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INNOVATIVE INSTRUMENTS AND INSTITUTIONS IN IMPLEMENTING THE WATER FRAMEWORK DIRECTIVE: THE GERMAN CASE STUDY

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Summary for Decision-Makers

Headline Summary Message

This case-study report of the i-Five project presents the an analysis of the institutional settings in the context of the first implementation cycle focusing on the development of environmental objectives and the programme of measures. Special focus is given to the area cooperation in Lower Saxony (Germany) as one innovative instrument and institution (i-3's) for implementing the Water framework directive (2000/60/EC; WFD). Two other case-study reports are available for the two other case-studies in France and the Netherlands. This report addresses how the key challenges that we identified in the inception report were overcome in the studied area. It presents the characteristics of the i-3 we identified and what was specific about them. It assesses their transplantability. Last, it raises potential and limits of the WFD that we came across as we did our empirical research.

What the report is about and why the work is important

This case-study report of the i-Five project presents the results of the German case study in the basin of the Weser. In the first two chapters, the historical background and the present implementation of the WFD in the country and at the level of the basin provides the reader with a extensive information on the institutional settings. Central themes are transposition, coordination across scales, integration between sectors, public participation, local appropriation and the role of expertise. Chapter 4 and 5 focus on the i-3 "area cooperation." They are studied for their support of the WFD implementation in order to assess their potential for transplantability into other basins. The report concludes on the innovations and further elaborates on the potentials and limits of the area cooperations.
The report addresses water managers who are in the position to design the implementation process of the WFD and are interested to learn from the Weser basin experiences with the area cooperation as a central i-3.

Aims and objectives of the project

The aim of the i-Five project is to support the implementation of the WFD by promoting the transboundary exchange of experiences, by broadening the range of methods and tools available to water managers, and by helping water managers to develop the best approach for their own circumstances. The aims of the case-study reports is to deepen the understanding of the challenges of implementing the WFD and to identify possible innovations in relation with their contexts.
Interaction with stakeholders plays a central role in the i-Five project. These include the authorities responsible for implementing the WFD at the local, grassroots level, as well as other stakeholders involved in the implementation. We believe that empirical results will help initiating discussions within and across Member states borders. In order to reach stakeholders that are not involved in the case studies, we will also organize training and undertake other dissemination activities, such as publishing in professional journals and newsletters and giving presentations at conferences for practitioners.

Results/Key findings in relation to report objectives

The inception report presented our findings in literature which resulted in setting up our research strategy. It identified six main challenges to be looked at in detail in each case-study :

1. Institutional challenges for the transposition of the Directive
2. coordination across scales
3. integration between sectors
4. public participation
5. appropriation at local scale
6. role of expertise

The three case-studies of this report answer basic questions regarding how local settings and actors addressed the six challenges. Some cases were more relevant than other to gather in-depth information on a

specific challenge. Additional questions are dealt in such cases for the given theme. In the following table crossing cases with themes, the more X the more details are provided on theme in the corresponding case.

Theme	Weser basin	Thau basin	Meuse basin
1. Institutional changes	XX	XX	XX
2. Coordination across scales	XXX	X	X
3. Integration between sectors	X	XXX	X
4. Public participation	XXX	X	X
5. Local “Appropriation” of the WFD	X	XXX	X
6. The role of expertise	X	X	XXX

In the German case-study the area cooperations were considered as an instrument that can be transplanted to other sites. The analysis show that area cooperations act at the level between local and regional. If they are planned to be transplanted into a different basins, it has to be considered if a formal to semi-formal instrument already existent intervening at the same in-between level? The potential for merging these two activities should be explored and used.
Summarising the benefits of area cooperation for water management can be:

- Increased networking which may lead to social learning and social cohesion among water actors.
- More coordination between sectors and levels on the implementation of measures.
- More locally/regionally adapted measures.
- More commitment of local actors towards water management.
- Raise of local funds (not necessarily in cash but in kind).

Area cooperations cannot directly improve the implementation of measures. However, if managed carefully, they can contribute to a coordination process of selection and prioritization of measures. Finally, area cooperations have to be embedded in a comprehensive process of public information and involvement and cannot act as a stand-along tool.

Implications for stakeholders (policy-makers, practitioners, others where relevant

This case-study report intends to perform as a mirror for stakeholders. At this phase, it is primarily oriented towards national stakeholders to reflect on how researchers have perceived and analysed their strategies, difficulties and innovations. We hope that this mirror will raise critical reflections and feedback from the stakeholders to enrich the next phase of cross-case comparison.

National cases may nevertheless be of interest for other EU readers as a second order mirror, offering a different trajectory of WFD transposition and implementation. It may raise interesting questions regarding one’s own strategy and understanding. In order to help this second order reading, we offer in the annex a short table where readers can easily find where each topic is mentioned throughout the report.

Contents

1 Introduction

This chapter introduces the case study research design and the case study area.

1.1. Research design

This report is one of the three case-studies reports developed within the i-five project of the IWRM-net program. Their goals are twofold:

- they first aim at illustrating what are the challenges of the WFD implementation in 3 specific contexts, what innovations are developed to overcome potential difficulties and what can be learned from their development and implementation;
- they also aim at providing a terminology of roles, resources, rules, challenges and settings that were key elements to explain how the WFD was implemented.

Both goals will nurture the cross-case comparison and the elaboration of a quick-scan method to assess the potential for transplanting of innovative institutions and instruments developed in each case.

This report presents how the implementation of the Water Framework Directive takes place in the Weser basin, Germany, with a focus on Lower Saxony. The case study addresses especially on the themes of participation and cooperation, also with regard to integration of scales. In terms of innovation and transplantability, it assesses the extent to which area cooperations as instrument for active involvement of interest groups, facilitate the WFD implementation process.
Next to an evaluation of existent material (e.g. on the area cooperations and the documentation of their functioning) the case study is based on ten semi-structured expert interviews with key persons (implementing agency, state ministry, federal ministry, environmental Ministries of other states, contracted engineering/consulting offices, NGO representatives, representatives of area cooperations- see reference section). The results are complemented with a survey on participation conducted on all area cooperation in Lower Saxony in 2007. For the validation of first results and further knowledge elicitation a regional stakeholder workshop was carried out (Hannover workshop October 2009).

1.2. Reading Guide

The first chapter outlines the demands of the WFD and the current water management and regulation in Germany in general and Lower Saxony in particular.
Chapter 2 goes into details through the process of implementing the WFD in the case study. It shows how the challenges raised by the WFD in this specific area are addressed.
Chapter 3 focuses on a specific feature of area cooperations in the Weser basin. Since their effectiveness varies to a large extent further analysis is needed on identifying the underlying cause of it. Such knowledge is necessary to evaluate the transplantability of this new instrument which will be discussed in chapter 4. Chapter 5 concludes on WFD challenges and the changes it requires. It sums up its implementation in Germany and Lower Saxony in particular, raising remaining uncertainties.

1.2 The Weser basin (Germany)

Figure 1: Geographical position of the Weser and the German Länder (Galbiati et al 2008)

In the south of Lower Saxony the Werra and Fulda merge to form the Weser. The river basin district of the Weser extends from central to northern Germany, including the central highlands in the south and the central plains in the north (Henneberg 2008, 15). This catchment area has approximately 9.3 million inhabitants. There are three main sub basins, in the southwest the Fulda / Diemel catchment, in the southeast the Werra catchment and the biggest sub basin in the north belonging to the Weser. The total catchment size of the Weser River Basin is 49,000 km², with the largest part of 29,500 km² falling into the territory of Lower Saxony. Other German Länder which are part of the Weser catchment area are Hesse (9,000 km²), North Rhine-Westphalia (4,970 km²), Thuringia (4,440 km²), Saxony-Anhalt (700 km²), Bremen (400 km²) and Bavaria (50 km²) (Henneberg 2008, 15).

The Weser river basin district is located in the temperate humid climate zone of Central Europe. The northern part is dominated by the Atlantic climate, while the southern part is affected by continental climate. The average temperature from 5°C to 9°C is depending on the altitude and mesoclimatic conditions. The average annual rainfall varies from 600- 1,100 mm. The Weser is a pluvio-nival type with high water flow in winter and low water flow from June to October (Henneberg 2008, 16).

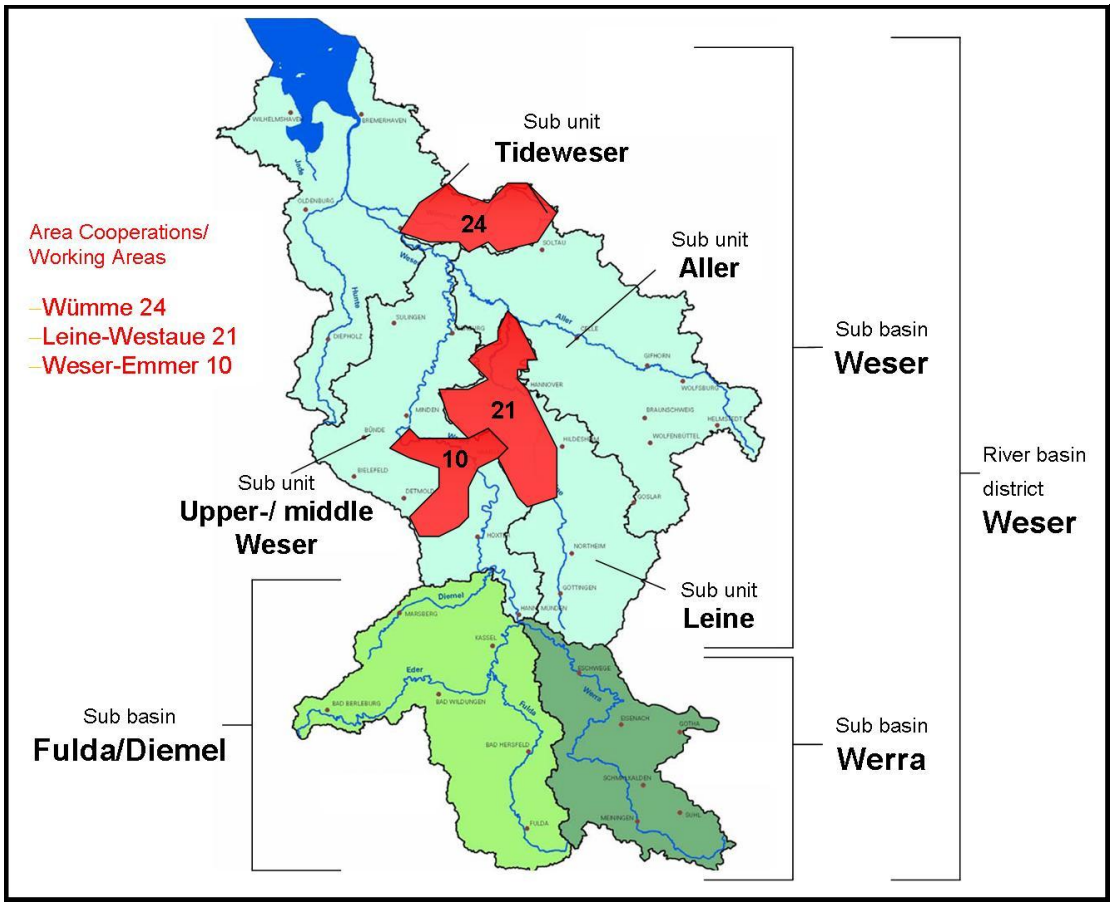
Hydrologically, the sub-basin Weser is divided into the Upper-, Middle- and Lower Weser. The Upper Weser has a length of 199 km and has its source in Hannoversch Münden and ends in Porta Westphalica.

According to basin approach of the WFD, this has translated into the following sub-basin structure: The *sub basin* Weser is divided into the sub units Tideweser, Ober- and Mittelweser, Aller and Leine. The sub basin Weser has two main tributaries called Leine (274 km) and Aller (244 km) (see Figure 2). The aggregated lengths of rivers and streams with a catchment size of more than 10 km² amount to a total of 16,600 km of the river Weser. About 500 km from the mouth up south are used as waterways (Henneberg 2008, 15). The Weser catchment area includes 15 large lakes with a total surface area of 53 km² and 12 impounded reservoirs with a total area of 26 km² (Henneberg 2008, 15). The sub-basin area adds up to 19.162 km². The catchment area of the Middle Weser lies much higher and has a size of 37.495 km² and a length of 168 km. The end point is Bremen, in the north of Germany. The Lower Weser ends in Bremerhaven and finally opens out in the North Sea.

The sub-basin is composed of different natural landscapes. The two main natural landscapes in Lower Saxony are in the south the mountainous to hilly areas and downs and in the north the Northern Plains,

characterized by “Börde” (a fertile area dominated by Loess soils), marshland and “Geest” (coastal sandy heathland).

Figure 2: The organizational units for implementing the WFD in the river basin Weser (modified, originally by FGG Weser 2009)



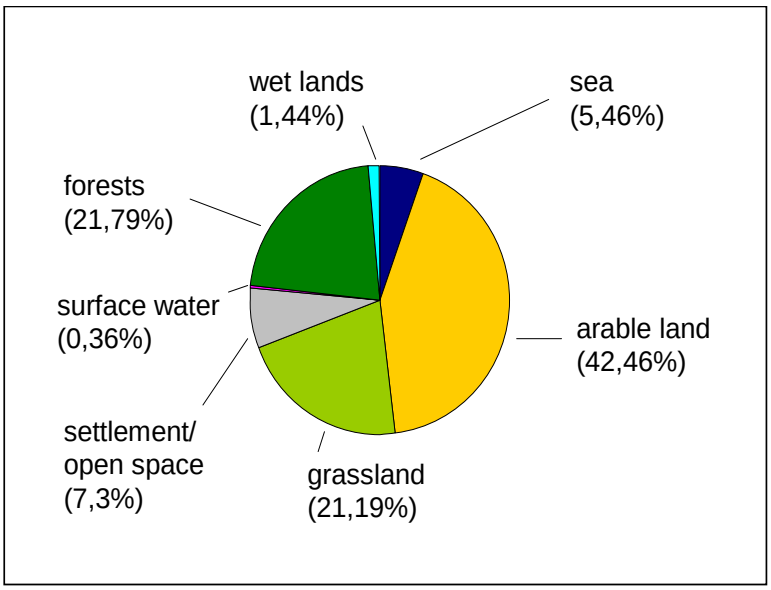
The German case study of i-five has focused for more detailed investigations in the context of participation on three smaller units called working areas: the Weser-Emmer (Nr.10) belongs to the sub unit Upper/Middle Weser, the Leine-Westaue (Nr. 21) belongs to the sub unit Leine and the Wümme (Nr. 24) belongs to the sub unit Tideweser. All three represent different natural landscapes and offer different socio-economic contexts. Whereas Wümme and Leine-Westaue lie entirely in Lower Saxony, the sub unit Upper/Middle Weser stretches down-south to North-Rhine Westphalia. Geographically, the Weser- Emmer is located in the mountainous and hilly areas with dominating farming (60%) and forestry (27%). The Leine-Westaue represents to a large extent the “Börde”, with similar landuse as in the Weser-Emmer. The Wümme is characteristic for Geest and Marsch (marsh). This soil is slightly less fertile, providing the ground for only 41% agricultural use and 37% forestry (Bezirksregierung, 2004). The different terms for the administrative units as well their location can be seen in Fig. 2.

As different names exist for hydrological units and administrative units created for the purpose of implementing the WFD, it is often confusing for a non-expert to exactly know to which unit to refer. For the German case study the terminology is based on the definitions of the Ministry of Environment of Lower Saxony as well as the NLWKN.

The central part of the Weser catchment area is used for agriculture. It is dominated by arable land (about 43%). About 22 % of the Weser river basin, especially in the mountainous areas, is predominated by forest or woodland. Roughly 7% of the catchment area is used for urban areas and settlements (NLWKN 2008 b, 7).

Generally one can say that information about land use could give reference to possible pressures (NLWKN 2008 b, 8). Accordingly it is not surprising that agriculture and non point sources are one important factor to be considered in trying to reduce nutrient loads in water bodies.

Figure 3: Land use in %, (modified, originally by NLWKN 2008)



All area co-operations selected for further analysis within the case study are located in the basin district of the Weser which is generally impacted by

- high amounts of salt in the water due to potash mining;
- anthropogenic increase of the nutrient load due to agricultural run offs and sewage and
- structural problems as reduced connectivity due to river development for power generation, shipping and agricultural purposes.

There are no significant pressures by municipal wastewater treatment plants. The main pressures of the catchment area are caused by diffuse nutrient pollution and hydro-morphological modifications. Nowadays it is possible that 62% of groundwater bodies of the Weser river basin could fail the good status because of diffuse nutrient inputs (Henneberg 2008, 16).

Particularly the rivers and streams in Lower Saxony are influenced by inputs of nutrients, especially nitrogen and phosphorus, and heavy metals. In the sub unit Leine there is an increase in the amount of phosphor due to erosion. In the areas of the Harz Mountains the water is polluted by heavy metals caused by ore mining. Other areas (Aller-Leine near Wunstorf) are impacted by salt because of former salt-production (NLWKN 2008 b, 14-17).

The catchment areas from the Central German uplands to the coastal waters are influenced by high impacts of nutrient, which result in the worst cases of algal bloom and shortage of oxygen. Furthermore, pollutants, esp. TBT (Tetrabutylzinn), further affect the water quality. The high concentration of nitrogen due to agriculture has effects especially on the groundwater quality of the Weser river basin (NLWKN 2008 b, 19).

2 Institutional development of water management

In this chapter the institutional setting will be presented to understand which changes were initiated due to or during the time of the WFD implementation. The most obvious element which distinguishes WFD implementation in the Weser basin from the other two case studies is the federalism and its implications on water regulation in Germany. The first sub-chapter presents what existed before the WFD enactment and what had to be changed to implement it. Here two processes are taken as example: how practically environmental objectives were set and how the programmes of measures were designed."

2.1. Institutions before the WFD and their development for implementing the WFD

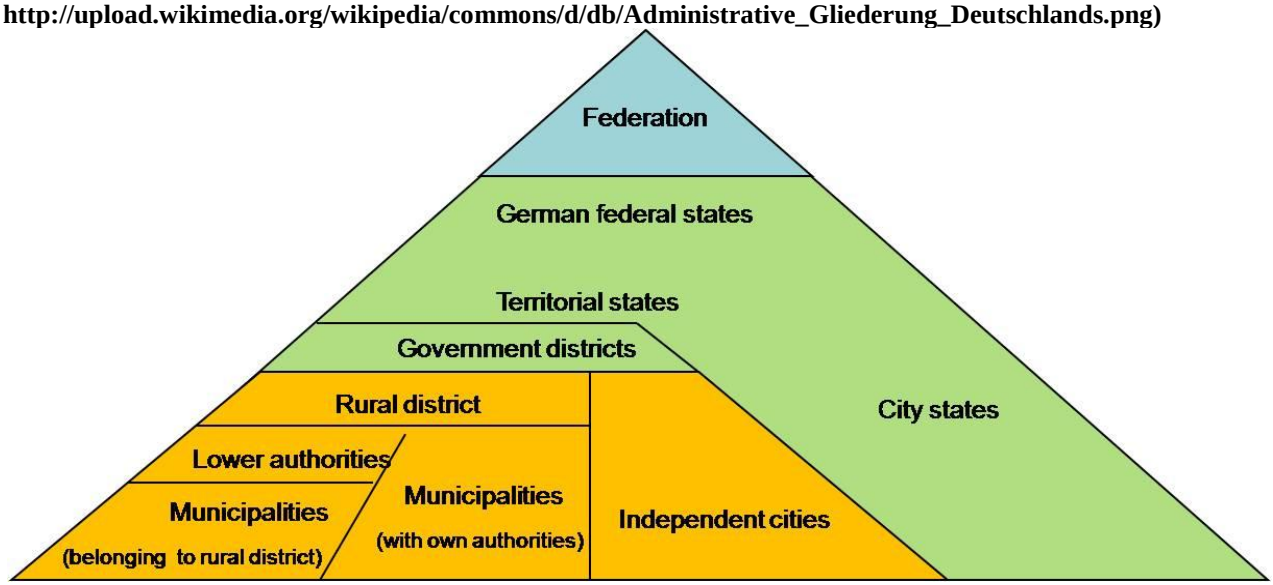
2.1.1 Decision making structures and relations between governmental levels and political entities

2.1.1.1 A federal system

Federalism in Germany is laid down in the *Grundgesetz (*The Basic Constitutional Law) as the political form of organisation, paying tribute to the German history and obviating any future centralist tendencies.
Hence, Germany is organised as a federal parliamentary republic consisting of 16 smaller states, the so called Länder (German federal states), which are united within the federal structure of the Bund (Federation). Even though the Bund takes over the constitutive role, competencies are divided between the Bund and the Länder. The members of the Bund have certain autonomy and possess their own legitimacy, rights and competences: All Länder have their own constitutions and, therefore, their own political institutions on the executive, judicial and legislative level. In general, the Bund is responsible for the formulation of the majority of the German legislation, while the Länder are responsible for their implementation and the detailed formulation of constitutive laws made by the Bund.

In the case of water management this means that the federal law provides the general frame (now along the WFD content) for most of the waters. The Länder have here legislative competence for laws – as it is the case in water management - which need no affirmation by the Bundesrat (upper house of the German parliament containing members of the Länder), or the Bundestag (federal parliament/lower house) (Rudzio 2003). The execptions are waters of 1st order which are federal water ways (Bundeswasserstraßen) such as Rhine, Elbe, Weser, lower parts of the Ems.

Figure 4: The administrative system of Germany (Source: adapted from http://upload.wikimedia.org/wikipedia/commons/d/db/Administrative_Gliederung_Deutschlands.png)



2.1.1.2 Main institutions at decision making level

BMU and predecessors

As indicated already above, the decison making competencies at federal level are restricted to representing Germany at international level in water management and at national level to manage the federal water ways and aspects of emissions.

Until the founding of the Federal Ministry of the Environment, Nature Conservation and Nuclear Safety (BMU) in June 1986 the core environmental-political tasks were spread over different departments at the federal level. For the wide field of technical nature conservation, the Ministry of the Interior was responsible. The formerly called Ministry for Food, Agriculture and Forestry had the responsibility for nature conservation in general and landscape conversation, with a small part being taken over by the Ministry for Regional Planning, Building and Urban Affairs. Responsibility for ocean protection was situated at the Ministry of Transport, while the Ministry for Youth, Family and Health was given the task to care for health issues connected to nature conservation and chemical legislation (SRU 2007, 89). Now all these tasks are with the Ministry of Environment.

Since 1986, the Federal Ministry for the Environment (BMU) is the competent authority, in terms of developing the laws such as the Federal Water Act, the Wastewater Charges Act, the Detergents and Cleaning Agents Act, and the Federal Soil Act and Federal Nature Conservation Act. At international level, it represents Germany and is responsible for the implementation of EU regulations at national level on water protection, protection of the marine environment and for river basin conventions on transboundary waterbodies. In executing its tasks in the field of water resources management, the Federal Environmental Ministry is assisted by the Federal authorities and research institutions reporting to the Federal Ministry of the Environment including (BMU 2006, 17;see also 2.1.1.2):

- Federal Environment Agency in Dessau (UBA)
- Federal Nature Conservation Agency in Bonn (BfN)
- Federal Office for Radiological Protection in Salzgitter (BfS).

Additionally to the BMU other ministries are also responsible for aspects of water management as e.g. the Federal Ministry for Transport, Construction and Urban Development being responsible for the administration of Federal waterways (see also chapter 2.1.2).

The legal implementation of the WFD occurred through the change within the WHG by the 7th amendment of the federal water act on the 18th June 2002, the consequent laws in the Länder and the issuing of new regulations.

