

Workshop on Significant adverse effects on use or the wider environment from measures

23- 24 April 2018 - Brussels

Summary Report

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1 Aims and background of the workshop

The current work program 2016-2018 of the Common Implementation Strategy (CIS) for the Water Framework Directive pays particular attention to the topic of hydromorphology and related issues. Activities are currently ongoing to elaborate guidance on harmonized requirements and emerging good practices on 'Good Ecological Potential' (GEP) for Heavily Modified Water Bodies (HMWB), complementing the existing CIS Guidance No. 4 on HMWB designation¹. The Ad-hoc Task Group on Hydromorphology is steering this work. Related discussions are ongoing within the Working Group ECOSTAT.

In the context of HMWB designation and GEP definition the question of which measures for achieving GES or GEP constitute a 'Significant adverse effect on use or the wider environment' requires particular attention.

In the first cycle RBMPs, only half of the reported RBMPs included a description of the approach on defining significant adverse effects of measures for achieving GES on the use or wider environment as part of the designation of HMWB. In half of the first cycle RBMPs, such descriptions were not provided or were unclear. Criteria and/or specific thresholds of 'significance' were reported only in few of the first cycle RBMPs, and in most cases using qualitative rather than quantitative criteria. In many RBMPs, the significance of effects was estimated simply on the basis of expert judgement. As a result, the assessment was often vague and not transparent, leading to a lack of comparability between Member States (EC, 2012).²

At a CIS workshop on the WFD and HMWB (in 2009), it was concluded that the reasons and criteria for judgements on significance should be made clear. It was recommended as good practice to be clear on what is taken into account when making judgements.³

Similarly, in the context of defining GEP in the first RBMPs, there was little transparency on the specific criteria used to define significant adverse effects of measures for achieving GEP on the use or the wider environment (EC, 2012). A specific study on mitigation measures to define GEP for water bodies impacted by storage, it was concluded that few countries have set national framework criteria/indications for determining significant versus non-significant effects of measures on hydropower and even less for water supply and other water uses related to water storage. Thus, it remains unclear how countries that have no relevant criteria or guidelines make sure that there is consistency in decision-making from case to case.⁴

One of the reasons why the standard for ecological potential can vary between water bodies and between countries is that it depends on what can be done by way of improvement to the hydromorphological characteristics of the water body without a significant adverse effect on the benefits served by the water use.⁵ At a CIS workshop on the definition of GEP related to water storage, it was noted that there is high heterogeneity of approaches, thresholds and transparency of the assessments of significance between countries. Most countries have not established a standardised approach and significant adverse effects are usually assessed with a case by case approach or hard to distinguish from non-significant effects on use. However, if significant adverse effects are very different for a certain measure between various countries, then GEP definition becomes quite case-specific and not

¹ See [https://circabc.europa.eu/sd/a/f9b057f4-4a91-46a3-b69a-e23b4cada8ef/Guidance%20No%204%20-%20heavily%20modified%20water%20bodies%20-%20HMWB%20\(WG%202.2\).pdf](https://circabc.europa.eu/sd/a/f9b057f4-4a91-46a3-b69a-e23b4cada8ef/Guidance%20No%204%20-%20heavily%20modified%20water%20bodies%20-%20HMWB%20(WG%202.2).pdf)

² Commission Staff Working Document 2012 WFD implementation (volume 2 of supporting material); see http://ec.europa.eu/environment/water/water-framework/pdf/3rd_report/CWD-2012-379_EN-Vol2.pdf

³ Conclusions of CIS Workshop Heavily Modified Water Bodies. Brussels, 12-13 March 2009.

⁴ JRC technical report on common understanding of using mitigation measures for reaching Good Ecological Potential for heavily modified water bodies (2016); see http://publications.jrc.ec.europa.eu/repository/bitstream/JRC110957/jrc110957_online_flood_gep_jan2020_18_jrc20technical20report_final_clean.pdf

⁵ JRC technical report on common understanding of using mitigation measures for reaching Good Ecological Potential for heavily modified water bodies (2016)

possible to harmonise.⁶ Consequently, transparency on when such adverse effects are significant is crucial for decisions already in the designation of water bodies as heavily modified (or not) and, hence, for ensuring comparability across countries and water use.

Against this background, a workshop on the subject of significant adverse effects was organized on 23-24 April 2018 in Brussels, allowing for related discussions. The results of the workshop will feed into the ongoing work on guidance related to 'Good Ecological Potential'.

The aims of this workshop were to:

- Exchange practical experiences on the assessment of significant adverse effects in the context of HMWB designation and definition of GEP;
- Gain clarification on common understanding which is already in place;
- Gain clarification on still open issues and challenges concerning the assessment of significant adverse effects;
- Discuss relevant input on the assessment of significant adverse effects to a new Appendix to CIS Guidance Document no. 4.

Prior to the workshop, a discussion paper was prepared and circulated to participants providing background information to the topic and suggesting questions for discussion. The discussion paper is available on CIRCABC at:

<https://circabc.europa.eu/sd/a/3bc74bb0-6349-451b-8b89-7fad10d1b360/Discussion%20Paper%20-%20Workshop%20SAEoU.pdf>

59 participants attended the workshop from numerous European countries and stakeholder organisations (see list of participants in Annex II).

This document presents the main discussions that occurred during the workshop plenary and breakout sessions. The Annex presents the workshop agenda.

2 Welcome, introduction and key concepts

Introductory presentations to set the context and aims for the workshop covered the following issues:

- Hans Stielstra (Deputy Head of Water Unit, DG Environment) welcomed the participants of the workshop. He reminded participants of ongoing work and upcoming milestones of the Water Unit in DG Environment.
- Raimund Mair (Water Unit, DG Environment) introduced the key legislative background and key terms, as well as preceding work on mitigation measures for different uses and ongoing work on the development of guidance on "good ecological potential".
- Wouter van de Bund (DG JRC) introduced key issues in the process of assessing significant adverse effects with reference to the discussion paper of the workshop.

All presentations are available on CIRCABC at:

<https://circabc.europa.eu/w/browse/63149a90-f1d9-41be-a776-5ca159903fcb>

⁶ Workshop on GEP inter-comparison case studies on water storage, 13- 14 February 2017 – Vienna, Summary Report.

3 Plenary session: Examples and views from country and stakeholders representatives

In the second session of the workshop, a series of presentations on HMWB designation and GEP definitions were given by Member States and stakeholders:

- Tor Simon Pedersen (Norwegian Ministry of Climate and Environment Hydropower) and H. Hamnaberg (Norwegian Ministry of Petroleum and Energy) presented the Norwegian approach to the significant adverse effects for GEP.
- Jukka Muotka (on behalf of EURELECTRIC) presented a hydropower sectors' view on 'significant adverse effect on use'.
- Sebastian Döbbelt-Grüne (Planungsbüro Koenzen / LAWA) presented HMWB related issues related to flood protection in Germany.
- Marcel van de Berg (Ministry for Infrastructure and the Environment, The Netherlands) presented the Dutch experience on decision making on 'significant adverse effect on use'.
- Katarina Vartia (Swedish Agency for Marine and Water Management) presented Swedish experience in relation to the co-existence of a living agriculture and good ecological status/potential.
- Jan Brooke (Chair Navigation Task Group, but on behalf of the Environment Agency) presented the English approach to significant adverse effect on inland navigation use.

