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BENEFIT OF GOVERNANCE  
IN DROUGHT ADAPTATION



# Water Governance Assessment Tool

With an Elaboration for Drought Resilience

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## **1. Introduction**

This document is explaining our Water Governance Assessment Tool and belongs to the INTERREG IVb DROP project (“Benefit of governance in DROught adaPtation”). First we will explain some background of the project and the tool. In Section 2 we will unfold the general Governance Assessment Tool with its five dimensions and four quality criteria. Section 3 will mention some specific background for governance of drought resilience, that will be incorporated in Section 4 that will specify for each of the five dimensions some specific topics of interest when applying the Tool to issues of drought resilience. Section 5 will stipulate some points of attention when applying the Tool in both data-gathering and –analysis.

The topic covered by DROP is drought. We aim to take early action to adapt to climate change, with a focus on adapting to drought. The North West European area will increasingly face drought periods that harm agricultural production, nature and fresh water supplies. Although the problem is not always very visible, the problem is there and will worsen in the future. Adaptation action taken now will reduce costs in the future. An optimal water governance setting is crucial for effective drought adaptation in NWE. DROP deals with two issues: 1) (technical) drought adaptation measures and 2) with promoting the use of governance models in the process of designing long term drought adaptation strategies. Just taking measures in isolation is not enough to solve the drought problem. DROP is structured into 5 work packages. WP1 will deal with the development of the Water Governance Assessment tool, for drought. In WP2 the tool will be tested in the partner regions, and based on a diagnosis of the governance setting in the regions, partners will prepare road maps for future optimisation of the regional governance regime, in place to deal with drought events. This document is the output of WP1 and thus explains the Governance Assessment Tool that will be applied in the second half of 2013 and 2014 in WP2.

Drought has many different causes, features and impacts – depending on whether it is defined as a hydrological, meteorological, agricultural or socio-economic drought.

However, the DROP partnership believes that drought can be most efficiently tackled by societies through the application of “good governance” principles and strategies. The management and adaptation to drought across the EU will depend significantly on the different ways that water systems are managed and governed in both our current and future climatic conditions.

Water governance is about the way the management of water resources is guided and organized. Alongside encouraging the application of appropriate technical solutions, it is comprised of the organizational, legal, financial and political aspects that guide and organise the interactions among and collective actions taken by all actors involved in the management of water resources. The concept of "governance" is widely used both in practice and in policy science literature, with a great variety of meanings.

The governance assessment tool developed in this project is made up of a ‘matrix’ like model consisting of five elements and four criteria, which we use as the basis of a more specific tool, in order to consider the possible specific circumstances for the drought related water governance issues in the NW European regions involved in the project (WP1). This model is outlined in this document. The structure of the GAT is a series of open questions about the nature of drought governance in a region, with the openness of the format making it possible to reveal the ‘essence’ of the governance of drought, and allow this to influence the overall understanding of drought adaptation and governance in NW Europe. This tool will be applied (WP2) to assess the context of regional drought settings and pilot measures. It will be used to diagnose the regional setting and to formulate regional roadmaps for optimizing regional settings.

The model enables the development of the concept of “governance” as a modification and extension of the concept of “policy”. The model specifies the dimensions for governance in general but has been most often applied to the water governance problematic, on national and regional / local levels. In general, the model can be used to systematically describe the contents of a governance regime in a certain area concerning a certain issue, like drought. In particular, the model draws attention to the governance conditions that can hinder water resources management policies and projects under complex and dynamic conditions.

In our model we did not include the resulting (inter)action related to policy or project implementation as part of the governance concept, but rather see governance as the context under which such (inter)actions take place. This implies that the results of the analysis will NOT tell what the best options for increasing drought resilience or more sustainable water resources management are. The model and thus the assessment tool that is derived from it do not evaluate what measures are more or less apt for attaining drought resilience. Rather the model draws the attention to the governance conditions that can hinder water resources management policies and projects under complex and dynamic conditions.

The kind of policy advice that the model and the tool can generate is thus not with what measures the practitioners could better reach drought resilience, but what barriers and hindrances in the governance context they will have to reckon with or try to circumvent in trying to adapt to drought in their practitioner contexts. It evaluates the governance context from the perspective of the intended action (programs, plans, projects), not the impact that these intended actions have on sustainability or resilience. The ability to provide an assessment of the contribution to sustainability and resilience of an intended action is understood as being part of the body of the expertise of the local water managers.

Predecessors of the model have been applied on a national scale, on regional scales and regarding specific projects focused on flooding and now drought governance and adaptation across NW Europe. The model can be applied at all of these scales (national, regional, project), and each scale of application will urge its own specification of the concepts. For instance, relevant actors can only be chosen when the domain of application of the model is defined in a specific case study.

There are a number of dimensions in the GAT, that are derived from a starting point in a simple concept of policy, with goals and means as its essential ingredients. Goals are rooted in perceptions about the problems at hand. In most situations different perceptions are brought into the debate by the involved actors, and water issues have many different facets that often lead to a wide range of included perceptions. Means consist of both the resources and organization of implementation activi-

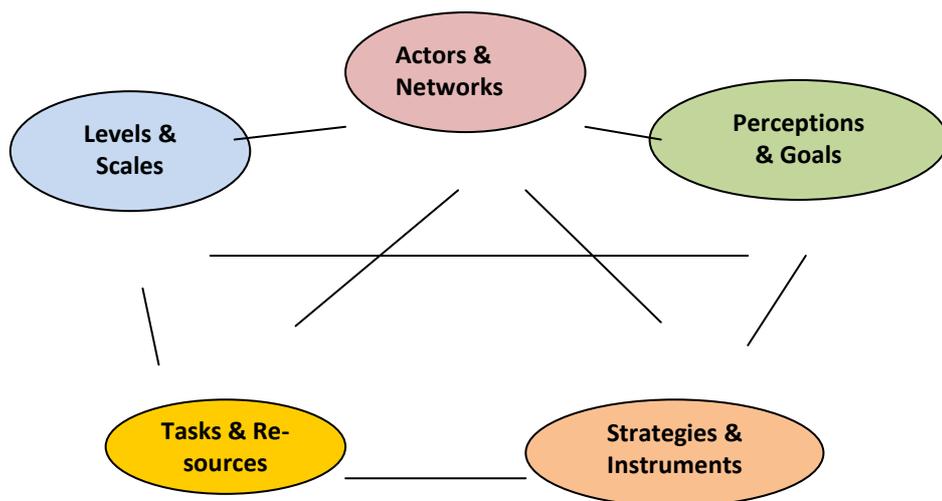
ties and also the associated strategies and instruments. As well as these three dimensions, multi-level and multi-actor dimensions of governance are also widely acknowledged as significant features in the governance literature. Obviously governance is always to be understood in relation to the topic or issues that are being focused on, and particularly for water management and drought resilience the concept of governance can encompass various scopes (e.g. water management sector at national scale, regional water authority policies and plans, or specific project).