Due to the framework legislation authority (Art.75, Abs. 1 Nr 4 GG) the final implementation is the responsibility of the Länder, so that only the fundamental aspects of the WFD had been incorporated in the WHG, while the main work concerning the WFD implementation has to be conducted on Länder level (MU 2005).

2.1.1.3 Decision making institutions at Länder level

After World War II, all German Flächenländer (territorial states) except for the smallest states of Schleswig-Holstein and the Saarland, introduced intermediate administration authorities with the aim to build a connection between the Länder administrations and the small municipalities and cities (Bogumil 2007, 249) in order to facilitate the implementation of the legislation. The implementation of the WFD is determined by this federal and administrative organisation. The enforcement of regulations of water management is entirely the responsibility of the Länder. In most Federal Länder, water resources management follows the already mentioned three level structure of general administration. A typical example for the institutional settings in the Länder is the one in Northrhine Westfalia which can be found in Fig. 5 below.

However, the assignment of tasks varies from state to state (BMU 2006, 18).

Until the mid-1990s the picture at the Länder level in all federal states was similar, consisting of State Offices of the Environment, which were founded in the 1970s and existed alongside older administrative structures concerned with water protection, environmental conservation, geology and soil protection (e.g. State Office for Soil Protection in Lower Saxony/ Niedersächsisches Landesamt für Bodenschutz). Since the mid-1990s a new tendency within the Länder structure advocated the merging of the different environmental authorities within consolidated State Offices of the Environment. Since 1994, with Bavaria, Brandenburg, Hesse, Mecklenburg-Western Pomerania, North Rhine Westphalia, Rhineland-Palatinate, Schleswig Holstein and Thuringia, eight of the 13 territorial states followed this path.

Lower Saxony decided in 1992 to merge different agencies to form a State Office for Ecology as well. Nevertheless, as the first territorial state it redirected its reform course in 2005, when it was decided to dissolve the State Office of the Environment and allocated its task to the Lower Saxony Water Management, Coastal Defence and Nature Conservation Agency (NLWKN), the Industrial inspection boards (Gewerbeämter), the Ministry of the Environment, LAVES (State Office for Consumer Protection and Food Safety), Alfred Toepfer Institute for Environment Protection (NNA) and the municipal level (SRU 2007, 91/2).

An overview of the actual development of environment conservation within the administrative and departmental structure of Bund and Länder shows that pure environment ministries still exist in four Länder (Baden-Württemberg, Lower Saxony, Rhineland Palatinate and the Saarland), as well as on the overarching federal level. The incorporation of environmental departments into other thematically similar or neutral departments has only been conducted in Bavaria (Environment, Health and consumer safety). In the last decade, the majority of the Länder opted for the merging of their environmental department with another important “polluter” department (Verursacherressort) (generally agriculture or construction/spatial planning). A decentralised approach which locates environmental tasks in the departments, which are responsible for environmental impacts, does not exist in any of the Länder and is not considered within the administrational reforms (example: integration of department for environmental impacts into the transport sector) (SRU 2007, 90).

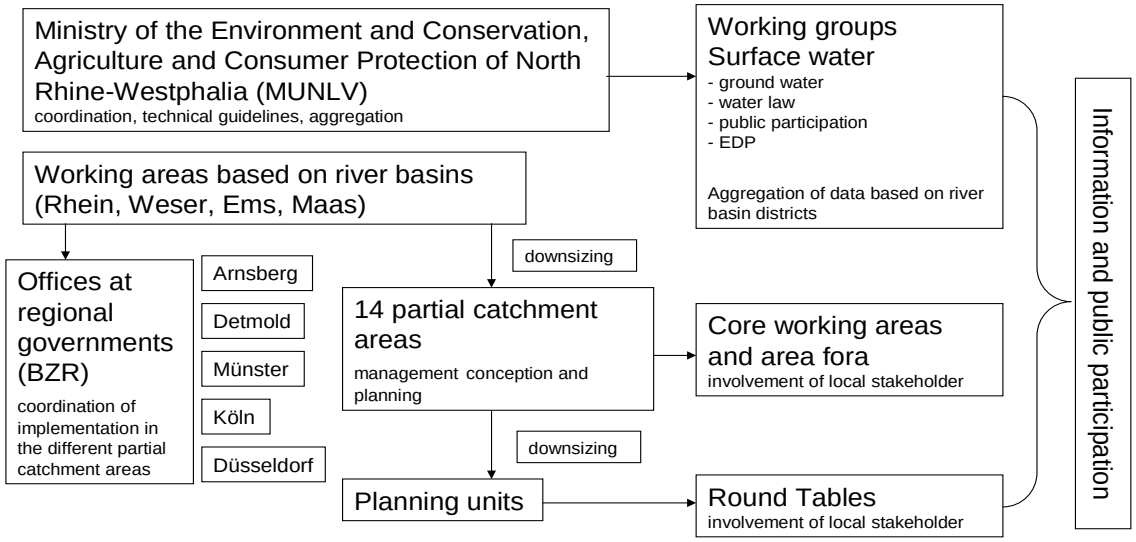
With regard to the spatial scales of decision making, in most other German Länder an intermediate tier exist represented by district or regional governments e.g. in North-Rhine Westphalia (see **Box 1**). Lower Saxony as a relatively large state, constitutes an exemption because since 2003 the implementation of the reform to change its administrative set-up from a three-tier system to a two-tier system is ongoing (Bogumil & Kottmann 2006; cc chapter 2.1.1.3).

Whereas the highest administrative level is in charge of water management control and superior administrative procedures, the lowest level (lower water authorities of local governments/municipalities) is in charge of procedures and activities under the water acts as well as technical advice, maintenance and monitoring of smaller waters (2nd/3rd order), and water use, especially wastewater discharges (see also Chapter 2.1.1.7). Since the beginning of the administrative reforms procedures of regional water resources management planning – typical for the intermediate level in Lower Saxony, got redirected to the superior level and few, as the zoning of flood-prone areas, to the lowest level.

As in the other Länder, under the water acts of Lower Saxony, central water supply and sewage disposal are traditionally a responsibility of the local authorities. In order to comply with the principle "polluter pays" and to meet the costs incurred in this respect, they levy charges on users (contributions and fees). As the owners of small waterbodies, they are responsible for the maintenance thereof (BMU 2006, 18).

Box 1: North-Rhine Westphalia

For the implementation of the WFD in North Rhine-Westphalia the organisation is divided into three levels. On the first level, the Ministry of the Environment and Conservation, Agriculture and Consumer Protection of North Rhine-Westphalia (MUNLV) develops a consistent concept and guidelines for the implementation of management plans, monitoring and public participation through different working groups. On a second level the regional governments (Bezirksregierungen) act as mediators between the Länder and the municipal level. In an attempt to streamline the administration the State Offices of the Environment (Staatliche Umweltbundesämter) have been relocated and are now part of the regional governments while some of its former tasks have been assigned to municipal entities. (SRU 2007: 109)



2.1.1.4 Decision making institutions at local level

In the German federal system the municipalities constitute the third pillar and therefore the lowest level of the state structure. Similar to the constitution on the federal and Länder level, the decision-making is situated in municipal parliaments, e.g. city council, municipal council or district councils, which are elected in general, direct, free, equal and secret ballots (Signaturbündnis Niedersachsen 2009).

On the municipal level, Paragraph 28 of the Grundgesetz and Article 57 (1) of the constitution of Lower Saxony guarantee the municipal self-administration, which means that the municipalities, Landkreise and regions administer their affairs within the legal framework of their own authority in order to foster the well-being of its residents (Niedersächsiches Innenministerium 2009).

Lower Saxony has 1023 municipalities, whereof 736 are members of joint municipal communities (Samtgemeinde). Moreover, there are 37 Landkreise (rural districts), which are area-wide organisation composed of different municipalities with the task to support their municipalities, in the fulfilment of local tasks that exceed the municipal capacity (Tauchmann et al 2006, 65-68). The political representation of the Landkreise is the Kreistag, administratively spearheaded by the Landrat, which is elected directly by the electorate of the specific Landkreis (Niedersächsiches Innenministerium 2009).

Since the 1st November 1996 citizens are able to directly elect their lord mayor and/or Landrat. Moreover, in some areas the citizens are able to decide via plebiscite (Bürgerbegehren, Bürgerentscheid) (Niedersächsiches Innenministerium 2009).

The directly elected lord mayor/mayor in the municipal constitution is distinguished on three characteristics: First of all, the mayor has the ex-officio-chair of the city- or municipal council. Second, as the head of the municipal administration he is in charge and controls the administrative structure including water management issues. Finally, the executive functions of the mayor include the implementation of the decisions taken by the municipal council and the execution of general municipal affairs, as well as those tasks allocate to the municipal level from the Länder or federal level (Wollmann 2008, 88).

The federal state has the supervision over the municipal level to guarantee that the municipalities abide to the law (Kommunalaufsicht). Concerning the tasks, that the municipalities perform as quasi agency of the state are additionally subject to the control of purposefulness/expediency (Fachaufsicht) (Niedersächsiches Innenministerium 2009; Signaturbündnis Niedersachsen 2009).

Within the self-administration framework, the municipalities have their own responsibilities and budget. Under constitutional law they belong to the Länder level. The Landtag decides upon the municipal constitution and the municipal borders. On one hand, both, Bund and Länder allocate tasks to the municipal level and decide on the financial resources they are entitled to. On the other hand, each municipality has to fulfil their original affairs, in which the Bund neither interferes, nor regulates. The Länder parliaments supervise the municipal administrations, while the municipalities themselves do not have any representation with extensive cooperation privilege under constitutional law on contrast to the Länder, which are able to cast their vote in the Bundesrat. One opportunity for the Länder to gain influence on political decision-making is through lobbying, e.g. through the German Association of Towns and Municipalities (Deutscher Städte- und Gemeindebund) (Wollmann 2008, 88).

Basically, the municipalities are responsible to self-administer the local services of public interest, including water supply and disposal. The self-administration includes the opportunity of the municipalities to decide freely on the organisational form of the services (Tauchmann et al. 2006, 18).

Therefore, municipalities have a special relevance as actors within water management: They are receivers of water legislative obligatory duty allocation (duty of waste water disposal) and in the execution of the task also the locally responsible body for the public sewage disposal, as well as being the responsible body for drinking water provision at times. In both function they have to create a regulation system under public and/or private law towards the beneficiary/polluter and finally the cost-bearers. Moreover, they are intermediary between federal water legislation and the citizen as well as the industry (Tauchmann et al. 2006, 65-68).

The tasks can be fulfilled by the municipality itself, by special purpose organisation (Zweckverbände) or by water and soil association. In the last years many cities and municipalities decided to partly privatize those services, allocating decision-making power to private management units or companies generally owned by the municipalities. Still, in Lower Saxony associations play an important role, when it comes to water management and maintenance as well as service provision (Tauchmann et al. 2006, 19).

2.1.1.5 Horizontal Coordination between the state institutions

While thus decision-making competences are formally assigned in a top-down manner, for the horizontal interaction among the different Länder and with the federal level bodies have been established for the coordination of common questions and to harmonise the water management in the Länder: The respective supreme authorities meet in the Umweltministerkonferenz (UMK) and have joint to form the working group LAWA (Länderarbeitsgemeinschaft Wasser, see below). The municipalities interact in the Landkreis- or Städtetag. However, there is, at municipality level no body for coordinating especially water related questions. In the context of implementing local tasks such as maintenance of smaller waters or management of sewage the Verbände play a central role (see below).

UMK - Umweltministerkonferenz

The Umweltministerkonferenz (UMK), a coordinating body where the Ministers of the Environment from Länder and from the Bund meet in order to facilitate the holistic implementation of environmental regulations of the Bund especially to provide orientation and guidelines for the Länder, was founded in 1973. (SRU 2007, 103) Practically, its tasks are implemented by permanent working groups and specialized boards containing representatives from both the Bund and Länder level. These working groups are institutions for cooperation of the expert administrations of Bund and Länder, implying that they function as an administrative network. The UMK was able to build upon existing working groups between the Bund and Länder level, like the LAWA (Bund/Länder working group on water), which was already founded in 1956.

Decisions reached within the UMK are based on a principle of unanimity between the representatives from the Bund and Länder, which places restrictions on its capacity to act, especially concerning politically controversial subjects (SRU 2007, 103). The main purpose of the UMK is the coordination among the Länder. The Länder discuss their procedures and try to streamline them. They also try to find a common position towards the Bund and the recent government. Decisions taken in the UMK have no legally binding character but as joint recommendation they can develop political relevance and bindingness.

LAWA – Länderarbeitsgemeinschaft Wasser

The LAWA is the German Working Group on water issues of the Länder and the Federal Government below the level of the UMK (permanent working group), which was set up in 1956 as an amalgamation of the ministries of the States of the Federal Republic of Germany responsible for water management and water legislation with the aim to coordinate water management between the Länder and neighbouring countries. The member of the LAWA are the heads of the upper water authorities of the Länder and since 2005 also the Bund, represented by the Federal Ministry of the Environment. The LAWA is not incorporated into the hierarchy and system of the water management administration since it has no legal capacity (Tauchmann et al. 2006, 64/5; LAWA 2008).

The LAWA discusses in detail water issues and questions arising in the areas of water management and water legislation. It formulates solutions and issues recommendations for their implementation. Moreover, in the national, supranational and international sphere operational questions are also adopted and discussed on a broad basis in order to provide relevant organisations with the newest developments and findings. Within the LAWA, three working groups and two ad hoc working groups deal with the subjects of water legislation, water supply, inland waters and sea conservation, flood prevention, handling of water polluting substances, coastal protection, groundwater, hydrology, ecology as well as municipal and industrial sewage. Over the last few years and in the context of the increasing technical and legal requirements in the area of water management from the European Union, the international cooperation between the LAWA and the responsible European committees has gained importance. The results of this work are incorporated into the implementation of standardised water management systems within the Länder, while taking account of specific regional characteristics (LAWA 2008). Therewith the LAWA represents the most decisive institution on the federal level, when it comes to coordinating the implementation of water legislation in the Länder and to articulate the interests of the Länder in the field of water management externally (Tauchmann et al. 2006, 64/5). The presidency of the LAWA changes every two years between the Länder in alphabetic order. In 2006 and 2007 the chair was held by Rheinland-Pfalz and was in 2009 held by the Saarland and is held in 2010 by Sachsen (LAWA 2008).

The LAWA developed a model ordinance to harmonise the implementation of the WFD into the German Länder[1] (Tauchmann et al. 2006, 39). The regulations in the area of water in Lower Saxony were adjusted to fit the WFD[2]. Those regulations include all requirements that could not be incorporated into the WHG as they fall into the responsibility of the Länder, due to the constitutional setup. These include the allocation of water bodies to river basin districts, the adoption of deadlines for the fulfilment of WFD management goals, the procedural guidelines for the formulation of measures and management plans as well as rules on the warranty of required data collection and data exchange (MU 2005a).

2.1.1.6 Elected bodies and further state representatives (local level)

On the Länder-level, the Länder parliaments are the highest institution, which are elected every five years. The head of the Länder is the Prime Minister (Ministerpräsident). In Lower Saxony, this position is held by Christian Wulff of the CDU since 2003. The elected parliaments of the Länder are responsible to agree or disagree on new legislation and to decide on the overall annual budgets. Thus, they have a major influence on the implementation of water policy.

In the case of Lower Saxony the tasks of the upper water authority are taken over by the Ministry of Environment and Climate Protection of Lower Saxony (MU). According to § 168 (1) of the Lower Saxony Water Law (Nds. Wassergesetz) the Landkreise (rural districts) and the independent cities (kreisfreie Städte) constitute the lower water authority. Before their abolishment in Lower Saxony, the regional governments (Bezirksregierungen/BZRs) had the position of an intermediate upper water authority (Tauchmann et al 2006, 61; NWG 2007). Figure 7 depicts the structure of water management in Lower Saxony. Whereas the environmental ministry of the Land is responsible and the decision-making level, the implementation is the responsibility of the NLWKN. Local governments comprise municipalities, cities and districts where both, the NLWKN and the mentioned lower authorities report directly to the Ministry for Environment.

[1] Musterverordnung zur Umsetzung der Anhänge II und V der Richtlinie 2000/60/EG des Europäischen Parlaments und des Rates vom 23. Oktober 2000 zur Schaffung eines Ordnungsrahmens für Maßnahmen der Gemeinschaft im Bereich der Wasserpolitik (http://www.lawa.de/pub/kostenlos/wrrl/mustervo020703.pdf).

[2] This includes the Directive 2000/60/EG; 2008/32/EG; 2006/118/EG; 2008/56/EG and 2008/105/EG of the European Parliament and the European Council.

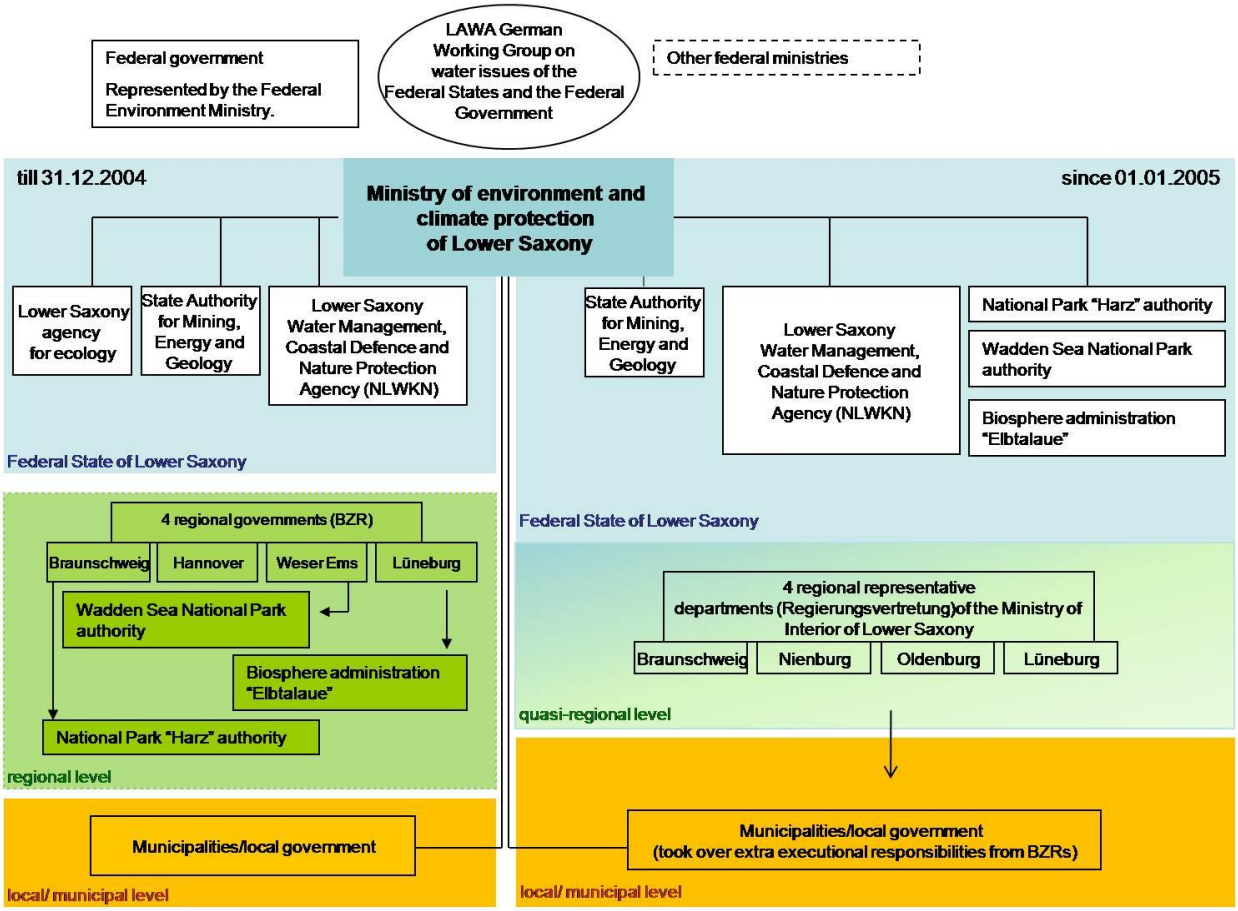


Fig. 7: Structure of Water Management in Lower Saxony before and after the administrative reform (modified from MU 2004 http://cdl.niedersachsen.de/blob/images/C6299509_L20.pdf)

2.1.1.7 German Association/Verbände Structure

The municipal authorities collaborate closely in so called associations (Verbände) in order to guarantee the efficient organisation of water supply and waste water treatment, as well as in the area of water body maintenance (BMU 2006, 20).

Verbände are organised interest groups that can include individuals, municipalities, interest groups, companies or institutions. The aim of the Verbände is to communicate their special interests on the political level and, therefore, influence political decision-making in their favour. Verbände do not only symbolize organisations of society, which put external pressure on the state and influence political decisions. In some cases they are officially involved within the state legislation in form of implementation, formal legislative setting and guideline formulation and interpretation. This implies an incorporation of Verbände into the state (Rudzio 2003, 103). This is also specified in the corresponding law (Wasserverbandsgesetz 1991) which even indicates the possible status of employees as civil servants.

As the associations are historically grown to manage one or several tasks they regionally differ in function and size. E.g. smaller associations started as early as the Middle Ages in Northern Germany to jointly build and manage their river dikes to guarantee a flood management that is suitable for agriculture. Huge associations in North-Rhine Westphalia as the Emscher association result out of the challenge to manage surface and groundwater and in particular wastewater under conditions of submerging land due to excessive coal mining. The Emscher Verband is an example for one of the large “sondergesetzlichen Verbände” (associations under special law) in North-Rhine Westphalia. Contrary to most other smaller associations they

even have the competence and legal power to carry out substantive water body and groundwater regulative measures (Kluth 1997).

Other examples are the different umbrella associations (Spitzenverbände) in Lower Saxony, which have been granted an important position by the Landtag of Lower Saxony anchoring the right of hearing in the constitution (Art. 57, 6). Three municipal umbrella associations exist in Lower Saxony the Niedersächsischer Landkreistag (NLT) e.V. combining all 37 Landkreise and the region of Hannover, the Niedersächsischer Städte- und Gemeindebund (NSGB) representing municipalities, cities, joint municipalities etc. and the Niedersächsischer Städtetag (NST) combining 132 cities representing 65% of the citizens of Lower Saxony (Signaturbündnis Niedersachsen 2009).

In the field of water management such associations are very common, when it comes to maintenance, water supply and waste water disposal. The associations differ in their tasks, regional coverage, size and the form. The most important associations are presented in the following. Summarising the purpose and tasks of water-related associations can be manifold and depend on their different statutes.

Special purpose organisations (Zweckverbände)
Special purpose organisations are associations under public law, which are generally active in the area of water body maintenance, drainage, disposal, drinking water supply and flood protection. The dike associations have been the starting point for the development of water associations in Lower Saxony being founded in the 12th/13th century. Their tasks are the maintenance of the 800km long dikes in the coastal area and the flood control in inland areas. Later on, other special purpose organisations concerned with the municipal water management and responsible for the waste water disposal in the rural areas were founded. In Lower Saxony the associations within the field of municipal water management supply 50% of the citizens of Lower Saxony with clean drinking water. Moreover, they actively promote a long-term and sustainable policy concerning drinking water supply. Therefore the associations collaborate closely with other branches, such as industry and agriculture (WVT 2009; cp. Tauchmann et al. 2006, 65-68).