All presentations are available on CIRCABC at:

<https://circabc.europa.eu/w/browse/63149a90-f1d9-41be-a776-5ca159903fcb>

Plenary discussions addressed mainly the following:

- **Alternative renewable energy sources:** The Norwegian case presented the application of a national rough Cost-Benefit Analysis (CBA) to establish the nation-wide value of hydropower production. Clarification was requested on whether alternative sources of renewable energy were considered as potential replacement to hydropower. It was emphasized that the CBA study focused on hydropower because no other energy sources can compete on an economical and environmental basis with hydropower production in Norway.
- **Implementation of mitigation measures for hydropower:** A question was asked on how mitigation measures are implemented at existing hydropower plants. It was explained that the Norwegian government typically uses the opportunity of changed license conditions. Many hydropower plants in Norway did not have specific environmental requirements in their original terms. The presented analysis is a basis for prioritising certain water bodies and hydropower plants for minimum flow release, which is part of the upcoming revision process of licenses. These national priority hydropower plants in catchments with highest benefits from environmental flow would probably be requested to introduce a minimum flow release with a potential total energy loss from 1.1-1.7 TWh. However, it was pointed out that this was not to be considered as national significant adverse effect criteria, but rather representing an overall strategic national ambition.
- **Scale of assessment and starting point for mitigation: It was emphasized that fairness and equity issues** may arise if the assessment of significant adverse effect is only done at local scale. For example, a hydropower plant which has done some mitigation in the past may be requested to do a (little) more to achieve GEP, while an older hydropower plant which historically did not need to implement mitigation measures may not be requested to carry out mitigation measures because of significant adverse effect (e.g. larger gap to achieve minimum flow requirement). Furthermore, it was emphasized that if we only assess significant

adverse effect on a case-by-case basis, we risk the assessment leading to different levels of “significance”. It is necessary to coordinate assessments of significant adverse effects at national and European level and to have comparable criteria and thresholds for assessing significant adverse effect. Participants mentioned the ongoing preparation of national guidance to ensure comparability of the assessment of significant adverse effects between regions in the country (e.g. Netherlands, Germany).

- **Time constraints on mitigation:** It was emphasized that some sectors such as hydropower and inland navigation realize the importance of being sustainable and there are multiple good examples of successful initiatives. However, solutions are not ready made and sectors need time to build know-how and implement mitigation measures without significant adverse effects on use. More time is needed for smart and effective solutions, possibly beyond 2027.
- **Consideration of adverse effects vs disproportionate costs:** Although practice differs between countries, it was emphasized that whilst significant adverse effects from measures can be linked to a loss of revenue (benefits arising for specific water use), this should not include the financial costs of mitigation or restoration measures, which instead should be considered when establishing the potential need for exemptions (in the analysis of disproportionate costs).
- **Benefits from hydromorphological modifications:** It was emphasized that the assessment of significant adverse effects is also linked to national strategic decisions on e.g. civil defense or food and energy security. Other general societal objectives are relevant. In Sweden for example, having an open landscape through agriculture is an important national land use objective, which requires maintaining agricultural production and thus appropriate drainage. However it is yet unclear how much area of agricultural land would be lost if mitigation measures were implemented, since assessments of hydromorphology based on WFD Article 5 are still ongoing.

4 Group discussions on different uses

The third session was organised around four parallel groups on water storage, flood protection, agricultural drainage and waterway transport. For each use, group participants discussed the following questions:

1. What exactly is considered as a “use”?
2. What are the key benefits and types of adverse effects which should be considered for the main uses?
3. Can we differentiate benefits of the uses on different levels (from national to local)?
4. At what scale are significant adverse effects of measures assessed for the key uses in the context of HMWB designation and in the context of definition of GEP? Are large-scale issues and water body level issues particularly relevant for specific parts of the process or for specific types of uses?
5. How can the adverse effects of measures on the use be quantified?
6. How to decide whether an adverse effect on use is significant or not? What is considered as a significant adverse effect on the use (versus just adverse effect) for specific sectors?
7. How do you differentiate between measures for achieving GES and measures for achieving GEP with regard to different key uses?
8. Which clusters of measures are frequently considered to have a significant adverse effect on use?
9. Can you provide examples/cases where a certain measure (e.g. a fish pass) has a significant adverse effect on the use and cases where it has no significant adverse effect on the use?
10. How do you distinguish in practice between significant adverse effects of measures on a use and costs of measures (linked to exemptions)?

The numbers of participants in each of the discussion groups were:

-Water storage: 27 participants

- Flood protection: 14 participants
- Agricultural drainage: 13 participants
- Waterway transport: 4 participants

The outcomes of the group discussions are presented below.

4.1 Group 1 : Water storage

- **Definition of “use”:**
 - Storage can occur for a range of uses including e.g. hydropower, water supply such as drinking water, industrial supply, irrigation, aquaculture, flood protection, recreational uses and navigation (mixed use).
 - The scope of storage hydropower needs to be clarified, particularly on the types of hydropower which are considered for HMWB designation. The discussion indicated the following:
 - Storage reservoirs and impoundments are usually clear cases of HMWB.
 - There was exchange on whether water bodies affected by small-capacity/scale hydropower are designated as HMWB, especially considering the fact that hydromorphological change is usually not large and permanent enough. In rare cases, small hydropower with ponding effects might be HMWB, but this depends on the local situation. Clear criteria and further examples from country practice are particularly needed for the designation of small capacity hydropower sites.
 - There was also a suggestion for developing graphical illustrations on different situations of storage and hydropower type in the new Appendix to CIS Guidance no. 4.
- **Possible benefits, types of adverse effects and criteria for assessing significance:**
 - The following table summarises the discussion on possible benefits, types of adverse effects and criteria for assessing significance.
 - In several countries, regulatory power and flexibility are considered as a more important benefit of storage for hydropower than base load electricity production, because there is no better environmental option to replace it by another renewable energy source.
 - For the different criteria discussed for assessing adverse effects on the use, the level/scale at which this assessment may take place have been noted (N=national, R=regional, S=site level).
 - Mitigation measures can also have effects on climate change drivers and CO2 emissions, which should be related to the assessment of effects on the wider environment rather than on the use of water storage. It is necessary to evaluate CO2-effects of mitigation measures corresponding directly to the storage reservoir aiming at depicting clearly the consequences for EU and national CO2 reduction goals when assessing possible cuts in reservoir uses.
 - Examples of national estimates of significance of the adverse effects of mitigation on the use were collected in the discussion.