Thus our general working definition of “governance” (for a certain sector of social reality) is:

*"Governance" is the combination of the relevant multiplicity of responsibilities and resources, instrumental strategies, goals, actor-networks and scales that forms a context that, to some degree, restricts and, to some degree, enables actions and interactions.*

In the developed model (see figure 1), the five dimensions of governance are:

1. Levels and scales (not necessarily administrative levels): governance assumes a general multi-level character of all other dimensions.
2. Actors and networks: governance assumes the multi-actor character of the relevant network(s).
3. Perceptions of the problem and goal ambitions: governance assumes the multi-faceted character of the problems and ambitions
4. Strategies and instruments: governance assumes the multi-instrumental character of the strategies of the actors involved.
5. Resources and organization (tasks and responsibilities) of implementation: governance assumes the complex multi-resource basis for implementation.



*Figure 1, Five interrelated dimensions of governance*

These five dimensions can be used to systematically describe the contents of a governance regime in a certain area concerning a certain issue, like drought. A governance regime is the whole of the contents of the five dimensions regarding a specified case or area. By calling it a “regime” it is emphasized that we regard “governance” as a context for action rather than the action itself.

Originally proposed in 2003 as a purely descriptive model, the model was updated in 2008-2011 to include four additional quality criteria, to allow to assess the aptness of the water governance regime to be considered (see for further explanation of the scientific background the literature in Appendix 1).

- a. Extent: are all relevant aspects taken into account?
- b. Coherence: are all aspects reinforcing rather than contradicting each other?
- c. Flexibility: are multiple roads to the goals, depending on opportunities and threats as they arise, allowed and supported?
- d. Intensity: the degree to which the regime elements urge changes in the status quo or in current developments

In the DROP project the model consisting of the five elements and four criteria is used as a basis to develop a more specific tool, which considers possible specific circumstances for the drought related water governance issues in the regions involved (WP1). This development is described in the present document. The tool will

be applied (WP2) to assess the context of regional drought settings and pilot measures. It will be used to diagnose the regional setting and to formulate regional roadmaps for optimizing regional settings. The summarized view of an example of results is displayed in figure 2.

	Criteria			
Dimension	Extent	Coherence	Flexibility	Intensity
Levels	↑			
Actors			=	
Perceptions	=			↓
Instruments				
Resources		↓		
<i>Colours Red: negative; Orange: Neutral, Green: positive</i>				
<i>Arrows Up: positive trend in time, Down: negative trend, Equal: stable trend</i>				

Figure 2, Example of visualization of governance context diagnosis in score card

The use of a summary visualization as a basis for inter-regional comparison gives an insight of the differences and similarities of different regional approaches and provides a framework for the discussion about the barriers and hindrances to drought adaptation among the parties involved. The translation of the model into a tool which forms the basis of a regional roadmap should demonstrate the applicability and transferability of this approach across multiple regions (WP4), and demonstrates how the outcomes of the DROP project will be relevant and transferable to other (European) regions. Another feature that is visualized in figure 2 is that also the time-dimension can get attention in the analysis in the form adding arrows to the cells, wherever there is reason to believe that positive or negative past or future evolutions are restricting or enabling the actions and interactions of the stakeholders.

This model has its roots in Contextual Interaction Theory. In this document we will hardly further elaborate the theoretical backgrounds. There are several publications that explain the choice of the governance dimensions and their quality criteria, and

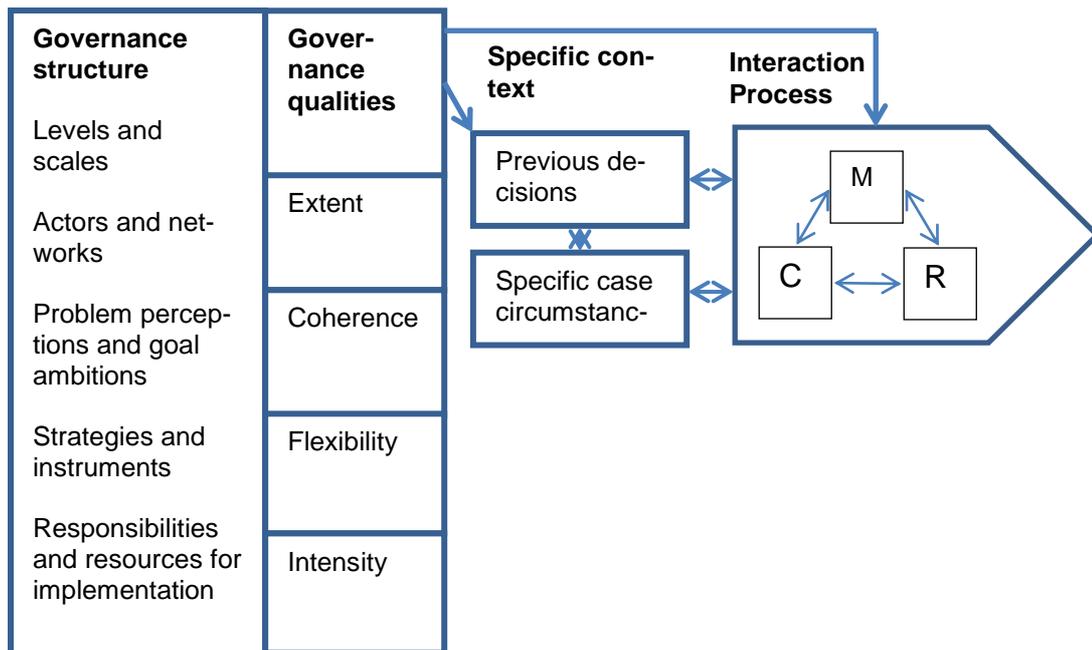
their impact on the processes and projects in more detail (see appendix 1). Rather than elaborating on the depths of this theoretical perspective, in this document we first deal with the questions that can be used as indicators for the description and quality assessment of the governance context. Next we will identify where it is possible or needed to provide further specification regarding the specific characteristics of countries, regions, drought issues or types of measures. Lastly we will present further ideas about how to use the tool in practice, as a guidance when gathering and analysing information with the help of the planned site visits to the regional water authorities and their pilot projects.