Maintenance associations (Unterhaltungsverbände)
In Lower Saxony the Landtag has created area-wide maintenance associations for the management of water bodies of the 2nd order and partly 3rd order with a focus on guaranteeing water flow whose borders are defined according to the catchment areas of rivers. Members and cost-bearers can be individuals such as property owners and/or municipalities, with the number of members ranging from two municipalities (UHV Neuhauser Deich- und Unterhaltungsverband) to around 39.800 individual members (UHV Ochtumverband). That means that landowners could legally become member but it is not very common. This is a major difference to the Wasser- and Bodenverbänden which members consist to a large percentage of landowners – many of them farmers. Wasser- and Bodenverbände can become member of the maintence association as well as a municipality. Thus the size of the associations varies between 8.800 hectare (UHV Kateminer Mühlenbach) and 220.000 hectare (UHV Leineverband). For comparison: the Ruhr- Association in North-Rhine Westphalia comprises 4.485 km²! The associations are responsible for the traditional water body maintenance as well as measures in hydraulic engineering, land improvement and landscape conservation. All in all 110 maintenance associations exist in Lower Saxony, being responsible for nearly 28.000km of surface water[3] (WVT 2009).

Water and soil associations (Wasser- und Bodenverbände)
The dike associations have been starting point for the development of water associations in Lower Saxony being founded in the 12th/13th century. Their tasks are the maintenance of the 800km long dikes in the coastal area and the fold control in inland areas. Beside the maintenance associations, which are responsible for the management of water bodies of the second order, several smaller water and soil associations within the meaning of the Water Association Act, have the function to manage and maintain the remaining 130.000 km of water bodies/water courses of the 3rd order. Similar to the bigger maintenance associations, the water and soil associations, taking the ecological and environmental circumstances into account, are responsible for the

- Maintenance of the correct drainage of rainwater

[3] See: http://www.umwelt.niedersachsen.de/master/C786189_N11352_L20_D0_I598.html

- Execution of hydraulic measures and maintenance schemes of all scales
- Regional balancing between water surplus and shortage

The costs for these measures are also paid by the members of the associations, in this case municipalities or property owner (WVT 2009; cp. Tauchmann et al. 2006, 65-68)

Additionally, several technical and scientific associations exist, which are dedicated to the targets of water resources management, e.g. Deutsche Vereinigung für Wasserwirtschaft, Abwasser und Abfall (German Association for Water Resources Management, Wastewater and Waste — DWA), Vereinigung Deutscher Gewässerschutz (Association for German Water Protection — VDG). Many associations in Lower Saxony, Bremen and Saxony-Anhalt are a member of the umbrella association the Wasserverbandstag e.V. (http://www.wasserverbandstag.de/), which was founded in 1949 to bring together the different interest groups and associations in one forum. Nowadays, the umbrella association has approx. 1. 000 members, which are supported in the fields of

- Water body maintenance, including development
- Drinking water supply and waste water disposal
- Flood protection (inland and coast)
- Landscape conservation
- Regulation of soil moisture budget

Scientific and technical associations play also a major role in the field of exchanging and providing expert knowledge among the different decentralised entities dealing with water management.

2.1.2 Specificities in Knowledge infrastructure in Germany

Administrative activities in relation to the environment are highly knowledge intensive. Expertise is of special importance for conceptual development, environmental observation and monitoring or supervision of technical facilities. Accordingly, decentralisation is structurally limited. At the level of local governments it seems to be unlikely that this can be guaranteed with equal quality and with 100% coverage of the areas concerned. The supreme and the intermediary level appear to be more appropriate (SRU 2007, 63).
In many local territorial authorities an efficient enforcement is difficult because the necessary expertise is no longer there. The tendency is that more generalists fulfil the tasks. For certain tasks this might be a step in the right direction also saving resources on the long run – for other tasks a more differentiated analysis would be desirable before substituting specialized experts with generalists in administration because the quality of enforcement of environmental legislation may suffer (cc Ebinger/Bogumil 2008, 181).

At Länder level, the authorities decided to largely follow the CIS Guidance documents. For this reason, the LAWA was assigned the task to translate those guidance documents which are considered most central or important for the implementation such as for public participation or best practices in river basin management. However, for some issues coordination and agreement among German Länder was sought, for example on the approach towards the monitoring requirements of the WFD and the harmonization of data generated in this context. In some cases the process in the LAWA working groups was considered too slow for the Länder to comply with the WFD requirements. For example, in the context of data management supporting the implementation of the WFD different approaches and software exist in the different Länder. The specific knowledge infrastructure developed in Lower Saxony is the GEOgrafisches InformationsSystem UMwelt (GEOSUM). To react to new demands of administration, science and economy, the retrieval of geo-based information has been partly and will be further developed. This includes the integrated and cross-sectoral design: from waste, soil protection, nature protection, spatial planning, forestry, water management to satellite data, all data will be provided by one data-server. FIS-W is one expert information system that runs as application, making use of the data-server for the purpose of water management. So far it is mainly the MU and the NLWKN that use it but it is intended that also the lower water authorities will get access (cc chapter 3.6). Similar to Lower Saxony, in Hessen they make use of an expert information system called FIS MaPro (Fachinformationssystem Maßnahmenprogramm). It is designed for the effective planning of

measures, the control and documentation of it. Although similarities of systems in use and also exchange between the Länder exist, it shows that each Land goes its own way to comply with the requirements of the WFD and find the means for doing so.

In addition to experts data systems, several systems have been developed to provide information on the implementation of the WFD.
The **Weser data bank (http://www.datenbank.fgg-weser.de/weserdatenbank/**) not only provides access for experts but the general public as well. Different data of hydrological parameters to various contaminations and charges can be retrieved.
The official web portal for implementing the WFD is **the WasserBlick - www.Wasserblick.net** . It is designed by and for the federal level and the Länder. Therefore, on behalf of the water management authorities of the Länder and the Bund, the website is managed by the Bundesanstalt für Gewässerkunde/BfG (Federal Institute of Hydrology). As a scientific institution ranking as a supreme federal agency, the BfG (reporting to the Ministry of Transport, Building and Urban Development) is also responsible for the German waterways in federal ownership. In this position it has a central mediating and integrating function. As a governmental research institute the BfG is responsible to maintain several information systems besides the "Wasserblick". Examples are the German Hydrological Yearbook containing hydrological data about the major river basins; the Hydrological Atlas of Germany offering cartographic overviews of key hydrological data; the River Elbe Information System (ELISE) containing information on ecologically oriented activities in the Elbe river basin; and the River Information System - (FIS) which contains interesting information on selected German waterways.

With regard to use research as support tool for the implementation of the WFD and to mainstream the implementation of water and soil protection laws, the federal states agreed on a federal financing program on water, soil and waste. The program is designed for the funding of research and technology development as well as for the scientific support in developing rules, standards and norms necessary for the implementation of the laws (Ministerium für Umwelt Saarland 2008). Besides this, there seems to be no systematic approach to integrate external knowledge into water resources management. Having been used to build on an expert understanding within the governmental bodies, it is often new for the water managers to define the necessary support in terms of knowledge and infrastructure. This difficulty is often increased due to the cut back in personnel which limit the specialized expertise in the authorities.

2.1.3 Funding structure for water resources management in Germany

The Bund, Länder and partly the municipalities are according to Art. 106 Para. 3 of the German basic constitutional law entitled to receive funds from the common tax revenue (Gemeinschaftssteuern) as pointed out in Figure 5. These includes the non assessed taxes of the proceeds, the assessed income tax, the wage income tax, the corporate tax, the capital yields tax and the value-added tax. The highest net income receives the Bund through the VAT and the income tax. The contribution of the Bund constitutes the main financing source concerning the common tax revenue. Bund, Länder and municipalities are engaged to different extents (see Table 1).

Figure 5: Distribution of incomes/budgets and flow of budgets between Bund, Länder and Municiaplites (Seecon 2009)

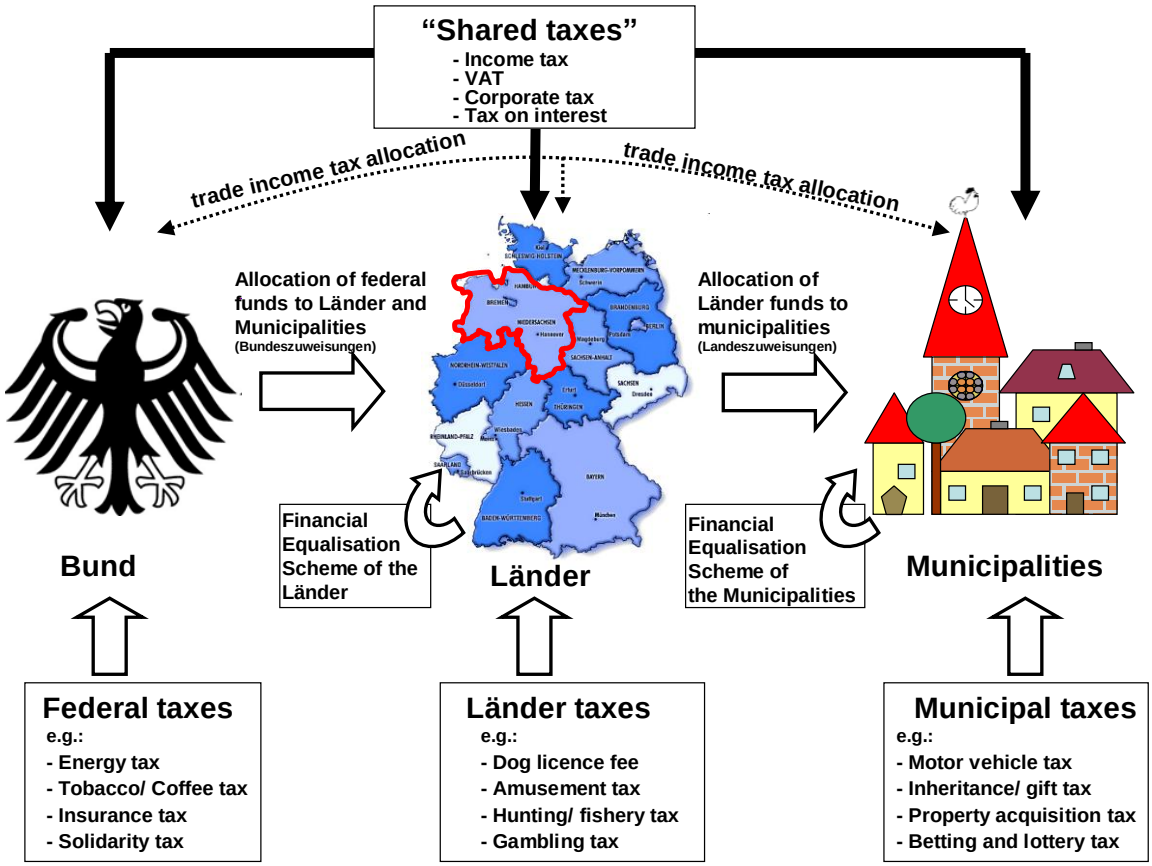


Table 1: Revenue and Expenditures in Germany and Lower Saxony

Revenue and Expenditures in Germany & Lower Saxony				
Level/ Länder	**Revenue**		**Expenditures**	
	2006	***2007***	***2006***	***2007***
	Mill. Euro			
Overall public budget[2]	992.612	1.026.358	1.011.850	1.016.111
Bund	263.348	286.589	296.576	303.175
EU-shares[3]	21.181	21.374	21.181	21.374
Social insurance	487.489	476.324	467.004	467.198
Länder[3]	252.357	275.305	261.792	266.193
Municipalities	158.642	169.303	155.705	160.710
Lower Saxony	31.539	32.090	31.522	32.678
[2] Results of the quarterly budget statistics, without internal payments between public budgets (not summable)				
[3]Including extra budgets.				
Source: Modified from Destatis 2008				

Accumulating all revenues from the area in which the Ministry of Environment and Climate Protection of Lower Saxony (MU) is responsible, the budget plan for 2009 expects a total revenue of 268.529.000 €, which is confronted by a planned total expenditure of 399.410.000 € (Land Niedersachsen 2009).

The own revenue of the Ministry culminates 34. 786.000 € in the fiscal year 2009, whereof 32.598.000 € are administrative revenue, earnings from debt services and the like as well as 1.577.000 € revenues from allocations and subsidies (excluding investments). The expenditures of the ministry are expected to accumulate to 51.326.000 €, which calls for further allocations amounting to 16.540.000 €. Within the area of water body protection and monitoring as well as waste water treatment Lower Saxony expects a total revenue of 39.724.000 €, whereof 33.000.000 € are earned through taxes and para-fiscal taxes as well as EU capital resources. The expenditure are envisaged to lie around 28.874.000 € leading to a surplus of 10.850.000 €. Another position within the responsibility of the MU is the coast and flood protection, where revenues 92.485.000 € are expected in contrast to expenditures of 95.655.000 €, leaving the need for further subsidies (Land Niedersachsen 2009).

Box 2: Many exemptions of the water abstraction charges for retaining or abstracting water!

E.g. the water use for hydro-energy is not charged in Lower Saxony! The retention of water for the purpose of open pit mining (e.g. sand and gravel extraction) is also not charged despite the severe impact on hydrology and ecology. Also no charges exist for the use of surface water for the purpose of aquaculture.

Niedersächsisches Wassergesetz (NWG 2004) in der Fassung vom 25. Juli 2007

The same goes for the NLWKN. With a total revenue of 3.656.000€, but expected expenditures in the area of 76.903.000 € subsidies of 73.247.000 € are needed, which presents the greatest deficit, also due to the administrative restructuring and the need for financial allocation within MU responsibility (Land Niedersachsen 2009).

Besides taxes levied at federal and Länder level which are designated for purposes of water management at different levels and by different ministries according to their tasks, two main charges are of importance for the generation of funds for water management. The first charge is set for the abstraction of water and the second for wastewater.

Under the law of most Federal Länder a charge is applied for the abstraction of water. The charge is payable by the party that abstracts the water (groundwater, and in some cases surface water as well); in the case of public water supply this is the supply utility, which passes the costs on to the consumer. The introduction of water abstraction charges in the eighties was supposed to offer an economic incentive for using less water and therefore respecting the principle of internalising resource costs due to the reduction of a resource. The water abstraction charges collected are often used for water conservation measures. Moreover in Lower Saxony, traditionally, the money is used for the subsidisation of projects within agricultural water protection in the context of the cooperation model of Lower Saxony (NLWKN 2007c, 39). Moreover, in some states, the legislation explicitly states that the water abstraction charges must be earmarked for such purposes. In Germany the water abstraction charge varied in 2007 among the Länder between 1,5ct per cubic meter in Saxony and more than 10ct in Brandenburg (BDEW 4.04.2008). In Lower Saxony the charge were 5ct/m³. (NLWKN 2007c, 39).

The sewage service charge as a typical example for the ‘polluter pays principle’, is contrary to the water abstraction charge valid for all Länder as it is defined in national law. It represents also one instrument for internalising resource costs. The sewage service charge is paid to the lower water authority at the level of municipalities for the discharge of contaminated water into water bodies (AbwAG 18.01.2005). The rate increases depending on the contamination level of the discharge. “The revenue from effluent charges must be used to improve water quality, and thus benefits directly or indirectly those liable to pay. [...] the charges are relatively high, and thus deter water pollution and have motivated considerable investment into pollution abatement measures” (Hansen et al. 2001, 9, 65).

Wastewater charges are set by local government and the local authorities on the basis of the local government act on charges of the individual Federal Länder with the corresponding local statutes. Under this

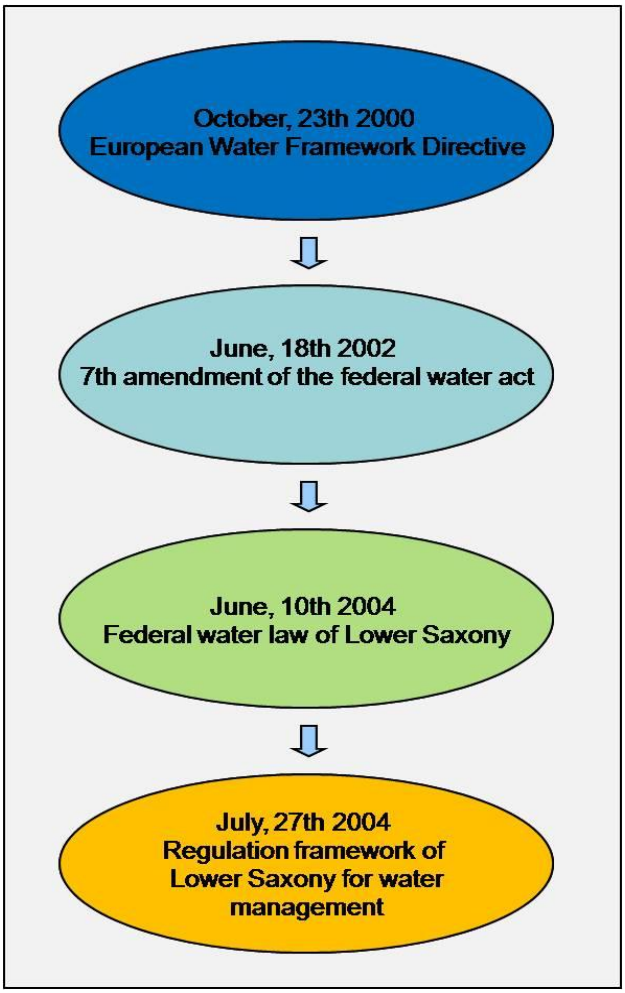
system, charges are set on a polluter-pays basis, and are payable by all property owners and companies connected to the public sewers. Under the cost coverage principle, therefore, the revenues of the local authorities must not exceed the actual operating and investment costs incurred in conjunction with the discharging and treatment of wastewater in the disposal area (BMU 2006, 78).

2.2 Current process of setting environmental objectives and selecting and implementing measures

2.2.1 Legal and funding framework

With the amendment of the water law of Lower Saxony on the 19th February 2004, the incorporation of the EU WFD into the federal water law in Lower Saxony was accomplished (MU 2005). The regulation framework of Lower Saxony for water management was put into force on the 27th July 2004 (Nds. GVBl. Nr. 21/2004 p. 267). Following this regulation framework, the Water Act of Lower Saxony (Niedersächsisches Wassergesetz/NWG) was enforced on the 25th July 2007 (see Figure 6).

Figure 6: Steps of the legal framework in Lower Saxony (Seecon 2009)



The environmental objectives according to article 4 WFD were integrated into the federal framework legislation on the water balance and consequently into the water act of Lower Saxony (§§ 64a, 64b, 130a and 136a NWG) (cc ch.2.2.1). Additionally, it was defined in § 98 of the water act of Lower Saxony (NWG) that water management and maintenance has to be conducted according to these environmental objectives and that reaching these goals should not be put at stake. Maintenance as well should comply with these demands mentioned in the program of measures according to § 181 NWG. Hence, the environmental objectives received a legally binding character.

Several directives have been implemented in Lower Saxony to guarantee the financing of measures related to the implementation of the WFD. Some of them make use of EU funds like EAFRD and ERDF:

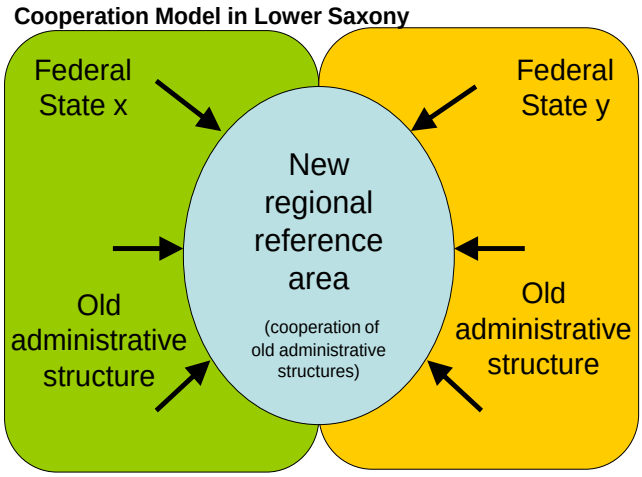
- Directive concerning the permission of allocations for measures on watercourse development co-funded by EAFRD[4]
- Directive concerning the permission of allocations for projects concerning drinking water protection in potable water extraction

[4] See http://www.voris-nds.de/jportal/?quelle=jlink&query=VVND-282000-MU-20071122SF&psml=bsvorisprod .psml&max=true

areas within the framework for the promotion of the development of rural areas. (Kooperationsprogramm Trinkwasserschutz) RdErl. d. MU v. 23. 11. 2007 – 23-01373/10/03. Co-funded by EAFRD.[5]

- Directive concerning the permission of allocations for the promotion of measures of municipal waste water disposal.[6] Co-funded by EFRE.

Figure 7: WFD Cooperation Model in Germany – the basin as new regional reference area for water management (Seecon 2009)



Other important directives concern the setting of charges e.g. in relation to sewage and pollutants by technical plants. Also important in the context of the water management is the "Niedersächsisches Deichgesetz" (Law on diking and dikes in Lower Saxony/NDG 23.02. 2004). Concerning the management of wastewater and sewage the responsibility remains at the level of the municipalities. In Lower Saxony are approximately of around 8,0 Mio inhabitants 94,2 % connected to public sewers and sewage treatments plants and the remaining 460.000 inhabitants discharge and purify with small and decentralised treatment plants (NLWKN 2009, 5).

2.2.2 Organisational framework for implementation of the WFD

2.2.2.1 River Basins in Germany

The WFD was developed in the spirit of the so-called Integrated Water Resource Management (IWRM). Accordingly the framework was formulated on the assumption of being implemented in countries with a holistic/integrated approach to water body management, which collides with the administrative structures in Germany as Länder and administrative borders do not correspond with the river basins (Hartje 2006).

For the organisational implementation of the WFD in Germany, two models were discussed within the LAWA:

- "establishment of Länder overlapping planning organisations with their own budget and norm-setting jurisdiction" or
- the creation of coordination associations between the Länder, which regions fall within the particular river basin area (LAWA 2001, 9) (Hartje 2006).

