. This will mean that considerable action outside the RDP (i.e. through strengthened WFD basic measures (reinforced nitrates directive measures, GWD measures, abstraction measures, and measures under the sustainable use of pesticides directive) and WFD supplementary measures (measures funded by non-EU funds) should be included in RBMPs if the GS objective of the WFD is to be achieved.

The monitoring and evaluation framework in place alone cannot properly monitor and evaluate water-related measures and their contribution to the WFD and FD. There is no indicator referring to the evolution in the status of water bodies.

Recommendations:

1. To reassess the approach of the RDP on diffuse pollution, with a water-body specific targeting of the eligibility and selection criteria, as to target areas where improvements are needed; and to include specific references in many Measure descriptions. To increase the ambition of requirements of measures under M10 as these hardly go beyond cross compliance.
2. As regards water quantity, to avoid further pressures on water bodies such as derived from land consolidation, and drainage and the expansion of irrigated areas; including also the establishment of appropriate indicators for water savings. Appropriate measures might include the promotion of less-water requiring crops or the increased use of reused water whilst changing groundwater use permits.
3. To address hydromorphological pressures on the rivers with appropriate measures, including integrating flood risk prevention and mitigation measures, like compensation payments for floodplain areas or river restoration measures.

A42 Spain – Castille La Manche

As stated within the RDP, the region is covered by the following River Basin Districts: Tagus, Guadiana, Júcar, Segura, Guadalquivir, Ebro and Duero. Out of these, the first 4 cover a significant share of the region. The Tagus RBMP does not refer to major significant pressures from agriculture. The most important one is the Water transfers to other river basins to overcome water deficits in these basins. The Guadiana RBMP faces numerous significant pressures due to agriculture, including abstraction from GWB, leading to significant over-exploitation of all GWBs. Most of the aquifers fail to achieve good status also due to physico-chemical pollution problems. Hydromorphological impacts by agriculture are also present and are linked to floodplain occupation (farming in the floodplain) and riverbed occupation. The Júcar RBMP mentions agriculture as a source of diffuse pollution for surface and groundwater bodies and refers to water abstraction from surface water and groundwater bodies, referring specifically to agriculture for the surface water bodies. The Segura RBMP refers to diffuse pollution from irrigated areas and from dryland farming. As regards groundwater quality, it mentions pesticides and endocrine disrupters, but without specifying the associated source. The RBMP refers as well as to water abstractions, including irrigation (407 out of 426 abstractions are linked to irrigation). The RBMP also links irrigation to hydromorphological alterations (bank enforcement, etc.).

SWOT
<p>In summary, the following pressures from agriculture on water bodies are present in the region:</p> <ul style="list-style-type: none"> • Water abstraction from groundwater and surface water bodies • N pollution from livestock holdings and farming (groundwater and surface water bodies) • Hydromorphological pressures (floodplain occupation, riverbed occupation, bank alteration) • The RBMPs are unclear as regards other pollution (e.g. pesticides) <p>The RDP refers to the Water Framework Directive and information has been provided on the status of water bodies as approximate figures. The Floods Directive is not mentioned in the SWOT analysis. The SWOT does use the information is from the most recent Art. 5 assessment.</p> <p>The RDP refers to data from the latest RBMP planning process (to prepare the 2nd RBMPs?), and includes information about the status of water bodies overall. In the region, there are more than 428 surface and 72 groundwater bodies. Out of these, more than half</p>

of the GWB are in poor quantitative status (in particular in the Segura and Guadiana basins) and approximately half of the surface water bodies are in less than good status, in particular in the Guadiana basin. An annex is provided with further detailed information. In the region, there are 7 nitrate vulnerable zones (NVZ), with a recent geographical increase of another 5% covering now 47% of the region. Fertilizer excess is estimated at 37,8 Kg nitrogen/ha/yr and 3,3 Kg phosphorous/ha/yr. Water abstraction amounts to 1.774.425 hm³/yr with 55% covered by groundwater sources. 55% of the irrigation systems are localised (drip), and (less efficient) sprayer systems are the most prevalent.

The SWOT analysis includes the following elements:

- Strengths: none water related
- Weaknesses: Excess of N fertilization in several crops and associated water pollution. Negative P balance in some crops forcing soil deterioration (D17). Insufficient results of NVZ Action Plans (D18). Water scarcity and limitations for water use (D23). High proportion of gravity irrigation systems (D24).
- Opportunities: RBMPs requesting more efficient water use in agriculture (O18).
- Threats: High abstraction pressure on groundwater bodies, in particular in the Albacete and Ciudad Real provinces (A20).

Hydromorphological pressures (floodplain occupation, riverbed occupation) and other pollution (e.g. pesticides) are not included in the analysis.

The translation of the factual information into Strengths, Weaknesses, Opportunities and Threats is rather limited in the RDP, although it is positive that the RBMPs are identified as an opportunity and high abstraction identified as a threat.

Needs

The RDP associates 2 Needs to Focus area 3b “Supporting farm risk prevention and management”, which are: Training for specialisation and environmental awareness (N01) and Disseminate training for motivating rural inhabitants (N02).

The RDP associates 12 Needs to Focus area 4b “Improving water management, including fertiliser and pesticide management”. The needs address training and one need specifically links to water management, namely “Reduce pressures on water bodies” (though specific information on WFD pressures is not presented). The remaining needs linked to FA4b focus on sustainable management of agriculture and forestry in general, improving product quality, fostering biodiversity conservation, preventing forest fires and reducing

desertification risks, among others.

The RDP associates 5 Needs to Focus area 5a “Increasing efficiency in water use by agriculture”, including training, improving competitiveness of water exploitation, reducing pressures pressure on water bodies and reducing desertification risks.

As regards the pressures identified in the RBMPs, the Needs do not address hydromorphological pressures.

Strategy

The general strategy of the RDP includes elements potentially contributing to the WFD objectives. Overall, P2 on “Enhancing farm viability and competitiveness” and P3 on “Improving competitiveness of primary producers” have a much lower budget (30%) than P4 on “Restoring, preserving and enhancing ecosystems related to agriculture and forestry” and FA5a “Increasing efficiency in water use by agriculture” (55%), with 41% for P4 and 14% for P5. The Strategy specifically mentions the WFD and the RBMPs.

Focus area 3b is activated in the RDP (0.82% of RDP budget), but no reference to water or floods is included.

The Strategy for FA4b includes the following measures: M01, M02, M08, M10, M11 and M12 for agricultural land and M01, M02, M04 and M08 for forestry land. The strategy description of the Focus area does not refer explicitly to the SWOT analysis. It does not mention the need to support the implementation of the WFD. M10 and M11 target the reduction of fertilizer and pesticides pollution; M08 improve forest benefits in the water cycle; M04 and M12 and are targeted towards habitats conservation within Natura 2000; and M01 and M02 are aimed at a horizontal contribution to reduce the pressures on water resources. Addressing hydromorphological pressures are not included in the strategy’s description

The target indicator for FA4b is 18.01 % of agricultural and 0,13% of forestry land under management contracts to improve water management. Even if this addresses a significant share of the agricultural land, it could indicate an insufficient level of ambition given the pressures identified in the SWOT and the large number of water bodies (approximately 50%) failing to achieve good status.

The Strategy for Focus area 5a includes the following measures: M01, M02 and M04. M04 targets infrastructure investments for irrigation optimization. It does not mention the need to support the implementation of the WFD or the RBMPs. The other measures refer to training, advice and innovation as supportive tools.

The target indicator for FA5a, which is the percentage of irrigated land switching to more

efficient irrigation system, is 2.44%. Potential or effective water savings are not estimated. This investment will not fully address the water abstraction pressures in the region linked to agriculture use and the impacts on water body status, as the overall water use is significantly larger than water resources, thus creating a deficit.

Ex-ante Conditionality

According to the RDP, EAC 5.2 is not considered fulfilled by the MS. The steps are outlined in the Action Plan and include that 2nd cycle RBMPs include a homogeneous estimation of cost recovery, including environmental costs; and the commitment to assess a review of cost recovery instruments of the RBMPs in order to contribute to the WFD objectives.

Measures

The measures and sub-measures that are linked to water issues under Focus area 4b and Focus area 5a include: M01, M02, M04, M08, M10, M11 and M12.

Measure 1 on “Knowledge transfer and information actions” includes financing for training as well as demonstration actions on many topics to be addressed including a specific reference to water. It contributes to FA4b and FA5a. It does not refer to the WFD/RBMPs specifically.

Measure 2 on “Advisory services” invests in the assessment of farmers as regards water use efficiency, or pollution. It contributes to FA4b and FA5a. It is targeted towards water management generally, although advice on WFD compliance is not mentioned.

Measure 4 on “Investments in physical assets” addresses Focus area 5a by reducing water consumption and pollution, as well as Focus area 2a via the improvement of water supply infrastructure. According to the measure description, it does not contribute to Focus area 4b as was claimed in the Strategy of the RDP. It includes the following operations:

- Sub-measure 4.3.3 Irrigation modernization and extension. This operation specifies in its description a clear aim to contribute to the good quantitative status of groundwater bodies and to foster a better control of abstractions for agriculture. Where water quantity is not a cause of the status of water bodies to be at less than good, the expected water savings deriving from modernization shall contribute to the region’s competitiveness and irrigation areas can be extended or created. On a positive note, the sub-measure includes eligibility conditions, such as the request for a report from the river basin authority (RBA), which has to specify the water bodies affected by the investment and their status; the existence of a water right; and the compliance with the RBMP as regards water availability including under future scenarios, including climate change. Eligibility conditions also require

knowledge on the water bodies linked to the project in terms of water abstraction, percolation or return after irrigation use. The text refers to Art.46 RDR and a minimum potential water saving of 5%, 10%, 15% or 22% according to the type of investment made according to the type of system addressed; which is good practice. Beneficiaries have the obligation of initiating a water rights review, have to monitor the water consumption of the 5 years after the investment is made and store the data for eventual audits. As regards the selection criteria, the RDP targets amongst other aspects water bodies in less than good status due to abstraction pressures and projects with higher potential and effective water savings. Furthermore, the support rates vary according to the type of investment and status of the affected water bodies: for new irrigation areas and projects on water bodies in good status, a baseline of 45% financial support is established; whilst for projects aiming effective savings for water bodies in less than good (quantitative) status, a baseline of 50% is planned, with an additional topping of up to 10% if effective water savings are voluntarily increased. As the text of the National Rural Development Framework is valid for this RDP, there are some text elements of the Framework which are not aligned with Art.46 RDR, such as the terminology used for allowing net extension of irrigated areas (“irrigable”), the term used to determine certain water bodies where net expansion is possible (“abstraction pressures” instead of “quantitative causes”) and the fact that the calculation of potential water savings is not only based on the technical parameters as requested by Art.46 RDR. The RDP should define which legal text is of application and prevails, as differences can be noticed, because an incorrect application could lead to less effective water savings or larger new irrigation areas than foreseen by the RDR.

- Sub-measure 4.1 supports investments in holdings, referring to modernization or new irrigation infrastructure (drop, spray). The description text refers to similar criteria and aspects as for Operation 4.3.3, with only small differences: the potential water savings are established at minimums between 5 and 20% according to the type of irrigation system to be installed; the baseline for support is set at 40%.

Measure 10 on “Agri-environment-climate measures” does not refer specifically to FA4b in its description, and none of the operations target clearly FA4b or address the WFD objectives. However, the commitments refer to the ban or reduction of use of pesticides and fertilizers, e.g. linked to Leguminosae and green cover which may confer some water quality benefits.

Measure 11 on “Organic farming”, contributes to FA4b. The measure aims to increase biodiversity and to reduce pesticides and nitrates, including in water. Neither sub-measure (maintenance and conversion) target nitrate vulnerable zones (NVZ) or water bodies in less than good status in the principles for selection criteria. However, specific operational criteria of the National Rural Development Framework include a reference that this measure aims

to avoid the pollution of water bodies.

Measure 12 on “Natura 2000 and Water Framework Directive payments” is only activated for Natura 2000 purposes. Within the agricultural sub-measure, crop rotation and reduced livestock density close to wetlands are addressed, which are likely to have benefits for the water quality of these. Though the forestry-related sub-measure mentions benefits under Focus area 4b, no further reference to specific water-related commitments is included in the RDP.

Indicators

In addition to providing standard information regarding the water-related CMEF indicators (39 on water abstraction, 40 on water quality and 42 on soil erosion), the National Framework requires an additional set of indicators for investments under Measure 04. However, the change in the status of water bodies according to the WFD is not considered.

Morphological alterations, and pesticide pollution are not monitored based on the information on the context and impact indicators. As such, there is lack of indicators in the CMEF to fully track progress on hydromorphology.

The monitoring system does not refer to data reported from the WFD monitoring systems.

As not required, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in supporting to achieve environmental objectives through operations designed to contribute to the WFD.

Conclusions

As regards the intervention logic, the SWOT analysis refers to a severe deterioration of water bodies in the region due to agriculture. However, in the Needs assessment only one Need targets water specifically.

Given the serious diffuse pollution issues in the region identified in the SWOT - with almost 50% of the region classified as NVZ and increasing nitrates pollution trends - the target indicators for FA4b of 18.01 %of agricultural land and 0.13% of forestry land under management contracts to improve water management could be of insufficient level of ambition. The RDP also presents inconsistencies such as several Measures being listed as contributing to FA4b under the Strategy, whilst such contribution is no longer maintained in the Measures’ descriptions. Furthermore, some of the most representative measures (e.g. M10) do not have a clear contribution to reduce pollution, M11 on organic farming being the most relevant measure of the RDP addressing such topics. However, the target indicator

for organic farming covers only 5.6% of the overall agricultural land.

As regards FA5a, the measure descriptions for irrigation modernization establishes an ambitious approach in terms of linking such infrastructure investments to water bodies in less than good quantitative status, and goes beyond the minimums established in the RDR. Thereby indicating a genuine resolve to ensure such projects do not run contrary to the objectives of the WFD. The target indicator, which is the percentage of irrigated land switching to more efficient irrigation system, is 2.44%. Additionally, potential or effective water savings are not estimated, new irrigation areas are planned, and EAC 5.2 is not yet fulfilled - which suggests that although the water use issue will not be made worse, there won't be a significant improvement in irrigation efficiency and dealing with overall abstraction pressures

The monitoring and evaluation framework in place cannot properly monitor and evaluate water-related measures and their contribution to the WFD and FD. There is no indicator referring to the evolution in the status of water bodies.