## 2. General governance assessment tool

### *Introduction*

Water governance deals with the protection and modification of water systems and water sanitation chains to support human and ecological needs. Though this may seem like a straightforward goal, in reality it's not. Goals, and their definitions, depend largely on the perceptions about the problems at hand. As an example, an engineer would define the issues of drought and goals for adaptation potentially very differently to a social scientist or psychologist, a water company representative, or a farm manager. Climate adaptation at large might be seen in one discourse as an inevitable part of society's response to global change, and in another as "giving up the battle" against greenhouse gas pollution. Water is quite unique in that it spans and solicits multiple perspectives to contribute to debates about governance and adaptation. It is important to focus on the organisation and facilitation of the practical implementation of policy instruments used to impact upon these multiple levels and sectors of society (the "means" component of public policy), rather than just focusing on the policy instruments themselves.

The dimensions of governance form a descriptive model and check list to describe all relevant aspects of the governance context. This context influences the motivations, cognitions and resources of the stakeholders involved in water management projects and processes and thereby the course and effects. Contextual Interaction Theory, of which the governance model is part, starts with the assertion that multi-actor processes can be understood from the motivations, cognitions and resources (M, C and R in the figure below) of the stakeholders involved in the process (see for a further explanation the literature in Appendix 1). In turn, these stakeholder characteristics are influenced by specific case circumstances originating from previous decisions (that to some degree reflect the governance context) and other case circumstances (like the characteristics of the geographical place). Also the structural and general governance context can exert direct influence on the motivations, cognitions and resources of the stakeholders involved and thus on the process and its likelihood of success.



*Figure 3, Relation between governance context and the interaction process with the motivation M, cognitions C and resources R of the stakeholders involved*

In figure 3 the above is visualized. The characteristics of the various stakeholders in the interaction process are placed in the process since they ultimately drive the (inter)actions. The immediate or “specific case” context is defined by previous decisions (relevant history) and other specific case circumstances, like the characteristics of the geographical place. A further context is given by the five dimensions of the governance context and the four criteria that influence to what degree they facilitate adequate and adaptive action by the stakeholders involved.

### *General descriptive questions*

While the four quality criteria form the basis for evaluative questions, descriptive questions regarding the five dimensions of governance are useful as a way to initiate the research designed to assess the governance context regarding a particular resource. Specific questions based on these five dimensions (elaborated below) provide this first generally descriptive research step. The answers to these questions taken together form an in-depth picture of the governance setting:

Governance dimension	Main descriptive questions
Levels and scales	Which administrative levels are involved and how? Which hydrological scales are considered and in what way? To what extent do they depend on each other or are able to act productively on their own? Have any of these changed over time or are likely to change in the foreseeable future?
Actors and networks	Which actors are involved in the process? To what extent do they have network relationships also outside of the case under study? What are their roles? Which actors are only involved as affected by or beneficiaries of the measures taken? What are the conflicts between these stakeholders? What forms of dialogue between them? Are there actors with a mediating role? Have any of these changed over time or are likely to change in the foreseeable future?
Problem perspectives and goal ambitions	Which various angles does the debate of public and stakeholders take towards the problem at hand? What levels of possible disturbance are current policies designed to cope with? What levels of disturbance of normal water use are deemed acceptable by different stakeholders? What goals are stipulated in the relevant policy white papers and political statements? Have any of these changed over time or are likely to change in the foreseeable future?
Strategies and instruments	Which policy instruments and measures are used to modify the problem situation? To what extent do they reflect a certain strategy of influence (regulative, incentive, communicative, technical etc.)? Have any of these changed over time or are likely to change in the foreseeable future?
Responsibilities and resources	Which organisations have responsibility for what tasks under the relevant policies and customs? What legal authorities and other resources are given to them for this purpose or do they possess inherently? What transparencies are demanded and monitored regarding their use? Is there sufficient knowledge on the water system available? Have any of these changed over time or are likely to change in the foreseeable future?

*Figure 4, Main descriptive questions per dimension of governance*

All five dimensions include a descriptive question regarding the time dimension – that is, ‘Have any of these changed over time or are likely to change in the foreseeable

future'. In case that the answers reveal significant and relevant past or future developments, also later when posing the evaluative questions such as which developments should be taken into account. The time horizon in the past is not fixed, and asking about the past is not with the aim of reconstructing history as such, but understanding ongoing adaptation processes with the stakeholders involved. As for the future prospects similar considerations are central. Yet, as the water authorities in Europe face similar deadlines, like the 2015 – 2021 – 2027 WFD assessment years, these time horizons could be taken into consideration.

The questions are about governance as a context for action, not the action itself. This is best illustrated with an example. In some countries, also outside of Europe, lack of transparency and even corruption can play a large role in the success or failure of sustainable water resource management. The success or failure of a sustainable water resources management program is only to a certain degree a result of the structural governance context (This could be represented in our model as “responsibilities and resources” about transparency and monitoring). To some degree the success or failure of a program is also a matter of the wider context of (political) culture and even more a matter of the motivation and resources of relatively powerful actors in the process itself. The implementation of the same or similar interventions can work out very differently in varying contexts. 'Governance' is one of such layers of context and an important one – influencing the degree to which various aspects of the intervention can emerge, grow and be sustained.

Similar interventions can work differently in varying contexts. The ultimate dependent variable is the feasibility of the measures aiming for drought resilience. Apart from this rather operational and “instrumental” variable also the degree to which the stakeholders involved are satisfied with the process and with its results can be given attention. Of course as a value in itself, but also while this satisfaction can be important for potential follow up steps.

### *General evaluative criteria and questions*

In the Governance Assessment Tool not only descriptive questions are asked, but also four quality criteria of the water regime are to be considered:

- a. Extent: are all relevant aspects for the sector or project that is focused on taken into account?
- b. Coherence: are the elements of the dimensions of governance reinforcing rather than contradicting each other?
- c. Flexibility: are multiple roads to the goals, depending on opportunities and threats as they arise, permitted and/or supported?
- d. Intensity: how strongly do the regime elements urge changes in the status quo or in current developments?

For each of the five dimensions of governance, these general questions are specified below. It is important to note that some degree of “informed judgment” is inevitable when assessing the status of the four criteria. Therefore it will be important to make these judgments “inter-subjective”, that is in discussion between at least two observers to prevent that the assessment overlooks important aspects, has a debatable weighting of observations or uses the concepts in a less than consistent way. This is the same for all cells of the matrix. For this reason any assessment regarding the 20 cells that tries to standardize more than an elaborate verbal statement, should not be overly “precise”. That is why in figure 2 only three “values” are visualized: satisfactory / good, uncertain / mediocre and unsatisfactory / worrying (green, orange and red).

The questions that aim to assess the degree of “extent” differ from the descriptive questions in that they are not just making an inventory, but asking for the degree of completeness of the aspects that are included in each of the five governance dimensions. Thus these questions are relating the answers to the descriptive questions to the array of aspects that are relevant for the issues at stake.