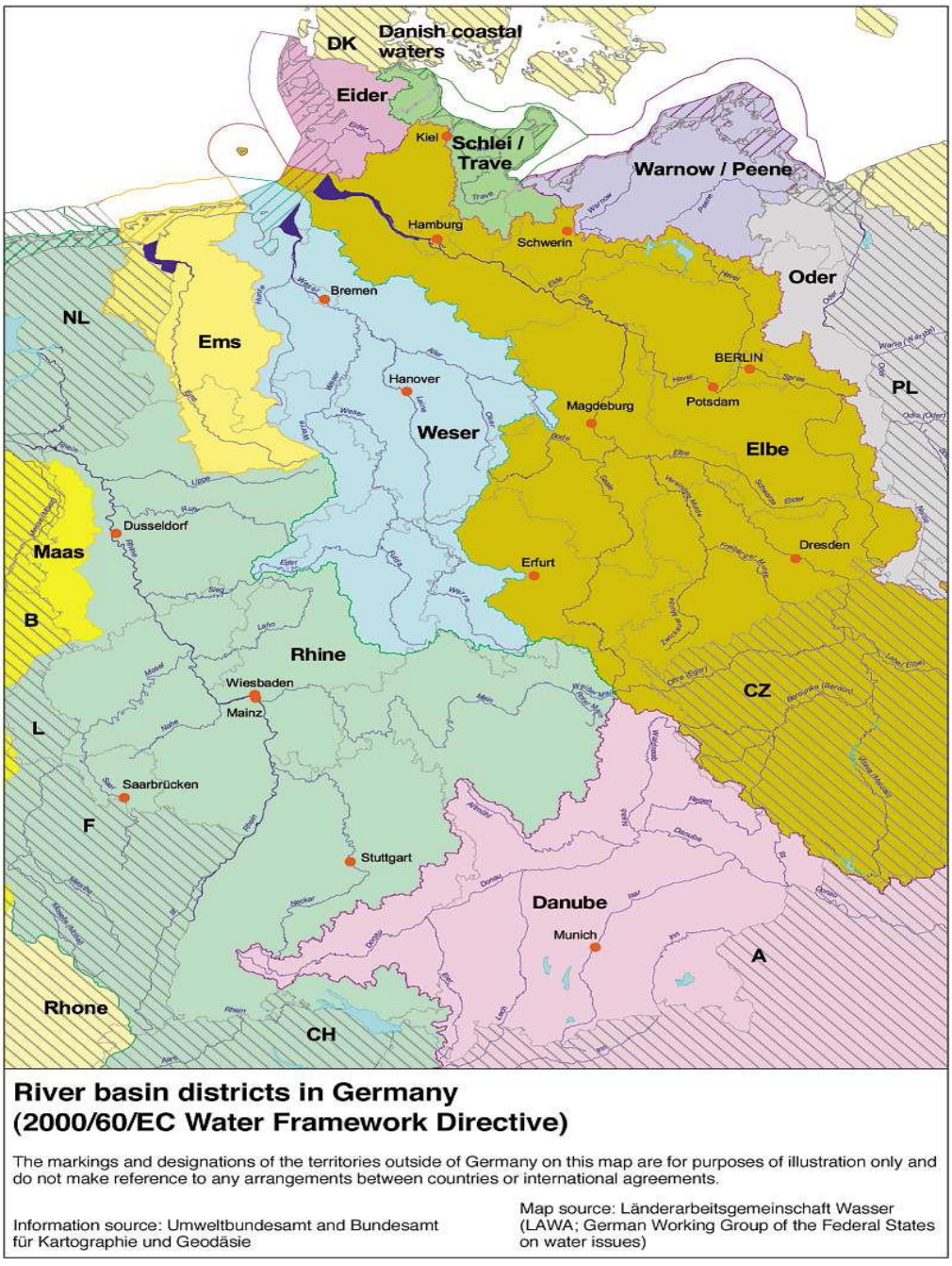
The advantages of the first model (comparable to the French model of the Agence de l'eau) would have been the creation of political entities with their own decision-making authority. On the one hand, the formulation of an overall plan would have been facilitated. On the other hand, such a model would imply considerable loss of competence and authority for the Länder, the municipal administrative unions and the municipalities. Moreover, it was feared that an overlapping of already existing and maintained official administrative structures could lead to new assignment and cooperation problems (Hartje 2006).

[5] See http://www.voris-nds.de/jportal/?quelle=jlink&query=VVND-282000-MU-20071123SF&psml=bsvorisprod.psml&max=true

[6] See http://cdl.niedersachsen.de/blob/images/C42598365_L20.pdf

Finally, it was opted for the second, the coordination model. With the establishment of coordination associations, it was possible to tie the new structure to the old structure of the Länder. This means that structures and competencies were retained, although the spatial reference area was changed. The surface water bodies are divided into 10 river basins and coastal areas of the North and Baltic Sea. The Rhine, Danube, Ems, Elbe, Meuse and Oder rivers go beyond the German border, while only the coastal area of

Figure 8: River basin districts in Germany (LAWA, o.J.)



Warnow/Peene, Schlei/Trave, Eider and the Weser lie entirely in German territory (Hartje 2006).

The amendment of the Federal Water Act defined these ten river basin districts (Flussgebiets-einheiten (FGE) (see Figure 8)). Those river basin districts are further subdivided into sub basins according to hydrological characteristics, which function as coordination areas (Koordinierungsraum). Frequently those areas are further divided into sub units (Unter-Teileinzugsgebiete /UTEG) (see also chapter 1.2).

The coordination of planning activities is conducted in local, regional, national and international coordination centres, which partially already existed before (as in the case of the Weser), complemented by new fields of responsibility, or which had to be newly established.

The basin commissions of the international basins either newly founded or further developed have to deal with questions and problems of an international dimension in regard to upstream/downstream relations.

Accordingly, for the Weser basin a single basin commission was established, which is completely in German hand and coordinates both the overaching issues and those affecting the different Länder including the upstream/downstream issues. The most prominent example for the Weser is here the question on how to manage the salt load due to potash mining in the upper parts of the Weser basin.

2.2.2.2 The development of the FGG Weser

On 22nd of July 2003 the administrative agreement on the establishment of the river basin commission Weser came into force. With effect of this agreement the coordination of the joint water management by the 7 federal Länder (cc chapter 1) Bremen (0,9% of the basin surface), Bavaria (0,1%), the Land Hesse (19,4%), the Land North Rhine-Westphalia (10,7%), the Land Lower Saxony (57,7%), the Land Saxony-Anhalt (1,5%) and the Land Thuringia (9,7%) was assured. The FGG Weser did not start at zero but emerged out of the working group for the Weser (Arbeitsgemeinschaft zur Reinhaltung der Weser/ARGE Weser).

According to the size and complexity of the river basin district Weser, it was divided into three coordination areas/sub basins. Each of the coordination areas is led by one Land: The coordination area Fulda by Hesse, the coordination area Werra by Thuringia and the largest coordination area Weser by Lower Saxony. The division of the sub basins is not entirely based on hydrological reasoning but also determined by political and administrative factors as for example the merging of the Diemel and Fulda into one sub basin illustrates (see Figure 2).

The coordination areas function as the spatial dimension in which data is gathered and aggregated. All necessary preparation for the development of maps and plans to implement the WFD is conducted at this level. The Weser sub basin is quite large, compared to Werra and Fulda, which led to a further break down of the sub basin into sub units before defining the working areas. From a management perspective the working areas (Bearbeitungsgebiete), also called regional management units, represent the lowest level of reporting and implementation of the WFD in Lower Saxony. The size of the hydrologically defined 34 working areas varies between 2000 to 5000 km³. They were created on the basis that the size for the lowest working level of a river catchment should range between 1.000 to 10.000 ha catchment area (cc WFD Annex II 1.2.2 further operationalised in CIS 2003. Guidance document no. 2. Identification of Water Bodies,p.12).
The working areas include each around 40-50 water bodies. The working areas are designed for the management of surface water. Eventually this has led to the designation of 1400 surface water bodies in the Weser basin (FGG Weser 2005, Bestandsaufnahme) compared to approximately 9,800 surface water bodies which have been totally delineated in Germany (BMU, Environmental Policy 2005, S. 25).
For groundwater, the 11 designated areas in Lower Saxony for the management of groundwater are considerably larger. They include a total of 126 groundwater bodies that lie entirely or partly in the Lower Saxony7. Of these, 66 groundwater bodies were identified which entirely or partly are situated within the area of the Weser basin district (FGG Weser 2005).

[7] Online Quelle des Landesamt für Bergbau, Energie und Geologie http://cdl.niedersachsen.de/blob/images/C39078985_L20.pd

Bremen lies entirely in the sub basin of the Weser which is coordinated under the responsibility of Lower Saxony. Therefore, a special administrative agreement (Verwaltungsvereinbarung) exists between Lower Saxony and Bremen: as a cooperation was agreed upon that makes it possible for the two Länder to submit joint reports. Also it means that Bremen takes part in all working groups or boards as an active member. This agreement on the cooperation for implementing the WFD was taken in 2001 and renewed in 2005.

The steering of the implementation of the WFD in the coordination area Weser is the responsibility of the Ministry of Environment and Climate Protection of Lower Saxony (MU). They are responsible for the political coordination but as well for the correctness of the implementation. To guarantee these different aspects, working groups have been established.

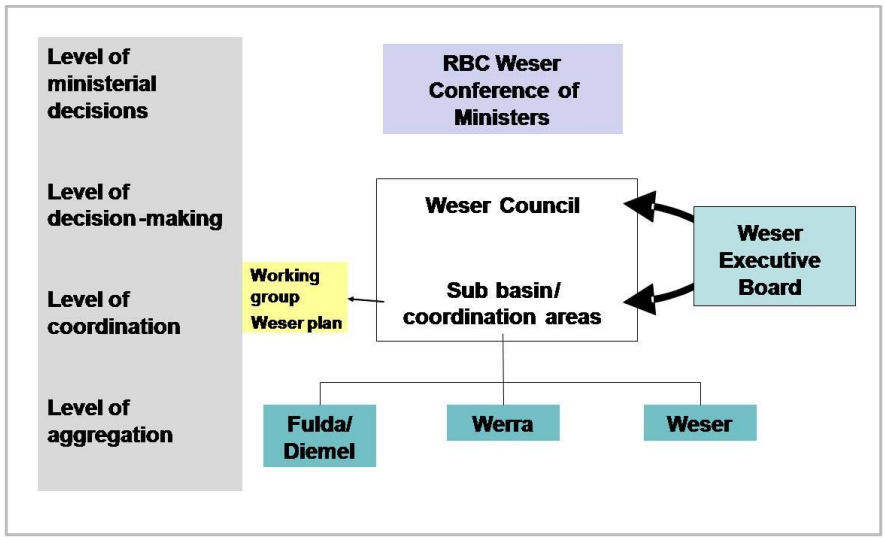
The coastal zone of Lower Saxony does not build its own special unit but areas is attributed to the basins. The coastal area "Jade" and the estuary "Weser" are assigned to the river basin district Weser. Concerning the tasks of the FGG Weser it must be mentioned that - like its predecessor ARGE Weser – the FGG Weser is only concerned with topics of transboundary relevance (in a federal context). The Weserrat (Weser Council) is the decision-making body on issues concerning the implementation of the WFD. It is composed of the departmental heads or their representatives of the water management authorities of the Länder. Buidling up on the recommendations resulting from coordination in the FGG Weser, the Weserrat has defined the topics on which common transboundary water management goals and environmental objectives need to be clarified as

- river load by non-point sources
- chlorides
- shipping
- river connectivity.

For these 4 topics a general scheme was developed to aid implementation and harmonization between the federal states (see Figure 9).

The three sub basins are defined as coordination areas as level for data aggregation which are directed by different Länder. The Weser coordination area is under the direction of Lower Saxony. Based on representatives of these coordination areas a coordination group is responsible for preparing the decision-making process and implementing decisions taken. Operational and planning work is conducted in the working group *Weser plan* which is also – as in the case of the coordination group - directed by the executive manager of the Weser executive board. Therefore the Weser executive board is the intermediary between the coordination group and the working group Weser plan. The Weser council is eventually composed of the water managers (Abteilungsleiter) of the seven Länder being part of the Weser basin. All decisions must be taken unanimously. In case of non-agreement the river basin minister conference (Länder ministers of environment) as the formal decision making body has to discuss and decide the issue.

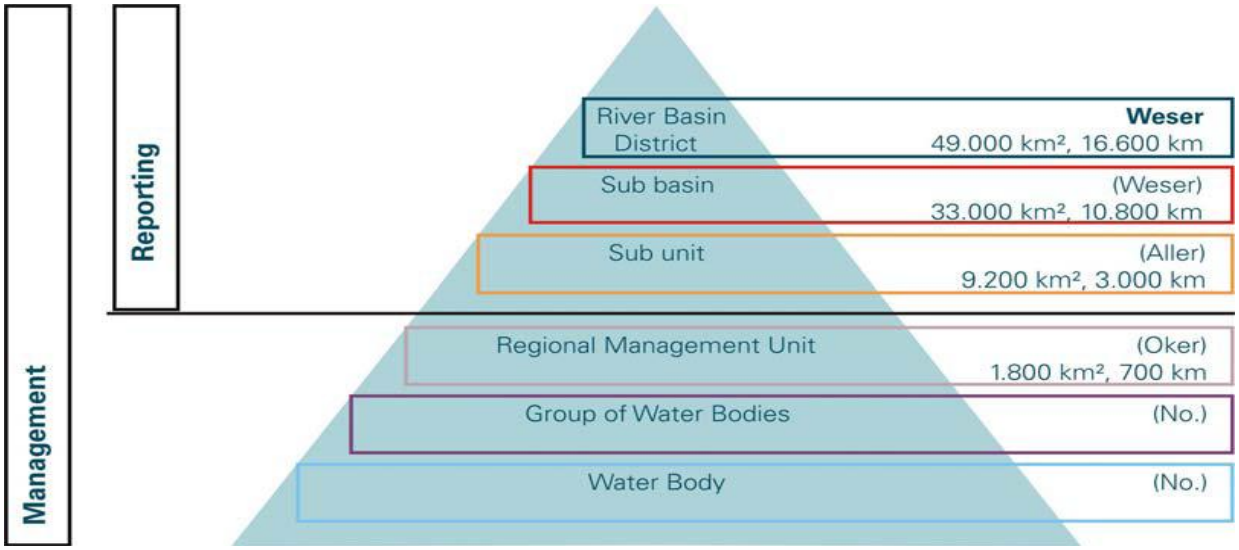
Figure 9: The organisation of the Weser river basin commission (modified, originally by FGG Weser 2009)



The reporting of the WFD has been implemented at different levels: river basin, sub basin and sub unit. On a larger scale, from sub units down to water bodies, the information needs to be aggregated to meet the WFD reporting requirements. As the Weser River Basin is a solely national river basin, the sub basin boundaries are actual catchments in contrast to international river basins where sub basins could be defined as member state's part of a river basin. But similar to international basins, representatives of the seven federal Länder that have shares of the basin participate at the coordination level. Figure 10 depicts the different reporting and working levels from transboundary level down to the water bodies. In Germany they also refer to categories of A-B-C-Level-Reports. The categories themselves have no legal meaning at all but help internal organization:

- "A-Level-Reports" characterize the whole River Basin District describing presentations of multiple Competent Authorities.
- "B-Level-Reports" characterize parts of a River Basin District (sub basin) describing presentations of multiple Competent Authorities.

Figure 10: Reporting and management levels in the FGG Weser with respective catchment size and total length of water bodies (rivers and streams). (Galbiati et al 2008, 153)



- "C-Level-Reports" characterize presentations of a single Competent Authority (sub unit).

Despite this decentralized structure to implement the WFD, it is first the responsibility of the Federal Länder to do the reporting according to the requirements of the WFD: the river basin commissions in Germany cannot function as a legal entity. Eventually, it is the Federal Government that is the competent point of contact for the European Union on this matter, with responsibility for reporting, inter alia. For this reason, the Federal authorities collate and aggregate the data from the Länder, and then forward it in a uniform to Brussels (EU Commission) and Copenhagen (European Environment Agency) (BMU 2006, 16). In case of non-compliance of one or several river basin management plans the EU commission would have to discuss with the national level and also sanctions would address the national level. But the federal environmental ministry would refer to the Land which is responsible for the plan or the part of the plan which is questioned.

For setting the environmental objectives the water bodies in the Weser basin belonging to Lower Saxony are mostly classified as heavily modified (60%) or artificial (15,5%) (NLWKN 2008 b). On average this distribution is in Germany as follows: 23% HMWB, 14% AWB and 63% natural water bodies (BMU 2005. Environmental

Policy, p. 28). These figures do not take into account revisions of this categorization as carried out e.g. in Lower Saxony in 2007/2008. As in the revisions the percentage of HMWB increased it can be assumed that the figures for the entire area of Germany shifted towards AWB and HMWB. To decide on the environmental objectives, they were derived in either by the method described in the European Guidance on Heavily Modified and Artificial Water Bodies or by means of the “Prague method” (or Praguematic method). The Prague method was explicitly applied in a simplified manner only in the Hesse part of the Weser basin. It is a method to derive the good ecological potential from the current ecological state by assessing all feasible mitigation measures. Taking the assumption that all will be applied and implemented the maximum ecological potential (MEP) will be reached. By leaving out those measures that have no significant effect, the good ecological potential (GEP) is reached.

In Lower Saxony the classification of the water bodies was carried out with the involvement of the area cooperations. The stakeholders received a further simplified form indicating 9 steps towards the designation of a HMWB. Basis for this form was- as in the case of the Prague method – the HMWB – CIS guidance paper. The different area cooperations filled in the forms. The data was then aggregated to provide the complete picture of the Weser basin in Lower Saxony (cf chapter 4).

According to the WFD a 100% coat coverage is required for environmental services as for e.g. water abstraction. This cost coverage lies in Lower Saxony between 85% to 105% (Gade, 25.02.2009, Weserforum Verden). But the basis for this calculation is just the potable water prices and the wastewater charge of companies which is compared to the water abstraction charges, fees for sewage discharge, compensation payments according to the law for nature protection and other fees for granting permits in relation to water management.

Concerning pollution control the draft programme of measures of the Weser depicts the different basic (legislative) measures according to the WFD and how they are already implemented (table 15). It can be summarized that pollution control as such did not significantly change due to the WFD.

2.2.2.3 Important organisations and actors in the Weser basin

In Lower Saxony on the Länder level, several institutions and agencies fulfil important functions in structuring the water management. The Ministry of Environment and Climate Protection of Lower Saxony (MU) is the highest institution in Lower Saxony concerning environmental and climate policies. The Ministry was founded in 1986. It is responsible for the protection of water, soil, nature, air and climate as well as on the politics of waste, radiation protection, reactor safety and energy. At the moment 336 people are employed at the ministry with 2 200 employees in subordinated agencies, who support the Ministry in its tasks. Those are: the ten industrial inspection boards, the NLWKN, the NNA and the administrations of the other Sonderbehörden (Nationalparke Harz, Niedersächsisches Wattenmeer, Biosphärenreservats Niedersächsische Elbtalaue) (MU 2006).

As the supreme water authority in Lower Saxony, the Ministry has several tasks including the legislative work, the fulfilment of its guideline competence through edicts to subordinate agencies as well as the coordination of planning activities and measures in the field of water management. At the same time, the Ministry is concerned with the adjustment with other superordinate and regional authorities of Bund and Länder. The Ministry has the technical supervision over the lower water agencies, as long as they fulfil tasks in the field of water management assigned by the Ministry (MU 2007, 58).

The already existent spatial and thematic graded planning instruments were replaced by the instruments of the WFD. With the creation of coordination associations (Kooperationsverbände) the previous responsibilities persist. In the context of the counter flow principle, guidelines and recommendations concerning the aims and organisation of plans shall be issued by a superior body (top-down). The results of the surveys and the measure planning will be communicated through different coordination units to the top (bottom-up). This implies that the future management plans will consist of summarizing accounts from the river basin units as well as accounts from the respective working areas (Hartje 2006).

NLWKN

The NLWKN, Lower Saxony Water Management, Coastal Defence and Nature Conservation Agency, was amalgamated from different predecessor organisation, the former Agency for Water -Management and Coastal Defence, which evolved from the state agency for water and waste, the Lower Saxony Agency for Ecology and the departments for water management and nature conservation within the four regional governments, in the context of the administrative reform in Lower Saxony (NLWKN 2007/2006; Bogumil/ Kottmann 2006, 13; SRU 2007, 100). Within the new agency, water management and nature conservation are consolidated under one roof in an attempt to improve coordination in project planning and management and enhance time and cost-efficiency bridging former departmental fragmentation.

Box 3: Landesbetrieb

Increasingly, the Lower Saxony Water Management, Coastal Defence and Nature Conservation Agency (NLWKN) uses privatization options to work under economic efficiency considerations (MU 2005; NLWKN 2007). In contrast to other administrative entities, Landesbetriebe like the NLWKN are legally dependent parts of the Länder administration, which are generally oriented on the operations side (erwerbswirtschaftlich) and on the free market. Following § 18 (1) of the Haushaltsgrundgesetz (Basic Budget Act) agencies of the Bund and the Länder have to formulate a business plan. Such cost accounting is also envisaged to enhance the cost consciousness within the administration. Lower Saxony State Court of Auditors (LRH) has criticised the consolidation of the Landesbetrieb. Points of criticism are that the agency operates to a large extent outside the Länder budget and, therefore, collides with the budget authority of the Länder parliaments and the fact that, the establishment of the NLWKN was largely attributed to the abolition of the three-tiered administrative structure. As the LRH remarks, the legitimacy of the Landesbetrieb is based on the range of responsibilities it takes over, a point not scrutinized in case of the NLWKN. Here the LRH states that especially sovereign tasks should not be conducted on a large scale by a profit oriented Landesbetriebe. (Bogumil/Kottmann 2006, 80/1; Meinert 2006, 9).

As a so called Landesbetrieb, the NLWKN is among the first state bodies, which follows the paradigm of economic efficiency including business bookkeeping and cost/efficiency accounting (see **Box 3**). The organisation of the NLWKN is clearly decentralised with the head office in the city of Norden (East Friesland) being restricted to strategic planning and governance, whereas the operational tasks are executed by 11 regional offices (Aurich, Brake-Oldenburg, Cloppenburg, Hannover-Hildesheim, Lüneburg, Meppen, Norden-Norderney, Stade, Sulingen, South with its offices in Braunschweig and Göttingen and Verden) in 15 stations situated all over Lower Saxony guaranteeing area-wide coverage with short ways to the next contact person (NLWKN 2007/2006).

The NLWKN is organized along the following areas: 1. operation & maintenance, hazardous substances abatement, 2. planning & construction, 3.water management and management of catchment areas, 4. nature conservation, 5. management and controlling, 6. approvals in hydro-engineering (NLWKN 2007).

2.2.3 Other factors influencing water management

The Administrative Reform in Lower Saxony since 2003

Water management in Lower Saxony cannot be analysed and described without considering the administrative reform which is still ongoing. The regional governments have existed for 175 years. They were originally constructed by the Hardenberg/ Stein´schen Reforms of the Prussian administrative organisation. Until 1932 a four tiered structure existed, featuring an upper provincial president between the regional governments and the Länder government. After the end of World War II the regional governments continued to exist and were taken over by the Allied powers (Melzig 1999, 76).

Several reform attempts have been discussed in all Länder particularly in context of the new public management approach. Like the Social Democratic government in Lower Saxony (1990-2004) formulated in

a strategy paper most Länder parliaments saw the regional governments as essential for an efficient inner structure. These middle authorities in Flächenländern (territorial states) were seen as essential links between the regions and the upper administrative authority as well as a service provider for regional stakeholder and citizens. The then Minister of the Interior of Lower Saxony, Heiner Bartling (2001), underlined that such bundling authorities are necessary as many of the tasks performed at the intermediate level, will need intensive and interdisciplinary coordination and bundling. In the following, the regional governments were assigned several additional task and agencies were incorporated like the Staatlichen Ämter für Wasser und Abfall (StAWA) (state agency for water and waste, while others were relocated to other agencies) (Bogumil/Kottmann 2006, 13).

The general idea was to develop leaner regional management authorities (Regionalmanagement-Behörden) (Bogumil/Kottmann 2006, 2). With the change of government this position was revised only three years later. The reforms were carried on but with new ideas on how to continue and implement them: Lower Saxony was the first territorial state that decided to abolish the three-tiered system.

The main aim of the reform was the abolishment of the intermediate authority, the regional governments (BZRs), and the relocation of its tasks to superior authorities and newly constructed Sonderbehörden (special agencies) as well as to cities and municipalities (SRU 2007, 100; Bogumil/Kottmann 2006, 29). Moreover, a reduction of the scale of the lower administrative Länder units is envisaged. This is done through the integration into the upper Länder administrations or the relocation to the responsibilities of municipalities and districts (Bogumil 2007, 248). Instead of the former regional governments, Regierungsvertretungen (representative governments; see Box 4) were established for the intermediate administration level (SRU 2007, 106/7).