Given the target indicators for FA4b and FA5a, considerable action outside the RDP (i.e. through strengthened WFD basic measures (reinforced nitrates directive measures, abstraction reduction measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (measures funded by non-EU funds) should be included in RBMPs if the GS objective of the WFD is to be achieved.

Recommendations:

1. To incorporate specific actions and commitments in the measures contributing to Focus area 4b, in particular M10, as currently only very limited benefits for water bodies can be expected.
2. As regards water quantity, to consider activating other measures beyond M04 to foster the uptake of dryland crops or lower water consuming crops. Given the presence of illegal water abstractions in the region, all irrigation-related investments and supports under the RDP should be linked to a proper water right of the beneficiary.
3. To address hydromorphological pressures on the rivers, groundwater abstractions and invasive species with appropriate measures, including the consideration of further natural water retention measures in floodplains, as to mitigate the impact of floods in the region.

A43 Spain – Extremadura

As stated within the RDP, the region is covered by four River Basin Districts: Tagus, Guadiana, Guadalquivir and Duero. Out of these, the first two cover a significant share of the region. The Tagus RBMP does not refer to major significant pressures from agriculture. The most important one are the Water transfers to other basins to overcome water deficits in these basins. The Guadiana RBMP faces numerous significant pressures due to agriculture, including water abstraction from groundwater bodies (GWB), leading to significant over-exploitation of all GWBs. Most of the aquifers fail to achieve good status (ecological, chemical, quantitative) due to abstraction, physic-chemical pollution problems, hydromorphological impacts by agriculture occupying rivers and floodplains (floodplain occupation, riverbed occupation).

SWOT

The RDP refers to data from the latest RBMP planning process and includes information about the status of water bodies; however, information referred to is only on natural surface water bodies (and not on other water body categories present in the region, such as artificial or heavily modified water bodies). 58% of natural surface water bodies are in good status in the Tagus and 29% in the Guadiana basin. This information is for the river basin districts as a whole and are not specific to the region itself. The SWOT indicates that water abstraction is mainly by the agriculture section for irrigation purposes. Irrigation covers 18% of the total arable area, and consumes 1.200–1.400 Hm³/yr with 50% using less-efficient gravity systems. 75% of the irrigation area was already subject to similar investments during 2007-2013, and 41% of irrigation is now being done with dripping systems; however, no reference to effective water savings is being made. Nitrates pollution is linked to livestock farming; phosphorus pollution is also mentioned, although more generally. Pesticide use is also identified as an issue.

The SWOT analysis includes the following elements:

- Strengths: Ecosystem services.
- Weaknesses: Limited efficiency of irrigation management. Surface and groundwater body pollution by agriculture and livestock holdings beyond the Water Framework Directive (WFD) thresholds.
- Opportunities: A better management of livestock nitrates can reduce the need for inorganic fertilizer. Existence of an Irrigation strategy for the region.
- Threats: Environmental restrictions. Increase of pesticide use in the past years. Climate change as uncertainty for water availability.

The Floods Directive is not mentioned in the SWOT analysis. The SWOT uses the information from the most recent WFD Art. 5 assessment. However, the translation of the factual information into Strengths, Weaknesses, Opportunities and Threats is rather limited in the RDP, especially identifying environmental restrictions as a threat.,

Needs

The RDP associates 1 Need to Focus area 3b “Supporting farm risk prevention and management”: Reduce farmer and livestock holder vulnerability to risks (P3, N8).

The RDP associates 1 Need to Focus area 4b “Improving water management, including fertiliser and pesticide management”: Improve and extend soil conservation techniques (P4, N11).

The RDP associates 1 Need to Focus area 5a “Increasing efficiency in water use by agriculture”: Increase efficiency of water use and improve distribution networks (P5, N12).

Only one Need (P5, N12) makes an explicit reference to water management (water use efficiency, reduction of nitrates and phosphorous pollution), but not to achieving the Water Framework or Nitrates Directives objectives.

As regards the pressures identified in the RDP, the Needs assessment does not address hydromorphological pressures, pesticide use, pollution from livestock holding and fertilizer pollution from other arable land than irrigation.

Strategy

The general strategy of the RDP states its focus is on competitiveness of holdings, including improvement of irrigation systems. However, P2 on “Enhancing farm viability and competitiveness” and P3 on “Improving competitiveness of primary producers” have a much lower budget (22%) than P4 on “Restoring, preserving and enhancing ecosystems related to agriculture and forestry” and FA5a “Increasing efficiency in water use by agriculture” (61%) – with a major proportion associated to P4, with 56% for P4 and 5% for P5. The Strategy does not mention the WFD or the RBMPs but states that all measures are expected to contribute to the environmental cross-cutting objective.

Focus area 3b is not activated in the RDP.

The Strategy for FA4b includes the following measures: M04, M07, M10 and M11 for agricultural land and M04, M08 and M10 for forestry land. The strategy description of the Focus area does not refer explicitly to the SWOT analysis and does not link back to the Needs. It does not mention the need to support the implementation of the WFD. M10 and

M11 target the reduction of fertilizer and pesticides pollution as well as soil conservation. M01 and M02 are aimed at a horizontal contribution to pollution reduction. Hydromorphological pressures are not mentioned.

The target indicator for FA4b is 16,34% of agricultural and 0% of forestry land under management contracts to improve water management. As the RDP does not present region-specific data for the status of water bodies, the ambition of this figure is hard to assess. Though it is to be noted, the large number of water bodies (70% in the Guadiana and 40% in the Tagus basins) failing to achieve good status.

The Strategy for Focus area 5a includes M04. M04 targets infrastructure investments for irrigation optimization. It does not mention the need to support the implementation of the WFD and addressing abstraction pressures.

The target indicator for FA5a, which is the percentage of irrigated land switching to more efficient irrigation system, is 15,56%. Potential or effective water savings are not estimated. The data provided within the RDP do not allow to assess if this investment will solve the water abstraction pressures in the region and the impacts on water body status.

Ex-ante Conditionalities

According to the RDP, EAC 5.2 is not considered fulfilled by the MS. The steps are outlined in the Action Plan and include that 2nd cycle RBMPs include a homogeneous estimation of cost recovery, including environmental costs; and the commitment to assess a review of cost recovery instruments of the RBMPs in order to contribute to the WFD objectives.

Measures

The measures and sub-measures that are linked to water issues under Focus area 4b and Focus area 5a: M04, M07, M08, M10 and M11.

Measure 4 on “Investments in physical assets” addresses Focus area 5a by reducing water consumption; and pollution. It includes the following operations

- Sub-measure 4.1.3 Implementation of efficient irrigation and energy systems in agricultural holdings, with a support to up of 90% of the investment, including for new irrigation areas. On a positive note, the Operation text refers to a minimum potential saving of 10%. However, the text is not fully aligned with Art.46 RDR, such as the terminology used for allowing net extension of irrigated areas (“irrigable”), and the fact that the calculation of potential water savings is not only based on the technical parameters as requested by Art.46 RDR but also considers crop changes. As regards the principles for selection criteria, the RDP does not

target bodies in less than good status due to abstraction pressures or projects with higher potential and effective water savings.

- Sub-measure 4.2.1 Support for investments for the transformation and commercialisation of cotton and other agricultural products. This measure includes in its selection criteria water and energy savings.
- Sub-measure 4.3.2 Irrigation infrastructure modernization, includes investments into such infrastructure as well as for metering systems, ponds and related infrastructure; the support covers up to 100% of the investment. On a positive note, the sub-measure includes eligibility conditions, such as the request for a report from the river basin authority (RBA), which has to specify the water bodies affected by the investment and their status; the existence of a water right; and the compliance with the RBMP as regards water availability including under future scenarios, including climate change. Eligibility conditions require a minimum potential water saving of 10% (which is above the minimum threshold in Art.46). As regards the principles for selection criteria, the RDP does not target bodies in less than good status due to As the text of the National Rural Development Framework is valid for this RDP, there are some text elements of the Framework which are not aligned with Art.46 RDR, such as the terminology used for allowing net extension of irrigated areas (“irrigable”), the term used to determine certain water bodies where net expansion is possible (“abstraction pressures” instead of “quantitative causes”) and the fact that the calculation of potential water savings is not only based on the technical parameters as requested by Art.46 RDR. This can result in less effective water savings and larger new irrigation areas when compared with a strict application of the RDR.
- Sub-measure 4.3.4 New irrigation areas aim to develop new irrigated areas (estimated at 29,000 ha) for traditional crops, such as olives and vineyards, with lower per hectare consumption (e.g. compared to corn), and according to the RBMPs with no significant impact on any water body. The support rate is 100%. Apart from irrigation infrastructure investments, the RDP includes as eligible costs the construction of dams and ponds. The description and conditions refer correctly to Art.46 RDR. However, the eligibility criteria do not refer to the need to conduct a WFD Art 4(7) assessment to determine if this is likely to cause a deterioration in water status (even if an Environmental Impact Assessment is requested). The principles for selection criteria refer to those areas which have water resources availability as assigned in the RBMPs.

Measure 7 on “Basic services and village renewal in rural areas” includes several operations, including one to restore habitats or eliminate exotic species (7.6.3). The description refers to the WFD, but is not targeted to water bodies facing invasive species as a significant pressure.

Measure 8 on “Investments in forest area development”. The operations refer to the benefits of well-managed forests to water. It includes some operations with positive aspects for water management in general, such as Afforestation (8.1), or the Investments into forest product transformation (8.6.1), the latter referring to water savings in these installations. No reference is made to WFD in the eligibility or principles for selection criteria.

Measure 10 finances “Agri-environment-climate measures”. The specific operations relevant for water finances “Integrated production” by applying commitments such as maintenance of green cover on steep slopes, and the wise use of nutrients, water and pesticides, based on measurements. Reduction of nitrates and pesticide pollution and efficiency of water consumption are mentioned as a general objective. Other operations like steppe bird conservation appear to have less direct links with water management. Nitrates Vulnerable Zones (NVZ) are an optional selection criteria for all operations. The measure on integrated production does not refer to other water bodies in less than good status, e.g. due to pesticides or phosphorous.

Measure 11 on “Organic farming” contributes to FA4b. The measure aims to increase biodiversity and to reduce pesticides and nitrates, including in water. The selection criteria for both sub-measures (maintenance and conversion) target NVZ. In addition, specific operational criteria of the National Rural Development Framework include a reference that this measure aims to avoid the pollution of water bodies.

Indicators

In addition to providing standard information regarding the water-related CMEF indicators (39 on water abstraction, 40 on water quality and 42 on soil erosion), the programme provides some limited additional relevant information beyond the water relevant context and impact indicators. This addition refers to the indicators as regards the % of surface water bodies in good status in the Guadiana and Tagus basins. These refer directly to the WFD. while this is a step in a positive direction, other water body categories like groundwater bodies or heavily modified water bodies like dams should also be included as well as water bodies in high status. Furthermore, the indicator refers to the whole river basin districts, which go far beyond the regional boundaries, and their evolution is only in a limited way influenced by the investments in Extremadura. The indicator set does also not refer to the WFD objectives for water bodies by 2021.

Morphological alterations and pesticide pollution are not monitored based on the information on the context and impact indicators. As such, there is lack of indicators in the CMEF to fully track progress on hydromorphology.

The monitoring system does not refer to data reported from the WFD monitoring systems.

Conclusions

As regards the intervention logic for addressing water management issues, the RDP does not present a consistent structure. The information on water bodies has not been properly transferred from the River Basin Management Plans (RBMPs) into the SWOT analysis, and only a limited information is available on the agricultural pressures on water. Furthermore, these elements have not been developed into Needs, where only one of them refers to water management, but not directly to the Water Framework Directive (WFD).

As regards pollution, the SWOT refers to nitrates vulnerable zones and an increase of pesticide use, as well as phosphorous pollution. The target indicators for FA4b of 16,34% of agricultural and 0% of forestry land under management contracts to improve water management might be insufficient to contribute significantly to the large number of water bodies (70% in the Guadiana and 40% in the Tagus basins) failing to achieve good status; however, the data are too scarce to allow a full assessment. It is also uncertain if the measures proposed and their specific commitments (e.g. maintenance of green cover on steep slopes, and the wise use of nutrients, water and pesticides) are enough to revert pollution trends. Also, the target indicator for organic farming (8,200 new hectares) covers only a small proportion of the overall agricultural land, and the descriptions of Measures 7, 8, 13 and 15 do not clarify the positive impact on the status of water bodies in the region and are fairly general.

As regards FA5a and water quantity, the target indicator is the percentage of irrigated land switching to more efficient irrigation system with 15,56%, and a minimum of 10% potential savings is established in the RDP which appears at first moderately ambitious. However, potential or effective water savings are not quantitatively estimated, new irrigation areas are planned for 29,000 hectares aimed to combat climate change and ensure competitiveness, EAC 5.2 is not yet fulfilled and Art.46 RDR is not correctly transposed, providing insufficient safeguard for its correct application. In the light of this context, it is uncertain how M04 will contribute to the objectives of the WFD.

While the eligibility conditions mention that if an intervention is likely to have negative effects on the environment it will be subject to an EIA, it does not make clear that any new technical investments must be subject to an Art. 4 (7) WFD assessment. While not specifically required by the EAFRD, such a link to Art. 4 (7) WFD is important given the Commission assessment that many MS are not fully clear on the application of Art. 4 (7) and have called for guidance. A reference to Art. 4 (7) WFD under the eligibility criteria would help to clarify to local authorities the legal requirements.

The monitoring and evaluation framework in place cannot properly monitor and evaluate water-related measures and their contribution to the WFD and FD. Though there is an indicator referring to the evolution in the status of water bodies, the indicator would need to

focus solely on the programme's territory to provide relevant information.

Recommendations:

1. To incorporate consistent specific actions and commitments in the measures contributing to Focus area 4b, and target these on those water bodies that face significant pollution levels beyond the thresholds to achieve good status. Furthermore, address in a clearer way the RDPs intervention logic on pesticide and phosphorous pollution.
2. As regards water quantity, to consider activating other measures beyond M04 to foster the uptake of dryland crops or lower water consuming crops. The RDP text shall be revised, improving the transposition of Art.46 RDR and including references to Art.4(7) WFD exemptions where appropriate. If the support rate would be reduced, larger irrigation areas could be modernized.
3. To address hydromorphological pressures on the rivers, groundwater abstractions and invasive species with appropriate measures, including the consideration of further natural water retention measures in floodplains, as to mitigate the impact of floods in the region.