The questions about the coherence include the assessment of the strength of network relationships of the actors. In practice it is often hard to assess a network as such, since the coherence of the network is highly dependent on how widely it is defined. Often there is a quite interrelated core of actors (for instance around the water boards) with circles of decreasingly connected actors around this core (like for instance forest owners) (Bressers and O’Toole 1995: 199-201). For the assessment of “coherence” of the network the degree of interrelatedness should be in accordance with the importance of the stakeholders to the issue at stake. Less relevant actors

might be less connected without hampering the coherence of the actor network in ways that restrict needed action.

In Figure 5 no questions are included that explicitly ask about the past and expected future developments regarding these 20 items. It is proposed that when the general descriptive questions reveal important evolutions taking place on these items, those questions should be posed considering the time dimension. In other words, that only attention will be paid to the likely positive or negative impacts of these developments over time when there is reason to think that the assessment score of the item is evolving because of them.

Governance dimension	Quality of the governance regime			
	Extent	Coherence	Flexibility	Intensity
Levels and scales	How many levels are involved and dealing with an issue? Are there any important gaps or missing levels?	Do these levels work together and do they trust each other between levels? To what degree is the mutual dependence among levels recognised?	Is it possible to move up and down levels (up scaling and downscaling) given the issue at stake?	Is there a strong impact from a certain level towards behavioural change or management reform?
Actors and networks	Are all relevant stakeholders involved? Are there any stakeholders not involved or even excluded?	What is the strength of interactions between stakeholders? In what ways are these interactions institutionalised in stable structures? Do the stakeholders have experience in working together? Do they trust and respect each other?	Is it possible that new actors are included or even that the lead shifts from one actor to another when there are pragmatic reasons for this? Do the actors share in 'social capital' allowing them to support each other's tasks?	Is there a strong pressure from an actor or actor coalition towards behavioural change or management reform?

<b>Problem perspectives and goal ambitions</b>	To what extent are the various problem perspectives taken into account?	To what extent do the various perspectives and goals support each other, or are they in competition or conflict?	Are there opportunities to re-assess goals?	How different are the goal ambitions from the status quo or business as usual?
<b>Strategies and instruments</b>	What types of instruments are included in the policy strategy? Are there any excluded types? Are monitoring and enforcement instruments included?	To what extent is the incentive system based on synergy? Are trade-offs in cost benefits and distributional effects considered? Are there any overlaps or conflicts of incentives created by the included policy instruments?	Are there opportunities to combine or make use of different types of instruments? Is there a choice?	What is the implied behavioural deviation from current practice and how strongly do the instruments require and enforce this?
<b>Responsibilities and resources</b>	Are all responsibilities clearly assigned and facilitated with resources?	To what extent do the assigned responsibilities create competence struggles or cooperation within or across institutions? Are they considered legitimate by the main stakeholders?	To what extent is it possible to pool the assigned responsibilities and resources as long as accountability and transparency are not compromised?	Is the amount of allocated resources sufficient to implement the measures needed for the intended change?

*Figure 5, Main evaluative questions of governance assessment tool*

The questions above will be applied in our case studies to assess the governance quality. These evaluative questions are also applicable for our cases of drought resilience policies and measures. The specification for this topic is not to be sought in different governance quality criteria, but in the specification of the descriptive questions that help to map the field of application for these criteria. For that reason we will in Section 4 elaborate specifications for all five sets of descriptive questions. Before that we will provide some backgrounds on the general discussion of the policies and measures on drought resilience in Section 3.

### **3. Specific backgrounds for the governance of drought resilience**

#### *Introduction*

For the DROP project the general governance assessment tool explained in the previous section should be made useable for the topic of drought resilience efforts in Northwest European countries. When specifying the tool for a given application, first a definition of the domain of application is needed in order to give specific meaning to the concepts in the model. This also holds for the application of the tool to assess the supportiveness of the governance context for drought resilience measures in the partner regions of the DROP project. For the purposes of DROP, we apply the tool on various levels (national, regional authorities, plans and projects) and each time this is done it redefines, for instance, what the relevant actors and regulations are. Nevertheless this section will elaborate on a number of specifications that matters specifically for actions to improve drought resilience. The purpose of doing so is to sensitize the users of the tool to the importance of these DROP-relevant aspects when applying the assessment tool.

In this introduction we start with mentioning a number of specifications that are mentioned by the European Commission and drought experts. We will thereafter review where and to what extent this will lead to specific foci or questions to be added to the tool.

#### *Drought Governance*

When dealing with “drought resilience”, one has to discern the concepts of water scarcity and drought. Both are important to DROP, but they are not the same. “Water scarcity, on one hand, and drought, on the other, should be considered different matters. Water scarcity refers to the average water imbalances between supply and demand, while droughts, as a natural phenomenon, refer to important deviations from the average levels of natural water availability” (European Commission, 2007a). However, “defining a prolonged drought, taking into account WFD principles, is a complex task, especially when duration, return period and impacts of droughts can

vary as much from country to country and between regions within a country, and there are as many variables involved.” (Water Scarcity and Droughts Expert Network, 2007).

A crucial question in water scarcity and drought policy is whether or when government or society at large should predominantly try to accommodate growing water uses, or alternatively include measures to restrict water use. This is also called supply-side and demand-side orientations (EEA, 2009; Water Scarcity and Droughts Expert Network, 2007):

- Supply-side measures may include the preservation of the functioning of natural catchments and aquifers, the restoration and improvement of existing water infrastructures (substitution of gravity irrigation systems with pressure ones, for example) and the setting up of conditions which need to be respected prior to water uses.
- Demand-side measures may include the promotion of subsidies (these measures should be strictly coordinated with CAP (agricultural subsidies), the reduction of leakages in water networks, the improvement of agricultural management, the use of appropriate pricing policies and the promotion of educational campaigns and the consideration of full decoupling.

While phrased here in terms of “measures”, these two sides not only relate to instruments, but even more to the problem perceptions in our model.

The European Commission pursues the approach that goals and measures are *not* just reflecting a supply-side perspective. “Most support actions and measures proposed by Member States to address WS&D target pressures, state and impacts, giving priority to measures to increase water supply. Measures that target key drivers at the origin of WS&D, or the implementation of accompanying measures such as metering, pricing/subsidies and restriction of water consumption are proposed in a few RBMPs only. Responsibilities for and financing of the proposed measures is unclear. Adequate coordination with other planning processes and availability of financial resources is not satisfactory. Finally, the links between water scarcity and ecological flows are not well established.” (European Commission, 2012b)

Three basic policy options are discerned (European Commission, 2007b):

*Option A:* ‘Water supply only’. Includes the following measures:

- Enhancing the development of new water supply on the basis of existing EU legislation.
- Supporting the widespread development of new water supplies, with priority being given to the allocation of EU and national funds.