Benefits of storage for hydropower	Effects of measures on storage for hydropower	Criteria for assessing adverse effect on use (level/scale)	Examples of national estimates of significance
Electricity production (base load)	Production loss (base load) <i>Effect on climate change drivers and CO2 emissions (effect on wider environment)</i>	Exact figure (production, MWh) (N, R, S) Compared to annual production (%) (N, R, S) Compared to renewable energy targets (%) (N, R, S)	Scot >2% of annual national production ⁷ AT >3% loss of annual national production at any rate (maybe already even less) SE >2.3% loss of annual national production RO >2% losses for single HPP, >5% for HPP chains NO estimates available but no specific threshold of significance
Flexibility (regulatory power, peak load production) - gaining importance	Loss of flexible capacity; Loss in minimum safe capacity <i>Effect on climate change drivers and CO2 emissions (effect on wider environment)</i>	Range of flexibility (N, S)	Quite unlikely to set quantitative threshold for significance
Regional or national energy security ⁸	Reduction of the regional or national energy security	Reduction of security (N, S)	No reduction of security can be accepted

- **Scale at which significant adverse effects of measures for HMWB designation and for GEP definition are assessed:**
 - At the stage of HMWB designation, usually the national level is relevant for assessing significant adverse effects of measures (pragmatic approach); at this stage, there is usually less detailed project data available at the local level.
 - At the stage of GEP definition, mainly the water body level is relevant for assessing significant adverse effects. However, the assessment has to be linked to a general or national method on how to assess adverse effects. Otherwise, cases at which mitigation has already taken place would be disadvantaged; it needs to be ensured that the starting point for the assessment is the same.
- **Quantification of adverse effects of measures on the use:** The quantification of adverse effects on the use is challenging because of seasonal and annual variations. Adverse effects

⁷ For Scotland, the 2% maximum reduction in generation is to deliver the measures set out for all RBMP cycles up to 2027. It is a cumulative annual total across the three cycles.

⁸ A clear definition would be needed: security of supply and/or grid security. Whereas enhancing security of supply aims to decrease energy imports from outside EU, the stable operation of electricity grids aims at providing the commonly known low level of shortages of electricity delivery.

can be quantified by means of average calculations and scenarios (e.g. scenarios of different % of Q95). It was highlighted that quantifications need to reflect the uncertainty in the data used as the basis (e.g. by indicating ranges). Finally, when carrying out quantifications, we should not use numbers only (such as loss of production in kWh), but also relate these to percentages (such as % of total production, share to fulfil RES goals, share of CO2 reduction goals).

- **Differentiation between measures for achieving GES and for achieving GEP:**
 - For many types of mitigation, these measures are similar but the level of their implementation may differ for achieving GES and GEP.
 - The difference between these measures depends on the intensity and range of the measure (e.g. amount of flow released). While the achievement of GES is related to a set of environmental standards for flow (e.g. Q95), GEP achievement is related to a lesser amount of flow than that required to meet environmental standards (however, it is noted that there are differences between countries in this respect, especially on whether or not Q95 is used as an equivalent to ecological flow). Therefore, the significant adverse effects on the use depend on the amount of flow and some amount of water can be required also for the achievement of GEP and some improvements in biological terms.
 - The differentiation between measures for GES and measures for GEP can also be based on the use of completely different measures. For example, in a ponded river, GES can be reached only if the dam is destroyed, whereas GEP can be achieved via a bypass channel with flowing water to improve the riverine character of the biology (which however would not be sufficient for reaching GES).
 - The differentiation between measures for GES and measures for GEP also depends on the type of habitat, the type of river and the species present (e.g. in small rivers with small weirs, GES can be achieved with a fish pass).
 - Finally, it was mentioned that measures to mitigate sediment alteration are still an open question; there are no technically feasible solutions for large rivers so far.
- **Measures which are rarely or frequently considered to have significant adverse effects on the use:**
 - Measures for upstream migration are not normally considered to have significant adverse effects on the use.⁹ However, according to information from some participants, upstream mitigation measures may lead to reduction of hydropower generation; in some cases, these losses may be significant. In case of large (pump) storage reservoirs, for dam safety reasons, both measures for upstream and downstream migration may have significant adverse effects.
 - Mitigation measures for downstream migration may have temporary significant adverse effects, such as during the construction phase which may last 1-2 years. In such cases, temporary solutions such as using another water intake can be an option to reduce loss of production.
 - Measures related to restrictions on flow, the ponding level and the lake level are the ones that are more frequently assessed to have significant adverse effects on the use.

⁹ According to the Working Group ECOSTAT report on Common understanding of using mitigation measures for reaching Good Ecological Potential for heavily modified water bodies, Part 1: Impacted by water storage, 2016, few countries are considering measures to mitigate upstream or downstream interrupted migration of fish to have a high relative effect on water storage. Low to no effect on water storage is dominating for these mitigation measures.

- **Significant adverse effect vs disproportionate cost:** If a measure is disproportionately expensive and if the investment costs are too high, this would be a case for exemption, and thus not part of the assessment of significant adverse effects on use. The exemptions most frequently used for water storage situations are time extensions (under WFD Article 4.4); in most countries, less stringent objectives (under WFD Article 4.5) are not used or are used only in few cases.

4.2 Group 2: Flood protection

- **Definition of “use”:** There is a need to distinguish flood protection for different purposes when assessing significance adverse effects of measures. Flood protection should not be considered a single use, as it depends on how the space is used, e.g. urban, agriculture or infrastructure. Typically, there is a hierarchy of uses: protecting lives is more important than protecting property which is more important than protecting grasslands. The arguments have to be convincing for the use of public money. Note that agriculture is not always protected from floods by everyone and everywhere; this depends on many factors including e.g. key benefits and geographical aspects; even removing flood defence in agricultural areas seems to be considered as a non-significant effect in some cases.
- **Key benefits and types of adverse effects:**
 - The key benefits depend on the use of the areas which are protected from flood damage (e.g. safety of the population, economic benefits, or even cultural heritage, etc). There is also a need to consider where the benefit occurs, as it could be far away from the structure and protected area. These considerations are related to spatial planning within the catchment.
 - The increase of risk of flooding is the adverse effect on the use of flood protection.
- **Issues of scale:**
 - The importance of spatial planning, at multiple scales, especially for assessing the achievement of good status (GES) and the designation of HMWB was noted.
 - For flood protection use, there is always a need to look at both local and larger scales because of interdependencies within the catchment. This also applies to mitigation measures for GEP that cannot be seen in isolation from upstream and downstream areas.
 - For measure scenarios, there should always be a consideration of the optimal scale (e.g. local measures with “regional effects”).
 - For benefits, larger scales may also be important (e.g. nuclear power plant flooding has far reaching effects).
- **Quantification of significant adverse effect on use:** The main criteria mentioned for the quantification of significant adverse effects is the level of protection in terms of flood hazard (e.g. protection against a 100 year flood) or flood risk. Participants also noted that the areas should be defined which are more or less strategically important. With respect to agriculture, it is important to take into account the season, importance of the agricultural areas (products thereof e.g. grassland vs. rare vegetables), also in the context of strategic planning. Flood risk management plans should be seen as reference documents for the derivation of elements for the quantification of significant adverse effect on use / risk assessment.
- **What is significant:** The assessment of significance is related to the acceptable risk to the protected benefits (i.e. hazard x damage). The acceptable risk depends on [the nature and] the value of the elements that are protected. It was also noted that the level of protection is a political decision, and is thus negotiable. Flood risk management plans should be seen as reference documents for determining levels of acceptable risk.
- The following table summarises the discussion on possible benefits, types of adverse effects and criteria for assessing significance:

Benefits of flood protection	Effects of measures on use protected from floods	Criteria for assessing adverse effect on use	Threshold for significance
Protection of urban areas (households, businesses)	Increase of flood risk in close-by areas Reduction in value of real estate Relocation of households or businesses Increased soil erosion	Flood hazard / flood risk	Acceptable risk (hazard x adverse consequences, depending on the nature and value of the elements at risk)
Protection of infrastructure and traffic routes	Relocation of traffic routes	Flood hazard / flood risk	Acceptable risk (hazard x adverse consequences, depending on the nature and value of the elements at risk)
Protection of agricultural areas (note: agriculture is not protected by default, depends on local conditions)	Reduction of the agricultural production area Change of conditions for production through increasing soil wetness	Flood hazard / flood risk	Acceptable risk (hazard x adverse consequences, depending on the nature and value of the elements at risk)

- **Measures with significant adverse effect on flood protection:**
 - All measures have the potential to have an impact on the use; this depends on the way of designing them.
 - Measures have to be planned taking in consideration a combination of several water bodies as well, and not only a single water body.
 - Multiple uses of physical structures are very common and flood protection may not always be the primary use (e.g. there are multi-purpose dams for hydropower, drinking water supply and flood protection)
- **Clusters of measures related to flood protection:**
 - The following table presents the main clusters of measures related to flood protection:

Clusters of measures	Detailed measures
Measures for interruption of longitudinal continuity (linked to dams for floods attenuation, Retention Check Dams, Grade control structures)	<ul style="list-style-type: none"> • fish passages • fish ramps • downstream sediment by-pass actions • openings (filtering action) for sediments • additional flows
Measures for interruption of lateral continuity (linked to bank reinforcements/protection, Embankments, Groynes, Concrete sea wall)	<ul style="list-style-type: none"> • Replacement of hard structures with soft engineering ones • Creation of natural-like irregularities • Set-back embankments • Increase of roughness trough wood/rocks • Beach creation or nourishment • Reconnection of side arms

<p>Measures for complex works</p> <p>(linked to flood detention basins, Flood Deviation channels, Flood Drainage systems, Channel straightening, Channel revetment)</p>	<ul style="list-style-type: none"> • Creation of natural-like diversity within the flood detention basin • Storage tanks at the delivery to attenuate discharge peaking • Irregular shaping of the banks to favour morphological diversity and habitat heterogeneity • Increase of roughness elements (cobbles or boulders)
<p>Measures for sediment management and maintenance</p> <p>(linked to channel re-profiling (dredging included))</p>	<ul style="list-style-type: none"> • Improve in-channel morphological diversity and riparian habitat • Create low-flow channel • Undertake habitat enhancement including provision of fish refuges

- **Measures for interruption of longitudinal continuity:** The measures may differ depending on the landscape. Consistently with channel slope, it is possible to use ramps with a low impact on use. Nevertheless, the decrease of capacity of flood protection has to be compensated elsewhere.
 - Dams for flood attenuation are often multi-purpose; additional flow is not always possible as a mitigation measure.
 - **Measures for interruption of lateral continuity:** In many cases, it is possible to mitigate lateral continuity effects without significant adverse effects on use. In this context, the availability of space is a key issue.
 - **Measures for complex works** (e.g. flood retention basins, drainage schemes): It is difficult to discuss this as a cluster, because it is very heterogeneous and overlapping with other clusters of measures.
 - **Measures for sediment management and maintenance:** Maintenance can be done sustainably following best practices without significant adverse effects on the use, as in the case of other uses (e.g. navigation).
- **General points:**
 - The need for integrated river basin management planning, flood risk management planning, agriculture, urban areas and (critical) infrastructure was emphasised in the discussion.
 - Additionally, there is a need for transparency of planning instruments and a common framework of how to carry out quantification of adverse effects, perhaps through indicators.
 - Combinations of measures at different locations can be much more effective than isolated measures at water body level, as the effectiveness of the measure has to be assessed at the wider scale.
 - Participants also noted that it is important to separate between new and old structures for flood protection; in this context, cost issues are critical.
 - In many areas in Europe, flood protection cannot be reached in any other alternative way (e.g. in the NL) or may have profoundly changed the character of the water bodies; restoration to good ecological status is therefore not possible.
 - Some key political decisions, for example on the reduction of agricultural area, are not taken solely (or not mainly) within the WFD framework. This needs to be considered in the decision-making process on significant adverse effects of measures on flood protection.

- The critical question was raised on how to know if GEP is reached, if its definition is a purely political decision without specific criteria.

4.3 Group 3: Agricultural drainage

- **Definition of “use”:**
 - In the WFD, significant adverse effect should be assessed in relation to the drainage activity. However, some countries may consider the related uses, such as agriculture, as the activity.
 - In WFD terms, relevant uses benefiting from drainage can include, for example, the following uses and wider environment aspects: agriculture, forestry, urban areas, protection of wetlands, Natura 2000, tourism. In some cases, there are multiple beneficial uses from a single drainage scheme (e.g. agriculture and urban area). Each of these uses will be more or less vulnerable to a change in drainage. This requires individual treatment and consideration.
 - The existence of specific drainage use such as integrated (surface) irrigation and drainage schemes (more frequent in southern countries) and schemes aiming to raise water tables seasonally for irrigation purposes to overcome a drop in water tables (lowland areas) were also mentioned.
 - The discussion highlighted the potential need to differentiate drainage as a “water service” rather than a “water use” (i.e. agriculture). This could be more coherent with definitions in Guidance n°1 on economic dimensions of the WFD.
- **Key benefits and types of adverse effects:**
 - Some countries focus mainly on the drainage function as the key variable affected by mitigation measures. Others focus on the area of arable land and on the linked land uses.
 - The intention of countries participating in the group discussion is to further consider the benefits and significant adverse effect on the existence or not of different types of land uses, and if possible quantify this in terms of an economic value such as the associated agricultural production in case of agricultural land use benefiting from drainage. It was emphasized that a change in drainage will have very different impacts on whether the linked agricultural land use is cropland or pastures.
 - The effect on indirect benefits including on the wider environment may also be important. For example, ecosystems might benefit from combined drainage-irrigation schemes where centuries of surface irrigation have led to the creation of linked wetlands or rivers depending on the drained irrigated water.
- **Benefits of the uses on different levels:** Different types of benefits may be considered at different scales. At local scale, benefits may be expressed in terms of agricultural production or farm income. At regional and national level, benefits may be considered with the same criteria. However others may be relevant such as the broader benefits associated with agricultural production such as employment, food security or thriving rural livelihood. These are yet rarely considered in HMWB designation or GEP definition.
- **Significant adverse effects of measures for HMWB designation and for GEP definition:** Participants reported the use of national guidance while assessments are done at local or water body level. In some cases, nevertheless, assessment of significant effects is also carried out at national level.
- **Quantification of significant adverse effect and assessment of significance:** Relevant criteria commonly used include area of agricultural land and production loss. Most countries consider taking a qualitative approach rather than quantitative one at this stage. Group participants mentioned that guidance is currently being developed in some countries. Many participants mentioned the relevance of using stakeholder engagement to assess significance.