Box 4: Regierungsvertretungen (representative governments)

On the 7th September 2007 the Cabinet decided to create Regierungsvertretungen (RV) in Braunschweig, Nienburg, Lüneburg and Oldenburg, set up as departments of the Ministry of the Interior of Lower Saxony. They are not envisaged to replace BZRs, but to foster rural areas and regions within Lower Saxony through regional development, the improvement of administrative tasks with regional reference, service and support functions. The RVs are founded in order to communicate and add weight to the interests of the region and its citizens, companies and organisations and enable them to contact the government of Lower Saxony (Bogumil/Kottmann 2006, 30-32). The creation of the RVs has met with a double-edged response. It is generally regarded as important, that the Länder level is still represented on the ground, to coordinate, initiate and support regional development and, finally, to avoid regional and trans-departmental technical coordination deficits. On the other side, some criticize the RVs for taking over tasks, formerly situated at the abolished BZRs and therewith creating a new three-tiered administrative structure (Bogumil 2007, 255/6).

In the case of the Ministry of Environment and Climate protection of Lower Saxony the aim was to make the administration more consumer oriented, and streamline bureaucratic structures, in order for Lower Saxony to compete with other Länder.
After some tasks were communalised, privatised or assigned to other authorities, it was tried to bundle the remaining tasks in rationalised, restructured administrative organisation. The supervision over the municipalities shifted from the regional governments to the Ministry of the Environment of Lower Saxony (MU 2005d).

Criticism

Although the reform in Lower Saxony is relatively recent, starting with its first implementation phase in May 2003 (Niedersächsisches Ministerium für Inneres und Sport 2005, 5) there already exist several critical evaluations concerning the efficiency of the administrative measures. Two basic points of criticism can be identified. First of all, Reffken (2006) argues that the abolition of the regional governments has not led to a facilitation of the administrative structures in Lower Saxony. In contrast, already during the reform process it became obvious that several tasks could not be taken over neither by the ministerial nor by the municipal

level. The result was a number of Sonderbehörden (additional specialised agencies), which were established on the intermediate level and resourced with additional personnel based on their new assigned tasks (SRU 2007, 106/7).

Nevertheless, so Reffken, this new structure is a false two-tiered attempt as a considerable amount of the former functions of the regional governments was neither given to the communities nor privatised, but assigned to Sonderbehörden e.g. the NLWKN, which are envisaged to take over some of the bundling functions. In contrast to other Länder, Lower Saxony did not reduce its number of Sonderbehörden through the reform but created new ones in order to divide the workload previously situated at the regional governments. Due to protests from the industrial sector against the relocation of authorisation procedures and supervision in the field of plant construction to the municipal level, the ten industrial inspection boards were retained and entrusted with additional tasks. Recent surveys concerning the administration reform showed that the radical restructuring in Lower Saxony posed a serious threat for the workability of the administrative structures (SRU 2007, 100; Bogumil/Kottmann 2006, 30). Summarising the following negative effects of the reform can be observed:

- An increasing centralisation and growing distance between administration and citizens (Bogumil/Kottmann 2006, 6);
- The former bundling authority (BZR) is missing hampering the integration and supervision and therewith the efficiency of the administration (SRU 2007; Bogumil/Kottmann 2006);
- Ministry of Environment and Climate Protection of Lower Saxony is not able to coordinate and manage (SRU 2007, 106/7);
- A lack of access to information on the ground as flow of knowledge and the data provision is restricted (Especially in the area of information provision e.g. the responses to the Landtag (Länder parliament) inquiries concerning complex and differentiated fields) (SRU 2007, 106/7);
- The number of technical experts working in the administration has declined as specialised personnel is replaced by general administrative staff (SRU 2007, 106/7);
- Difficulties of coordination between districts and the NLWKN (Ebinger/Bogumil 2008, 178/9).

Human Resource Development

The administrative reform also had direct consequences for the workforce and the allocation of personnel on the different administrative levels and agencies. With the NLWKN a new big authority was introduced, which took over main parts of the tasks and the personnel from the former regional governments. The remaining personnel has been divided between the ministries, the rural districts and a series of, partly newly-created Sonderbehörden (SRU 2007, 100).

Table 2 shows the human resource development in the Ministry of Environment and Climate Protection of Lower Saxony (MU) since the beginning of the administrative reform. More drastic personnel consequences of the administrative reform are expected in the future. Within the reform, 415 jobs are planned to be cut in the MU. Until 2006 only 100 jobs have been reduced so far (SRU 2007, 80).

Human Resources Development in the Ministry of Environment and Climate Protection of Lower Saxony (MU) * - after the start of the administrative reform

	2003	Fraction in %	2005	Fraction in %
Nature Conservation	225	9%	213	9%
thereof general administration in departments of regional governments	39			
Water Management	1.062	43%	1.132	46%
thereof general administration in departments of regional governments	58			
* In parts including personnel positions in transdepartmental environment protection tasks and general administration.				

(SRU 2007, 80)

Table 2: Human Resources Development in the MU – after the start of the administrative reform

The abolishment of 415 jobs at the MU corresponds to a reduction rate of 17% of the workforce of 2005 and exceeds the rate of general reduction of manpower in the administration of Lower Saxony, which lies around 12%. In the areas of water management and nature conservation this rate is even higher, culminating to 22% in the field of water and 23% in nature conservation. The positions in question have been located to the NLWKN, which amounts to a reduction of the work force in the area of nature conservation of – 39 % and within water management of – 25 % (SRU 2007, 81).

Human Resources Development in the area of environment in Lower Saxony – prior to the administrative reform

Year	Personnel total*	Personnel in the area of Environment*	Percent of total personnel
1995	183.501	2.702	1,5%
1997	181.355	2.633	1,5%
1999	179.175	2.434	1,4%
2001	178.536	2.355	1,3%
2003	182.881	2.324	1,3%
Difference	-0,3%	-14,0%	-0,2%
* Fulltime equivalent for civil servants, employees etc. see § 17, Abs. 6, Niedersächsisches Landeshaushaltsordnung			

(SRU 2007, 80)

Table 3: Human Resources Development in the area of environment in Lower Saxony – prior to the administrative reform

In Lower Saxony, only the financial means for the execution of municipalized tasks are allocated to the Landkreise, while the personnel remain at the Länder level. In contrast to other Länder, the personnel transfers to the Landkreise was only minimal. Momentarily, four employees of the NLWKN, which have previously been active within the environment department of the BZRs, have been delegated to municipalities. Instead of the transfer of personnel, the municipalities get a financial compensation. The

Landkreise get a refund for the tasks taken over by them, which amounts to 78 500 Euro per transferred personnel position (pro übertragener Personalstelle). There exists no concrete specifications towards the usage of the assigned funds, and control and disclosure of spend resources is neither possible nor intended. Unfortunately, the earmarked funds, have not been invested into the creation of new positions for the newly communalized tasks (SRU 2007, 82; Nds. Landtag 2006, 29).

Box 5: New Public Management

With the end of the 1970s the time for the critical task criticism/scrutinization arrived and lasted until today in the discussion on different forms of privatisation and municipal responsibilities. The ideal picture featured a lean state that developed from a bureaucratic administrative state to a citizen-oriented service state, with an efficient, small and tightened administration body. Finally, the concept of ‚New public management' was introduced and partially implemented on the municipal level at the end of the 1980s. At the core of the reforms was the aim to arrange the structure of the administration based on the concept of private sector service rendering companies. Other demands concerned the call for faster administrative procedures especially in the area of environmental relevant approval processes (SRU 2007, 53). In the last years similar demands have been made inspired by the tight budgetary position of many administrations. They revolve around drastic staff reductions and reduction of material expenses as well as some elements of the 'New Public Management' approach. The reform instruments should lead towards a downsizing of administration bodies of the Länder e.g. through the abolishment of the State Offices of the Environment of the Länder (Landesumweltämter) which results from the change from a three-tiered towards a two-tiered administration structure as well as a decisive municipalization of state tasks; nevertheless the different Länder differ considerably in their reform approaches. The attempts range from an optimization in the context of long established administrative structures in Bavaria on the one hand to a radical cut with the abolition of the regional governments etc. in Lower Saxony on the other hand (SRU 2007, 53; Moss 2003, 13). In contrast to previous administrative modernisation attempts, the New Public Management reform in Germany spread bottom up. Only after the modernisation measures were firmly implemented on the municipal level, did some Länder governments start to develop managerial motivated reform programs. Since the end of the 1990s the administrative reform orientated on the New Public Management approach spread faster from the municipal to Länder and even to the federal level (SRU 2007, 54).

In the face of the stressed domestic budgets of most German cities and municipalities, it cannot be precluded/ ruled out that means directed at environmental conservation are used in other fields of activity. First signs for such development can already be found in Lower Saxony: Municipalities which are in the middle of the proceedings to balance their budget (Haushaltssicherungsverfahren) have to fulfil their designated task, but are, despite the allocations from the Länder level, not allowed to employ new personnel. The discontinuation of the control and appeal instance of the regional governments accommodates the municipalities and districts, which use the new funds to reorganise their budgets (SRU 2007, 100).

2.2.4 Public involvement

Moss (2003) stated that "... issues of water management, spatial planning, nature conservation and agriculture are communicated through administrative structures from the federal to the municipal level and are administered by distinct organisational units, which are not accustomed to interacting beyond the scope of formalised planning procedures". He concluded that "Strong reliance on the rule of law is another distinctive feature of water management – and environmental policy generally – in Germany. Experience with non-formalised forms of interest group consultation or public participation is as a rule very limited." Taking this observation as basis for analysing the implementation of the WFD in Germany, it depicts the special importance to investigate the potential of the WFD and the innovations its implementation brings along in regard to public participation.

Public participation or involvement is more than informing the public. The activities initiated in Lower Saxony to comply with Art. 14 of the WFD can be distinguished according to information supply, consultation and

active involvement (p.17, CIS guidance document on participation). Also different ways of public participation take place at different scales. Besides more informal activities participation started more or less in 2005 with regional fora to inform and consult the expert to general public. Since 2005 participation is an ongoing activity.

1. Information supply

Information on the status quo of implementing the WFD in the basin of the Weser/ Lower Saxony can be officially retrieved from

- the homepage of the Ministry for Environment and Climate Protection of Lower Saxony (www.umwelt.niedersachsen.de);
- the homepage of the NLWKN (nlwkn.niedersachsen.de)
- the homepage of the Weser basin commission (www.fgg-weser.de),
- the Wasserrahmenrichtlinie-InfoBörse (WIB) which is a project funded by the Ministry for Environment and Climate Protection of Lower Saxony to integrate the municipal level into the implementation of the WFD (www.wrrl-kommunal.de) and
- the www.Wasserblick.net which is the official portal for implementing the WFD (including reporting duties towards the commission) designed for the German federation and the Länder.

The tasks of the latter are twofold: to internally exchange administrative information and data related to water and to inform the public and interested groups by putting selected items into the public forum. Due to this centralized, cross-national approach of comparing and adapting data and information, the Wasserblick" supports the requirements of the WFD in regard to a coherent and harmonized GIS including standards for data exchange and access.
Additional information material on the WFD as theme-based publications, CDs, brochures and flyers, produced by water authorities but also water associations as well as environmental NGOs, are also available and manifold. Information material in form of brochures or CDs is partly produced centrally by the MU or NLWKN on general issues but also on local activities by the regional branches of the NLWKN. In most cases these local activities Examples are on activities in the area cooperations Leine-Westaue and Wümme.

An advisory board of the MU of Lower Saxony and Bremen is established to inform and consult at an early stage concerned experts coming from organized interest groups and other concerned authorities. The advisory board is composed of representatives of agriculture, water supply, water associations, nature protection, inland shipping, municipalities, industry and research. The advisory board meets once to twice a year in rotation in Lower Saxony or Bremen.

2. Consultation

The extended expert (working) groups (erweiterte Fachgruppen) under the direction of the MU exist in regard to the WFD for groundwater, surface water and on economic analyses. At the moment of conducting this study the group on economic analyses cannot be considered as functional as meetings do not take place. The extended expert groups also function to inform and consult its members: besides experts of the ministry and the NLWKN e.g. representatives are present from the chamber of agriculture/irrigation management, the BGW/DVGW (German Association of Gas and Water Experts - DVGW), or of associations as the "Wasserverbandstag", an umbrella organisation of the soil and water organisations Bremen, Lower Saxony and Sachsen Anhalt, and the "Kommunale Umweltaktion" an association to support and advise municipalities on environmental issues.

Another instrument of public participation is the regional forum. Experts and concerned groups are invited but generally the forum is also open to the general public. The purpose is to inform the general public about the status quo and the particularities of implementing the WFD in Lower Saxony. Additionally, it was meant for consultation of the interested public. In reality, this opportunity was not effectively used as the management of a consultation process in large groups requires skilled preparation that goes beyond presentations with very limited time for discussions. The regional fora are held on an annual basis and can be more or less attributed to sub basins that are relevant in Lower Saxony which adds up to four to five

annual fora in Lower Saxony. Among others, all municipalities of the respective areas are invited. The regional fora are visited by around 100 to 200 interested persons (Nitsche/MU 2007).

The Land Bremen has set up an additional "forum WFD" especially for the citizens of this Land. It is meant for information but it is supposed to encourage the public to get actively involved (Hansestadt Bremen 2007).

Lower Saxony complied with the requirements of the WFD in so far that the responsible authority – here the MU - published and made available for comments the following documents in time:

1. Timetable and work programme (December 2006)
2. An overview of significant water management issues according to the river basins in Lower Saxony (published 22.12.07)
3. The draft programme of measures, the draft river basin management plan and the environmental report according to the demands of a SUP for the programme of measures (all published the 22.12.2008)
4. The final river basin management plan and the final programme of measures (to be published in December 2009).

For the 2nd and 3rd documents the 6 months time for written comments were provided for the public and users. For the environmental report according to the SEIA the commenting phase was 3 months (until the end of March 2009). According to the timing the responsible authorities meet the requirements of the WFD. The comments are collected, analysed and summarised by the NLWKN and forwarded to the environmental ministry of Lower Saxony. The comments are further analysed by the basin commission FGG Weser. The summary of comments of each phase is/will be published and will be respected as far as possible in the future planning. How this happens and based on which criteria is an internal process although reasoning is provided in form of the written and published summary statement. For the report on important river basin management questions published in December 2007, the comments were summarised and further commented by the NLWKN (Dec. 2008). The online published document provides the reasoning why and how the NLWKN deals with the different comments on the report. It is worth noting that comments came solely from organisations. The described procedure will be the same for the draft management plan and the programme of measures. It is expected that the MU or NLWKN will publish in December 2009 the summary of all comments including their reasoning in how far the arguments will influence the final plans and programmes.

Box 6: Online Participation

An interesting alternative to sending in written comments on the draft management plans and plans of measure is offered in North-Rhine Westphalia. An online-participation tool (https://www.bo-munlv.nrw.de/bo_wrrl/) is set up which allows to directly comment pages, paragraphs or sentences on the selected page of the document in question. The referencing is hereby facilitated and the threshold level to comment the draft plans is likely to be lower at least for the younger "online-community".

The SEIA of the programme of measures for the Weser was conducted by the responsible ministries of the states as Lower Saxony, Hessen and Thuringia. In Lower Saxony the environmental report – as part of the SEIA – was published together with the programme of measures. Besides making the environmental report public on the internet, the SEIAs are also displayed at the lower water authorities. As the FGG Weser does not have the status of a legal entity the SEIAs must be conducted by the states and not under the auspice of the FGG Weser. This leads to the fact that each Land must carry out its own SEIA for those parts of river basins it shares (this is also dependent on the individual interpretation of the law for SEIA by the Länder and certainly other factors as the size of the portion of the basin the Land shares).

3. Active Involvement

The most important instrument for public participation in Lower Saxony that even corresponds to active involvement is the area cooperation (cc Borowski et al. 2008). As a regional and direct form of active involvement, the Ministry of Environment of Lower Saxony established 28 so-called Gebietskooperationen (area co-operations) in autumn 2005 (MU 2005), covering the whole of Lower Saxony (cc chapter 3.4). They were designed as long-term institutions with the aim of contributing to the implementation of the WFD. The

area co-operations typically consist of approximately 15 to 20 participants, representing different regional organisations, including water management, agriculture and nature conservation. They were developed on the basis of the 34 working areas. The difference in number arises because of working areas that lie to a large extent in other Länder, where no area cooperations exist. Also the coastal working areas were merged to one area cooperation which further reduced the number of area cooperations.

The implementation of the WFD requires different target groups for participation. A very broad differentiation can be made between the expert and the broad public. The expert public was consistently addressed by the means of extended experts groups at the ministry, advisory boards and the area cooperations. The regional fora were supposed to address the general public too but as invitations were sent out only to organised stakeholder groups and the announcements of the fora in daily and regional newspapers was very limited, the broad public hardly took notice about ongoing activities related to the WFD. This fact leads also to the situation that hardly individual persons The formal publication of documents was mainly done by internet and additionally the paper versions were made available at the NLWKN in Norden.

For the participation of environmental NGOs, they organized a special approach integrating their representatives working on a voluntary basis in Lower Saxony and Bremen: a special network project called „Wassernetz“ has been developed (www.wassernetz.org). The „Wassernetz“ functions as a network and umbrella merging several environmental NGOs with expertise in water protection with the objective to support the implementation of the WFD. This means that in different area cooperations the environmental representatives may come from different organizations. The representatives in area cooperations of local environmental NGOs e.g. report back to the Wassernetz. The same applies to the environmental representatives that are members of the advisory board who report back as well. The Wassernetz also exchanges with other environmental NGOs in other federal Länder. In Summary the “Wassernetz” is responsible for

- The organisation of information exchange between volunteers in the different working areas, the respective authorities and the environmental associations.
- The coordination of activities of the environmental and nature-protection NGOs
- Being first contact point in regard to question of implementing the WFD in Lower Saxony and Bremen and beyond.

Besides requirements of public involvement related to the WFD or the SEIA, other regulations in Germany request participation. Since December 2006 a federal law on public participation is in force. It implements the “European Directive 2003/35/EC on public participation in respect of the drawing up of certain plans and programmes relating to the environment”. In fact this directive does not require much more than the already existent requirements on participation for approval procedures of plans and technology.

3 Implementation of the WFD

In this chapter, the five central challenges as identified in the i-five-inception report (Mostert et al 2009) have been used to describe in detail the specific characteristics of the WFD implementation in the Weser case study region. This chapter provides in all three case studies the data base for the cross-case-comparison in the final i-five report.

3.1 Institutional structure and changes for implementing the WFD

3.1.1 Regional policy and principles of German water management

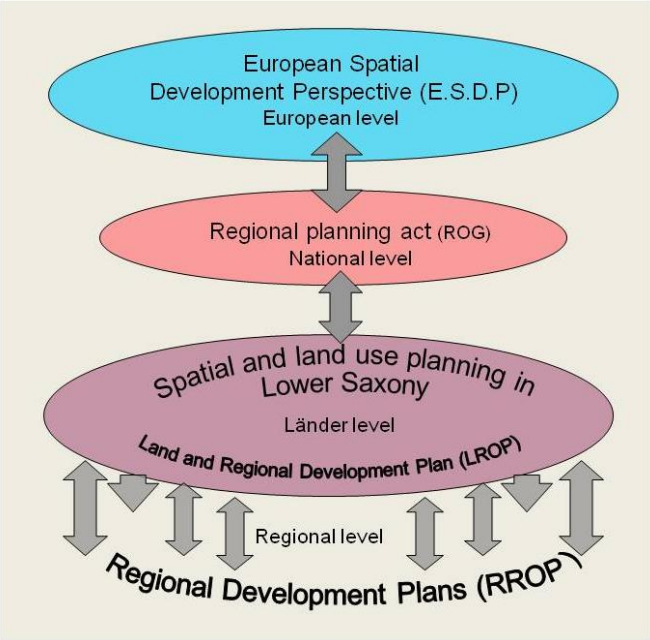
In order to compare institutional structures of the three case study countries, a common understanding of institutional structures for water management is needed (cf Inception report). This chapter supplements chapter two and provides more details on institutional actors, their competences and responsibilities in water management.

As already earlier, the FGG Weser is considering the complete Weser basin and the environmental authorities of the different Länder follow their administrative territorial borders. This complicates coordination between authorities involved.

Most important actors for water management in the basin of the Weser in Lower Saxony were already introduced in Chapter 2. These are the Ministry of Environment and Climate Protection of Lower Saxony, the Saxony Water Management, Coastal Defence and Nature Conservation Agency, the local authorities of municipalities and rural districts and the different associations.

Another important aspect to be considered comparing the different case studies is the different territorial/spatial planning and management - in Germany characterized by the Federal Regional Policy Act (Bundesraumordnungsgesetz). Principles of regional policy relate to all types of area demand including the prevention of water pollution, the conservation of water resources and the protection and conservation of the landscape. The federal structure of Germany and the constitutionally guaranteed right of self-determination grants the local authorities (municipalities and rural districts, compare chapter 2.1.1.3) unconditional sovereignty over urban planning and development (see Langenscheidt 1973). Regional planning functions as important interface between spatial planning at federal state level and development planning at local authority level (BMVBS 2006). The implementation of regional policy takes place with the implementation of federal regional policy programmes and plans, and their subregional plans. Other sectors have to respect the requirements of regional policy as e.g. the Federal Waterways Act. The particular importance of the objectives of regional policy and planning lies in the fact that the distribution of public investment and subsidies is tied to them. Besides formal instruments of regional policy like the RROP (subregional plan see Figure 11) also informal instruments as e.g. regional marketing or regional development concepts are commonly applied and may concern aspects of water management or nature protection too. Still, the implementation of

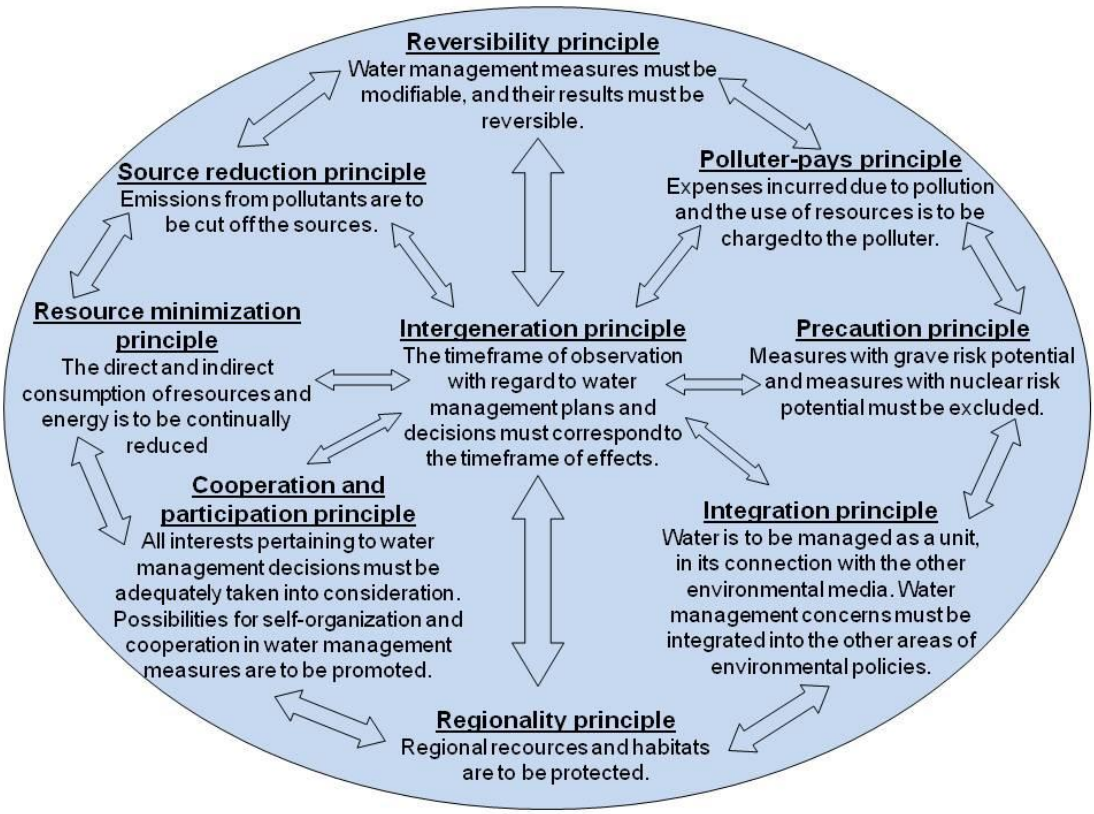
Figure 11: Levels of regional planning leading to the regional developmetn plans in Lower Saxony



the WFD so far did not change in Lower Saxony procedures of spatial and territorial management as it does not become that concrete and keeps a strategic and general character for guiding spatial development.