*Option B: 'Water pricing policies only'.* Includes the following measures:

- Effective water pricing.
- Cost recovery.

*Option C: 'Integrated approach'.* Includes measures

- to prevent droughts,
- to support efficient water allocation and sustainable land use planning,
- to foster water performance technologies and practices,
- to foster the emergence of a water-saving culture in Europe,
- for new water supply.

Additional water supply infrastructures should be considered as an option only when other options have been exhausted, including effective water pricing policy and cost-effective alternatives. Water uses should also be prioritised: according to the European Commission it is clear that public water supply should always be the overriding priority to ensure access to adequate water provision.

Seven policy actions and instruments discerned by the EC are (European Commission, 2007b):

1. Putting the right price tag on water
2. Allocating water and water-related funding more efficiently
  - Improving land-use planning
  - Financing water efficiency
3. Improving drought risk management
  - Developing drought risk management plans
  - Developing an observatory and an early warning system on droughts
- Further optimising the use of the EU Solidarity Fund and European Mechanism for Civil Protection
4. Considering additional water supply infrastructures
5. Fostering water efficient technologies and practices
6. Fostering the emergence of a water-saving culture in Europe
7. Improve knowledge and data collection

- A water scarcity and drought information system throughout Europe
  - Research and technological development opportunities

The European Commission claims that the majority of measures applied by Member States target pressures, state and impacts and only very few measures target key drivers (European Commission, 2012). However the less-costly instrument mix includes water conservation, changes in crop rotations and sowing dates, use of drought tolerant crops and awareness raising campaigns (EEA, 2009; Water Scarcity and Droughts Expert Network, 2007).

### *Characteristics of good governance as seen by drought resilience experts*

The Water Scarcity and Droughts Expert Network (2007) has specified a number of desirable characteristics of governance for drought resilience. Many of those can be grouped under the five dimensions of governance in the governance assessment tool and specify relevant topics or provide relevant backgrounds to the specification. Here a number of these background statements are presented that will later feed into the specifications.

*On levels and scales:* Drought planning and management should involve multiple levels:

- National level: Focus on policy, legal and institutional aspects, as well as in funding aspects to mitigate extreme drought effects. National level measures should determine drought on-set conditions through a network of global indices and indicators at the national or regional level global basin indices/indicators network, which for instance can activate drought decrees for emergency measures with legal constraints or specific budget application.
- River basin level: Drought Management Plans (DMPs) are contingency management plans supplementary to the River Basin Management Plans (RBMP)s. DMPs are mainly targeted to identify and schedule on-set activation tactical measures to delay and mitigate the impacts of drought. RBMPs have to include a summary of the programmes of measures in order to achieve the environmental objectives (article 4 of WFD) and may be supplemented by the production of more de-

tailed programmes and management plans (e.g. DMPs) for issues dealing with particular aspects of water management.

- Local/municipal level: Tactical and response measures to meet and guarantee essential public water supply as well as awareness measures are the main issues.

*On actors and networks:* According to the expert network it is important to foster public participation during the elaboration of DMPs to obtain different stakeholders opinions, prior to the decision-making process, being able to influence in the final decision process.

*On problem perspectives and goal ambitions:* Water policies should incorporate incentives for all drought-prone regions to develop plans that promote a more proactive, anticipatory approach to drought management. Environmental objectives and limitations included in the RBMP should be respected. These may include ecological flows, groundwater inputs to wetlands, maximum aquifer abstractions, aquifer and reservoir levels of maintenance, or volumes flowing to the sea.

On the relation with the WFD: The main objective is to minimize the adverse impacts on the economy, social life and environment when drought appears. It also aims at extending WFD criteria and objectives to realize drought management. This general objective can be developed through a series of specific objectives that might include:

- Guarantee water availability in sufficient quantities to meet essential human needs to ensure population's health and life.
- Avoid or minimize negative drought impacts on the status of water bodies, especially on ecological flows and quantitative status for groundwater and in particular, in case of prolonged drought, as stated in article 4.6. of the WFD.
- Minimize negative effects on economic activities, according to the priority given to established uses in the RBMPs, in the linked plans and strategies (e.g. land use planning).

*On instruments and strategies:* Prevention measures to reduce the risk and effects of uncertainty and mitigation measures to limit the adverse impacts of hazards:

- Preventative or strategic measures are developed and used under the normal status. They belong to the hydrological planning domain and their main objective is

reinforcing the structural system to increase its response capacity (to meet supply guarantees and environmental requirements) towards droughts. According to the expert network these are measures to be taken in RBMP.

- Operational (tactical) measures are those that are typically applied when droughts occur (during pre-alert and alert statuses). These are mainly control and information measures in pre-alert and conservation resources measures. If the drought is prolonged excessively, the status of water resources can deteriorate to a point in which emergency operational measures might be needed, consisting essentially of applying water restrictions. Severe Water conservation measures and restrictions, to be adopted if drought worsens to extreme status, should be ranked according to parameters such as: priorities among different uses, environmental requirements, status of drought etc.

- Organizational measures establish competent agents and an appropriate organization to develop and follow-up the DMP; create coordination protocols among administrations and public and private entities directly linked to the problem, in particular to those entities in charge of public supply

- Follow-up measures serve in the process of watching out for the compliance and application of the DMP and its effects.

- Restoration or exit drought measures include the deactivation of adopted measures and the activation of restoration ones over the water resources effects and the aquatic ecosystem.

The above implies that both measures during drought events and measures to be taken when drought events are only anticipated (water scarcity) can be taken into account.

When the above mentioned issues in drought and water scarcity measures are reviewed, it is clear that they relate mostly to the descriptive questions, and they touch hardly on the governance quality criteria, with the exception of the criterion of “extent”. The criteria of “coherence”, “flexibility” and “intensity” are not easily discerned.

For a specification of the Governance Assessment Tool the descriptive questions that specify the subject matter to which the quality criteria are applied need to be specified and not the quality criteria themselves. This does not imply that for the use of the Governance Assessment Tool for studying the governance context of regional

plans or local projects concerning drought resilience, that only these descriptive questions should be used as guidance. It does imply however that the 20 cells of the matrix with evaluative questions do not change and can also be directly applied for these kinds of content matters.

In the following section we will create specified charts with not only the descriptive and evaluative questions, but also the specific drought and water scarcity related issues that could be used as a checklist while interviewing. The answers to the general and drought specific descriptive questions will provide thereafter an overview of the subject matter to which the evaluative questions of the matrix are applied.