Some countries will potentially consider that any average rise in water levels would be a significant adverse effect. Improvements would thus need to avoid any change in the drainage function for riparian land. Some mitigation measures can be designed in such way (e.g. lower whole restored floodplain). In case water bodies are large, improvements can be made at sub-water body level so that they lead to GEP without affecting the drainage function at the water body level.

- **Differentiation between measures for GES and for GEP:**
 - Several countries use the same measures library for GES and GEP.
 - Additional relevant measures (from the list presented in the workshop discussion paper) currently considered for achieving GES in some countries include the complete renaturalisation of hydrological regime and the restoration of natural floodplain.
 - Measures for GES are those re-creating the natural system and letting natural processes take control. Measures for GEP are mostly the same measures but designed at smaller scale. For example, re-meandering for GEP may be considered but it would be done at smaller scale or lower level (e.g. floodplain is lowered) so it does not impact the drainage function from riparian land.
- **Measures and significant adverse effect:** All measures in the list presented in the workshop discussion paper can be used to reach GEP. They also considered that measures in the list presented are rarely considered to have a significant adverse effect on use, depending on the scale of implementation. It can be considered that stakeholder participation may be used more frequently for GEP than for HMWB designation to help assess what is possible to implement locally.
- **Examples:**
 - Group participants mentioned the possibility and interest to provide generic cases and implemented cases for reaching GEP in order to inter-compare approaches and outcomes between countries.
 - Interest was expressed in sharing experience / compare on the use of the mitigation measures on “removal of vegetation” to maintain water discharge capacity of the channel (a measure more frequently used to tackle the impact of more intense rainfall events with climate change) and “introduction of woody debris”.
 - There was also interest in comparing the proportion of mitigated sites achieved at GEP.
 - Overall, it was observed that national guidance documents had been or are being produced on HMWB designation, setting objectives and disproportionate cost. It would be valuable to share this information.
- **Significant adverse effect vs disproportionate cost:** Some group participants mentioned the existence of guidance on the treatment of costs in the assessment of adverse effects (e.g. on agricultural production) vs disproportionate cost analysis (cost of measures). In other countries, the focus is still on HMWB designation and GEP definition; thus, no reflection, guidance or experience is available on the assessment of disproportionate cost on HMWB due to drainage.
- **Additional observations:**
 - Participants highlighted an interest to exchange on the use of quality elements in HMWB and on which quality elements are ruled out and why.
 - In addition, it was emphasised that GES and GEP planning (for different water bodies) should be part of same RBMP planning process. There is no need for separate planning processes.

4.4 Group 4: Waterway transport

Inland navigation

- **Definition of “use”:** Relevant uses include commercial, recreational, and military navigation, as well as the supporting infrastructure such as ports.
- **Key benefits:** Participants noted the following benefits for the different categories of navigation:

Use	Benefits
Commercial navigation	Transport of goods, passengers Jobs/employment, value added (multiplier effect) Reduced GHG emissions compared to road Reduced congestion (road capacity issue) Also, for ports (irrespective of whether public or private, general or commodity specific) create employment, leveraging effect
Recreational navigation	Jobs/employment, value added (multiplier effect) Health and wellbeing benefits
Military navigation	Military defence exercises/practices

- **Types of adverse effects:** Participants noted the following adverse effects for the different categories of navigation:

Use	Adversely affected by
Commercial navigation	Safety implications Hydromorphological or physical process changes Reduced efficiency or ability to compete with road or rail transport
Recreational navigation	Safety implications Hydromorphological or physical process changes Reductions in health and/or wellbeing
Military navigation	Safety implications, hydromorphological or process changes

- **Benefits on different levels:** Participants noted the following differentiations of benefits on different levels:

Use	Level
Commercial navigation	Depends on Member State but generally considered a national benefit
Recreational navigation	Generally a local benefit
Military navigation	Always a national benefit

- **Scale at which adverse effects of measures are assessed:** Participants noted the following points:
 - **For HMWB designation:**
 - Commercial navigation: Mostly assessed at the national or large scale – i.e. the waterway rather than just the water body (geographic and, by implication, economic scale).
 - Recreational navigation: Assessment may not be national (neither in geographic nor economic sense), but rather for a regional/local “network” of water bodies.
 - Military navigation: Mostly assessed at the national level.
 - **For GEP definition:**
 - Commercial, recreational and military navigation: Assessed as a function of ecology as well as use at the level of the water body.
- **Quantification of significant adverse effect:**
 - Overall, quantification can be made with great difficulty.
 - Commercial navigation: Significant adverse effects can be quantified by reference to safety, for example through a risk assessment, however there is likely to be a legal responsibility to ensure safety. Safety cannot be compromised, so post-mitigation measure conditions would either be safe or not safe (binary). Furthermore, quantification can occur in reference to increased transport costs, economic efficiency compared to road and rail, and GHG emissions compared to road and rail.
 - Recreational navigation: Significant adverse effects can be quantified by reference to safety, for example through a risk assessment, however there is likely to be a legal responsibility to ensure safety. Safety cannot be compromised, so post-mitigation measure conditions would either be safe or not safe (binary). Furthermore, quantification can occur in reference to changes in visitor or user numbers, surveys of visitor experience (qualitative; economic, e.g. willingness to pay), and ecosystem service methods. In general, it is difficult to quantify health and wellbeing effects.
 - Military navigation: Significant adverse effects can be quantified by reference to safety, for example through a risk assessment, however there is likely to be a legal responsibility to ensure safety. Safety cannot be compromised, so post-mitigation measure conditions would either be safe or not safe (binary). Furthermore, quantification can occur in reference to political decisions.
- **When is an adverse effect significant:**
 - Commercial navigation: If applying safety criteria, any adverse effect will be considered significant. Percentage thresholds can be used to determine “acceptable” levels of effects on efficiency or competitiveness (e.g. compared to road transport). Finally, from an operational perspective, effects on adjacent water bodies, i.e. the use for which the HMWB was designated, is compromised.
 - Recreational navigation: If applying safety criteria, any adverse effect will be considered significant. Percentage thresholds can be used to determine “acceptable” levels of effects on the local economy. There is still no suitable approach to assess effects on health and wellbeing.
 - Military navigation: If applying safety criteria, any adverse effect will be considered significant. If a water body is used for military purposes, any adverse effect will be considered significant.