From a policy perspective, Figure 12 depicts the many existing environmental principles that interact which each other and provide the fundamentals of a sustainable water management policy. This diagram developed in a report by the BMU in 2001 shows that from a policy perspective the WFD did not require much innovation in Germany. Since it was (and still is) difficult to find a balance between the principles during implementation, the challenge of implementing the WFD in Germany is rather the operationalization by recognizing the principles depending on different situations at different scales to different times and redefining the means of implementation accordingly.

Figure 12: Interaction of principles relevant to water management (BMU/DBU 2001. The German Water Sector. Policies and Experiences. p.17)

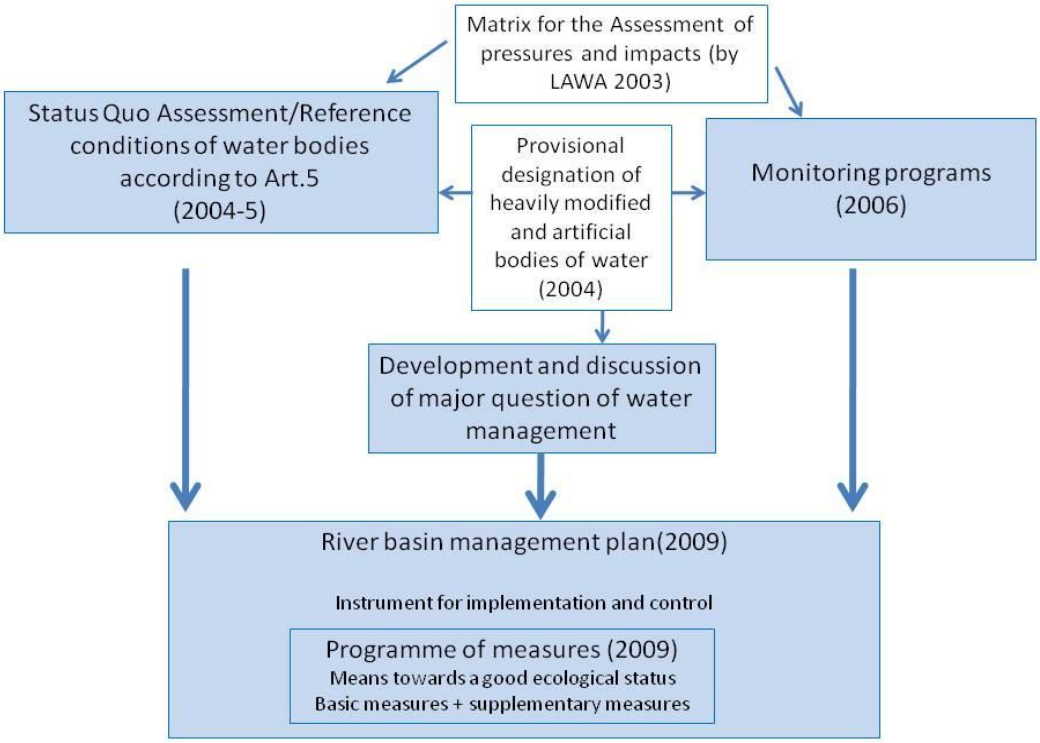


3.1.2 Steps towards the implementation of the WFD in Lower Saxony

For the planning of measures in Lower Saxony seven steps were differentiated (Gade 25.02.2009 Weserforum Verden)

1. Status quo **assessment of water bodies**
2. Development of measures in the area cooperations,
3. Setting priorities for measures,
4. Adaptation according to results of public participation and the SEI,
5. Aggregated proposition and summary for the state government
6. Integration of other sector departments and development of a proposal for the cabinet
7. Decision by the state government.

Figure 13: Steps of implementing the WFD in Lower Saxony (adjusted based on NLWKN 2007b)



Although this process can only partly be judged as the final decision-making has been still ongoing at the time of the case study, it is not surprising that the political process of integrating other sector departments, developing a proposal for the cabinet and the final decision-making by the state government seems to be not transparent for the public. Unfortunately also the process of prioritizing the measures and developing the categories A/B/C for the implementation of structural measures (surface waters) corresponds rather to a black box than to a transparent process. A first non-structured bottom-up collection of measures in the area cooperations obtained around 2000 measures. These measures were further grouped into

- A for measures that can be immediately implemented (around 600-700),
- B for measures that cannot be immediately implemented (around 1100),
- C for measures that for the time being it is not realistic to implement them but are considered as important to reach the good ecological status.

Criteria to make this categorization were the availability of land for the measures in question, favorable legal conditions, volunteering of a private or public body to implement the measure, and a guaranteed matching fund of the implementing body. But even if all measures including the category C were implemented until 2015, nevertheless it would not be likely that a good ecological status for all water bodies would be achieved by 2015. The planning of measures is rather based on feasibility than exclusively looking for that what would be needed to achieve the good status. This is also due to the delay of the deficit analysis which is expected end of 2009 – a continuation of the already small delay of the monitoring report. Only once knowledge gaps are filled leading to the finalization of the deficit analysis, the planning may become more structured as the basis for it will be developed. Among others, the basis for the planning of measures was also a guidance by the LAWA in 2008 which apparently was that late that Lower Saxony, Hesse and probably most other Länder already started to collect their measures and develop its own Länder-catalogue (see Table 2). Later on this

was re-adapted to the catalogue of the LAWA. Highly critized was also the following step to include the measures collected into the programme of measures. The programme of measures labels the different measures as “offer” and provides no details about where which measures should be implemented. This led to dissatisfaction in area cooperations (and of other interest groups including the general public) who invested significant time to discuss their (regional) measures which is later on not reflected in the programme. This fact is also not corresponding to the initial idea of the edict for the establishment of the area cooperations that they should develop innovative solutions that are typical for the region (Original in the edict of the MU 2005 “…regionaltypische innovative Lösungen…”). This bottom-up approach gets lost at such a high level of aggregation as seen in the programme of measures.
Another aspect that led to dissatisfaction was the unclear or lacking degree of compulsion to achieve the environmental objectives by implementing certain measures. Besides the approach to make “offers of measures” - meaning their implementation is not compulsory – also there was a lack of coordination between the water management associations, the MU and the municipalities once establishing their budgetary funds because many measures depend on the different sources. It is the particular interest of municipalities and water management associations that the implementation of measures remains voluntary. But additional to better coordination on budgets, incentives and more motivating procedures are necessary to increase the number of municipalities that volunteer to implement measures (Workshop Hannover 10/2009).

Another problem concerns the setting of environmental objectives and the designation of HMWB. Whereas internal communication certainly existed among the ministry and its environmental authority on the setting of environmental objectives, unfortunately this process cannot be followed up. E.g. inter-ministerial working groups under the direction of the NLWKN were explicitly composed in Lower Saxony for the purpose of implementing the WFD and are also concerned with such questions. In extended working groups other policies and sectors were integrated at an early stage (cc Fig. 19 in chapter 3.4.1). E.g. for the purpose of groundwater management the chamber of agriculture is already involved as water abstraction for irrigation purposes by farmers is the most important groundwater use after water abstraction for potable water provision. Still, the setting of environmental objectives was more or less conducted by the NLWKN without the integration of more local knowledge and other interest groups. This gap has to be seen in the same line as the delayed deficit analysis already mentioned. Similar to the setting of environmental objectives or the priority setting of measures also the designation of HMWB is criticized as non-transparent especially from the side of nature protection. The lacking transparency is manifested by a lacking understanding on how criteria and reasoning led to a certain designation of a HMWB (written comment by the Wassernetz on same plan). A checklist with nine steps was applied in the area cooperations to designate a HMWB or AWB. For example, a question like “do we have hydromorphological modifications” can be answered very differently and does not seem to be adequate to make such a judgment of being HMWB that allows later on a complete different treatment of a water body within the WFD than being classified as “naturally”.

Box 7: Implementation of measures in priority areas:
According to different criteria as e.g. soil types and groundwater renewal time, priority areas for the implementation of measures are defined. The priority areas are defined for groundwater protection and for surface water protection as well. The idea is that measures are channeled to areas where their implementation becomes most effective.

The identification of heavily modified water bodies based on the CIS guidance document No.4 ” was generally conducted in the German Länder very differently. The report on the Water Framework Directive - Summary of River Basin District Analysis 2004 in German (BMU 2005, p. 27) mentions here “the criteria for this assessment were not uniformly interpreted in every case, however. For example, some German states provisionally classified only shipping lanes and dams as heavily modified water bodies, while Lower Saxony and Mecklenburg-West Pomerania also placed in this category water bodies that play a key role in farmland whose morphology has been permanently and significantly altered to facilitate water abstraction”. The report also notes that “…already during the initial phase of the characterization process several German states assessed the hydromorphological changes in water bodies not on the basis of good ecological status but rather on the basis of good ecological potential, which has less stringent requirements”.

Table 2: Publication date of documents for the WFD implemetation in Lower Saxony (NLWKN 2008)

30.04.2003	LAWA: Arbeitshilfe zur Umsetzung der EG- Wasserrahmenrichtlinie
15.2.2005	LAWA: Rahmenkonzeption zur Aufstellung von Monitoringprogrammen und zur Bewertung des Zustandes von Oberflächengewässern
15.02.2005	LAWA: Rahmenkonzeption zur Aufstellung von Monitoringprogrammen und zur Bewertung des Zustandes von Grundwasserkörpern – Eckpunkte
2005	FGG Weser. Bewirtschaftungsplan Flussgebietseinheit Weser 2005. Bestandsaufnahme (and the additional B-reports for sub units and coordination areas and sub units)
22.12.2006	Zeitplan, Arbeitsprogramm und Anhörungsmaßnahmen zur Erstellung des Bewirtschaftungsplans 2009 für die Flussgebietseinheit Weser, Information der Öffentlichkeit
2006	LAWA- Leitlinien zur Gewässerentwicklung - Ziele und Strategien -
21.03.07	FGG-Weser Bericht zum Überwachungsprogramm Weser (Monitoring Report)
07.09.2007	LAWA-Strategiepapier ”Klimawandel - Auswirkungen auf die Wasserwirtschaft”
Dez 2007	FGG Weser: Wichtige Wasserbewirtschaftungsfragen in Niedersachsen und Bremen für die Weser
01.02.08	LAWA: Grundsätze zur Standardisierung des Maßnahmenprogramms
08.02.2008	Maßnahmenkatalog WRRL LAWA
31. 03.2008	NLWKN: Wasserrahmenrichtlinie Band 2, Leitfaden Maßnahmenplanung Oberflächengewässer Teil A Fließgewässer-Hydromorphologie
Juni 2008	NLWKN: Leitfaden Maßnahmenplanung Oberflächengewässer. Teil C Chemie
14.10.2008	Bericht der LAWA-ad-hoc Arbeitsgruppe "Wirtschaftliche Analyse" zur Umsetzung der Anforderung von Art. 9 WRRL zur Kostendeckung der Wasserdienstleistungen in der Bundesrepublik Deutschland
Dez. 2008	NLWKN: Anhörungsdokument zum Entwurf des niedersächsischen Beitrags für das Maßnahmenprogramm der Flussgebietsgemeinschaft Weser nach Art. 11 der EG-Wasserrahmenrichtlinie bzw. nach § 181 des Niedersächsischen Wassergesetzes Dezember 2008
Dez. 2008	NLWKN: Strategische Umweltprüfung zum Anhörungsdokument zum Entwurf des niedersächsischen Beitrags für das Maßnahmenprogramm der Flussgebietsgemeinschaft Weser, Umweltbericht – Entwurf. Dezember 2008
Dez. 2008	NLWKN: Anhörungsdokument zum Entwurf des niedersächsischen Beitrags für den Bewirtschaftungsplan der Flussgebietsgemeinschaft Weser nach Art. 13 der EG-Wasserrahmenrichtlinie bzw. nach § 184a des Niedersächsischen Wassergesetzes Dezember 2008
March 2009	EU-Commission CIS guidance paper on exemptions to the environmental objectives
18.03.2009	LAWA- Ausschuss, Oberirdische Gewässer und Küstengewässer - Ad hoc-Unterausschuss „Wirtschaftliche Analyse“ - (18.03.2009) Gemeinsames Verständnis von Begründungen zu Fristverlängerungen nach § 25 c WHG (Art. 4 Abs. 4 WRRL) und Ausnahmen nach § 25 d Abs. 1 WHG (Art. 4 Abs. 5 WRRL)

As the two other subbasins of the Weser Werra and Fulda/Diemel are coordinated by Thuringia and Hesse, the respective administrative bodies of these Länder become important once dealing with the entire basin district of the Weser. Their approach of operationalising the WFD varies compared to the one chosen by Lower Saxony. E.g. Lower Saxony has chosen the approach of planning measures (called "Machbarkeitsansatz"/feasibility approach) to generally improve the status quo of water bodies and prioritise the different measures according to A, B, C whereas the A measures are supposed to be implemented until 2015. In Hesse they have developed a 100% scenario – meaning all measures necessary to reach the defined environmental objectives and a good water status. Also in Hesse they developed one water management plan for the entire Land – called "Hessenplan" -comprising parts of the Weser basin district and parts of the Rhine basin district. In both Länder - Lower Saxony and Hesse - the implementation of and compliance with the WFD in the respective Land is the first priority. Based on this coordination and integration with other Länder or other decision-making bodies is seeked. As both Länder developed its separate programme of measures and as an SEI for programmes is obligatory also separate SEIs were conducted. Also for both Länder it can be stated that coordination between each other and the FGG Weser is rather low. The FGG Weser executive management body came into force by treaty between the federal states concerned whereas the Weser council (cf chapter 2.2.2.2) is highest level of decision-making. The executive management of the FGG Weser is actually not implementing the WFD but only collecting and aggregating of the Länder concerned the basin information to develop the Weser basin management plan. In working groups at the level of the FGG Weser an exchange takes place of what the Länder do but it does not necessarily serve to harmonise implementation of the WFD in the Länder. There are no formal procedures to make this process transparent but individual discussions and exchange between actors involved certainly exist. Also the Länder did not wait for directions by the LAWA – which was in several cases too late anyway – but each developed in small working groups its own strategy to implement the WFD including the definition of environmental goals. As each Land is represented in the LAWA and co-decides on important issues, a certain information level on what is going on in the LAWA working groups can always be assumed.

Box 8:

In Hesse lower water authorities developed bottom-up a 100% scenario, indicating all necessary measures towards a good water status. This was conducted in the entire Land – meaning also in the districts and regions being part of the Weser basin. The following step was to present it to the public by carrying out participatory workshops at subregional level: first on surface water and then on groundwater. In the groundwater groups the focus was on farmers, land owners and representatives of agencies, chambers etc dealing with agriculture. In the surface water groups the members came from a wider field including environmental NGOs, water associations etc. In expert working groups they took these results to prioritise the measures according to implementation blocks (measures to be implemented until 2015, until 2021 and until 2027). The planned costs of implementation are more or less equally distributed among the 3 implementation blocks (Interview 3/HLUG 2009)

Whereas the process of operationalising the WFD in Hesse was made transparent in form of a new project structure (see Fig. 17) depicting different theme-specific working groups composed of various actors of different administrative levels the operationalising of the WFD in Lower Saxony remained rather diffuse. An example is here the definition of environmental goals in Hesse which were developed in the above mentioned working groups. The results of the pilot projects in Hesse influenced the setting of environment goals in the working groups. This means that a certain level of involvement of other actors was guaranteed (composition of theme-specific working groups in Hesse: e.g. HLUG/environmental authority, lower water authority, environmental ministry, other sector groups…).

One result of the interviews conducted was that transparency on how measures were collected and how they were prioritised was lacking to a large extent. In future it would be desirable that more structure is provided by the ministry and respectively the NLWKN on how measures will be collected and according to which criteria and who will decide on the prioritisation. The role of the area cooperations in this matter needs to be re-discussed. Also the process of aggregating later on the measures to a programme and establishing the river basin management plan leaves plenty of room for improving a transparent process management. This

process should be further developed together with the analysis on the cost efficiency of measures not only at local scale but for the basin (see chapter 3.2). Stakeholders at the regional i-five workshop missed transparency of how the priorities in implementing measures were set, with regard to the following criteria (Workshop Hannover 10/2009):

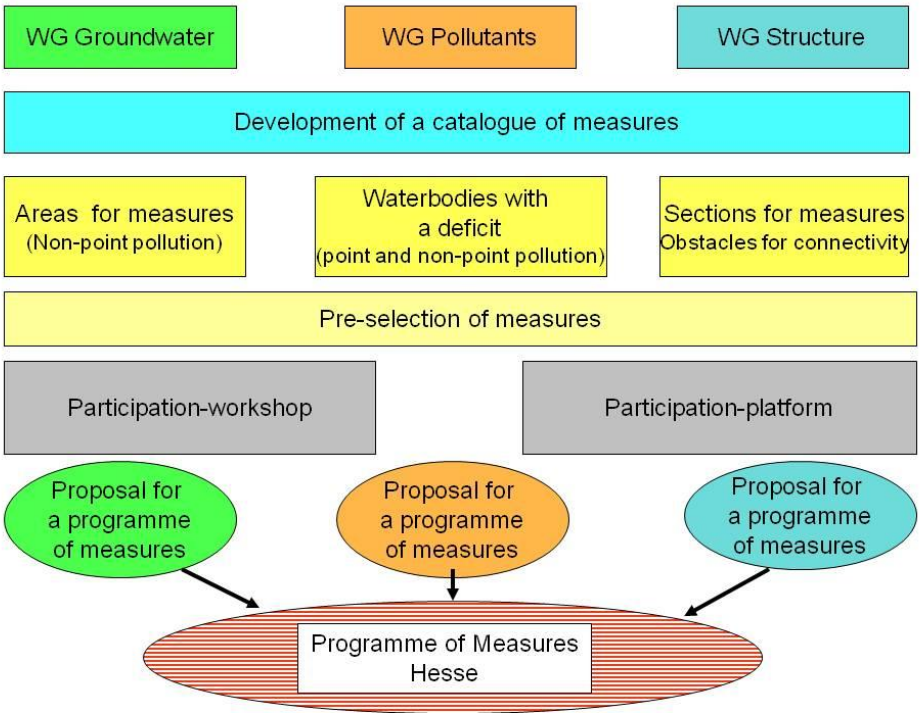
- organization,
- financing and
- participation.

The above mentioned criteria could be used in future for an internal monitoring in how far transparency of water management decision is improved. This discussion must include the role of the different organizations involved in implementing the WFD. To improve the 2nd cycle of the WFD (2015) at national level, at the level of the Länder and at basin level the following working steps have to be conducted (Workshop Hannover 10/2009):

- in 2011/2012 work on basic questions where correction is necessary,
- communicate results in 2013,
- include until 2015 results into formal procedures.

Although the operationalisation of the WFD in Hesse looks more transparent than the one in Lower Saxony, both approaches (and probably in all other German Länder too) include high levels of uncertainty of what the planned measures can really achieve. This is due to the time pressure of the reporting duties to Brussels inevitable. Some scattered pilot projects cannot offer all necessary information on how measures become effective in such a short time. Therefore, only structures created for implementing the WFD can be differentiated and evaluated in regard to its positive and negative aspects.
Despite the recognition of the fact that the implementation of the WFD has to been done under time pressure by the EU, it is rather the lack of an overall transparent structure to implement a more holistic water management that needs to be criticized than delays of reports or more detailed problems of how issues were treated. The WFD offers the chance to open new perspectives towards basin approaches and to overcome old territorial thinking. This chance is by far not highlighted enough and little efforts done to stimulate a re-direction towards more holistic water management. This first phase is dominated by the struggle to fulfill bureaucratic demands and only at second place to look for content and effectiveness.

Figure 14: The structure of implementing the WFD in Hesse



Part of the problem in Germany is that many resources are lost in bureaucracy which is due to the federal system that requires an additional reporting and compliance level. Analysing the implementation of the WFD in Germany must lead to the question (again) if the system of federal states is not counterproductive once implementing directives of Brussels. The fact that each Land got its own territorial sovereignty over water management issues complicates coherent river basin approaches. The demands of adaptive water management which is described as supportive to IWRM (van der Keur et al. 2009, p. 7/in print) are among others good governance. The necessary governance style is described as polycentric and horizontal), other authors refer to the necessity of decentralised structures in water management for effectively implementing IWRM and a more adaptive water management (Henriksen et al. 2009, p.20/in print. As in Germany it seems that a more centralized structure would ease aspects of implementing the WFD, it depicts the difficulty to identify the “best” level of centralisation or decentralization depending on different tasks and responsibilities in integrated water management.

3.1.3 Financing of supplementary measures

The funds raised from the sewage charge (cf chapter 2.1.3) gave the Land Lower Saxony the opportunity to save money for the purpose of having sufficient funds for implementing the WFD. Since 2004 between 30 and 45 Mio Euro were set aside to make it available for the implementation of measures after 2009 (Interviews). This is possible because the use of the sewage service charge is restricted. Formerly the generated funds were used for measures related to water protection in general and in particular for measures related to the purification of sewage and wastewater, now the funds will be channelled for water protection in general. The funding of measures related to the treatment of sewage and wastewater is fading out because Germany - including Lower Saxony - already complies with the European Urban Waste Water Treatment Directive (91/271/EEC).

In all German Bundesländer in relation to the cost recovery requirements of WFD-article 9, a narrow definition of water services is used, that is water provision and wastewater disposal. This definition remains

questionable, since a formal infringement procedure of the European Commission against Germany (not being the only Member State) on this issue is still ongoing.
An important aspect of Article 9, that is the “adequate contribution of the water users to the costs of the water services” (e.g. agriculture creating additional costs to water service providers due to diffuse pollution – and having in theory to pay for this) have so far been discussed only marginally. Such a consideration would correspond to the principle of “polluter pays” and fulfil the requirements of Art.5 and 9 of the WFD. The main information provided so far is only for the defined water services (based on the “narrow” German definition) where the assumption of an almost 100% cost recovery for water provision and 96% for sewage discharge and disposal (FGG Weser 2005, Bestandsaufnahme) is concluded but that does not include to the full extent – as required – the external environmental and resource costs of the water services (due to methodological and data/information constraints). The assumed cost recovery for potable water provision and sewage is among others based on the “local government act on charges” that requires cost recovery in regard to operational costs (NKAG i.d.F. vom 23.01.2007 Nds. GVBl. 2007, S. 41 §5).
The current status of considering only the ”classical” water services and not getting into the discussion of “adequate contribution” to a great extent is also due to the difficulty to exactly define the “polluter/user to pay” but also due to a lack of ambition to further internalise environmental and resource costs beyond what is done so far through the different taxes/charges in place. This does not utilize the chance to generate substantive amounts that could be used to refund measures for water protection – due to methodological, but also political reasons.