#### **4. Specification of the assessment tool's descriptive questions for drought resilience matters: Assessment charts per dimension of governance**

In this section the descriptive questions regarding the five dimensions of governance that were presented in figure 4 are dealt with in succession. In five separate figures the general descriptive questions are repeated, and also a number of specific questions and points of attention are added to make sure that important aspects are not forgotten. The colors of the five figures are the same as those used in figure 1. It should be noted that the attention paid in this Section to the specification of the descriptive questions does NOT imply that only these matter when applying the Governance Assessment Tool to issues of drought resilience. Only that these descriptive questions can be specific for the topic, while the evaluative questions remain the same, though applied to the contents that is revealed by the answers on the descriptive questions.

Firstly the “levels and scales” dimension is presented. The various levels are seen by the “Water Scarcity and Droughts Expert Network” as being linked with specific roles. Whether we agree with that listing or not, it sensitizes the users of the tool to pay attention to the roles and the influences that the various levels and scales exert on each other. Also the influence of the relevant EU policies and white papers will be a subject in this part of the conversation.

Governance dimension “Levels and scales”												
General descriptive questions	<p>Main descriptive questions:</p> <ul style="list-style-type: none"> <li>- Which administrative levels are involved and how?</li> <li>- Which hydrological scales are considered and in what way?</li> <li>- To what extent do they depend on each other or are able to act productively on their own?</li> <li>- Have any of these changed over time or are likely to change in the foreseeable future?</li> </ul>											
	Specific points of attention	<p>Specific extra descriptive questions and points of attention:</p> <ul style="list-style-type: none"> <li>- Use the roles for the national, river basin and local/regional level that are specified by the Water Scarcity and Droughts Expert Network as a basic checklist. What is the “functional space” for each level?</li> <li>- How did the creation, merging, division of national, regional, local water authorities evolve over time?</li> <li>- How are the vertical interactions organized?</li> <li>- What role do the EU policies play (WFD or water scarcity policies)?</li> <li>- Mind that the geographical area of involved companies/authorities/people might be larger than that of flooding, and possibly that of water quality issues and even the river basin.</li> </ul>										
Evaluative questions		<p>Evaluative questions:</p> <table border="1"> <thead> <tr> <th>Extent</th> <th>Coherence</th> <th>Flexibility</th> <th>Intensity</th> </tr> </thead> <tbody> <tr> <td>How many levels are involved and dealing with an issue? Are there any important gaps or missing levels?</td> <td>Do these levels work together and do they trust each other between levels? To what degree is the mutual dependence among levels recognised?</td> <td>Is it possible to move up and down levels (up scaling and downscaling) given the issue at stake?</td> <td>Is there a strong impact from a certain level towards behavioural change or management reform?</td> </tr> </tbody> </table>				Extent	Coherence	Flexibility	Intensity	How many levels are involved and dealing with an issue? Are there any important gaps or missing levels?	Do these levels work together and do they trust each other between levels? To what degree is the mutual dependence among levels recognised?	Is it possible to move up and down levels (up scaling and downscaling) given the issue at stake?
	Extent	Coherence	Flexibility	Intensity								
How many levels are involved and dealing with an issue? Are there any important gaps or missing levels?	Do these levels work together and do they trust each other between levels? To what degree is the mutual dependence among levels recognised?	Is it possible to move up and down levels (up scaling and downscaling) given the issue at stake?	Is there a strong impact from a certain level towards behavioural change or management reform?									

Figure 6, Descriptive questions, specific points of attention and evaluative questions for the governance dimension of “levels and scales”

The second dimension of governance is formed by the “actors and their networks”. Here among others the issue of public participation is important. Not only the presence of a variety of stakeholders beyond the legally or financially involved actors, but also their position in the network (degree of their involvement and influence) is relevant.

Governance dimension “Actors and networks”	
General descriptive questions	<p>Main descriptive questions:</p> <ul style="list-style-type: none"><li>- Which actors are involved in the process?</li><li>- To what extent do they have network relationships also outside of the case under study?</li><li>- What are their roles?</li><li>- Which actors are only involved as affected by or beneficiaries of the measures taken?</li><li>- What are the conflicts between these stakeholders? What forms of dialogue between them?</li><li>- Are there actors with a mediating role?</li><li>- Have any of these changed over time or are likely to change in the foreseeable future?</li></ul>

Specific points of attention	<p>Specific extra questions and points of attention:</p> <ul style="list-style-type: none"> <li>- What forms of public participation exist during the elaboration of DMPs and other drought policies and projects to obtain different stakeholders opinions, prior to the decision-making process, being able to have influence in the final decision process? (Through the relatively new problem other/new structure for stakeholder involvement might be necessary.)</li> <li>- How strong is the role of non-governmental stakeholders regarding actions towards drought resilience? Do they have they a real influence on the decision making process?</li> <li>- Are the stakeholders involved in the different relevant processes for droughts? (WFD, regional planning, river maintenance plans, land use plans, etc.)</li> <li>- Think of possibly more relevant actors than in other water issues: farmers, energy industry (cooling water), water-intensive industries. Some stakeholders have a new role, i.e. environmental NGOs, energy industry.</li> </ul>											
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Figure 7, Descriptive questions, specific points of attention and evaluative questions for the governance dimension of “actors and networks”

The “problem perceptions and goal ambitions” form the next dimension. Among the points of attention that are relevant, the two main perspectives on drought resilience (supply-side vs. demand-side orientations) play an important role. To what extent these orientations are followed or mixed has not only important implications for the goals, but also strongly affects the preferred strategies and instruments. Attention should also be paid to a somewhat longer time horizon so that proactive and anticipatory approaches are also recognized, as well as the possible prioritization of the various water users and users over each other.

Governance dimension “Problem perceptions and goal ambitions”	
General descriptive questions	<p>Main questions:</p> <ul style="list-style-type: none"><li>- Which various angles does the debate of public and stakeholders take towards the problem at hand?</li><li>- What levels of possible disturbance are current policies designed to cope with?</li><li>- What levels of disturbance of normal water use are deemed acceptable by different stakeholders?</li><li>- What goals are stipulated in the relevant policy white papers and political statements?</li><li>- Have any of these changed over time or are likely to change in the foreseeable future?</li></ul>