A44 Spain – Murcia

In Murcia, there is one River Basin District: the Segura. The Segura RBMP for 2009-2015 refers to diffuse pollution from irrigated areas and for dryland farming. As regards groundwater quality, it mentions pesticides and endocrine disrupters, but without specifying the associated pressure, as well as salts due to marine intrusion processes (though not specifically related to agriculture). The RBMP refers as well as to water abstractions, including irrigation (407 out of 426 abstractions are aimed to irrigation). The RBMP links also irrigation to hydromorphological alterations (bank enforcement, etc.).

SWOT
<p>The SWOT does not mention whether the information is from the most recent WFD Art. 5 assessment. However, the RDP includes a map of the status of water bodies, taken from the SEA of the 2nd RBMP and 1st FRMP. The RDP indicates that 31% of the river water bodies, 19% of the lake water bodies and 66% of the groundwater bodies are in good status. There is no information on whether this refers to ecological, chemical or quantitative status.</p> <p>The SWOT analysis mentions water scarcity as a pressure leading to a major water deficit in the region. It also refers to the fact that 80% of the water is being used by the agriculture sector. The RDP refers to previous investments in efficiency, wastewater treatment and reuse, referring to an 85% being irrigated with drip irrigation. Which suggests that a focus on irrigation modernization alone will not ensure sustainable water use.</p> <p>As regards water quality, surface and groundwater bodies are affected by agriculture, as shown by indicators as regards nitrogen and phosphorous; however, the pressures are not linked to specific agricultural activities. As regards nitrates in groundwater (regional average of 49,57 mg/l), the SWOT refers to livestock farming as significant cause. It is not clear what production type causes diffuse pollution. The coastal lagoon of Mar Menor is mentioned specifically in the context of poor water quality, and although the RDP refers to multiple causes for its deterioration, it links agriculture activities to eutrophication caused by nitrogen pollution.</p> <p>Morphological alterations are not mentioned, although the RBMP indicates that irrigation is a pressure with associated dams. Hydromorphological pressures are not fully included in the Strengths, Weakness, Opportunities and Threats section.</p> <p>Flooding is mentioned once as a threat.</p> <p>The following Strengths are mentioned: Efficient water use, Wastewater reuse, Irrigator communities as management bodies. Weaknesses are Erosion; the pollution and deterioration of the coastal lagoon Mar Menor, water scarcity and groundwater</p>

overexploitation, high water prices and costs of desalinated water. Opportunities are the increasing awareness about the role of agriculture in the preservation of natural resources, inter-basin water transfers benefitting the area and investments in research and development of water technology solutions; Threats are increased natural risks like floods and droughts, and the high prices and uncertainties regarding water resource inputs, the water scarcity, climate change effects and the difficulty to comply with the WFD.

Needs

Dedicated water needs were developed out of the SWOT, including 4 water-related needs. This includes the reduction of erosion in forest areas (N10) and agricultural areas (N13), the reduction of fertilizers and pesticides by fostering organic farming (N11) and increased efficiency to reduce the water scarcity threat to agriculture (N14).

Not all the pressures have been turned into sound Needs; e.g. pollution aspects are more widespread than organic farming can reach, and it is not clear how groundwater overexploitation will be properly addressed with efficiency improvements only.

The achievement of the objectives of the Water Framework Directive or the Floods Directive is not mentioned specifically in the Needs.

Strategy

The general strategy of the RDP focuses on competitiveness and knowledge transfer. The WFD or the FD are not specifically mentioned. The general strategy of the RDP makes a specific reference to the maximum use efficiency of resources like water and energy. Although the overall budget of P4 and FA5a (55%) – 41% for P4 and 14% for P5 - is higher compared to P2 and P3A (38%), it is not clear if this can be attributed to emphasizing water issues or to other environmental legislation.

Although flooding is mentioned in the SWOT as an issue, the strategy for FA3b does not mention specifically the need to reduce flood risk and implementing the Floods Directive.

The Strategy for FA4b includes the following measures: M01, M02, M04, M10, M11 and M16. It refers to different pressures and related measures, including to foster biotechnology to reduce pesticide pollution (M10), foster soil conservation and water retention (M10), intensification of livestock pastoralism to reduce its pressures on water resources (M10), and to foster and maintain organic farming (M11). As regards forestry, the better usage of pesticides and nitrates is foreseen via M01, M02 and M16.

The target indicator for FA4b is 26.43% of agricultural land under management contracts to improve water management, which could indicate an insufficient level of ambition given the

pressures identified in the SWOT given the large number of water bodies failing good status. The RDP does not specify if these measures will prioritise agricultural land surrounding the coastal lagoon Mar Menor, which is indicated as a major hotspot for pollution from agriculture.

The Strategy for Focus area 5a includes the following measures: M01, M02, M04 and M16. It does not mention the need to support the implementation of the WFD. M04 is programmed to further expand the efficient irrigation systems (85% of the irrigated area was already improved during the 2007-2013 period), and to enable water reuse infrastructure. Measures 1, 2 and 16 address adaptation of crops to water scarce areas and to climate change. The target indicator for FA5a is the percentage of irrigated land switching to more efficient irrigation system with 8.97%, affecting 4,300 hectares. Potential water savings are estimated at 450,000 m³/yr, and effective savings at 120,000 m³/yr, to be reallocated according to the RBMP to urban water supply or environmental purposes. However, given the relevance of overexploited groundwater bodies, this strategy is likely to be insufficient.

Ex-ante Conditionality

According to the RDP, EAC 5.2 is not considered fulfilled by the MS. The steps are outlined in the Action Plan and include that 2nd cycle RBMPs include a homogeneous estimation of cost recovery, including environmental costs; and the commitment to assess a review of cost recovery instruments of the RBMPs in order to contribute to the WFD objectives.

Measures

The measures and sub-measures that are linked to water/floods issues under Focus area 4a and Focus area 5a, whether by reducing the pressures on the water environment or by increasing it include: M1, M2, M4, M10, and M16.

Measure 1 on “Knowledge transfer and information actions” includes financing for knowledge transfer about less water-consuming crops and field techniques. It contributes to FA4B and FA5A. It addresses Need 14 (water efficiency), and water abstraction pressures. It is targeted towards water management generally, without referring to the WFD specifically. Sub-measure 1.2 targets the support for demonstration activities and information actions. The eligibility conditions do not specify clear relations neither to water management nor to the WFD objectives.

Measure 2 on “Advisory services” aim to foster efficient water use. It contributes to FA3B (not related to floods), 4B and 5A, and Need 14. The eligibility conditions do not specify clear relations to water management nor to the WFD objectives.

Measure 4 on “Investments in physical assets”:

- Sub-measure 4.3.1 finances irrigation efficiency (like regulatory ponds, pumps and pipes, metering), and sub-measure 4.3.2 finances infrastructure for water reuse (idem). It contributes to FA4B and 5A. No specific water-related Need is mentioned in either description (despite Need 14 included in the RDP). Under both sub-measures, the text refers explicitly to the compatibility of the investment with the RBMP and the WFD. The potential water saving to be achieved is fixed as a minimum of 10%; however, crop changes are considered in its calculation, which is not aligned with Art.46 RDR. As the RDP applies the text of the National Rural Development Framework, it also applies those text elements which are not aligned with Art.46, such as the extension of area beyond the “irrigable” area, which by itself includes an extension from “irrigated”. This also applies to the criteria for the possible expansion, where the Framework refers to “abstraction pressures” instead of “quantitative causes” when referring to the water bodies. Amongst several others, the principles for selection criteria refer to the geographical situation of the water body without further specification.
- Sub-measure 4.3.2 includes support for investments for on-farm waste-water treatment plants and the water reuse. While this can help address pollution, neither the eligibility conditions or principles for selection criteria specify clear relations to the WFD objectives or particular areas to be prioritised.
- Sub-measure 4.4 on support for non-productive investments is linked to the achievement of agri-environment-climate objectives aims for water and soil retention in the Upper Guadalentin basin with high slopes and finance investments in small deviation dams and aquifer recharge infrastructure. This measure targets areas with erosion risk and nitrate vulnerable zones (NVZ) amongst others in its selection criteria. Though FA3B is not listed, the text refers to preventing flood risks as one of the benefits of this sub-measure. While the measures can help address pollution and abstraction pressures, the eligibility conditions do not specify clear relations to the WFD objectives.

Measure 5 on “Restoring agricultural production potential damaged by natural disasters” refers to Need 8 (Risk reduction) and FA3B. Sub-measure 5.2 refers to the restoration of existing drainage infrastructure, among other actions, including after droughts. The eligibility conditions do not specify clear relations to the WFD objectives. It does not refer to specific pressures.

Measure 8 on “Investments in forest area development” aims for afforestation and forest management and specifies in its objectives water and soil retention. It does not refer to the water-specific Needs of the RDP but refers to FA4B. However, the eligibility conditions do not specify clear relations neither to water management nor to the WFD objectives. It does

not refer to specific pressures.

Measure 10 on “Agri-environment-climate measures” refers to Need 14 (resource efficiency) and FA 4b, but not to FA5A, and does not refer to any other water-specific needs. M10.1.2 refers to the biotechnological practices (previously named integrated production), controlling pesticide inputs. The principles for selection criteria target NVZ, amongst others. M10.1.3 relate to the protection of the Natura 2000 landscapes with the preservation of dryland farming practices (vs. shift to irrigation), and NVZ are targeted in its selection criteria. M10.1.4 finances the shredding and distribution of biomass on the soil as natural fertilizer and targets NVZ, amongst others, in its selection criteria. M10.1.5. targets hedgerows for water and soil conservation and includes NVZ in its principles for selection criteria. M10.17 on pasture control aims to maintain low livestock densities.

Measure 11 on “Organic farming”, contributes to FA4B, but not to any water-specific need. The measure aims to increase biodiversity and to reduce pesticides and nitrates, including in water. Both sub-measures (maintenance and extension) refer to NVZ in the principles for selection criteria. The specific operational criteria of the National Rural Development Framework include a reference that this measure aims to avoid the pollution of water bodies but the eligibility conditions do not specify clear relations to water management or to the WFD objectives.

Measure 16 on Cooperation promotes innovative projects referred to the topic of a sustainable use of natural resources as water. These projects include water and fertilizer management and targets FA4b and 5a. As regards sub-measure 16.1 on innovation, it refers to efficient irrigation particularly. However, there is no further link to the pressures, needs, water management or the objectives of the WFD.

Indicators

In addition to providing standard information regarding the water-related CMEF indicators (39 on water abstraction, 40 on water quality and 42 on soil erosion), the National Framework requires an additional set of indicators for investments under Measure 04. However, the change in the status of water bodies according to the WFD is not considered. The RDP provides information on the % of WBs failing GES or GQS.

However, morphological alterations, pesticide pollution or water savings are not monitored based on the information on the context and impact indicators. As such, there is lack of indicators in the CMEF to fully track progress on hydromorphology.

The monitoring system does not refer to data reported from the WFD monitoring systems.

As not required, the RDP did not expand on the existing CMEF framework to better accurately evaluate its progress in achieving environmental objectives through operations

designed to contribute to achieve the objectives of the WFD.

Conclusions

Overall, in its intervention logic, the RDP attempts to address some pressures and needs through measures that are targeted, while at the same time fails to address some pressures or does not adequately have safeguards in place to avoid negative impacts to the water environment.

As regards flood risk, the RDP considers it in an intermittent way, including it as a threat in the SWOT analysis, but without associating explicitly Needs and FA3B. However, some Natural Water Retention Measures (hedgerows) are included in the RDP and might contribute to flood mitigation.

As regards Focus area 4b and its aim to improve water quality, the plan includes some beneficial measures to reduce pesticide pollution and nutrient pollution through sub-measures under M4, M10, M11 and M16. A positive example of targeted financing is the inclusion of NVZs in the selection criteria of M4.4 (soil and water retention), M10 (hedgerows for soil and water conservation) and M11 (organic farming). On the other hand, some of the measures are targeted to nitrate vulnerable zones although the link to nutrient pollution is not very strong. For example, to better support the WFD, the M10 measure to reduce pesticide pollution could rather be targeted to WBs failing good status due to pesticide pollution. This is the same issue with the sub-measure 10.1.3 that finances dryland cropping. This measure could better support the WFD if it targeted areas with significant water scarcity issues or GWBs failing quantitative status. Other measures do not include water-related targeting, for example 4.2 on on-farm waste-water management. The links to supporting WFD implementation are not strong as there are no eligibility conditions or selection criteria in place relating to water issues. There is a potential that pressures from livestock farming, as described in the SWOT, are not fully addressed.

While some measures are well-linked to FA4b through specific restrictions and/or targeting, measures 1 and 2 are hardly linked to fertilizer and pesticide management. Measures 1 and 2 are more clearly linked to FA5a. No specific action is foreseen for the area surrounding the coastal lagoon of Mar Menor, despite its severe pollution with pesticides and nutrients.

Missing from both the SWOT and therefore the design of Focus area 4b is the aspect of morphological alterations due to agriculture activities.

As regards Focus area 5a and addressing water quantity issues, on a positive side, M01, 02 and 16 support drought resistant and climate change resilient crops and cropping techniques, which might enable overall water savings. One of the sub-measures under M10 finances dryland cropping; however, as mentioned above, there is missed opportunity to

target this measure to GWBs failing quantitative status. On the other hand, the RDP considers the difficulty to comply with the WFD objectives in water scarce areas as a threat, and in consequence does not target the reduction of abstraction pressures as a priority of its investment. It should be noted that Art. 46 RDR is not fully included in the RDP, and this presents a risk that investments into irrigation efficiency may not ensure achieving good water body status, as required by the RDR. Water efficiency investments aim to increase competitiveness and resilience of farmers and are not designed to necessarily support the achievement of WFD objectives. Overall effective water savings are estimated at 120,000 m³/year, whilst the water deficit for the region is 460 hm³/year. In this sense, the investments would just address 0.02% of the water deficit, without considering climate change considerations.

The programme includes measures financing irrigation operations that could negatively impact WFD good status. The EAC (in the case of irrigation) is not yet in place and Art. 46 is not fully complied with within eligibility conditions. Furthermore, there is a potential issue that the water retention operations under M4.4 and M10 will serve to increase water use for irrigation purposes, thus reducing common floods downstream where they might be required to sustain riparian ecosystems.