- **Differentiation between measures for achieving GES and achieving GEP:**
 - The starting point will be the same for achieving both GES and GEP. Essentially, the same list of measures is used, but with additional measure related to the removal of structures that would only be used for GES.
 - It was noted that GES is used as the reference for GEP (i.e. for elements that are not modified).
 - Finally, we need to be aware that measures for AWBs may be different.
- **Measures which are rarely considered to have a significant adverse effect on navigation use:**
 - It is not possible to say which measures will always have a significant adverse effect (as this is always a site-specific consideration), but there was agreement that several measures should rarely adversely affect use: careful programming of maintenance, sediment management, and fish passes.
 - Habitat enhancement measures can only sometimes have a significant adverse effect.
- **Examples of certain measure which have or do not have a significant adverse effect:**
 - Reconnecting meanders: This measure in some cases will not have significant adverse effects (especially if only one end is to be re-connected) but in other situations a consequence is to restore natural processes operating in river, which may be to the detriment of a stable navigation channel.
 - Marginal planting: This measure will not have significant adverse effects in backwaters but not in the 'turning circle' (the widened area of the channel used by vessels for turning around).
 - SMART technology: Adverse effects depend on the level/intensity of the use. This can be effective in managing vessel movement through a constrained area, but can sometimes slow down transport unacceptably, potentially leading to modal shift (e.g. to road).
- **How to distinguish between significant adverse effects on use and the (potentially disproportionate) cost of measures:** All group participants indicated that the process used can be broken down in the following steps:
 - i) refer to list of possible relevant and appropriate measures,
 - ii) remove those that will have a significant adverse effect on the use or wider environment (significant adverse effect on use is not determined by the cost of the measure),
 - iii) the result is a list of measures to reach GEP,
 - iv) consider costs and apply exemptions including based on disproportionate cost, which can involve political decisions.

It was noted, however, that the third round of RBMPs will make more use of less stringent objectives under WFD Article 4(5): the outcomes of the REFIT exercise will come too late for the third round of RBMPs.

Links between wider environment and mitigation measures for inland waterways

- **Wider environment:** The following elements were raised for consideration as wider environment: built heritage/cultural heritage, Natura 2000 sites, protected species, nationally and locally important sites and wider biodiversity, EIA parameters such as air quality, recreation – formal (sailing, etc. requires infrastructure) = use; informal (e.g. canoes, no infrastructure) = wider environment, invasive non-native species (INNS), contaminated sediment

- **Key benefits and types of adverse effects:**
 - The main benefits are the continued protection for internationally, nationally, and locally important resources.
 - The key adverse effects consist in converse, i.e. loss of the resource, loss of access to the resource, or damage to the resource.
- **Differentiation of benefits from national to local level:** Such differentiation can be done, for example, on the level of legal protection, or in relation to policy objectives. However, this becomes more difficult where social, health and wellbeing, cultural benefits are involved.
- **Relevance of scale in determining significant adverse effects for designation of HMWB and GEP definition:** The resource may be protected through international, national, etc. legislation, but overall differences in scale are less clear than in the case of specific uses.
- **Quantifying adverse effects on wider environment:** Responsible authorities/agencies might have their own systems for quantification, evaluation or risk assessment. The status may be related to legal protection or policy importance. Otherwise a graph (importance of resource vs. quantitative or qualitative scale of loss or damage) or 'risk assessment' type matrix can be used to indicate or illustrate the nature of effect.
- **Assessing effects on more than one use:**
 - Where several uses are present, if the effect of the mitigation measures on any one of these uses is significant, then significant adverse effect on use is triggered for that measure.
 - If there are several uses present and none of these is significantly affected, but several effects are very close to the relevant threshold (i.e. are nearly 'significant') this might trigger further investigation in case the overall cumulative effect is significant.
 - In other cases, if none of the uses are close to being significantly affected by a particular measure (i.e. alone), it would not be expected that the in-combination effects would be significant.

5 Plenary session: Significant adverse effects on other uses, the wider environment and cross-cutting issues

The fourth session, organized as a plenary, was introduced with the following presentations:

- Jan Brooke (Chair Navigation Task Group) presented elements on potential adverse effects on other uses and on the wider environment.
- Michael Wann (Scottish Environment Protection Agency) presented on key considerations regarding the 'wider environment' in the UK.

All presentations are available on CIRCABC at:

<https://circabc.europa.eu/w/browse/63149a90-f1d9-41be-a776-5ca159903fcb>

Plenary discussions addressed mainly the following:

- **Stakeholder involvement:** It was emphasized that stakeholders should contribute to the appropriate design of mitigation measures so as to maximize benefits to all uses while minimizing significant adverse effects on use and the wider environment.
- **Hierarchy of uses:** Participants emphasized the usefulness of prioritizing uses, for example drinking water supply and health safety over other uses. In some countries this is commonly used in other domains, such as infrastructure development.

- **Potential adverse effects on other uses:** Measures taken to mitigate the effects of one use can adversely impact on another use or the wider environment. One of the plenary presentations (Jan Brooke, Chair Navigation Task Group) provided examples of situations where the mitigation measure for one use may adversely affect the use of navigation, recreation or the wider environment. If “unintended consequences” are to be avoided, it is important to consult with all users of a water body in order to understand possible impacts of mitigation measures on other uses, including uses that have not triggered a HMWB designation.
- **Wider environment and climate issues:** Clarification was requested on whether relative increases or decreases in greenhouse gas emissions as a consequence of implementing or not implementing certain mitigation measure(s) is considered as part of the wider environment case. In some countries, this is not yet the case. There have nevertheless been investigations of how slowing navigable waterways (e.g. due to changed hydromorphological maintenance) may result in modal shift with cargo shifting to roads and hence increased road transport. In other cases, mitigation measures on hydropowering can lead to reduced flexibility from hydropower production, replaced by conventional energy leading to increased greenhouse gas emissions. In these cases, greenhouse gas mitigation is generally treated in the context of significant adverse effects on the wider environment.
- **Wider environment and biodiversity:** Cases were mentioned where authorities identified that improving the situation of a chain of reservoirs towards GEP may have an impact on a RAMSAR site. This was considered as part of the assessment related to the “wider environment”.
- **Consideration of catchment scale:** Participants mentioned the tendency to focus the identification of measures too much on the water body level. Overall, we should be aware of unintended consequences when taking mitigation measures, because it is difficult to look at uses and water bodies in isolation; we should also be considering effects on other uses and on other water bodies, which makes planning difficult. It was emphasised that it was important to take into account multiple influences and pressures and have a more integrated planning at river basin level. Some countries reported current and future attempts at better integrating river basin planning dimensions in GEP.
- **Consideration of longer timescale:** Some participants highlighted that the current framework makes it difficult to consider the long term. Participants emphasised the need to consider longer timescale than the existing cycle(s) and possibly the need to prolong the WFD in order to achieve objectives. Appropriate solutions without a significant adverse effect on the use and wider environment take time to be designed and we need to take account of all the activities in the catchment; it requires detailed projects for specific water bodies and much more data to be able to say what GEP is at water body level and how to get there.