Specific points of attention	<p>Specific questions and points of attention:</p> <ul style="list-style-type: none"> <li>- To what extent are attempts made to accommodate growing water uses (supply-side orientation), or alternatively to include measures to restrict water use (demand-side orientation)?</li> <li>- To what extent is a more proactive, anticipatory approach to drought management included?</li> <li>- To what extent are various water uses (human health, irrecoverable damage to nature, economic uses for agriculture and industry) differently prioritized?</li> <li>- To what extent do the various perspectives on the problem come with the actors involved or alternatively does the dominant perspectives draw certain actors rather than others into the process?</li> <li>- To what extent do the actors involved have different time perspectives (e.g. agriculture and industry having relatively short time perspectives)?</li> </ul>											
Evaluative questions	<p>Evaluative questions:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #4F7942; color: white;"> <th style="width: 25%;">Extent</th> <th style="width: 25%;">Coherence</th> <th style="width: 25%;">Flexibility</th> <th style="width: 25%;">Intensity</th> </tr> </thead> <tbody> <tr> <td style="vertical-align: top;">To what extent are the various problem perspectives taken into account?</td> <td style="vertical-align: top;">To what extent do the various perspectives and goals support each other, or are they in competition or conflict?</td> <td style="vertical-align: top;">Are there opportunities to re-assess goals?</td> <td style="vertical-align: top;">How different are the goal ambitions from the status quo or business as usual?</td> </tr> </tbody> </table>				Extent	Coherence	Flexibility	Intensity	To what extent are the various problem perspectives taken into account?	To what extent do the various perspectives and goals support each other, or are they in competition or conflict?	Are there opportunities to re-assess goals?	How different are the goal ambitions from the status quo or business as usual?
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Figure 8, Descriptive questions and specific points of attention for the governance dimension of “problem perceptions and goals ambitions”

In terms of the “strategies and instruments” dimension, the strategies of on the one hand conservation measures (rather than supply) and on the other hand technological measures (rather than measures striving for behavioural change) are important to discern. The overviews of possible instruments provided in the first part of this section could also serve as checklists to draw the researchers attention to the possible instruments that are or aren’t chosen in the regional plans. Next there is the issue of risk and uncertainty that is connected with the capacity of present measures to deal

with the weather variation and potential future climate changes. Also the incentive structure for water users that is formed by the combined policies and measures, also from outside of the water management field can get attention here.

Governance dimension: "Strategies and instruments"	
General descriptive questions	<p>Main questions:</p> <ul style="list-style-type: none"> <li>- Which policy instruments and measures are used to modify the problem situation?</li> <li>- To what extent do they reflect a certain strategy of influence (regulative, incentive, communicative, technical etc.)?</li> <li>- Have any of these changed over time or are likely to change in the foreseeable future?</li> </ul>
Specific points of attention	<p>Specific questions and points of attention:</p> <ul style="list-style-type: none"> <li>- What conservation measures are applied to increase drought resilience?</li> <li>- With what system of incentives (e.g. given by presence or absence of water prices) does the present regime impact the water users?</li> <li>- Are there any technologies applied and how effective are they during drought periods?</li> <li>- Use the seven instrument options of the European Commission and of the Water Scarcity and Droughts Expert Network mentioned above as a partial checklists to avoid overlooking relevant actions.</li> <li>- What levels of disturbance (drought) are current policies designed to cope with and what instruments / incentives are in place to address these risks? With what level of uncertainty is this estimation?</li> <li>- How often were the policies revised?</li> </ul>

Evaluative questions:			
Extent	Coherence	Flexibility	Intensity
What types of instruments are included in the policy strategy? Are there any excluded types? Are monitoring and enforcement instruments included?	To what extent is the incentive system based on synergy? Are trade-offs in cost benefits and distributional effects considered? Are there any overlaps or conflicts of incentives created by the included policy instruments?	Are there opportunities to combine or make use of different types of instruments? Is there a choice?	What is the implied behavioural deviation from current practice and how strongly do the instruments require and enforce this?

*Figure 9, Descriptive questions, specific points of attention and evaluative questions for the governance dimension of “strategies and instruments”*

The last dimension that we discern is that of the “responsibilities and resources for the implementation”. First of all we should make clear that we understand implementation not in the classic way in which – often labelled “lower” authorities – should employ the measures that others have decided upon. In fact implementation is also part of the decision-making process and within that even often the most important process of all. It is the process in which the plans and policies of governmental and non-governmental actors are translated into concrete action that aims at changing physical realities and day to day behavior. Responsibilities and resources for the actors in this process are deliberately given specific attention next to strategies and instruments, while otherwise it is mostly overlooked. The division of responsibilities and resources for implementation is however, from the perspective of implementers like in our case water authorities. among the most influential contexts that they find enabling or restrictive.

A specific point of attention – apart from specific funding options – here are the extensive resources that private property and use rights in many cases provide to land owners and in some cases even extend to water use. Also the role of models to provide scenario’s that can play a role in the process as a source of widely accepted knowledge deserves attention, especially while drought resilience is partly a matter of preparedness for uncertain but possible events.

Governance dimension: “Responsibilities and resources”	
General descriptive questions	<p>Main questions:</p> <ul style="list-style-type: none"> <li>- Which organizations have what tasks under the relevant policies and customs?</li> <li>- What legal authorities and other resources are given to them for this purpose or do they possess inherently?</li> <li>- What transparencies are demanded and monitored regarding their use?</li> <li>- Is there sufficient knowledge on the water system available?</li> <li>- Have any of these changed over time or are likely to change in the foreseeable future?</li> </ul>
Specific points of attention	<p>Specific questions and points of attention:</p> <ul style="list-style-type: none"> <li>- What are the resources of “target” actors like farmers? Do they include property and use rights regarding land use and sometimes regarding the water itself?</li> <li>- What funding possibilities are in place for actions to increase drought resilience? How has the economic crisis and budget cuts affected this?</li> <li>- Role of modelling tools (e.g., mathematical models of reservoir management, scenario simulation for testing resilience, etc.) as part of the cognitive resources in the decision-making process (this could be specifically interesting to practice partners that are planning to improve - or have thought about improving - their simulation tools).</li> </ul>

Evaluative questions	Evaluative questions:			
	Extent	Coherence	Flexibility	Intensity
	Are all responsibilities clearly assigned and facilitated with resources?	To what extent do the assigned responsibilities create competence struggles or cooperation within or across institutions? Are they considered legitimate by the main stakeholders?	To what extent is it possible to pool the assigned responsibilities and resources as long as accountability and transparency are not compromised?	Is the amount of allocated resources sufficient to implement the measures needed for the intended change?

Figure 10, Descriptive questions, specific points of attention and evaluative questions for the governance dimension of “responsibilities and resources for implementation”

In this section some important visions on special issues for governance when dealing with drought resilience were presented. Together with inputs from the members of the governance team this led to a number of specific questions and points of attention for each of the five dimensions of governance that were added to the descriptive questions.

Again it is important to note here that the elaboration for the subject of drought resilience has been only done for the descriptive questions. However the evaluative questions are still the core of the assessment. The descriptive questions just help to specify their meaning in the context of the region and pilot projects focused on.

In the next section we provide some guidelines for the application of both these descriptive charts and the evaluative matrix. This includes questions concerning the assessment of factors in the governance context that hinder the intended plans and projects in the field of drought resilience.