The monitoring and evaluation framework in place cannot accurately monitor and evaluate water-related measures and their contribution to the WFD and FD. There is one indicator referring to the evolution in the status of water bodies; however, this is not linked to monitoring the progress of measures implementation.

The budget to address water management (pollution and abstraction) and the target indicators for FA4b and FA5a will likely not be enough to ensure support for WFD implementation, as the pressures are very severe (especially water scarcity) and specific areas like the Mar Menor are not targeted. This will mean that considerable action outside the RDP (i.e. through strengthened WFD basic measures (reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (measures funded by non-EU funds) should be included in RBMPs if the GS objective of the WFD is to be achieved.

Recommendations:

1. To develop a quantified approach on how to reduce the severe pollution levels by nitrates, phosphorous and likely pesticides, in particular for the Mar Menor coastal lagoon.
2. To be more ambitious in terms of effective water savings compared to water consumption, water deficit and upcoming climate change restrictions; and to fully implement the provisions of Art. 46 and also to reduce the area of irrigated land effectively, and thus contribute to climate change resilience; and avoid further

expansion of irrigated (not irrigable) areas.

3. To address hydromorphological pressures on the rivers, with appropriate measures, like e.g. nature-based water retention measures.

A45 Spain – Valencia

In Valencia, there are three River Basin Districts: the Segura and the Júcar, and a minor share of the Ebro RBD.

The Segura river RBMP (ES070) for 2009-2015 refers to diffuse pollution from irrigated areas and from dryland farming. As regards groundwater quality, it mentions pesticides and endocrine disrupters, but without specifying the associated pressure, as well as salt due to marine intrusion processes (though not specifically related to agriculture). The RBMP refers as well to water abstractions, including irrigation (407 out of 426 abstractions are linked to irrigation). The RBMP also links irrigation to hydromorphological alterations (bank enforcement, etc.).

The Júcar RBMP (ES080) for 2009-2015 mentions agriculture as a source of diffuse pollution for surface and groundwater bodies; and refers to water abstraction from surface water and groundwater bodies, referring specifically to agriculture for the surface water bodies.

SWOT

The SWOT analysis refers to risks from natural hazards like floods, droughts, erosion and desertification, and refers to the fact that water availability will likely be 12-15% less in 2030 due to climate change. Agriculture is the largest water consumer in the region, and 70% of the irrigated area has been modernised in the past. The SWOT also refers to water abstraction being a significant pressure, in particular in the Alicante province, where water scarcity is present. It refers to nitrates pollution of the coastal aquifers caused by intensive agriculture, and the increased soil salinization due to the reuse of water. Very few specific figures or numbers are presented for the pollution pressures. It is not clear whether the fertilizer pollution comes from arable or livestock farming. The SWOT does not mention whether the information is from the most recent WFD Art. 5 assessment.

There is no information found in the SWOT regarding the current status of water bodies in the Valencia territory. Information is missing regarding the percentage of surface and groundwater bodies failing good ecological, chemical or quantitative status.

The following Strengths are mentioned: Efficient water use, Low water consumption per hectare, Urban wastewater treatment and reuse infrastructure; Weaknesses are water scarcity, groundwater overexploitation, and pollution by nitrates; no Opportunities are included; Threats are climate change, water scarcity and consumer trends towards more sustainable or organic products.

Morphological alterations are not mentioned, although the RBMP indicates that irrigation infrastructures as a pressure. Hydromorphological pressures are not fully included in the Strengths, Weakness, Opportunities and Threats section. The same applies for pollutants

other than nitrates, for example pesticides.

Needs

The following water-related Needs are included in the RDP: 3BN1 Risk mitigation; 4BN1 Flood protection by preserving forest areas and drainage systems; 4BN2 Water saving and management; 4BN3 Water infrastructure maintenance for Natura 2000; 5AN1 Control of groundwater overexploitation (assessment on irrigation practices). Need 2AN2 Modernization of exploitation contributes transversally to the environmental objectives (no specific water aspect mentioned), as well as 4CN3 on sustainable livestock holding (e.g. reduction of nutrient and heavy metal proportion in fodder), 4AN3 on fostering organic farming, and 5AN2 on sustainable agriculture and livestock holding benefiting water resources, as by the reduction of inorganic fertilisers and the increase of livestock exploitation's capacity of storage for emissions.

The elements of the SWOT analysis are at least partially covered in the following way by the Needs:

- Water scarcity and efficient water use by Needs 5AN1, 4BN2
- Groundwater overexploitation by Needs 5AN1, 4BN2
- Pollution by nitrates by Needs 5AN1, 4BN2, 4CN3, 4AN3, 5AN2
- Climate change (floods, droughts, water scarcity) by Needs 3BN1, 4BN1

Morphological alteration pressures, as described in the RBMPs, are not covered by the Needs; and pollution by pesticides and endocrine disrupters might be eventually addressed by Needs 4AN3 or 4CN3, though the information provided in the RDP is insufficient for a judgement.

The achievement of the objectives of the Water Framework Directive is mentioned specifically in the Needs 4BN3, but not in any other of the needs. The Floods Directive is not mentioned, despite the fact that floods are relevant.

Strategy

The general strategy for the RDP has 4 pillars, including the conservation of natural resources and competitiveness. Within the conservation of resource use, the RDP aims to avoid the pollution of water bodies by fertilizers and pesticides, to increase the water use efficiency and reduce the overexploitation of water resources. In these terms, the Strategy goes beyond the Needs assessment in its consideration of pollution by pesticides, which were not specifically considered under the Needs. The Water Framework Directive is not

explicitly referred to in the Strategy. Flood risks and the implementation of the Floods Directive, such as included in the Needs 3BN1 and 4BN1, have not been taken up explicitly.

Although the overall budget of P4 on “Restoring, preserving and enhancing ecosystems related to agriculture and forestry” (37%) is higher compared to P2 on “Enhancing farm viability and competitiveness” and P3a “Improving competitiveness of primary producers” (34%), it is not clear if this can be attributed to emphasizing water issues or to other environmental legislation.

The RDP does not address Focus area 3b on “Supporting farm risk prevention and management”, despite the fact that floods are considered in the SWOT analysis and risk management was identified in the Needs section.

The Strategy for FA4b on “Improving water management, including fertiliser and pesticide management” covers the following measures: M02, M04, M08 (forestry), M10 and M11. M2 aims for advisory services on the management of water, M4 provides water infrastructure, including for flood prevention, and biodiversity related operations. M8 aims to construct water points for forest fire extinction, with an unclear relation to the Focus area 4b; and includes afforestation thus promoting rainwater infiltration. M10 fosters agricultural practices benefitting soil, water and landscape, and M11 reduces fertilizer and pesticide inputs.

The target indicator for FA4b is 2.81% of agricultural and 24.54% of forestry land under management contracts to improve water management. Though the RDP does not provide information on the number of water bodies in worse than good status in the region, only 42% of the surface water bodies and 70% of the groundwater bodies are in good status in the Jucar basin, which covers the largest proportion of the region. Within such a comparison, the strategy indicates a low level of ambition.

The RDP does not address the Focus area 5a, despite the fact that irrigation efficiency and water scarcity are considered in the SWOT and Needs assessment.

Within the cross-cutting objectives, P2 has programmed measures addressing water aspects, such as reducing pollution load due to improved wastewater treatment and its latter reuse in agriculture.

Ex-ante Conditionalities

According to the RDP, EAC 5.2 is considered fulfilled by the MS. Which is not in agreement with the EC view. Though FA5A was not programmed and so the EAC was not relevant. However, it should be noted that an Action Plan had been agreed and includes that 2nd cycle RBMPs include a homogeneous estimation of cost recovery, including

environmental costs; and the commitment to assess a review of cost recovery instruments of the RBMPs in order to contribute to the WFD objectives.

Measures

The measures and sub-measures that are linked to water issues under Focus area 4b, whether by reducing the pressures on the water environment or by potentially increasing it include: M2, M4, M8, M10 and M11.

Measure 2 on “Advisory services” aims to foster good water management. It contributes to FA4b; however, the description is unspecific on water. The eligibility conditions do not specify clear relations to water management nor to the WFD objectives.

Measure 4 on “Investments in physical assets” is programmed under P2, but also addresses FA4b via the modernization of irrigation systems and water reuse infrastructure and support to water-efficient crop patterns. Art.46 RDR is considered as frame for the whole measure.

- Sub-measure 4.1 finances investments in agricultural holdings, including improvements in the efficiency of irrigation systems or the corresponding water quality. No specific water-related Need is referred to; no reference to the Water Framework Directive is made in its description or the eligibility or selection criteria. It does not refer to specific pressures.
- Sub-measure 4.3.1 finances irrigation efficiency infrastructure including water reuse infrastructure, desalinisation of treated wastewater, pipes, extension of ponds and dams, localised irrigation systems, etc. It contributes to FA4B. No specific water-related Need is mentioned in the measure description. The eligibility text refers explicitly to the compatibility of the investment with the RBMP and the WFD. The potential water saving is fixed as a minimum of 5% within the eligibility conditions; As the RDP applies the text of the National Rural Development Framework, which has not fully implemented Art. 46, the following elements have not been included a) the extension of area beyond the “irrigable” area, which by itself includes an extension from “irrigated”; b) the consideration of crop changes for the calculation of potential water savings; and c) the criteria for the possible expansion, where the Framework refers to “abstraction pressures” instead of “quantitative causes” when referring to the water bodies. However, on a positive note the sub-measure includes a specific reference to the Water Framework Directive, as from the National Rural Development Framework considerations in the eligibility conditions, such as the request for a report from the river basin authority (RBA) specifying a) the water bodies affected by the investment and their status, b) the existence of a water right, c) the compatibility with the RBMP as regards water availability including under future scenario,

including climate change. In consequence, the investments might achieve lower effective water savings and larger new irrigation areas than considered following the RDR.

- Sub-measure 4.3.2 includes support for investments for water infrastructures – like the maintenance of irrigation channels or ponds, their cleaning or revegetation – which are linked to Natura 2000 sites and their aquatic wetland habitats. The eligibility criteria refer to the Natura 2000 wetland protected areas; however, the text includes a contradiction, as it also includes all other non-water related protected areas under the Habitats Directive for such measures, which is rather untargeted. No reference to the Water Framework Directive is provided in the RDP.

Measure 8 on “Investments in forest area development” aims for afforestation and forest management. Sub-measure 8.5 “support for investments improving the resilience and environmental value of forest ecosystems” refers to indirect added value from rainwater infiltration and thus aquifer recharge. It does not refer to the water-specific Needs of the RDP but refers to FA4B. The eligibility conditions do not specify clear relations neither to water management nor to the WFD objectives. It does not refer to specific pressures.

Measure 10 on “Agri-environment-climate measures” refers to FA4B. The text description refers to the majority of arable land linked to vulnerable areas, i.e. citrus production closely linked to NVZ. It also refers to rice farming strongly linked to protected wetlands, thus limiting the water management capacity of the crop in order to avoid negative effects on the wetland.

- Sub-measure 10.1.3 targets wetland conservation in the south of the Alicante province by maintaining soil cover or fallow, thus contributing to water quality improvements (though the Water Framework Directive or specific pollution aspects are not referred to in the text, eligibility or selection criteria).
- Sub-measure 10.1.1 finances sustainable rice cultivation to avoid trends to cultivate other crops and to maintain water levels and organic quality in the Albufera wetland, which is a measure that can be considered positive in terms of the conservation of the wetland.

Measure 11 on “Organic farming”, contributes to FA4B, but not to any water-specific need. The measure aims to increase biodiversity and to reduce pesticides and nitrates, including in water. The specific operational criteria of the National Rural Development Framework include a reference that this measure aims to avoid the pollution of water bodies. However, neither sub-measures (maintenance and extension) refer to the WFD in the text, eligibility or selection criteria. Water bodies failing good status or nitrate vulnerable zones are therefore not targeted.

Indicators

In addition to providing standard information regarding the water-related CMEF indicators (39 on water abstraction, 40 on water quality and 42 on soil erosion), the National Framework requires an additional set of indicators for investments under Measure 04. However, the change in the status of water bodies according to the WFD is not considered. As such, morphological alterations, and pesticide pollution are not monitored based on the information on the context and impact indicators. As such, there is lack of indicators in the CMEF to fully track progress on hydromorphology.

The monitoring system does not refer to data reported from the WFD monitoring systems.

As not required, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to achieving the objectives of the WFD.

Conclusions

The RDP provides a general description of agriculture pressures on the environment, has developed a number of water-specific needs, but overall has not developed a clear Strategy to tackle pressures under the different focus areas.

The RDP state that it aims to avoid the pollution of water bodies by fertilizers and pesticides, to increase the water use efficiency and the overexploitation of water resources, addressing some of the most relevant pressures in the River Basin Districts. However, in the RDP the intervention logic as regards water management is insufficiently presented. Though the RDP mentions the Water Framework Directive a few times, the SWOT analysis does not include a thorough assessment of the pressures identified in the River Basin Management Plans, nor information on the status of water bodies in 2009 or the objectives foreseen for 2021. In consequence, the following elements of the sequence present gaps:

- Not all pressures identified in the RBMPs are incorporated in the RDP SWOT analysis, such as e.g. hydromorphological pressures or pesticide pollution.
- No measure is targeted on livestock holdings; however, it is also unclear if livestock holding is negatively contributing to the status of water bodies.
- In its Strategy and Measures, the RDP does not address the Focus area 3b, despite the fact that floods are considered a relevant issue in the SWOT analysis.
- Despite water scarcity being a major concern today and in the future (under worsened climate change conditions), FA5a has not been programmed by the

RDP, and water efficiency infrastructure investments are only considered under P2, which has the objective to improve farm competitiveness and not to achieve water savings. The RDP does not clarify how the weakness “groundwater overexploitation” will effectively be addressed in the RDP.

As regards flood risk, the RDP does consider it as a risk, but does not include measures for addressing it.

As regards water quality, on a positive side, the RDP links agricultural practices to the maintenance of biodiversity and good status are linked to wetlands, which are relevant protected areas also under the Water Framework Directive. M10 offers two measures that link to reducing fertilizer pollution but does not aim to reduce its application; rather, the focus is on conservation. Measures 2 and 8 are more loosely linked to Focus area 4b but does provide enough details to understand how it intends to contribute to improved water management. The target indicator for Focus area 4b is to have 2.81% under contracts for improved water management. Given that a large proportion of water bodies fail to achieve good status and the RDP refers to nitrate pollution strongly linked to agriculture, it is likely that the RDP will provide only very limited contributions to achieve good status of water bodies. This will mean that considerable action outside the RDP (i.e. through strengthened WFD basic measures (reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (measures funded by non-EU funds) should be included in RBMPs if the GS objective of the WFD is to be achieved.