In the context of the “Entwicklungsprogramm für den ländlichen Raum der Länder Niedersachsen und Bremen für den Programmzeitraum 2007 bis 2013“ (Rural development programme Lower Saxony and Bremen) two different budgets will be made available for the WFD. A total of 341 Mio € is available for implementing its priority „Improving the environment and the landscape“. 60% of this budget will be funded by the European Agricultural Fund for Rural Development (EAFRD)[8]. Around 3.65 Mio € are set aside to specifically support measures in regard to NATURA 2000 and the WFD[9]. (cc Holländer et al. 2008). The latter funds will be channelled through the relevant departments for nature protection of the MU and not the one for water management.

The approximate total cost of the proposed measures (that are considered with high priority) within the RBMPs for Lower Saxony make up around 65Mio € (Wöhler 2008). For international comparison it must be noted that no measures are funded for sewage treatment or other activities related to domestic sewage. As already mentioned Lower Saxony already complies with the European Urban Waste Water Treatment Directive (91/271/EEC). Hence, there is no more scope to make significant progress in reducing emissions by point sources as of sewage treatment plants or even untreated waste water.

At the time of writing this report, all figures in regard to the financing of measures were continuously under debate. This is partly due to the fact that the Länder face similar budgetary problems as the federal state and negotiations on the distribution of other budgets are ongoing that may affect these budgets earmarked for water protection. To a certain extent it is the result of the world economic crisis that reduced the expected governmental income out of taxes etc. and to another it is the political reluctancy to provide transparent information on the availability of funds and their planned expenditure.

Sewage will be one of the most important sources to fund investments and measures according to the WFD. The above mentioned savings of the sewage charge (“Abwasserabgabe”) will be channelled into the “Fließgewässerprogramm Lower Saxony” with its own funding directive. In total, three main funding possibilities for implementing supplementary measures according to the WFD can be differentiated (cc Sellheim 2007):

1. the European Agricultural Fund for Rural Development (EAFRD) to finance among others measures in and at the river up or even research projects within the programme PROFIL;

[8] Europäischer Landwirtschaftsfonds für die Entwicklung des ländlichen Raums (ELER)

[9] Decision of approval by the Commission dated the 26th October 2007. Please, note that all figures may still change!

2. Own funds from Lower Saxony that comprise two possibilities
    - Contributions for the integrated development in rural areas (ZILE)
    - The agrarian-environment programme of Lower Saxony NAU (Niedersächsisches Agrar-Umweltprogramm).
3. the Fließgewässerprogramm/water course development programme for the implementation of supplementary measures according to WFD (RdErl. d. MU v. 22.11.2007 - 24-62631/2).

Requests and applications have to be directed in the first two cases to the Lower Saxony Ministry for Rural Areas, Nutrition, Agriculture and Consumer Protection. This fact highlights the need of a good coordination between the two ministries since measures will be preferably funded within the scope of the WFD: the programme of measures.

The third option Fließgewässerprogramm/water course development programme under the responsibility of the MU got a special position because it is partly financed (Förderrichtlinie Fließgewässerentwicklung) by the *European* Agricultural *Fund* for *Rural Development* (EAFRD) and/or funds coming from the budget of the environmental ministry. In the case of Lower Saxony the latter budget originated from the sewage charge. The department for water management of the MU will manage funds in the context of EAFRD totalling up to 34.5 Mio Euro within the funding regulation water development (Förderrichtlinie Fließgewässerentwicklung) 2007-2013 (Wöhler 2008). The total is eventually composed of own funds, EU funds and matching funds of e.g. municipalities and water associations who apply for the funding to implement a measure. It is estimated that the available money including the co-financing of those that implement the measures by around 10-20% will only last for approximate 100 measures per year (2010-2015). A first non-structured bottom-up collection of measures in the area cooperations obtained around 2000 measures and it was not verified at that stage if these measures would be sufficient to reach the good ecological status.
Measures and therefore their funding are authorized according to different sets of criteria and priorities in regards to water courses. The authorizing authority is the NLWKN. In average municipalities and other organisations apply for funds and bring in the requested matching funds. So far the matching fund is a financial contribution in cash but not in kind. Especially smaller water associations claim for the possibility to also bring in conceptional and organisation work as matching fund. So far the co-funding of measures carried out by private persons and landowners cannot be conducted due to legal restrictions (NLWKN Bericht 2007, 13). Unfortunately, the authorizing procedure for the measures is criticized as highly bureaucratic and time consuming (Hannover workshop 14.10.09).
Besides these measures have to be implemented locally, others can be fully financed by the Land once it is decided that the Land itself will take over the responsibility for implementation.

According to some interviewees the financing of measures at urban water bodies bears a special problem. As EAFRD- funds do not allow the financing of measures in urban areas, an additional program financed only by the Land Lower Saxony will be necessary.

3.2 Coordination across scale

As mentioned in the inception report of i-five, water management requires complex coordination across scales (Huitema & Bressers, 2006), including planning activities, and thus can offer classical examples of multi level governance of natural resources. Due to this importance of the coordination across scales issue, it deserves a closer look in the i-five-case studies.
This coordination across scales touches upon issues related to stakeholder participation, the role of expertise, etc., but in this section will focus mainly the decision-making process within the water authorities, specifically concerning the definition of environmental objectives and the selection of measures. Both the objectives and the measures depend on the use made of the possibilities for exemption under art. 4 WFD, and therefore decision-making on the use of these exemptions will receive attention as well.
The assumption behind our work is that a practical and effective “moving between scales” is needed in order to deal with the two central points of WFD-implementation mentioned above. The overall aim of the WFD of

management at the River Basin scale makes an efficient coordination across scales even more important. A required integrated decision making-process needs to:

- be based on an overall approach at the river basin scale and the member state level as an agreed upon starting point (Step A below);
- this approach should then be used for the practical development of environmental objectives and the selection of measures, using local knowledge (Step B below);
- finally, procedures should be put in place to aggregate the objectives and measures at the river basin scale and check their compatibility/ appropriateness/ completeness. The resulting draft set of measures then may need to be revised, and to ensure that the measures will be implemented, all decision-making levels will need to be involved in this (step C below).

The details of such "moving between scales" differ from country to country and even basin to basin, depending on for instance the degree of centralization/ decentralization and the political culture. Nevertheless, some common key measures of success are 1) the existence of a basin wide approach, as witnessed by for instance a coherent, basin wide set of objectives and measures; 2) optimal use of local knowledge, resulting in, among others, tailor-made solutions for specific water bodies and local variation; 3) agreement of all involved authorities on the RBMP; and 4) appropriate financial arrangements for implementing a cost-effective set of measures.

When looking at Germany and esp. the Weser river basin, one needs to keep in mind that Germany is a Federal State with the "Bundesländer" having the responsibility of water management (see chapter 2.1.1.1. for more details) and having developed their own, diverging institutional structures for fulfilling their responsibilities (see chapter 2.1.1.3). Below, we have split up the main implementation steps/elements for this "moving across scales" and evaluated how this worked in the Weser Basin.

Step A - Top-down: developing a river basin approach to setting objectives and the selection of measures, establishing appropriate common guidelines in timely manner

With respect to the environmental objectives, it is important to note that the way water is managed locally can have a significant impact on upstream and downstream water bodies. Environmental objectives can therefore not be developed for each water body individually. Instead, an overarching view at the basin level is required. A similar argument pertains to the selection of measures: because of potential upstream or downstream impacts, the selection of measures requires an overarching view.

A significant overall observation in this context is that in Germany it was decided early not to set-up specific new institutions for water management based on the River Basin Approach and granting them appropriate decision-making power and finances (thus, the establishment of Länder-overlapping planning organisations with their own budget and norm-setting jurisdiction). The basic institutional arrangement of the "Bundesländer" having the responsibility and financing for water management and related measures was retained, leading to rather a rather complex solution of creating coordination associations between the Länder, which regions fall within the particular River Basin area (see chapter 2.2.2.1. for the two different options that were under consideration regarding the institutional structures for WFD-implementation in Germany). While this can be seen as at least as a step forward – in the case of the Weser the creation of the FGG Weser (see chapter 2.2.2.2 on this creation)– is has not lived up to its full potential for the first implementation cycle of the WFD (see for more details below). Regarding the general framework, the setting up of the different coordination areas ("Bearbeitungsgebiete") was done not only on hydrological reasoning but mainly based on political reasoning and on existing administrative structures in place (leading to each coordination area being in the hand of one Bundesland). In addition, and due to the FGG Weser not being a legal entity, the responsibility of reporting according to the WFD has remained at the Bundesland-level.

A positive point regarding the first implementation cycle in the Weser River Basin and the work of the FGG Weser is that the "significant water management issues" of basin-wide importance were developed and agreed upon by all involved "Bundesländer" (diffuse pollution, chloride pollution, shipping, connectivity – see chapter 2.2.2.2). Following this, working groups in these issues were set up.

Nevertheless, commonly agreed guidelines on how to practically define clear environmental objectives (and in a transparent way) including the use of exemptions were not developed at the start for the whole River Basin. In addition, the approach for the selection of measures also was not commonly agreed at the start,

while the crucial issue of cost-effectiveness (of practical use esp. in the later coordinating steps of the measures selection, see below) was not deal with at all in the beginning.
Since the "Bundesländer" kept their responsibilities for water management, one could then hope that the LAWA would set common approaches and criteria for these issues (for the coordinating role of the LAWA in general, see chapter 2.1.1.5). Also here, guidelines where either developed far too late for being of big practical use; this observation is in line with the one made regarding the issue of the approach towards the monitoring requirements of the WFD and the harmonization of data generated in this context of data management (see chapter 2.1.2): the LAWA seems to be too slow for complying with the WFD requirements (due to the complex structure of a large number of Bundesländer having to agree with a specific proposal, thus – beyond d the time needed for this - increasing also the bureaucratic effort for the development of e.g. guidelines) and seems to have not reached the aim of harmonizing overall the WFD-implementation in Germany (see chapter 3.3.1).
Some crucial guidance documents that where developed to late by the LAWA are e.g. (a full list of relevant document by the LAWA can be found in chapter 3.1.2):

- the "principles for the standardisation of programmes of measures", finalized 2/2008;
- the "catalogue of measures": finalised 2/2008 (see also chapter 3.3.1);
- the "approach towards justification of exemptions": finalized 3/2009 (also due to the finalisation of the CIS-guidance paper on this issue just in the same month).

These delays lead to the Bundesländer developing and implementing their own approach (e.g. developing own "catalogues of measures", see chapter 3.1.2, developing justifications for exemptions etc.), esp. since time was tight considering the strict deadline of the WFD and the large amount of work to be done (here again, this is in line with the observation made in chapter 2.1.2 regarding the different Länder going their own way in developing relevant expert information systems).
Even the guidelines that were developed by the LAWA have a legally non-binding character, thus leading to the Bundesländer following them to a varying extent (example here: the designation of HMWB was performed differently in the different Bundesländer, thus not following the proposed approach by the LAWA in a harmonized was; see chapter 2.2.2.2 and 3.1.2).
The division of responsibilities within the different administrative levels in Germany is one additional limiting factor in implementing an integrated water resource management. This difficulty continues due to the categorisation of watercourses into 1st, 2nd and 3rd order, which means that the responsibility for the 1st order is at the Federal Ministry of Transport, Building and Urban Development, for the 2nd order it is the Land or a respective authority or association and for the 3rd order it is the municipality (see also chapter 2.1.1.3).

Step B – Bottom-up: utilising local knowledge for setting specific objectives at water body level, selecting measures, ensuing acceptance of the overall approach/later RBMP

While as stated above, an overarching view regarding the setting of objectives and the selection of measures for a whole River basin is required, each water body has its own specificities regarding its status/specific objectives and many potential measures have a local character. So, most relevant information on the measures is available locally and needs to be integrated adequately in the process of developing a RBMP.
Based once again on the different ways the Bundesländer went regarding the objective setting and the selection of measures, the importance of the procedure of "bottom-up" provision of information on advisable measures and specification of objectives varies greatly (for the general management institutions at the local levels see chapter 2.1.1.4; for the differences regarding the process of measures selection in two Bundesländer of the Weser Basin, Lower Saxony and Hesse, see chapter 3.1.2). For Lower Saxony, it was agreed that general guidelines would be given "top-down" to the local level in order to collect the possible measures for the implementation of the WFD (see chapter 2.2.2.3). In this process, the role of the "area cooperations" is crucial and has been described in chapter 3.1.2. While in principle the area cooperations did fulfil their assigned role by providing a significant amount of valuable local information, the lack of guidance "from above" did compromise the utilisation of this information. This concerns e.g.:

- the lack of guidance on criteria and reasoning for defining HMWB (see chapter 3.1.2 and 4.3); a checklist of 9 steps for set up, but remained unclear in practice;

- the overall approach of collecting “interesting measures” without providing a specific, tangible approach first on what the specific objectives of these improvements should be (the definition of a “100% scenario”). Due to this lack of clear objective setting (the lack of a 100%-scenario) early in the process at the Bundesland level (also linked to the very late finalisation of the “deficit analysis in 2009), it remained unclear what the “level of ambition” was for the non-structured process of collection possible measures at the local level – the focus seemed to be on “feasibility” .So, it remains unclear if the requirements of the WFD will be fulfilled with the proposed POMs by the local level. This difficulty is “solved” by defining exemptions to the “good ecological status” based again on not clear/transparent criteria for the Article 4-application;
- in combination with the difficulties/lack of transparency concerning the aggregation of measures into the POM (see below), this process did create quite some dissatisfaction of the involved experts/stakeholders at local level (see chapters 3.4.1 and 3.4.3). In addition, the current financing situation seems to enable implementation of only 100-200 measures/year (2010-2015) (see chapter 3.1.3), being short of the proposed 2000 “feasible” measures by the area cooperations. Even if these factors did not lead to an overall disapprovement of the final POMs, there is room for improvement for the next implementation cycles.

Step C – Aggregation-coordination: ensuring overall feasibility and appropriateness of specific objectives, consideration of upstream-downstream relationships, ensuring cost-effectiveness of the (aggregated) sets of measures, ensuring appropriate funding

As the WFD requires a river basin approach, an aggregation at the Basin level of locally collected information on objectives and measures needs to be done. Regarding the POMs, the “cheapest solution” (cost-effective sets of measures) has to be found for each individual river basin. For most countries the river basin is a relatively novel scale that does not correspond to existing water management structures and certainly not to institutions in related policy sectors, such as land use planning and nature protection, which in many cases can create a number of difficulties for the implementation of the WFD.
Here, and starting at the highest level of the Weser River Basin, the discussions and finally the establishment of a RBMP for the whole basin can been seen as an important step forward. Nevertheless, both due to the limited authority of the FGG and the diverging approaches of the Bundesländer on setting objectives and selecting measures, the Weser level did “come after” the selection of measures at the Bundesländer level, collecting but not harmonizing the work done (see also chapter 3.1.2). To put it differently: while it would be advisable to have a coordinated collection of measures proposals from the local level in the different Bundesländer and then perform an aggregation at the Weser level (esp. regarding the measures on issue of basin-wide importance”) based on the Basin approach, the decisions already taken in the different Bundesländer were just collected and compiled for the Weser. On the important point of cost-effectiveness of the sets of measures, no efforts were done at the Weser level. In the different Bundesländer, cost-effectiveness was considered (as traditionally has been done so far) at the local level but not at a “higher” level (the River Basin/Bundesland level; see chapter 3.1.2 regarding Lower Saxony and also more generally below in the outlook section). A reason given for this limited consideration of cost-effectiveness are a number of uncertainties mentioned/recognized in the RBMP Weser and the programme of measures in regard to insufficient information on the causes of a certain status quo of a water body and as well in regard to the effect of selected measures (see chapter 3.3.2 below). In addition, Lower Saxony provided (at a late stage) a justification of the approach taken to the selection of measures as related to cost-effectiveness, basically explaining why overall cost-effectiveness can not be considered (Lauterbach et al 2009). This can be seen as an effort to explain afterwards what was done – or not.

Regarding the compilation and prioritisation (into categories A/B/C) of “the long list” of measures proposed by the local level/the area cooperations in Lower Saxony into the POMs (see chapter 3.1.2 regarding this process and its critique), the process was considered to be not transparent and basically a “black box”, leading finally to unclear methodological correctness, unclear WFD-compliance and strong dissatisfaction in the area cooperations. While the local level put a lot of effort into developing and proposing approx. 2000 measures, the aggregation process lead to a selection of only some of them; in addition, these details of the

measures have been “aggregated away”, leading to general statements regarding the measures selections and again to dissatisfaction and loss of the “bottom-up” process results.
A small, but interesting point showing that the overall aggregation of WFD-implementation issues at the Weser still remains strongly a “Bundesland-issue” is that the SIA of the POMs was done for each Bundesland separately and not for the whole of the Weser Basin.

Outlook: what are the perspectives for the next cycles of WFD-implementation regarding the coordination across scales?

Overall, significant room for improvement exists and can be realised on this issue in the Weser RB and in Germany in general. This is not just a general hope, but can be achieved, esp. since now one can build on the first implementation cycle of this in many parts novel European-wide approach to water management as defined by the WFD. Now, all the processes regarding WD-implementation have been “tested” once, something that had to take place under great time pressure and with limited resources.
Such needed improvements concern:

- the guidance to be provided early at the Weser level on how to deal with main issues at hand, esp. for the “issues of basin-wide importance”. At the same time, such guidance would be of limited impact in case it remains non-binding for the Bundesländer;
- the guidance to be provided on main methodological issues like the objective setting and selection of measures by the LAWA. Here, significant “lessons learned” come up from the first implementation cycle and chould be utilised for something like a “handbook for setting up RBMP” by the LAWA (in correspondence to the “handbook for the Art.5 implementation” developed in 2004) for the second implementation cycle.
  Here, the issue of cost-effectiveness at the River Basin level - or at least at the Bundesland level – is and remains very challenging. It needs to be seen if in other Member States/River Basins positive experiences were made on this issue that could be “transformed” to the realities in Germany. An additional possibility for improvement would be to continue working on this issue within the CIS-process in order to have some useful Europe-wide guidance to be utilised also on Germany.
  Overall, the fundamental issue/risk of the non-binding character of guidance developed by the LAWA will remain, if the responsibility for the Bundesländer for water management is not modified;
- the way local knowledge is collected for the setting up of the RBMP. Here and for Lower Saxony, the innovation of the “area cooperations” seems to be basically a successful one, but needs to take on board the various criticisms in order to better function and create a stronger sense of overall “ownership” of the resulting RBMP.

Overall, the issue of financing measures for WFD-implementationseems to need additional clarification and commitment (see chapter 3.1.2 for the general set-up regarding water management financing within the federal structure of Germany). Germany (as also other Member States) sees “affordability” of measures as a sufficient argument for not reaching the objectives of the WFD and for justifying exemptions(setting lower environmental objectives, something that does not find the approval of the European Commission and might led to infringement procedures for the first RBMP. In addition and linked to “affordability”, the financing requirements by the different concerned implementation levels and institutions for reaching the objectives of the WFD in the long run can be assumed not to correspond to the existing financing structures. This has lead e.g. in Lower Saxony to a voluntary” implementation of WFD-measures for municipalities and water management associations (see chapter 3.1.2) which might seriously comprise an overall good implementation of the Directive.

Finally, it needs to be noted that any improvements that could be implemented for the second cycle have to be tackled early in order to have the necessary time for their implementation. This improvement processes have to take place at various levels, with a strong participation of all relevant institutions and stakeholders, but under an overall strategy. For establishing and implementing such a strategy, a significant role will have to be played by the Bundesländer, but also by the FGG Weser, esp. if its role will be strengthened based on a first assessment of how the first implementation cycle practically was done.
Of course and in parallel, a more significant re-ordering of water management responsibilities and procedures in Germany could be valuable, esp. towards a strengthening of the Federal Level and the River

Basin authorities. This might even have to touch upon the procedures of spatial and territorial management (see chapter 3.1.1: not much changed in this policy field due to the WFD) in order to really enable a water management based on the River Basin approach. At the same time, such a process will face significant opposition by the Bundesländer and would take a significant amount of time for its implementation – but the evaluation of the extent in which the river basin approach of the WFD was implemented in Germany by the European Union might support such a development for the implementation cycles to come.

3.3 Integration of sectors

The need for a better integration of policy areas to meet its environmental objectives and for sustainable development is no longer up for debate. The WFD (preamble 16) explicitly recognizes this need for integration of different policy areas relevant to water at the European level. Besides policies on energy, transport, agriculture, fisheries and tourism a special attention and potential of integration lies on the spatial planning policies. As too many policies area relevant to be analyzed at different levels in regard to their implementation interface to water management, only examples can be given where integration takes place or where significant improvement would be necessary. This chapter focuses on the integration of aspects of uncertainty and climate change and as well on the sectors nature protection, flood control and spatial planning. An example how agriculture is recognized in water protection will be provided in chapter 3.5 on the "appropriation of the WFD at the local level".

3.3.1 The role of the LAWA for integration

The problems of integration during the implementation of the WFD are already discussed: "the WFD becomes operationalized by the plan of measures and the river basin management plan. Also for nature protection areas of European significance, management plans are mandatory. Until now, for the development of water bodies and for flood control, the development of flood action plans, regional water management concepts and plans are required. These instruments need being streamlined" (LAWA 2006b, 12).
This requires to adapt the federal law on water courses of first order to the recent development of European water policy. In cooperation with the federal states the goals and measures of water development should be integrated into the development and maintenance plans of water courses of first order on a routine basis. This includes the incorporation of the goals of the WFD into the guiding principles of operation and maintenance of federal waterways as well as into the planning of future measures (LAWA 2006b, 15). When this work will be completed is still open.

The LAWA report (2006) on guidelines for water body development, goals and strategies (Leitlinien zur Gewässerentwicklung , Ziele und Strategien) clearly depicts the necessity of sustainable integration of other important EU directives as FFH and birds directive. The more holistic view on water management of this paper is also shown by mentioning the tasks of flood control, satisfying the public welfare and guaranteeing ecologically functional waterbodies in the same line. The attempts by the LAWA of integrating other sectors' tasks into the implementation of the WFD has continued with the report on integrating organizational and technical aspects of monitoring duties in regard to the WFD, the FFH and the birds directive (LAWA 2006b). The problems with guidelines and specifications of the LAWA are their recommendatory character. The relations of the Länder and the LAWA are quite complex (see chapter 2). On one hand the Länder are working on timely recommendations to implement the different steps of the WFD but on the other hand they make use of their right as a Land to follow its own judicial interpretations. Examples are the "principles for standardizing the program of measures" and as well the "catalogue of potential measures" which were finalized by the LAWA in January 2008. During that time the Länder were already busy to develop their own catalogues because in spring 2008 the planning of concrete measures started by collecting ideas from the area cooperations in Lower Saxony or by workshops in Hesse (see following chapter).

The most important activity of the LAWA in regard to implementing the WFD was the development of the "LAWA-Arbeitshilfe" (the German guidance for implementing the WFD!) in 2003. It is based on the CIS-guidance documents but adapted to the German context and needs. Unfortunately, it remained the only document that was elaborated sufficiently in time that it gained adequate recognition and impact.

Although each Land is represented in the LAWA their task to harmonize the implementation of the WFD in the different Länder of Germany is hardly fulfilled. It is an open question in how far the structure of the LAWA can cope with the new demands of the WFD. Although the LAWA became a good instrument to communicate water management issues externally of Germany, it failed to support a timely and effective communication within Germany. A presidency that is rotating every two years may be counterproductive too, once systematic work and support of the Länder is needed over a longer period. A more permanent organizational structure could help to overcome this problem.