## 5. Manual for application

In the previous section for all five dimensions of governance a number of specific points of attention were mentioned that can be used in case studies to get a more in-depth description of the governance context for the drought resilience plans or projects under study. That does not imply that the four criteria as specified in the 20 cells with evaluative questions are not to be used. On the contrary, the idea is that the answers to the descriptive questions provide the real-life basis to which the four criteria can be applied. For instance, when various aspects of the “levels and scales” dimension that are relevant for the drought resilience plan or project studied, are identified, they form the subject matter about which further questions regarding extent, coherence, flexibility and intensity can be asked with greater specification than would have otherwise been possible.

Using the matrix as a guidance for interviewing in Dutch case studies, a Mexican case study and an assessment of the Vietnam Mekong delta water governance context showed that even when the ultimate evaluative conclusions are done per criterion, the data-gathering can best be done per dimension of governance. This way the “real-life stories” of the practitioners can be discussed more intact and fluently and the analytic dissection can be left to the analysts. The assessment afterwards of the four criteria also gives the opportunity to consider interrelations between the five dimensions of governance. This is the reason why in the section 4 above the assessments tool is specified per dimension of governance.

For the preparation of the visits to the practice partners it is suggested that the researchers make a list of (types of) people that the GT would like to speak to. The practice partners have the task of organizing the logistics and inviting as many potential respondents as possible and thereby making a programme for the visit. This is however done in consultation with the lead partner of the GT.

As our governance model may prove abstract for our interviewees, it may be relevant to aim in some of our questions for previous governance challenges, comparable in importance and recent in time. As the region has not developed much drought policy

yet, we could target floods or climate change policy processes. Although this is not ideal (actors do not overlap completely, for instance), this way we could collect additional information that helps us evaluate the governance regime.

While the present policies of the practice partners are not developed from scratch, it might be relevant to learn about their history. We would have to check, probably within each interview, if we need to expand on these “context” questions (e.g. capture information on additional pre-existing strategies and instruments), or if the knowledge about present strategies and instruments is enough.

The interviews should start by a brief introduction to clarify the goals (i.e. remind the stakeholders that the objective of the visit is not to assess their actions or to give them solutions to improve drought resilience, but the project aims at identifying the barriers and the hindrances in the present governance) of the study and precise how the results can potentially bring socio-economic and environmental benefits by providing an analysis of the governance in place. It could also be important to give an overview of the whole context, which may not be necessarily well known for some of them. This context is particular for each pilot site and should be prepared before the visits,

The assessment of the 20 cells in the Governance Assessment matrix will always remain a matter of informed and argued qualitative judgment. The green, orange and red colors in the overview figure (compare Figure 2) are intended to provide a quick overview of strengths and weaknesses of the governance setting. The making of the "judgments" should preferably be done "inter-subjective", that is in discussion between at least two observers to prevent that the assessment overlooks important aspects, has a debatable weighting of observations or uses the concepts in a less than consistent way. When reporting about the strengths and weaknesses of the governance context for the work of the regional water authorities the matrix scoring table is just a summarizing overview. The accompanying text in the report on the regional governance assessment will give the more precise assessment. Hereby there will also be an open eye for the interrelatedness of the positive or hindering factors. This is something that cannot be pointed out in the matrix.

The “scoring” the three values of the 20 cells is inevitably a matter of judgment. The definitions can give some guidance but there will always need some interpretation in the situation to which they are applied to. Definitions can never replace the argued judgment. Therefore it is recommended that the application of scores to the situation is discussed among the analysts involved and that the observation taken into account when making the judgment are made explicit in the report. This way both the inter - subjectivity and the practical meaning of the judgments can be increased.

## **6. To conclude**

Not only the manual presented in the last section but also the governance tool itself may evolve once the Governance Team will have finished the first round of visits to the water authority and pilot sites. The feedback on the application of the tool and the experience while using it will hopefully provide concrete directions and further practical guidance to improve the quality and the utility of the deliverables of the DROP project.

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## Appendices

### Appendix 1, Background scientific literature for this governance assessment tool

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Joanne Vinke-De Kruijf, Denie Augustein & Hans Bressers (2013?), How Social Learning Influences Further Collaboration: Experiences from an International Collaborative Water Project, XYZ

## **Appendix 2, Descriptive questions about five dimensions of governance based on policy and governance literature (from Bressers and Kuks 2003: pp. 73-74)**

A model of governance in five elements

Based partly on the previous discussion and partly on a slightly more detailed representation of the specifications from the previously examined approaches, we arrive at the refined description of the five elements of the governance structure we have identified. In its shortest form, the 'governance model' consists of five questions: Where? Who? What? How? and With what? A characteristic feature of modern 'governance' systems is that they have many aspects. They are multilevel, multi-actor, multifaceted, multi-instrumental and multi-resource-based.

### *(1) Levels of governance*

Where? – Multilevel

Which levels of governance dominate policy and the debate on conducting policy, and in which relations? What is the relation with the administrative levels of government? Who decides or influences such issues? How is the interaction between the various administrative levels arranged?

### *(2) Actors in the policy network*

Who? – Multi-actor

How open is the policy arena in theory and practice, and to whom? Who is actually involved and with what exactly? What is their position? What is the accepted role for government? Who have relevant ownership and use rights or are stakeholders in some other capacity (including policy-implementing organizations)? What is the structural inclination to cooperate among actors in the network? Are there actors among them who operate as process brokers or 'policy entrepreneurs'? What is the position of the general public versus experts versus politicians?

### *(3) Problem perception and objectives*

What? – Multifaceted

What are the dominant maps of reality? What is seen as a problem and how serious is this considered to be? What do people see as the causes of this problem? Is the problem considered to be a problem for individuals or a problem for society as a whole? What values and other preferences are considered to be at stake? Which functions are allocated to the sector? Is the problem seen as a relatively new and challenging topic or as a topic in the 'management' phase without much political 'salience'? To what degree is uncertainty accepted? Where are the recognized points of intervention? What relations with other policy fields are recognized as coordination topics? Which policy objectives are accepted? What are levels to which policy makers aspire (ambition) in absolute terms (level of standards) and relative terms (required changes in society)?

### *(4) Strategy and instruments*

How? – Multi-instrumental

Which instruments belong to the policy strategy? What are the characteristics of these instruments? What are the target groups of the policy and what is the timing of its application? How much flexibility do the instruments provide? To what extent are multiple and indirect routes to action used? Are changes in the ownership and use rights within the sector anticipated? To what extent do they provide incentives to 'learn'? What requirements do they place on the availability of resources for implementation? How are the costs and benefits of the policy distributed?

### *(5) Responsibilities and resources for implementation*

With what? – Multi-resource-based

Which organizations (including government organizations) are responsible for implementing the policy? What is the repertoire of standard reactions to challenges known to these organizations? What authority and other resources are made available to these organizations by the policy? With what restrictions?



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