As regards water quantity, it is not clear why the irrigation related measures in the RDP have been programmed under P2 and FA4b as opposed to Focus area 5a, whose objective are to increase efficiency in water use. One plausible reason is to attempt to avoid the EAC linked to such investments. The planned measures under M4 target competitiveness, and are not specific to water bodies facing overexploitation or abstraction pressures. The RDP does not contain information about the expected amounts of water (m³/yr) to be potentially and effectively saved by this operation.

The programme includes measures that could negatively impact WFD good status, as the investments for irrigation efficiency, in particular if Art.46 RDR is not fully applied, as a consequence of the inadequate inclusion in the Spanish National Framework.

The monitoring and evaluation framework in place cannot properly monitor and evaluate water-related measures and their contribution to the WFD and FD. There is no indicator referring to the evolution in the status of water bodies.

Recommendations:

1. To revise the SWOT analysis and the ambition of the RDP, using the information

from the River Basin Management Plans, establishing quantified contributions e.g. for effective water savings: as well as to fully implement the provisions of Art. 46. The RDP should also support less-water consuming crops and promote other measures for reduced water consumption.

2. To expand the target indicator for FA4b (2.81%) to be meaningful in comparison with the agricultural land linked to nitrate vulnerable areas and surface water bodies not achieving good status due to nitrates or pesticide pollution.
3. To address hydromorphological and pesticide pressures on the rivers, with appropriate measures.

A46 Sweden

Sweden has 10 river basin districts (RBDs): Bothnian Bay, Torne river, Troms, Nordland, Troendelag, Bothnian Sea, Skagerrak and Kattegat, Glomma, the North Baltic and the South Baltic, of which 8 RBDs are shared with either Finland and Norway or both. On a national basis, 17% of the surface water bodies are impacted by acidification, 100% by hazardous substances (mercury, other substances are not systematically reported) and 13% by nutrients. Diffuse sources of nutrient and chemical pollution are linked to agriculture. Southern RBDs (Southern Baltic, North Baltic and Skagerrak and Kattegat) state that 45% of the rivers in the RBD have been subject to morphological changes due to the agriculture and forestry sector. 6 basins have achieved good ecological status in between 68% -100% of its natural SWBs; the remaining 4 basins range between 24.5-55.5%. Good chemical status as been achieved in 0.01% of all natural SWBs due to mercury; a link to pesticides has not been made. The chemical status of groundwater bodies (GWBs) in Sweden is very high with 98% having achieved good status. Quantitative status is high around 100% but the status is unknown for a number of GWBs but water use from agriculture is not an issue.

SWOT

Overall, agriculture land use represents only 8.4% of the total, with the majority concentrated in the southern parts of the country. The SWOT provides little information regarding the water environment. There is no information regarding the percentage of surface water bodies or groundwater bodies failing good ecological or chemical status. The SWOT indicates that water availability is good, and the use of water for irrigation and animal husbandry accounts for only 4% of total water use. Both phosphorus and nitrogen pollution show decreasing trends. Drainage of agricultural land over last 50-100 years has resulted in a significant decrease in wetlands. There is no information regarding the percentage of WBs affected by pesticide pollution. There is no mention of the WFD or the Floods Directive.

Strengths in the programme include that the supply and removal of phosphorus to agriculture land is balanced. Sweden has one of the lowest levels of nitrates in freshwater in the EU; however, spatial variation is strong. Water use by agriculture is low. On the other hand, nutrient leaching from grazing animals is considered a weakness. Another weakness is that a large proportion of rivers, lakes and coastal waters have poor ecological status according to the WFD. Half of the arable land is drained, which has negatively impacted wetlands. Opportunities include the application of integrated pest management, the restoration of wetlands, improved handling of plant protection products (PPPs) and fertilisers to achieve objectives of the WFD and the Pesticides Directive.

The section on strengths, weaknesses, opportunities and threats provides more insights into the links between agriculture activities and pressures on water than the general

description itself.

Needs

2 needs have been directly linked to Focus area 4b “Improving water management, including fertiliser and pesticide management”: Protect the aquatic environment; and Create and maintain wetlands;

The need “Protect the aquatic environment” mentioned nutrient pollution to water due agriculture, with the problem most severe in the plains but also in some woodland areas. There is a need to increase the efficiency of the use of fertilisers and PPPs. The need “Create and maintain wetlands” focuses on the capacity of wetlands to retain nutrients and reduce diffuse pollution in surrounding water courses. The need “Improve air quality” focuses mainly on emissions to air but links to water quality through also reduction of nitrogen into water bodies.

Others needs linked to P4b include: Strengthen innovation; Sustainable forest management; Increase knowledge and skill development; Strengthen competitiveness of Swedish Agriculture; Preventive measures for risk management in agriculture; and Protection biodiversity and cultivate habitats. These are not specifically linked to water issues.

The pressures identified in the SWOT have been taken up in the Needs section

Strategy

The general strategy of the RDP is based on weighing the SWOT analysis and policy priorities. The strategy emphasises that enhancing public goods and minimising negative environmental impacts are at the core of the programme. It specifically mentions compliance with the WFD and the Marine Strategy Framework Directive and the need to reduce nutrient and pesticide pollution to rivers, lakes and the Baltic Sea. Experience from the previous programme shows that targeting water measures is more efficient, which will be done by linking measures to nitrate vulnerable zones. The issue of restoration of wetlands is further outlined.

The programme gives significant budgetary emphasis to P4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry”, representing about 61% of the RDP budget compared to P2 “Enhancing farm viability and competitiveness of all types of agriculture” and Focus area 3a “Improving competitiveness of primary producers” which comprise together about 13%.

Focus area 3b on “Supporting farm risk prevention and management” is not programmed.

The description of Focus area 4b provides little information. M4.4 and M7.6 will contribute to improving water and land management through financing wetlands, M10 will finance protection zones and grasslands, and M11 will help with reducing nutrient leakage. It is stated that these measures will contribute to achieving the objectives of the WFD. The following measures are included: M1, M2, M4, M7, M8, M10, M11, and M16. The target indicator for Focus area 4b is 33.25% of agriculture land and 0% of forest land under management contracts to improve to improve water management. The agriculture target could be sufficient if targeted to those RBDs where 50% of SWBs are at less than good ecological status.

Focus area 5a on “Increasing efficiency in water use by agriculture” has not been programmed.

Ex-ante Conditionalities

EAC 5.2 was assessed by the MS as fulfilled. No action plan was required.

Measures

Focus area 4b is linked to M1, M2, M4, M7, M8, M10, M11 and M16.

Measure 1 finances knowledge transfer, demonstration activities and farm visits. The measure explicitly links to Focus area 4b and finances demonstration activities and vocational trainings on manure and mineral fertilizer applications and prevention of pollution. Integrated pest management and reducing soil erosion and sedimentation of water courses are additional water-related topics.

Measure 2 finances advisory services. The measure explicitly links to Priority 4b and finances training of trainers and aid to advisory services on water-related topics such as manure and mineral fertilizer applications, prevention of pollution, integrated pest management and reducing soil erosion and sedimentation of water courses.

Measure 4 finances investments in agriculture holdings. The general description highlights investments to increase competitiveness but also non-productive investments to support achieving the goals of the WFD and HELCOM. The following water-related operations are financed.

- Sub-measure 4.1 finances, among others, installation for manure storage and construction of new drainage. The operation states that drainage activities can only be financed if they are line with the WFD, in particular Article 4 (7, 8, 9) and if they will help to improve the status of water bodies.
- Sub-measure 4.4 finances, among others, controlled drainage. The aim is to increase the retention of nitrogen on arable land and reduce eutrophication of

SWBs and to contribute to a better water management in dry conditions. Support will be given to install specific systems in existing dike systems that can regulate when to drain land and when to increase the water table to support the plants access to water and nutrients. The controlled drainage should help to reduce nutrient leaching into groundwater bodies. Eligibility conditions target nitrate vulnerable zones. In addition, selection criteria include increased retention of nutrients and ecological status of water bodies downstream.

Measure 7 finances basic services and village renewal. In addition to financing broadband and recreational infrastructure, the measure will finance wetlands, ponds and ditches aimed at increasing the retention of nutrients and thus improving water quality. Supporting the achievement of WFD objectives and agreements with HELCOM are specifically mentioned. The aim is to improve the ecological status of physico-chemical, hydromorphological and biological quality elements that are linked to eutrophication. Four separate environmental investment types can be financed: 1) construction and restoration of wetlands and ponds for biodiversity, 2) construction and restoration of wetlands and ponds to retain nitrogen and phosphorus, 3) construction of ditches to reduce erosion and reduce losses of phosphorus from arable land and 4) project to improve water quality (no additional information) in lakes, rivers and seas through actions in water bodies or those upstream that are less than good status under the WFD. The sub-measure states that assessment (selection) criteria can be linked to ecological status of WBs, target water bodies downstream or areas with nitrogen and phosphorus load.

Measure 8 finances investments in forest area development. Under the general description it is mentioned that the effects on the climate may be reduced through the take up of waterlogged woodland which can act as a filter to limit the leakage of humic substances into lakes and oceans. Sub-measure 8.5 on investments to improve the resilience and environmental value of forest ecosystems includes aid for the creation of wetlands. However, the main focus is on increasing the natural and social value of forests, so only an indirect effect on water quality can be expected.

Measure 10 finances agri-environment-climate measures. The general description includes the objective of water quality for both inland and coastal waters and supporting the WFD and HELCOM agreements. 15 operations are financed, of which 4 are specifically linked to improving water quality. The operation "Reduced nitrogen leaching" focuses also on phosphorus losses and is achieved through catch crops and tillage in the spring. Eligibility conditions include vulnerable soils (likely to erosion). The operation "Protection zones" finances riparian buffer strips and reduce surface runoff and erosion leading to nutrient and pesticide pollution of lakes and water courses. The operation "Management of wetlands and ponds" aims to maintain effective nutrient retention to improve water quality or to enhance biodiversity. The operation "Grassland farming" aims to encourage sustainable farming and reduce nutrient losses. It finances grassland conversion in areas dominated by intensive cereal production. There are no eligibility criteria or selection criteria targeting the latter 3 operation. In addition, the measure

“pastureland and hay meadows”, focussed more on biodiversity, also prohibit the applications of fertilisers and PPPs, which also support the reduction of nutrient and pesticide water pollution.

Measure 11 finances organic farming. The measure is primarily directed at P4a but will contribute to P4b, improving water quality.

Measure 16 finances cooperation activities. Sub-measure 16.5 on support to cooperation in the field of environment finances, among others measures implemented at landscape scale to reduce eutrophication in lakes, rivers and seas. The sub-measure focuses on forest land and includes measures like wetlands, buffer strips and forest corridors. The sub-measure is not specifically targeted (not required by EAFRD).

Indicators

In the RDP, the relevant context indicators are 40 (water quality), which includes both nitrogen and phosphorus, and 42 (soil erosion by water). Water-relevant target indicators are T10 (percentage of agricultural land under management contracts to improve water management) and T11 (percentage of forestry land under management contracts to improve water management).

There is no specific mention of monitoring on morphological alterations or pesticide pollution. There is no mentioning of using WFD monitoring systems.

Although not required by the EAFRD, the RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD.

Conclusions

The RDP includes a number of important measures to support the achievement of the Water Framework Directive. Although the SWOT does not provide clear information regarding the percentage of WBs failing good ecological, chemical or quantitative status and does not explain in detail the agriculture activities linked to pressures on the water environment, the overall strategy of the RDP points to considerable efforts to improve water quality and restore wetlands in the country with the goal of achieving good ecological status.

In terms of the strategy for Focus area P4b, the RDP includes measures such as controlled drainage (to reduce surface run-off), wetlands specifically designed to improve water quality, riparian buffer strips, catch crops coupled with spring tillage and grasslands. M7 and M16 both financed wetlands, the later to achieve landscape scale results. M8 also finances wetlands but it is likely that they emphasize rather biodiversity benefits since the target indicator for percentage of forestry land under contract to improve water

management is 0%. It is positive that M4.4 targets nitrate vulnerable zones and that M7 targets improving ecological status of WBs. The different measures show a strong commitment to support the implementation of the WFD.

M4.1 does finance drainage activities but also includes Art. 4 (7,8,9) and states that operations may only be financed if they improve water status, so environmental safeguards are in place to ensure no negative impacts to the environment.

One issue is that the programme focuses heavily on wetland creation, not only for diffuse pollution but also to overcome the years of drainage. However, the monitoring and evaluation programme can only evaluate such measures' contribution to improving water quality and not in relation to improving hydromorphological elements necessary to achieve good ecological status.

Overall, despite considerable issues with diffuse pollution in certain RBDs, the status of water bodies in Sweden is good. Most of the RBDs contain WBs that have achieved good ecological status (70%+). The target indicator for Focus area 4b is 33.25% of agriculture land and 0% of forest land under management contracts to improve to improve water management. The agriculture target could be sufficient if targeted to those RBDs for which SWBs are at less than 50% good ecological status.

Recommendations:

1. Be more clear about the status of WBs in the SWOT.
2. Although not required, consider expanding both the context and target indicators to better reflect water management. The context indicators of nitrogen and phosphorus pollution do not cover two morphological alterations. This missing aspect does not enable obtaining a full picture of the environment in the territory. Moreover, the target indicators do not enable to track the impact these measures have on improving the water environment. Especially with constraint budgets, it would be beneficial to have indicators in place that enable the authorities to track whether a measure's implementation is having a positive effect on the water environment and is therefore worth financing. Here, linking also the monitoring programme to existing programmes under the WFD would be helpful and would not pose any additional administrative or financial burden on the district.

A47 UK – England

The RBMPs located in the programme's territory are Thames, South East, South West, Anglian, Humber, North West, Northumbria, Severn (partially), Dee (partially) and Solway Tweed (partially). Diffuse source pollution is the single most relevant pressure in England. For the whole UK, 68.1% of water bodies have identified this as a significant pressure (with the average only for England higher). The number of water bodies in an RBMP that listed water abstraction (no specification per sector) as a significant pressure ranges between 7 and 22%, with an average around 15%. Agricultural irrigation is expected to increase by ~20% in English and Welsh RBDs by 2020. Hydromorphological pressures are significant in English river basins, with an average value (for all the UK) of 45% of water bodies affected by it. Agriculture is identified as contributing to this pressure through drainage and flood protection.