6 Conclusions & next steps

Raimund Mair (Water Unit, DG Environment) thanked the participants for constructive and engaging discussions and open exchange, and concluded the workshops with some key observations and reflections from the discussions in plenaries and parallel groups. The following was highlighted:

- The workshop served as an opportunity for very **constructive discussions** on a quite political topic and exchange between participants was very open.
- According to the review of the first cycle RBMP, **HMWB designation is one of the key elements of WFD**. It is used to a significant extent all over Europe, reflecting the amount of modifications that took place historically in Europe. It is important to emphasize that HMWB is not an exemption but a specific water category with its own classification scheme, and will still need mitigation measures in many water bodies. Reaching GEP requires the implementation of mitigation measures to reach the objectives of HMWB and to improve the overall environmental condition of the water bodies as much as possible.

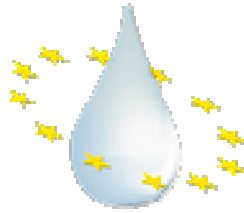
- Significant adverse effect of measures on the use or wider environment is a key issue and there is interest by Member States to discuss it further. However, it is also a complex topic. In particular, the inter-sectoral character of hydromorphological modifications (e.g. multi-purpose storage) is frequent. It is thus important to have a **joint approach with user groups**, so as to move forward collectively in a collaborative way. Communication is a key aspect as well as learning and understanding the relevant uses and the effects of mitigation measures.
- The assessment of significant adverse effects has a **technical nature** (e.g. mitigation measures, impact on biology) but also a **policy and political component**. Both these dimensions need to be taken into account. Assessing significance is thus not only a technical exercise but also a political one. A concept for facilitating decision-making on “significance” is needed. This requires involvement of technical experts, policy makers and exchange with stakeholders.
- The workshop on 23-24 April 2018, in Brussels, was not meant to negotiate specific criteria and threshold values of significance. The objective was rather to allow for **exchange on approaches on how an assessment of significance can be carried out and how an assessment framework/process may look like**. There are several approaches already in use in some Member States and examples were provided during the workshop discussions. Overall, there is a need to ensure transparency in decision making, to allow equal treatment of water users within Member States and ensure comparability.
- The question is still open on how far we can go in terms of ensuring a harmonised approach. A completely unified approach may be too ambitious because socio-economic circumstances between countries vary and have an effect on decisions regarding HMWB and GEP definition. However, there is a **need for comparable assessment methodologies** between countries to ensure comparability of outcomes.
- Based on several previous CIS questionnaires on issues related to adverse effects on use as well as discussions during this workshop, it seems that most Member States are addressing adverse effects on a case-by-case basis for most relevant water uses. However, by doing so, it might be difficult to distinguish between significant and non-significant adverse effects of relevant measures.
- The issue of **scale** was another important point of discussion. The national or river basin level seems to be relevant for some uses, especially in terms of deciding on the significance of adverse effects at the stage of HMWB designation. The specific circumstances at water body level need to be considered especially for objective setting and GEP definition. However, there may be also cases where a focus on the local scale is not recommended to ensure equitable treatment and fairness. Overall, different scales of analysis may be relevant for different uses.
- There will also be situations where there is no flexibility in terms of significance, for example when measures have an effect on the protection of lives (e.g. 100-year flood protection needs to be ensured). This does not mean however that no improvements can be made. In general, the assessment of adverse effects is not only about checking which mitigation measures have a significant effect, but also particularly checking which mitigation measures do not have a significant adverse effect and can be applied.
- It also has to be taken into account whether significant effects on uses or the wider environment can be avoided by combination of mitigation measures or in combination with other additional measures (e.g. losses in electricity production due to provision of an additional flow might be significantly reduced by implementing a residual flow turbine).
- Finally, it is important to remind that the **costs of mitigation measures need to be distinguished from the significant adverse effects on the use or wider environment**. This is important in terms of the overall logic of the WFD. Significant investment costs for measures may be overcome with an appropriate cost recovery scheme, reminding ourselves about Article 9 of the WFD. There may also be possibilities to provide support via incentive schemes to

ensure that measures can be implemented, or to extend the timing for taking measures by applying WFD Article 4(4). As a last resort, there may also be the possibility of applying WFD Article 4(5) which of course requires very particular justifications, as lowering the objectives should only apply for exceptional cases.

Next steps

- The input received during the workshop will be further assessed and taken forward in the on-going work on the Appendix to CIS Guidance Document no.4, whereby significant adverse effects on the use or wider environment will be an important element. However, the scope of the Appendix to the Guidance is planned to be much broader, looking particularly also into mitigation measures for different modifications and an approach for GEP definition.
- Consultation on the draft Appendix to CIS Guidance Document no.4 will take place at the next ECOSTAT meeting in May 2018 in Estonia.
- Brief information on the workshop will be provided at the upcoming SCG Meeting on 17 May 2018
- A draft summary report on the workshop can be expected by end of May 2018, with comments to be collected by the end of June.
- The workshop discussion paper and summary report including comments received will be taken into account for the next version of the draft Appendix to CIS Guidance Document no.4. A chapter on significant adverse effects on the use or wider environment will be integrated in the draft Appendix in autumn 2018 and will be discussed at the SCG Meeting.