SWOT

The information presented in the RDP is for the whole of England, without distinguishing between different RBMPs. The RDP's SWOT mentions WFD classification (without a reference year), RBMPs, and the reasons for water bodies failures (to meet good status) from agriculture and rural land management. The majority of these failures correspond to diffuse pollution ("phosphorus, nitrates, fine sediment, sanitary pollutants and freshwater eutrophication"), followed in turn by physical modifications and abstraction and flow. It is not made clear what agricultural production types cause diffuse pollution.

The SWOT discusses the share of agriculture in pressures such as nitrates, pesticides, sediments and phosphorus, but does so on the basis of outdated information (references are from 2008 and 2009); rather than the information that should have been updated for the 2nd WFD Art. 5 assessment. The SWOT reports that agriculture is cited as the likely cause to fail to achieve Good Ecological Status in 31% of English water bodies.

Regarding abstractions, the SWOT discusses the pressure but fails to provide a clear defined picture of its importance. Morphological alterations are mentioned but not elaborated on.

Flood risk is discussed under climate change adaptation in agriculture, with reference to the National Adaptation Programme. It is mentioned that work on developing Flood Risk Management Plans according to the FD has commenced.

It is mentioned under strengths that there is evidence that farmers are using fertilisers and manures more efficiently, particularly in the case of grasslands, and that freshwaters are improving. Listed under weaknesses are the significant failures to achieve Good Ecological Status in many water bodies. Several relevant aspects are listed under opportunities: a) a more effective targeting of agri-environment measures, b) the planning and operation of interventions at the catchment / hydrological scale so as to improve delivery, c) the

possibility of building on the success of voluntary schemes Pesticides Voluntary Initiative, Campaign for the Farmed Environment and Catchment Sensitive Farming, d) improving soil management so as to reduce irrigation needs. The threats section makes general mention of a) climate change and the associated negative impacts to the agricultural sector of flood risk to agricultural land, reduced water availability and increased water demand, b) diffuse water pollution as a threat to sensitive habitats, c) climate change impacts in terms of environmental consequences (*inter alia* droughts, flooding, reduced river flows with associated impacts on water quality, increased frequency of combined sewers overflowing, increased water temperatures, declines in moisture levels).

Most pressures mentioned in the SWOT are found in the Strengths, Weakness, Opportunities and Threats section, if discussed qualitatively. Not mentioned are hydromorphological pressures.

Needs

Six needs have been linked to Focus Area 4B “Improving water management, including fertiliser and pesticide management”: Advice to farmers to support environmental performance; Climate change adaptation; Conversion and maintenance of organic farming practices; Flood management, where it also contributes to river, wetland and coastal habitats; Greater resilience to climate change and extreme weather events in both farming and forestry sectors; and Reduction in point source and diffuse pollution from agriculture.

Addressing physical modifications, abstraction and flow are not mentioned in the needs.

Four needs have been linked to Focus Area 5a “Increasing efficiency in water use by agriculture”: Advice to farmers to increase productivity and competitiveness; Advice to farmers to support environmental performance; Climate change adaptation; Supporting improvements in the efficiency and use of natural resources.

FA3b “Supporting farm risk prevention and management” has been linked to four needs: Climate change adaptation, Improved business management practice, Improving standards of animal and plant health and animal welfare, and Support for new entrants in the agriculture and forestry sectors and more effective succession planning.

Strategy

The general strategy of the RDP emphasises its main focus on improving the natural environment, and that 87% of total spend between 2014 and 2020 specifically focuses on the environment. This reflects the fact that enhancing the natural environment and meeting key environmental commitments was the main opportunity presented in the SWOT. The main focus will be on biodiversity, but a significant proportion will aim to address biodiversity, water quality and floods together in an increased effort to deliver multiple

outcomes.

The WFD and the problems in achieving GES are mentioned explicitly. Flooding is also mentioned, but the general strategy includes no reference to the FD.

The strong emphasis on environmental topics in general can be seen through the share of budget for P4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry” and FA5a “Increasing efficiency in water use by agriculture”, representing about 82,19% of the RDP budget compared to P2 “Enhancing farm viability and competitiveness of all types of agriculture” and FA3a “Improving competitiveness of primary producers” which comprise together about 3,4%.

The strategy for FA3b does not mention water-related risks. It is rather targeted at livestock farming risks (improvements in animal health and welfare) and related knowledge transfer. A reference is made to Flood Risk Management Plans.

The strategy for FA 4b references flood risk and diffuse agricultural pollution. It mentions a targeting framework developed “to address the greatest possible number of WFD failures”. This framework is outlined summarily, indicating that achieving GES or Good Ecological Potential will be grounds for prioritising measures, and that the measures have been selected to address reducing pollution sources, stopping the movement of pollutants into waters from source, reduce localised flood risk and support water storage and efficiency activities. It is linked to measures M2, M4, M7, M8, M10, M11, M16.

The targets for agricultural land under management contracts under Focus Area 4B is 2.024 mi ha, which is 22.4% of the total agricultural area (9.018 mi ha). This is an ambitious target but still low considering that 68.1% of the county’s water bodies have diffuse agricultural pollution as a significant pressure.

FA 4c follows the same programming principles of 4a and 4b. It places particular emphasis on the need to improve approaches to soil management to significantly reduce the need for irrigation (a key opportunity identified under the SWOT).

The Strategy for focus area 5a mentions the need to achieve greater resilience against climate change, mainly using reservoirs in drought affected areas and techniques such as rainwater harvesting. There is no mention of the need to support the implementation of the WFD. FA 5a is linked to M1, M2, and M4.

Ex-ante Conditionalities

EAC 5.2 was assessed by the MS as fulfilled. No action plan was required.

Measures

FA 4b is linked to M2 (at sub-measure level), M4, M07, M8, M10, M11, M16. Focus Area 5A is linked to M1, M2, and M4.

Measure 1: The measure does not mention water or WFD, but does include climate change adaptation (FA5a) as a topic for which advice can be financed, including in activities which do not have adaptation as its primary purpose.

Measure 2: the general description of the measure does not list any water-related priorities (with the exception of 5A, targeting climate adaptation), but its sub-measures are linked to Focus Area 4B and have strong focus on water-relevant priorities. Specific advisory services are proposed to maximise benefits of water quality measures funded under M4 and M10 in sensitive catchment areas and supporting delivery of specific objectives (incl. proper implementation) of water and biodiversity.

Measure 4: water-related objectives are addressed under general resource efficiency and under adaptation to climate change (addressing water shortage).

- Sub-measure 4.1: Support for investments in agricultural holdings. Investments in the livestock and dairy sectors will include operations that improve efficiency in use of chemicals and water and improve storage and use of animal waste. Investments in the arable and horticultural sectors will include operations that improve nutrient management of soils and improve efficiency in use of chemicals and water. Improvements in water efficiency will include support for on-farm reservoirs in areas of water shortage and for techniques such as rainwater harvesting. Linked to Priorities 4b, 4c, and 5a. The eligibility criteria of Art 46 have been well developed, all elements (46(2) to 46(6)) are included. However, metering is not clearly required
- Sub-measure 4.3: support for investments in infrastructure related to development, modernisation or adaptation of agriculture and forestry. The description of measure is based on providing examples, 2 (out of 3) of which are water-relevant: collective investment in water management and storage for farms and collective investments relating to supply/saving of energy and water. The sub-measure is linked to PFA 5a. The eligibility criteria of Art 46 have been well developed, all elements (46(2) to 46(6)) are included.
- Sub-measure 4.4: support for non-productive investments linked to the achievement of agri-environment-climate objectives. Non-productive investments will include grants to support commitments under the agri-environment-climate measure (Sub-measure 10.1) and to address diffuse water pollution. For water, the measure will apply where capital payments are necessary for the delivery of water quality improvements. Linked to Priorities 4 (FA a, b, c) and FA 5a. Although not required to go beyond statutory requirements (incl. EU cross compliance requirements), investments will take account

of these and payments are calculated to compensate only for expenditure beyond requirements.

Measure 8: The general measure description states that woodland creation in appropriate locations can achieve water management and water quality objectives included in the WFD, including tackling diffuse pollution through both barrier and interception functions. Furthermore, riparian and floodplain woodland can protect river morphology and moderate stream temperatures, and afforestation of soils susceptible to erosion can help reduce sedimentation and help mitigating flood risk. Whereas the measure mentions flood risk, no link is made to the FD. The measure is linked directly to Priorities 4 (a, b, c).

Sub-measure 8.5 “support for investments improving the resilience and environmental value of forest ecosystems” links to Priorities 4 (a, b, c) with investments to improve water quality draining from wooded watersheds (e.g. by replacing coniferous species adjacent to watercourses with broadleaves) and investments to reduce flood risk (construction of woody leaky dams). However, the measure is not targeted to areas identified under the Floods Directive as being of significant flood risk.

Measure 10: The scheme is mainly targeted to deliver on biodiversity, using around 75% of the budget, and the main secondary focuses on water (including flood management). It will also help meet soil commitments (made in the national Natural Environment White Paper).

The measure description provides a summary of modelling work conducted in early 2014 to give an indication of the potential benefit regarding WFD objectives where agriculture is considered to be a contributory factor and where Measure 10 options (and associated Measure 4.4 investments) may offer some benefit. A level of benefit lying between 3 and 30% improvement (between current position and WFD objective), depending on the catchment type, the focus on targeted effort and supporting advice and depending on the level of uptake by farmers, was determined.

The M10 description does not provide a detailed targeting strategy for M10 sub-measures: but does highlight that the targeting framework will underpin operations under this measure and that it draws on approximately 400 data sets for the scheme objectives (incl. soil and water).

Sub-measures related to water management aim to: 1) address diffuse pollution by establishing buffer and riparian strips (protecting habitats from fertiliser and sprays), enhance the buffering capacity of field margins, avoid soil compaction and use no fertilisers or manures; 2) improve management of arable lands for biodiversity, water and soil purposes (crop rotation, enhanced overwinter stubbles, herbicide restrictions); 3) maintain or restore uplands (moors and rough grazing areas) for biodiversity, water and soil purposes; 4) improve management of wetlands by e.g. creating 10-metre wide buffer strips around ponds and along ditches; 5) enhance woodlands by e.g. reducing pesticide input; 5) maintain or restore inter-tidal habitats, reducing flood risk; 7) restore and enhance

grassland habitats for biodiversity, water and soil purposes; 8) enhancing historic environment and landscape with biodiversity, water and soil outcomes (replacing grassland for arable, reducing cultivation depth, changed cropping, managed water meadows); 9) maintain and restore lowland heathland with biodiversity, water and soil outcomes; and 10) options related to organic land, with biodiversity, water and soil outcomes.

Natural retention measures (including measures related to soil management, wetlands, woodlands, etc.) are included. The emphasis is on ensuring both flood protection and WFD implementation; however, it is indicated if flood risks are related to the areas identified under FD.

The pressures diffuse agricultural pollution and flood risk listed in the SWOT are tackled. Physical modifications, abstraction and flow are not addressed.

Measure 11: The measure description states that investments will contribute to meet WFD obligations. No scoring or targeting criteria is currently planned; applicants meeting eligibility criteria will be entitled to support.

Measure 16: In general, the measure description is linked to Priorities 4 (a, b, c), while the individual sub-measures do not include a link to Focus Area 4B. Sub-measure 16.5 “support for joint approaches to environmental projects and ongoing environmental practices” aims to bring land owners together to deliver environmental benefits at a landscape scale, but the main target seems to be biodiversity. There is no mention of WFD which appears to be a missed opportunity given the catchment based approach in England to improve WFD delivery.

Indicators

In the RDP, the only relevant context indicator presented in Ch 11 is: 20 (surface of irrigated land). In Ch 4, context indicators 39 (water abstraction in agriculture), 40 (water quality) and 42 (soil erosion by water) are also listed.

Water-relevant target indicators are T10 (percentage of agricultural land under management contracts to improve water management), T11 (percentage of forestry land under management contracts to improve water management) and T14 (percentage of irrigated land switching to more efficient irrigation system).

There is no specific mention of monitoring on water saving, morphological alterations or pesticide pollution. There is no mentioning of using WFD monitoring systems.

The RDP did not expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute

to the WFD.

Conclusions

The overall logic of the RDP seems coherent with its main aim: environmental improvements, in particular regarding biodiversity. This is identified as the main opportunity in the SWOT, and environmental concerns (biodiversity as main focus, main secondary focus on water incl. flooding) are taken up systematically and coherently throughout the RDP. The Needs and the Strategy are coherent with this overall approach.

Diffuse pollution, the main pressure affecting water bodies in England (over 68.1% of water bodies counting this as a significant pressure), is tackled adequately and with strong financial support. While the range of measures addressing this pressure appears adequate, the prioritisation of the measures is not presented in detail in the RDP. It is nevertheless positive that some selection criteria include a prioritisation in view of potential to achieve GES, although it is only described without actual details regarding their use and methodology.

Water scarcity/abstraction is addressed with some demand-oriented measures (investments addressing water efficiency and water savings). The RDP could support additional measures in drier areas of England (e.g. less water intensive crops).

While mentioned in the SWOT, hydro-morphology is not directly addressed in RDP and the RDP does not finance measures that are specifically targeted to address deficits in ecological status linked to morphological alterations. The RDP nevertheless finances a range of agri-environment-climate measures in riparian areas that can have beneficial impact on hydro-morphology. Flooding is addressed secondarily, predominantly in measures that can be considered NWRM.

The monitoring and evaluation framework in place cannot properly monitor and evaluate water-related measures and their contribution to the WFD and FD. There is for example no indicator referring to the evolution in the status of water bodies. The current framework does not enable tracking progress in terms of achieving good status.

It is positive that overall about 82,19% of total spent on Priorities is specifically focussed towards the environment. The target for agricultural land under management contracts under Focus Area 4B was set 23.2% of the total agricultural area. However, given that diffuse pollution is a significant pressure in more than 68% of water bodies, it will mean that considerable action outside the RDP (i.e. through strengthened WFD basic measures (reinforced nitrates directive measures, GWD measures and measures under the sustainable use of pesticides directive) and WFD supplementary measures (measures funded by non-EU funds) should be included in RBMPs if the good status objective of the

WFD is to be achieved.

Recommendations:

1. Better target M04, M08 and M16 towards WFD and FD objectives. The prioritisation of measures at regional level should be accompanied carefully, to ensure maximum outcomes for the water directives are delivered. The incorporation and good use of WFD and FD criteria into the process should be a priority. It would be important to clarify the prioritisation of M10 to areas beneficial for WFD implementation. Hydro-morphological pressures should be given adequate consideration in the RDP, as well as measures that can deal with these pressures, for example by improving the description and targeting of existing measures in M10 and by adding specific river restoration measures (e.g. in M07 and M10).
2. Better target measures related to water efficiency (FA5a). Areas facing water shortages are geographically restricted in England. Measures improving water use efficiency and water savings should be targeted in view of areas facing shortages and water bodies affected by abstractions, and further measures could support less water intensive crops.
3. Improve the monitoring and evaluation framework to better assess the improvements coming from the implementation of water related measures, for example through indicators reporting the % or number of water bodies at Good Status, water savings, pesticide pollution or morphological alterations.

A48 UK – Northern Ireland

SWOT

The river basin districts (RBDs) located in the programme's territory are North Eastern, North Western, Neagh Bann and Shannon, the latter 3 are shared with Ireland. Diffuse source pollution is the single most relevant pressure in England. Diffuse pollution is a major pressure in all RBDs in N. Ireland (ranging from 65-86% of WBs reporting this pressure). Point source pollution is reported by between 27-53% of WBs in the three RBDs. Pressure on morphology is also linked to agriculture in all RBDs in Northern Ireland.

Detailed information on WFD status is presented in the RDP. The SWOT mentions 3 out of the 3 RBDs; the Shannon only has a minor part in N. Ireland. The latest WFD Art. 5 assessment data was used. 67% of river bodies have not achieved good chemical status. Around 38% of river water bodies are failing due to phosphorus, among others, with nutrient enrichment pressure from agriculture identified as a problem. Another 35% are failing due to pressures from discharges such as from waste water treatment works and agriculture runoff. Information on ecological status is not provided. The RDP states that 16 Lakes have not achieved good status as of 2013; it is not clear if this is referring to chemical or ecological status. No information is provided in the SWOT regarding the quantitative or chemical status of groundwater bodies (GWBs). In the Needs section, the RDP mentions that 65 out of 67 GWBs are of high quality.

The SWOT identifies the main agriculture pressures in each river basin, namely nutrient enrichment from excess phosphorus and nitrogen on agriculture land and farming practice; sediment loss caused by livestock poaching and river bank erosion by livestock; and diffuse organic pollution arising from farm yards. Contamination by pesticides is a problem in some catchments only. The Neagh Bann RBD has the main areas of poor status due to agricultural pressures. The main agriculture pressures on river morphological status include lack of buffer strips, poaching by livestock and channel straightening.

Flooding is briefly mentioned in the context of climate change but there is no mention of the EU Floods Directive.

Strengths in the programme include that the chemical quality of rivers has improved over the last decade, although weaknesses are that diffuse phosphorus pollution by agriculture is a major contributor to the eutrophication of lakes and rivers and that there has been little improvement in the status of surface water bodies (SWBs) in recent years. In addition, a weakness is the absence of nutrient management plans on livestock farms and the inefficient application of nutrients. Opportunities include reducing diffuse pollution and sedimentation to improve the biological quality of SWBs to help achieve WFD targets, as well as the introduction of the Pesticides National Action Plan. Threats relate to continued unsustainable or environmentally damaging practices through drive for competitiveness

and growth.

Missing from this section is the aspects of flooding and morphological alterations by the agriculture sector.

Needs

Seven needs have been linked to Focus area 4b “Improving water management, including fertiliser and pesticide management”: Need for improvement in the ecological status of river and water catchments; Need for non-native invasive species action; Need to halt the loss of habitats; Need to improve management of land to increase efficiencies and contribute to improved environmental and/or climate outcomes; Need to increase industry awareness and engagement with research and innovation and uptake of new technologies; Need to increase woodland cover; and Need to protect priority habitats and species and Natural 2000 sites.

Under the need to improve ecological status, diffuse pollution from fertilisers and pesticides and morphological pressures from livestock are mentioned and there is a clear link to achieving the objectives of the WFD. The need to improve the management of land refers to the inefficient application of nutrients leading to eutrophication. The need to improve woodland cover is directly linked to achieving WFD objectives (reducing pollution, protecting river morphology) and sustainable flood management. The need to protect Natura 2000 sites refers to the WFD as well.

Strategy

The general strategy of the RDP emphasises the need to improve the natural environment, including supporting farming practices which improve water and soil quality. Each measure is briefly mentioned and linked to different focus areas, including Focus area 4b. The general strategy states that the proposed RDP measures will contribute to the achievement of the proposed WFD objectives of 65% by 2021.

The programme gives about equal budgetary emphasis to P4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry”, representing about 40% of the RDP budget as to P2 “Enhancing farm viability and competitiveness of all types of agriculture” and P3a “Improving competitiveness of primary producers” which comprise together about 43%.

Focus area 3b on “Supporting farm risk prevention and management” is not programmed.

The description of Focus area 4b reiterates the needs identified above. The main support for Focus area 4b will come from M10 on agri-environment-climate measures (AECM) and options under the Environmental Farming Scheme are in line with achieving WFD objectives. Reference is also made to knowledge and advisory services under M1 and M2.

The other measures linked to Focus area 4b – M4, M7, M8, M11, and M16 – are not described.

The target indicator for Focus area 4b is 8.08% of agriculture land and 0.03% of forest land under management contracts to improve to improve water management. In the general strategy, it is stated that the proposed RDP measures will contribute to the achievement of the proposed WFD objectives of 65% by 2021, representing a 50% improvement of the status from the 2014 baseline (32% in good status). It remains to be seen whether the relatively low target (<10%) will be able to realise the stated ambition.

Ex-ante Conditionality

EAC 5.2 was assessed by the MS as fulfilled. No action plan was required.

Measures

Focus area 4b is linked to M1, M2, M4, M7, M8, M10, M11, and M16.

Measure 1 finances knowledge transfer, demonstration activities and farm visits. The measure explicitly mentions the weaknesses identified in the SWOT as regards nutrients applications and highlights the need to provide training to farmers that will demonstrate the relevance of efficient nutrient planning to the sustainability of their business. In addition, demonstration activities can be financed that include topics such as soil and water quality. The WFD is not mentioned specifically but reducing nutrient pollution is a clear aim of the measure.

Measure 2 finances advisory services. The measure targets advice for priority habitat areas. With respect to water quality, non-regulatory advice for catchment-based projects can be funded with the intention to provide information on pollution avoidance to assist in the achievement of the WFD, Nitrates and Pesticides Directives.

Measure 4 finances investments in agriculture holdings. The general description of the measure mentions that any investments that negatively impact on the WFD and Floods Directive such as an increase in livestock or in manure and slurry spreading will only be supported if there are mitigation actions, which will be evaluated during project selection and on a catchment basis.

- The Business Investment Scheme (Sub-measure 4.1) is mentioned as the main investment scheme within the RDP at farm holding level. Financing for investments includes, among others, precision slurry/manure and fertiliser application equipment to reduce the need for inorganic fertiliser use and constructed farm wetlands for bioremediation. This sub-measure includes financing for installation of drainage systems to improve land management. Eligibility criteria state that support

for drainage will only be provided if the project is in compliance with Art 4 (7, 8, 9) of the WFD, cumulative impacts are considered and mitigation measures at river basin management level are foreseen. In addition, the installation of drainage systems requires a farm level nutrient and pesticide management plan and an environmental assessment and drainage that could negative impact the status of water bodies or exacerbate flooding under the Floods Directive are not eligible. Another eligibility criteria for all investments is advice to farmers and land managers that address emission, manure, pesticide and fertiliser use with the aim to mitigating negative impacts on water.

- Sub-measure 4.4 finances non-productive investments linked with AECM financing. Capital works related to water include riparian buffer strips, ditch blocking, pond creation, wetland creation and fencing and other works to protect water and soil. There is no specific link to the WFD and WBs not achieving good ecological status due to morphological alterations (from livestock) are not targeted.

Measure 7 finances basic services and village renewal. The measure will finance Conservation Management Plans for Natura 200 sites and will have a positive impact on water management, among others, and thus contribute to Focus area 4b. Selection criteria mention that plans will be prioritised for sites most affected by agriculture activity and plans for water dependent Natura 2000 sites will be considered.

Measure 8 finances investments in forest area development. The measure is linked to Focus area 4b by financing support for woodland planting to improve water quality by reducing diffuse pollution. Integrated Pest Management is an obligatory requirement for support for afforestation/creation of woodland (sub-measure 8.1). Support for silvo-pastoral systems combining sheep farming with small trees (sub-measure 8.2) will contribute to water quality by reducing pollutant run-off. This sub-measure is linked to receiving support under AECM. Sub-measure 8.5 (Woodland Investment Grant) will improve the ecological status of rivers and water catchments by encouraging low impact silvicultural systems. There are no eligibility or selection criteria for these sub-measures that target areas at risk as defined under the WFD.

Measure 10 finances agri-environment-climate measures through the Environmental Farming Scheme (EFS). The general description of M10 reiterates in detail the status of WBs in N.Ireland in accordance with the WFD and recalls the main pressures from agriculture on the water environment (diffuse pollution and morphological alterations). Within the EFS, there are three levels: higher (for environmentally designated areas and priority habitats), wider (to deliver benefits across the countryside) and group (to support cooperation action by farmers in river catchments or commonages). Training under M1 is required. Linked to water issues, financing is offered for the creation of arable margins (no fertilisers or pesticides can be applied); creation of riparian buffer strips 2 or 10 meters wide with native trees including fencing or ungrazed land; hedges; planting woodlands; low emission slurry application methods; retention of winter stubble; and water course

stabilisation with fencing. Selection criteria for the whole M10.1 mention that applicants which deliver the most environmental benefits to biodiversity, water quality, mitigating climate change and creating small woodlands on farms will receive priority. Individual operations include some water-related eligibility criteria, for example buffer strips with trees are for sites with water courses prone to bank erosion. It is not clear from the measure description which areas are targeted for the higher level and whether these relate to risk areas identified in the WFD.

Measure 11 finances organic farming. The measure is primarily directed at P4a but will contribute to P4b, improving soil, water quality, biodiversity and mitigation and adaptation to climate change, through practices including crop rotation, use of organic fertilisers, improvement to soil organic matter, and by not using synthetic plant protection products or synthetic fertilisers. Selection criteria prioritise, among others, farms who participate in other agri-environment schemes.

Measure 16 finances cooperation activities. Among other schemes, this measure finances cooperation on agri-environment-climate measures at group level to deliver environmental benefits at a landscape scale. Selection criteria may include the prioritisation of environmentally designated sites e.g. Natura 2000 and Areas of special Scientific Interest (ASSIs), priority habitats, and sensitive water habitats and catchments.

Indicators

In the RDP, the relevant context indicators are 40 (water quality) and 42 (soil erosion by water) are also listed.

Water-relevant target indicators are T10 (percentage of agricultural land under management contracts to improve water management) and T11 (percentage of forestry land under management contracts to improve water management).

There is no specific mention of monitoring on morphological alterations or pesticide pollution. There is no mentioning of using WFD monitoring systems. Neither are required by the EARD, but would represent good practice in terms of monitoring measures related to water management.

The RDP did not voluntarily expand on the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the WFD.

Conclusions

The RDP presents clear information regarding the pressures agriculture activities place on the water environment. The SWOT indicates the percentage of river and lake water bodies failing good status but is less consistent whether this is related to ecological and/or

chemical status, the same for groundwater bodies. The needs are well developed, taking into account all the pressures identified in the SWOT, and the general strategy outlines information regarding how certain measures will address water quality issues and also help to achieve the objectives of the Water Framework Directive. Overall, the RDP's strategy provides equal emphasis to measures to protect the environment and to support competitiveness. But at the same time, Measure 4 (mainly linked to P2 and P3) has clear safeguards in place and eligibility criteria emphasizing that projects posing potential negative impacts to the environment (biodiversity, water, air, soil) will not be funded unless mitigation measures are in place. Operations that allow drainage have strict criteria in place, including references to Art. 4 (7) and not allowing any drainage near WBs not in good status.

Regarding the strategy to address diffuse pollution, the programme requires all farmers receiving funding under M4 and M10 to receive farm advice on manure, fertilizer and pesticide use. N. Ireland has experienced positive improvements to pollution issues in the past through increasing awareness. The RDP addresses pollution from livestock farming through financing precision farming equipment, wetlands for bioremediation, riparian buffer strips and payments for low emission slurry applications (which also reduces pollution runoff). Moreover, multiple additional measures under M10 restrict the use of pesticides and fertilizers on arable strips and promote integrated pest management. It is furthermore positive that all AECM measures can be undertaken through cooperative efforts, as financed under M16 and that selection criteria are included for prioritising sensitive catchments. On the other hand, measures addressing pesticide pollution are not targeted (voluntarily as not required by the EAFRD) despite this only being an issue for a few areas.

Morphological alterations are addressed through M4.4 and M10 through the financing of fencing and alternative drinking sites to prevent livestock from entering water bodies and degrading banks, a pressure identified in the SWOT. In addition, M8 and M10 both finance woodland creation, which is intended, among others, to support bank stabilisation, water retention (for flooding), and reduce diffuse pollution into water bodies. Operations under these measures, however, do not target WBs failing ecological status due to poor hydromorphology or flood risk areas identified under the Floods Directive. Natural water retention measures like wetland and pond creation are also financed under M4.4 but it is not fully clear what pressure they are addressing and more focussed on biodiversity.

The RDP emphasizes three main pressures from agriculture: phosphorus pollution, pesticide pollution and morphological pressures from livestock. None of these pressures are monitored within the RDP, as no supplemental indicators were included. For diffuse pollution, only nitrogen is a context indicator. Therefore, it will not be possible for the programme to evaluate the improvements in trends regarding phosphorus and/or pesticide pollution as a result of measure implementation. The same can be said for the measures addressing morphological pressures.

Although the target indicator for Focus area 4b is 8.08% of agriculture land and 0.03% of forest land under management contracts to improve to improve water management, the RDP indicates that the proposed RDP measures will contribute to the achievement of the proposed WFD objectives of 65% by 2021, representing a 50% improvement of the status from the 2014 baseline (32% in good status). This is an ambitious improvement for 5 years. Nevertheless, it is also clear that additional programmes outside the RDP will be needed in order to bridge the gap of bringing the remaining 35% of WBs into good status by 2021.