Annex I: Workshop Agenda



Designation of Heavily Modified Water Bodies and definition of Good Ecological Potential under the Water Framework Directive (WFD)

Significant adverse effects on use or the wider environment from measures

Common Implementation Strategy Workshop

23-24 April 2018, Brussels

AGENDA Draft 2

Venue:

Maison des Associations Internationales (<https://mai.be/>)

Rue Washington 40

1050 Brussels, Belgium

Public transport:

TRAM 81/94; BUS 54: Stop Bailli

Day one, 23 April 2018

12.30 – 13.00 Registration

13.00 – 13.10 **Welcome address** – *H. STIELSTRA, Deputy HoU, DG ENV Water Unit*

13.10 – 13.35 **Background and introduction to the workshop** – *R. MAIR, DG ENV Water Unit*

- WFD legislative background and key terms
 - Preceding work on mitigation measures for different uses and ongoing work guidance on 'Good Ecological Potential'
 - Main uses, HMWB designation and GEP definition
 - Objectives of the workshop
 - Discussion
-

13.35 - 14.00 **Assessing significant adverse effects on use or the wider environment** – *W.v.d. BUND, DG JRC*

- Key issues in the process of assessing significant adverse effects
 - Significant adverse effects on uses or on wider environment
 - Significant adverse effects versus financial costs of measures
 - Discussion
-

14.00 - 14.40 **HMWB designation and GEP definition – Examples and views from Member States and stakeholders**

- Hydropower: Norwegian approach to determining the significant adverse effects for GEP – *H. Hamnaberg, Norwegian Ministry of Petroleum and Energy and T. Simon Pedersen, Norwegian Ministry of Climate and Environment*
 - Hydropower: A sectors' view on 'significant adverse effect on use' – *J. Muotka on behalf of EURELECTRIC*
 - Discussion
-

14.40 – 15.00 Coffee break

15.00 – 16.15 **HMWB designation and GEP definition – Examples and views from Member States and stakeholders - Continuation**

- Considering flood protection at Heavily Modified Water Bodies in Germany – *S. Döb-belt-Grüne, Planungsbüro Koenzen / LAWA*
 - Decision making on 'significant adverse effect on use' in the Netherlands – *M.v.d. BERG, Ministry for Infrastructure and the Environment, The Netherlands*
 - Co-existence of a living agriculture and good ecological status/potential in Sweden – *K. Vartia, Swedish Agency for Marine and Water Management*
 - Significant adverse effect on use: Inland navigation in England – *J. Brooke, Chair Navigation Task Group*
 - Discussion
-

16.15 – 18.00 **Group discussions on different uses**

- General introduction to the group discussions and questions
 - **Four parallel group discussions on specific uses**
 - Group 1: Water storage
 - Group 2: Flood protection
 - Group 3: Agricultural drainage
 - Group 4: Waterway transport
-

18.00 **End of day one**

Day two, 24 April 2018

09.00 - 11.00 Group discussions on different uses – *Continuation*

- **Four parallel group discussions on specific uses**
 - Group 1: Water storage
 - Group 2: Flood protection
 - Group 3: Agricultural drainage
 - Group 4: Waterway transport

11.00 - 11.30 Coffee break

11.30 - 12.15 Significant adverse effects on other uses, the wider environment and cross-cutting issues

- Considering potential adverse effects on other uses and on the wider environment – *J. Brooke, Chair Navigation Task Group*
- Considerations regarding 'wider environment' in the UK – *M. Wann, Scottish Environment Protection Agency*
- Discussion

12:15 – 13:30 Lunch

13.30 – 14.30 Reporting-back from group discussions

- Reporting-back from different groups on specific uses
 - Group 1: Water storage
 - Group 2: Flood protection
 - Group 3: Agricultural drainage
 - Group 4: Waterway transport
- Discussion

14.30 - 15.00 Wrap-up, final discussion and next steps

15.00 End of workshop

Annex II: List of participants

Last Name	First Name	Member State /Organisation
Abati	Silverio	Italy
Aleksic	Varvara	European Commission
Alves	Maria Helena	Portuguese Environment Agency
Aruväli	Agne	Estonia/Ministry of the Environment
Barbalić	Darko	Croatia / Hrvatske vode
Bäumel	Egon	Austria/ Land Steiermark, Gemeinsamer Ländervertreter WRRL
Belinskij	Antti	Finnish Environment Institute
Bonne	Wendy	Belgium /Federal Public Service Health, Food Chain Safety and Environment
Boucneau	Michel	Flemish environment agency
Bracho	Mildred	Spain/Tragsatec
Brooke	Jan	WFD NAVI Task Group
Bussettini	Martina	ISPRA
Carstens	Christoffer	Sweden /County Administrative Boards
Döbbelt-Grüne	Sebastian	Germany / Planungsbüro Koenzen
Edström	Frida	The Swedish Board of Agriculture
Einarsson	Kristinn	Iceland / Orkustofnun - Icelandic National Energy Authority
Eirik	Bjørkhaug	Norway/Norwegian Water Resources and Energy Directorate (NVE)
Gabriels	Wim	Flemish Environment Agency
Halleraker	Jo Halvard	ATG HYMO
Hamnaberg	Håvard	Norway/Ministry of Petroleum and Energy
Heymans	Lie	EU

Hiiob	Mariina	Ministry of the Environment (Estonia)
Iversen	Anders	Norwegian Environment Agency
Jekabsone	Jolanta	Latvian Environment, Geology and Meteorology Centre
JULA	GRAZIELLA	Romania/National Administration "Romanian Waters"
Kampa	Eleftheria	Ecologic Institute
Karottki	Ivan	The Danish Environmental Protection Agency
Keto	Antton	Finland/Ministry of Environment
Kilinc	Serhat Fatih	Turkey (The Ministry of Forestry and Water Affairs, General Directorate of Water Management)
Koller-Kreimel	Veronika	Austria/Federal Ministry for Sustainability and tourism
Kožený	Pavel	Czech Republic / T.G. Masaryk Water Research Institute, p.r.i.
Lauridsen	Marie Skjødt	Ministry of Environment and Food of Denmark
Lejdstrand	Gerd	The Swedish Energy Agency
Mair	Raimund	European Commission
Matt	Peter	Austria Österreichs enerhie
Miholic	Tina	Croatia, Hrvatske Vode
Mohorko	Tanja	Slovenia/Ministry of the Environment and Spatial Planning
Muotka	Jukka	Eurelectric/Fortum
Ofenböck	Gisela	Austria / Federal Ministry for Sustainability and tourism
Pedersen	Tor Simon	Ministry of Climate and Environment, Norway
Repnik Mah	Petra	Slovenia / Slovenian Water Agency
Ries	Oliver	Denmark /Ministry of Environment and Food of Denmark
Rouillard	Josselin	Germany
Sabas	Gintautas	Lithuanian Environmental Protection Agency
Sadowska	Olga	Poland/ National Water Management Authority

Sjöberg	Katrin H	Sweden/ South Balrog Water Distrikt Aauthority
Sparrevik	Erik	Eurelectric
Staat	Dieter	EUWMA (Dutch Water Authorities)
Stefansdottir	Gerdur	Iceland / Icelandic Met Office
Stielstra	Hans	European Commission
Truumaa	Irja	Ministry of the Environment of Estonia
van de Bund	Wouter	European Commission DG Joint Research Centre
VandenBerg	Marcel	Netherlands
Vartia	Katarina	ATG HyMo
Vehanen	Teppo	Finland
Wann	Michael	UK Scottish Environment Protection Agency
Wessels	Yolanda	Netherlands/Ministry of Infrastructure and Water
Wynne	Caroline	Ireland, Environmental Protection Agency
Żero	Grzegorz	Poland/Krajowy Zarząd Gospodarki Wodnej (National Water management Authority)