Recommendations:

1. Be more certain about the status of WBs in the SWOT, providing clear information on both ecological and chemical status of all SWBs.
2. Although not required, consider expanding both the context and target indicators to better reflect water management. The context indicators of nitrogen and phosphorus pollution do not cover two important water management issues, namely pesticide pollution and morphological alterations. These missing aspects do not enable obtaining a full picture of the environment in the territory. Moreover, the target indicators do not enable to track the impact these measures have on improving the water environment. Especially with constraint budgets, it would be beneficial to have indicators in place that enable the authorities to track whether a measure's implementation is having a positive effect on the water environment and is therefore worth financing. Here, linking also the monitoring programme to existing programmes under the WFD would be helpful and would not pose any additional administrative or financial burden on the district.

A49 UK – Scotland

Scotland has two river basin districts (RBDs): Scotland and Solway Tweed. Half of the surface water bodies (SWBs) in Scotland RBD and 39.41% in Solway RBD have no pressures. 66% of natural SWBs in Scotland and 65% of natural SWBs in Solway Tweed have achieved a good ecological status or better; 54% and 31% of artificial and heavily modified water bodies have achieved a good ecological potential in each basin, respectively. A good chemical status has been achieved by 99% of natural and artificial/heavily modified SWBs in Scotland. In Solway Tweed, good chemical status has been achieved by 77% of natural and 47.5% of artificial/heavily modified SWBs. Between 80-89% of groundwater bodies (GWBs) have achieved good quantitative status, and between 86-88% have achieved good quantitative status. In Scotland SWBs and GWBs are affected by diffuse pollution from nutrients (N and P) and pesticides. In Solway Tweed, increased P levels, which are causing status failure in surface waters, are found in intensive agricultural areas. The poor status of groundwater is partly caused by nitrate pollution due to agricultural activities. Pesticide pollution is an issue but not considered significant. In Scotland's RBDs agricultural irrigation is a significant abstraction pressure on surface waters and groundwater. In Solway Tweed, agricultural abstraction is a significant pressure on surface waters, particularly in the east for arable farming, though it is not clear whether this also applies to groundwater. In Scotland, only 1% of rivers and 8% of transitional (estuary) water bodies are prevented from achieving good ecological status by flood protection and drainage of agricultural land. The proportion that is solely linked to agricultural activities is not clear. In Solway Tweed, although the modification of river beds, banks and shores are acknowledged as a significant pressure, agriculture is not mentioned as a significant source of this pressure.

SWOT

The SWOT of the RDP provides little information regarding the water environment. It states that as of 2012 63% of SWBs in Scotland have achieved good ecological status. However, 18% of WBs are considered to be in less than good status as a result of diffuse pollution from agriculture. Information on chemical status using WFD terminology is not provided. More detailed information regarding the types of agriculture activities (arable, livestock) resulting in diffuse pollution is not provided in the SWOT. There is no mention of pesticides, morphological pressures or water abstraction issues, as described in the RBMPs.

Strengths of the programme include large quantities of good quality water, and the threat of negative impacts of climate change on the environment has been mentioned. No specific weaknesses or opportunities regarding water have been identified.

Needs

One specific water-related need has been linked to Focus area 4b "Improving water management, including fertiliser and pesticide management": to reduce the incidence of

diffuse pollution in priority catchments. The need description mentions that adverse impacts from agriculture activities include diffuse pollution and river channel realignment. Forestry measures like establishing woodlands will contribute to reducing diffuse pollution and achieving WFD targets.

In addition, Focus area 4b has been included in more cross-cutting needs such as better training, stronger links to research and technology, improved coordination of advisory services, increase focus on innovation and business management, invest in knowledge transfer and skills development. These needs apply to almost all priorities and do not provide water specific information.

Two biodiversity focussed needs have also been applied to P4b: address negative environmental impacts of land abandonment and improve conditions in nature protection areas (NATURA, SSI, SAMs). Water-related issues are not mentioned in the need descriptions.

Needs have been developed for Focus area 3b “Supporting farm risk prevention and management” but they are not linked to flood risk management.

Under Focus area 5a, one need focuses on developing small agricultural holdings and improving their efficiency. Irrigation or water use efficiency is not mentioned in the description.

Strategy

The general strategy of the RDP highlights four key priorities, including protecting and enhancing natural assets. The strategy mentions that agri-environment-climate measures (AECMs) support reduced fertiliser and pesticide use, which will help to deliver obligations under the WFD, the Nitrates and the Sustainable Use of Pesticides Directive. The general strategy also mentions that support for the reconstruction of drainage channels will be provided only if compliant with the WFD, in particular Art 4 (7,8,9), is taken into account and mitigation measures within the RBMPs are foreseen. Advice will also be made available to farmers and land managers regarding manure and fertiliser use. Measures on water quality will be targeted to priority catchments identified in the RBMPs. Reference is also made to flood risk areas identified in the flood risk management plans.

The strategy also highlights that 35% of the entire RDP budget has been allocated to M13 on support for less-favoured areas. This is significant considering that M13 does not place cultivation restrictions – biodiversity, soil, water, air – on farmers. The strategy indicates that EU regulations set a minimum spent for environment and climate change as 30% of the total budget, which is met by Scotland by M13 alone. However, 19% of the budget will be allocated to M8 and M15. M10 on AECMs is also mentioned but the budget is not highlighted. Overall, it seems that the RDP will focus most of its budgetary efforts of P4

“Restoring, preserving and enhancing ecosystems related to agriculture and forestry” with 48.8%.

The programme gives about equal budgetary emphasis to P4 “Restoring, preserving and enhancing ecosystems related to agriculture and forestry”, representing about 40% of the RDP budget as to P2 “Enhancing farm viability and competitiveness of all types of agriculture” and P3a “Improving competitiveness of primary producers” which comprise together about 43%.

Focus area 3b on “Supporting farm risk prevention and management” is activated but the description of the priority does not link to flood risk management.

The description of Focus area 4b reiterates the pressures highlighted in the general strategy. The strategy states that the aim to have all WBs in ‘good conditions’ by 2027 and the RDP is one of the key measures identified in the RBMPs to achieve this goal. The strategy states that the measures focus on the need “to reduce the incidence of diffuse pollution in priority catchments. Focus area 4b will be implemented through M4, 10, 11 and 16. In addition, M1, 2 and 16 will make a modest contribution. M16 will allow support for landscape scale or water catchment area projects.

The target indicator for Focus area 4b is 19.80% of agriculture land and 37.99% of forest land under management contracts to improve to improve water management. This represents a high ambition to address water management issues in the territory.

Focus area 5a on “Increasing efficiency in water use by agriculture” has not been programmed; however, M4 has the potential to address this through improvements to drainage and water supply infrastructure.

Ex-ante Conditionalities

EAC 5.2 was assessed by the MS as fulfilled. No action plan was required.

Measures

Focus area 4b is linked to M1, M2, M4, 10, 11 and 16.

Measure 1 finances knowledge transfer, demonstration activities and farm visits. The WFD is not mentioned specifically but training on better manure handling and more efficient use of fertilizers has been included.

Measure 2 finances advisory services. The measure includes advice on pollution prevention (e.g. to provide farmers with information and advice on how to comply with: the Diffuse Pollution General Binding Rules and other WFD requirements; Cross compliance

including GAEC; NVZ Action Programme Rules; and effective measures for control/minimisation of agricultural diffuse pollution from all sources).

Measure 4 finances investments in agriculture holdings. The general description includes a list of needs, including the need to reduce the incidence of diffuse pollution in priority catchments. This will be addressed through investments under M4.3 and M4.4. The description mentions that most of the support under M4 is directed towards achievement of environmental and climate objectives.

- Sub-measure 4.3 provides support for slurry stores, increasing the area of woodland, drainage for crofts (tenants managing a portion of agricultural land within a larger estate), irrigation lagoons and investments to reduce pollution risks. Investments to reduce pollution risks include improved pesticide handling facilities and upgrading livestock tracks for dairy cattle. The operations regarding drainage are linked to Art. 4 (7,8,9) of the WFD. Eligibility conditions for slurry storage targets land within a diffuse pollution priority area (not part of a nitrate vulnerable zone (NVZ) identified under the Nitrates Directive or is a NVZ designated after 2014) and that livestock numbers cannot increase as a result of increased slurry storage capacity. Livestock tracks can only be financed in land at risk of poaching and where run-off from the area can pose a pollution risk to surface water. Irrigation lagoons can only be financed within a catchment which drains to waterbodies significantly impacted because of abstractions for agriculture.
- Sub-measure 4.4 is linked to AECMs under M10. It provides financing for capital items for a whole host of items. The most relevant water-related investments include: livestock crossing to reduce poaching erosion of river banks; livestock tracks to reduce poaching and protect water quality; create drainage breaks to minimise the volume of dirty water and slurry to transport run-off to a rural sustainable drainage system such as a wetland, pond, swale or retention pond that treats the dirty water; pesticide sprayer loading and wash down areas and filters to reduce run-off of pesticides into water bodies; sediment traps to intercept run-off that currently discharges directly to a water course; alternative drinking water for livestock that currently have direct access to water courses; riparian buffer strips; and wetland creation. These measures are not targeted. In addition, under M4.4 investments in restoring river banks and floodplains will be financed. These measures are targeted to damaged water courses.

Measure 8 finances investments in the development of forest areas. Although the RDP specifically states that M8 is not programmed under P4b, the general description states that the programme seeks to contribute to the delivery of the WFD objectives by enhancing water quality, by reducing the potential for watercourse acidification and soil erosion and by stabilising riverbanks and reducing pollution run-off. These are considered secondary effects of the actions taken under the forestry measure (afforestation,

agroforestry systems, and reforestation).

Measure 10 finances agri-environment-climate measures. Support to the implementation of the WFD and the Floods Directive are mentioned in the general description. It refers to the need to reduce the incidence of diffuse pollution in priority catchments. 40 operations have been included in the programme. 8 of these relate specifically to water: buffer areas for fen and lowland bogs (buffer is wet and no fertiliser); converting arable land at risk of erosion or flooding to low-input grassland; floodplain management; retention of winter stubbles for wildlife and water quality; stubble followed by green manure in arable rotation; riparian buffer strips in arable and grassland fields; and wetland management. Spatial targeting criteria have been defined. For water quality, a target map was produced using the location of priority catchments (the following have been identified in River Basin Management Plans: The Scotland River Basin District and the Solway Tweed River Basin District) that are expected to benefit from an option, taking into account the specific pollutant pressures affecting each catchment. For flood risk management, a map was produced based on Potentially Vulnerable Areas defined under the Flood Risk Management.

Measure 11 finances organic farming. The measure is primarily programmed under FA 4a but will contribute to FA 4b, improving soil, water quality, biodiversity and mitigation and adaptation to climate change, through practices including crop rotation, use of organic fertilisers, improvement to soil organic matter, and by not using synthetic plant protection products or synthetic fertilisers. Organic farming is to be offered across the whole territory and is not targeted like the operations under M10.

Measure 16 finances cooperation activities. The need to reduce diffuse pollution in priority catchments, which is linked to Focus area 4b, is included in the general description. Within M16, cooperation action to deliver landscape scale projects will be financed. These are linked to the same operation under M10 and M8 and M15 (for forestry). Selection criteria include that the proposed actions compliment the AEC targeting and local and national objectives/strategies.

Indicators

In the RDP, the relevant context indicators are 40 (water quality) and 42 (soil erosion by water) are listed.

Water relevant target indicators are T10 (percentage of agricultural land under management contracts to improve water management) and T11 (percentage of forestry land under management contracts to improve water management).

Monitoring on morphological alterations or pesticide pollution are not mentioned. There is no mentioning of using WFD monitoring systems. Neither are required by the EARD, but

would represent a good practice in terms of monitoring measures related to water management.

The RDP did not voluntarily expand the existing CMEF framework to better track and evaluate its progress in achieving environmental objectives through operations designed to contribute to the aim of the WFD.

Conclusions

Although the Scottish RDP does not provide a full picture regarding the status of water bodies in the SWOT, the needs developed related to water are clear and the strategy identifies water issues to be addressed.

The strategy to address water pollution takes a multi-pronged approach, offering different measures to tackle diffuse pollution (both fertilisers and pesticides) from arable and livestock farming. One time investment costs are financed, such as new slurry storage tanks and improved pesticide handling facilities, as well as non-productive investments targeting not only water quality but also morphological pressures from livestock farming. Water retention, wetland creation and floodplain management are also supported. It is positive that the measures under M10 are targeted according to spatial maps designated under the WFD and the Floods Directive. It is also positive that M16 enables landscape scale projects linked to the measures under M10. Although the strategy for Focus area 4b states that M8 is not actually programmed under the priority, measures under M8 support water quality by addressing watercourse acidification and soil erosion and by stabilising riverbanks and reducing pollution run-off through afforestation and reforestation operations.

The ambition of the RDP can be seen by the target indicators for Focus area 4b: almost 20% of arable land and 38% of forest land under contracts to improve water management. Considering that 63% of SWBs have achieved good ecological status, this target is sufficient.

Although Focus area 5a is not programmed, M4 includes investments to reduce water abstraction through rainwater harvesting (irrigation lagoons). It is positive that this measure is targeted to water bodies significantly impacted by water abstractions. Although drainage is financed as well, the RDP includes as an eligibility condition that the measures must adhere to Art. 4 (7,8,9) of the WFD.

The water-related pressures identified in Scotland cannot be sufficiently monitored and evaluated based on the existing set of indicators under the CMEF. Morphological alterations – a pressure targeted by a number of measures under M4.4 – are not included in the framework. Moreover, the target indicators for diffuse pollution (land under management contracts) do not adequately evaluate measures with respect to their

contribution to the objectives of the WFD.

Recommendations:

1. Provide full information regarding the status of water bodies in Scotland in the SWOT chapter of the RDP.
2. Although not required, consider expanding both the context and target indicators to better reflect water management. The context indicators of nitrogen and phosphorus pollution do not cover two important water management issues, namely pesticide pollution and morphological alterations. These missing aspects do not enable obtaining a full picture of the environment in the territory. Moreover, the target indicators do not enable to track the impact these measures have on improving the water environment. Especially with constraint budgets, it would be beneficial to have indicators in place that enable the authorities to track whether a measure's implementation is having a positive effect on the water environment and is therefore worth financing. Here, linking also the monitoring programme to existing programmes under the WFD would be helpful and would not pose any additional administrative or financial burden on the district.