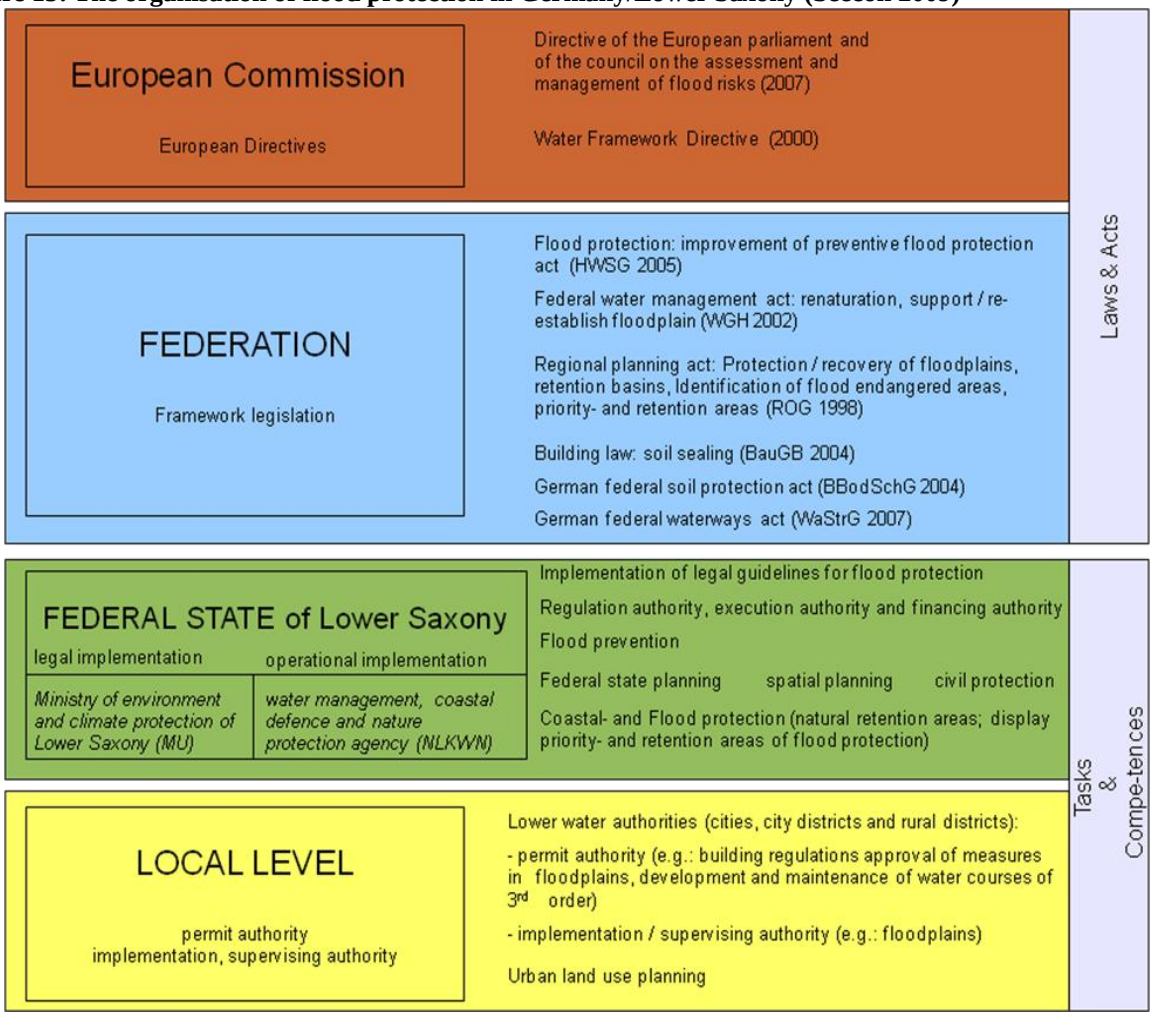
3.3.2 The integration of climate change, uncertainties, flood control and nature protection

Many aspects of integration naturally overlap with aspects of participation. E.g. the integration of nature protection into water management is partly described in the following chapter under the functioning of the area cooperations which include representatives of nature protection. Additionally, the responsibilities of nature protection and water management in Lower Saxony are merged under one roof - the NLWKN – which facilitates the integration of the two. The NLWKN is also responsible for the operational implementation of flood protection. Contrary to water body development which is the legal mandate of the Länder, flood control legislation is at the federal level, the Bund (see Fig. 18). The tasks and competences are then further broken down. This operationalization depends again of the Land in question. Hence, in Lower Saxony flood control implementation happens at the Länder and the local level (cc Fig. 18). In other Länder as e.g. Hesse the more typical three-tier system exists with the superior authority at the Länder level, the upper authority at the regional level as intermediary between the Land and the lower level represented by the lower water authority. An important function of flood control is the urban land use planning at the level of the municipalities and the designation of flood plains for the rural areas which is conducted by the NLWKN. An intermediary level between the Land and the municipal urban land use planning is the regional development plan (RROP) at the district level as e.g. the Region Hannover (cc chapter 3.1). Among others these plans designate priority areas for drinking water protection and flood control. These plans are binding as the urban land use plans developed by local authorities at the lowest level of territorial management in Germany. The RROP of the Region Hannover explicitly refers to the needs and requirements of the WFD (RROP Region Hannover 2005, S. 19). But the RROP of the Region Hannover covers only parts of the working area 21 Leine-Westaue as reference area for water management. Another part of the working area 21 is covered by the RROP of the rural district Hildesheim. Here, no explicit reference is made to the WFD but many objectives and tasks of the WFD are covered nevertheless. Also, the RROP Rotenburg-Wümme which covers large parts of the working area 11/Wümme mentions the importance of the WFD. Still, the quality of the RROP in regard to water management differs very much: some provide substantive information on what needs to be done even at a detailed level referencing to water bodies and other RROPs remain very general.

Another important instrument of ensuring integration is the Environmental Impact Assessment (EIA) for projects and the Strategic Environmental Assessment (SEA) for programs. When applicable, the "EIA directive" (85/337/EEC,) ensures that environmental consequences of projects are identified, taking into account the WFD related inputs, and assessed before authorisation is given. The same applies to the SEA directive (2001/42/EC) which was applied according to German law to the draft plan of measures for the Weser basin in Lower Saxony (and respectively in the other Länder as well). Additionally, the Strategic Environmental Assessment is part of the process of establishing the regional development plans (RROPs). Therefore the different steps of the SEI are already integrated into the formal regional development planning

procedure. This integration offers an additional potential of the RROPs. Although they are not developed according to hydrological boundaries they still could support water management: as the content of RROPs must be observed by all public planning agencies the integration of more water management details at this level could provide a legal basis to other sectors as e.g. agriculture and energy to effectively integrate the needs of water protection into their planning activities.

Figure 15: The organisation of flood protection in Germany/Lower Saxony (Seecon 2009)



Substantive experiences on the integration of agriculture into the river basin management planning were gathered in the evaluations conducted in the Weser as pilot river basin for the implementation of the WFD. The link of agriculture and the WFD was identified as one of the highest priorities at the EU level. The pilot river basin Weser was one of the rivers chosen for in depth analysis to support the Strategic Steering Group on Agriculture as one organizational body in the Working Structure under the WFD Common Implementation Strategy. The resulting report on “Experiences in Analysis of Pressures and Impacts from Agriculture on Water Resources and Developing a related Programme of Measures” by Cherlet, M. (ed) in 2007 provided among other recommendations, a first consolidated ´Catalogue of Measures` conforming Article 11 of the WFD. Unfortunately this report gave no indication on what needs to be done at the level of European Agricultural Policy to mainstream the two policies on water and agriculture to avoid counterproductive aspects in implementation as e.g. the stop of the farmland set-asides in 2009 as instrument of European agricultural policy.

The integration of aspects of uncertainties got different dimensions. E.g. uncertainties relate to incomplete knowledge when information and/ or data about a system are insufficient or unreliable or it relates to when outcomes of measures in a river basin are unpredictable because of the complexity of the systems, or it may relate to different perception of actors because different actors might associate specific information with different meanings due to their mental frames (cc Brugnach et al. 2007, 1089). The recognition of uncertainties such as climate change or changes in administrative systems underline the need for new, more adaptive management styles in water management in general and groundwater management in particular (Pahl-Wostl et al 2008).
Uncertainties are mentioned at different levels of reporting. Frequently uncertainties are mentioned at the lowest level of data aggregation: the so-called C-reports. Here, uncertainties are made explicit in regard to the impact of measures on a certain water body. The deficit analysis is supposed to take these uncertainties into recognition once developing the100% scenario as basis for the definition of all measures necessary to achieve a good water status. This work is in Lower Saxony still ongoing and will not be completed before end of 2009.
Uncertainty is already recognized in the RBMP Weser and the programme of measures in regard to insufficient information on the causes of a certain status quo of a water body and as well in regard to the effect of selected measures (NLWKN 2008 b, 55 and FGG Weser RBMP 2009, p. 36 & 65). The RBMP Weser mentions climate change as potential source of uncertainty but does not give any recommendations on how to deal with it. Apparently is available information on impacts of climate change already included into the drawing of the RBMP Weser. Still, there is no information available on the adaptiveness of measures to climate change and the programme of measures only refers to the fact that uncertainties due to climate change have to be integrated into the future planning of measures. For that purpose the LAWA developed 2007 a strategy paper on climate change which mainly focuses on depicting potential effects on water management but provides very limited information on measures that are suitable to better cope with impacts of climate change.

3.3.3 The role of the municipalities for integration

Box 9: Municipalities as level for practical integration

The effects of the WFD on municipalities are threefold. Firstly, they are responsible for maintenance and development of water bodies of 3rd order. Secondly, they are involved in water supply and thirdly, they are responsible for sewage removal, purification and discharge into water courses (cc Witte & Nutzenberger (2006), p. 160 in U. von Alemann & C. Münch. Europafähigkeit der Kommunen.). Additionally, local authorities at rural or city districts are responsible for the implementation and or compliance checks with other environmental directives as e.g. the FFH directive. As well urban land use plans are developed and become effective at this level. This includes the designation of areas prone to flooding. Municipalities are in many cases the implementer of WFD measures which demands the approval of the local administration in regard to the budget. This formally guarantees the information, consultation and accordance of other departments. This depicts that it is at the local level where integration takes place to a large extent. It raises the question if integration can be guaranteed at this level in a qualified manner? Fact is that at the municipal level staff is reduced and plans are to further reduce civil servants at this level. Additionally staff trained as agronomist, biologists, geographers, landscape ecologists, water engineers and similar is successively replaced by staff trained in general administration. To shoulder the tasks directed to the municipal and district level becomes increasingly difficult.

The most important level is very likely there where implementation of measures takes place. The selection of regional pilot projects in Lower Saxony for funding e.g. took place on the basis of 12 criteria of which one was asking for the “integration of compensation measures under the nature protection law, water body development plans (Gewässerentwicklungspläne), water power and concepts for nature protection into the river basin management” (MU 2005. Pilotprojekte WRRL, Fördergrundsätze). It is routine work for engineering offices once being appointed to develop a water management plan or to do a feasibility study on a certain structural measure on a river to also consider local spatial plans, nature protection aspects like NATURA 2000 areas or flood zones. The problems appear once it becomes very practical: as the process of designating the NATURA 2000 zones in Lower Saxony was perceived by many farmers and

landowners as very dis-satisfactory, their perception towards measures within the WFD – “another thing coming from Brussels” – is rather negative and not supportive. The reasons are manifold: not adequately trained personal at the level of the Lower Environmental authorities who did not communicate well the goals and tasks of the FFH directive towards the farmers or lacking exchange of information between the different responsible departments at the NLWKN working on NATURA 2000 and on the WFD (Interview 10).

Summarising it can be stated that the implementation of the WFD at local level affects at first place the plans in regard to flood control and nature protection. When and where integration or cross-sectoral influence of policies takes place, depends on local conditions. Measures for implementing the WFD also depend on so-called ´windows of opportunity`: e.g. plan approval procedures, land for sale or exchange offer these opportunities to implement or combine measures. It is evident that areas which are designated for NATURA 2000 rather the topic of nature protection comes into the plans of the WFD and in other areas including areas designated as flood plains it is flood control.
Besides the local conditions as important factor for differences in implementing the WFD the factor of individual leaders cannot be highlighted enough. Once it comes down to the planning and implementation of measures it is the local leader at the municipality, of a NGO, at the water management association or somewhere else who is convinced of the benefits of the WFD – this person may promote the local implementation and can make the difference. Generally these persons are progressive and good networkers and they develop this feeling of ownership for the WFD. Almost all interview partners supported the importance of local leaders for implementing the WFD.

3.4 Public participation

For public participation many interpretations and definitions exist. To ease understanding and allow comparability of cases, we defined in the i-five inception report public participation as “direct participation in decision-making by non-governmental stakeholders (the general public, individual companies and organized interest groups). It requires but goes beyond providing access to and actively disseminating information, and may include consultation and different forms of active involvement of the public” (Ridder et al. 2005). Public participation thus covers both “stakeholder participation” and participation of ordinary citizens. In addition, different government bodies may participate in the implementation of the WFD, but this issue is mainly covered in section 4.2 and 4.3.

3.4.1 The general setting of public participation in Lower Saxony

Public participation in Lower Saxony (for an introduction to the different public participation instruments please see chapter 2.2.4) takes place at the Länder level. The decision-making at the level of the ministry is supported by the advisory council/Beirat (see fig. 19) which is meant to guarantee the information flow between the authorities and different societal groups as well as for the advice of the Ministry of Environment in regard to this matter. So far, the advisory council is rather meant as instrument for information than of consultation. Potential members of the advisory council are around 40 organizations; this does not mean that they all attend the meetings. The participating organizations are different associations and umbrella organizations representing local governments, water utilities, water associations, inland shipping, industry including the chamber of trade and industry, agriculture, larger nature protection associations as the BUND, NABU and WWF, anglers` associations and universities. The annual to bi-annual meetings are chaired in rotation by the Ministry for Environment of Lower Saxony and the respective authority of the senator for environment of the city state Bremen (the senators of the city states in Germany correspond to the ministers at the Länder level). Unfortunately this instrument can no longer be considered as really functional due to its erratic nature of meetings.

Since 2005, annual regional river basin fora serve the purpose of informing the public about the status quo of implementing the WFD taking a more basin-oriented and therefore regional focus.

Participation in a more active form takes place at the Länder level in form of extended working groups or sections to the ministerial department into which selected representatives of organised interest groups are invited (see Figure 16). This is a form of active involvement of selected stakeholders.

And eventually, participation takes place at the sub-regional level in the area cooperations in form of active involvement but still with a focus on the expert public.

Taking a closer look at the area cooperations it can be summarized that participatory activities are very diversified in quantity and quality from case to case. The dynamics reach from area cooperations which are rather ineffective resulting in little activities in the respective working areas to area cooperations that developed high dynamics initiating many activities. The focus of the German case study lied on three different area cooperations: Weser/Emmer, Leine/Westaue and Wümme.

The model project Hamel was conducted in the working area Weser/Emmer No. 10 and included stakeholder cooperation and integration. Here, experiences were gathered on how effective active involvement may look like once implementing measures to improve hydromorphological problems.

In the working area Leine/Westaue No. 21 several pilots or model projects including participation were carried out including sensitisation measures for the general public.

Additionally to intensive cooperation in the working area Wümme No.24 among organized stakeholders, quite extensive activities to reach the general public can be cited. Besides well developed public relations work including workshops with the public it is especially the environmental education focusing at school children that must be mentioned here. One example of their brochure series - picking out the otter as central theme - is shown below.

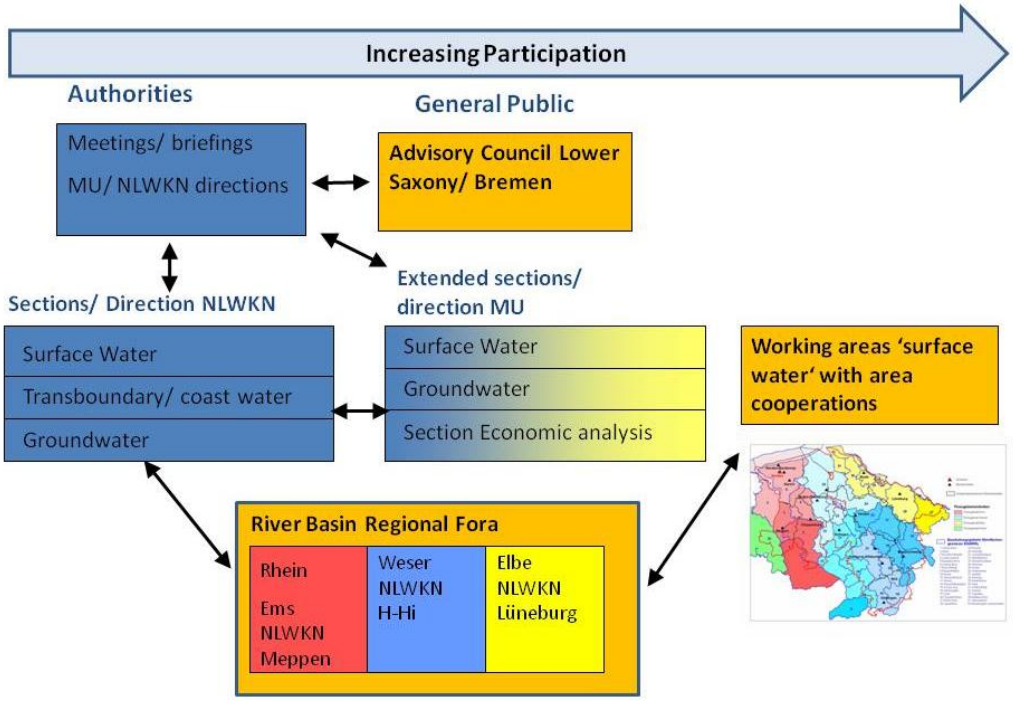
In summary, participation in Lower Saxony and respectively in that part of the Weser basin is dominated by informative activities and most importantly by the area cooperations. Their impact on decision-making and on the planning of measures differs according to their different internal functioning (cc chapter 4). According to an evaluation in 2007 the satisfaction of stakeholders with this new possibility of participating in decision-making by the means of the area cooperation was generally high. Stakeholders got the general feeling that they are perceived and their opinion respected from “above”. Still, since 2007 with the start of planning measures this enthusiasm has partly decreased as many decisions as e.g. on the designation of HMWB and the priority setting of measures were not transparent. This is especially true for the side of nature protection since the publication of the draft river basin management plans and the plan of measures: the frustration was high that the plans remained that vague despite intensive and detailed discussions in the area cooperation. The three organizations MU, NLWKN and the FGG Weser did not achieve to communicate the programme of measures as an offer that is nevertheless more than a “shopping list” but follows a logic based on criteria and priorities for implementation.

Although biggest differences in participation among the Länder is in initiating active participation, already at the level of publishing the draft programme of measures and the draft water management plan significant differences can be seen. E.g. Lower Saxony first collects all statements on the draft programme and the plan and makes them only public in an aggregated version commented by the Environmental Ministry – to be expected December 2009. In Hesse already in August 2009 all statements can be already looked at in the internet in their

original version.

Interestingly, the different approaches in the Länder became increasingly important once Art. 14 was interpreted and operationalised. Respecting the existing competencies and in order to ensure that Member States were not able to block each other's activities, the responsibilities for public participation was associated to the Member States itself. In this, the river basin approach was neglected (Interview No. 4). Public participation became an end in itself instead of supporting the overall intention of the WFD It is an example how this article can counteract the river basin management approach depending on its interpretation.

Figure 16: Operationalising the WFD including Coordination and Participation in Lower Saxony



Box 10: The participatory approach for developing the plan of measures in Hesse

Since in Hesse the lower water authorities developed for their areas a 100% scenario for achieving a good water status, it was necessary to present and discuss the corresponding measures to the expert public. In the following around 16 events including approximately 720 people were organized from January to February 2008 on groundwater or "diffuse pollution". The so-called "Beteiligungswerkstätten" or participatory workshops were conducted for measures regarding surface water or "morphology" from March to June 2008 in 18 events comprising approximately 1500 people. Whereas stakeholders of the groundwater workshops were composed of farmers, representatives of farmers` organizations, representatives of agricultural authorities, water utilities as well as of agricultural consultancies the workshops on surface water included especially local authorities, nature protection, fishing, forestry and agriculture. The general idea of all workshops was to present planned measures and to verify the importance and possibility of implementing planned measures (http://www2.hmuelv.hessen.de/umwelt/wasser/wrrl/umsetzung/ massnahmenprogramme/ bwerkstatt). All workshops addressed (and invited) solely representatives of organizations and not the general public. In one groundwater workshop an additional ranking of measures by the stakeholders was carried out and was supposed to provide a focus and identify measures to be implemented first. Despite, the satisfaction of participants with the cooperative approach as such there was a reluctance in that workshop that authorities make directly use of the workshops result (Schnittstelle Boden/HLUG 2008).

3.4.2 Special participatory activities beyond the specifications of the WFD

A special round table initiative by the Länder Thuringia and Hesse was founded the 18th of March 2008 on the issue of salt emissions into the Werra and Weser. The company K+S AG produces agricultural fertilizers by potash mining. Since more or less 100 years parts of the residual salt solutions are discharged into the Werra (www.runder-tisch-werra.de). Whereas the biological threshold level for chlorides is < 500mg/l, emissions into the Weser/Werra are permitted up to thresholds of 2500mg/l. The recommended threshold by the LAWA for groundwater is even at 250 mg/l Chlorid (LAWA 2004). As the company employs around 4200 people in Eastern Hesse and Western Thuringia its importance for the regional economy is substantial. This is a typical example of a conflict economy versus water protection. Accordingly, this round table was created specifically to develop alternatives to the recent procedure of emitting high salt loads into the river and is not developed as response to implement article 14 of the WFD. The FGG Weser is included by the representatives of the Länder concerned. It can be expected – but there is no direct obligation - that results of the round table will be considered in the next round of the river basin management plan.

A special issue of concern is the information of the local public in the context of implementing measures. This should belong to the tasks of the organization that is implementing the measures. As for smaller municipalities it is a general problem to manage and coordinate the process of implementing measures in terms of time, money and know how, it seems to be unlikely that they are in the position to conduct an adequate information and sensitization of the general public in regard to water management issues. This also impacts the quality of participation of the local public in general – if any (Interview 10).

One initiative of the area cooperation Wümme is the successful development of the participation concept Wümme which comprises since the beginning a kickoff-event, a Wümme conference with 80 attendees at the beginning of the WFD implementation for developing a general consensus on water management issues among all actors and additionally theme days, annual Wümme days and excursions.

One example of the many local activities on environmental education and participation is “schools for a lively Weser” (www.duh.de/327.html) which tries to raise awareness for local water bodies and rivers in particular. Another example is the Leinewerkstatt (the Leine is a tributary to the Weser) that works towards the same direction of sensitizing people for the local waters (www.leinewerkstatt.de). These activities are generally initiated and funded independently of state organisations and authorities.

Concluding, it can be stated that the public participation approach that was developed in Lower Saxony cannot be described as unique but what develops and developed at the local level in some cases might be described as unique. Many factors as leadership, already existing relations, geography, administrative borders, local resources, demographic and economic factors influence the willingness of local participation. It confirms the necessity that superior water authorities develop open structures that allow that such processes grow individually adapted to local circumstances. Nevertheless, after this first step a second step of supporting the positive examples and disseminating them as role models would be desirable.

As for the activities of the pilot projects in the Weser basin also for the task of conducting participation a strategy to monitor and evaluate it on a more or less regular basis and in particular to make it transparent is not visible. The 2007 carried out evaluation of participation in Lower Saxony (Ridder et al., 2007) was communicated in regard to the relatively high satisfaction level of participants with the participatory activities conducted (70% of participants of the study covering Lower Saxony were rather satisfied with participatory activities in 2007!). Unfortunately, the aspects that were criticized in 2007 as e.g.

- insufficient flow of information,
- late communication of the MU,

- lack of clarity in tasks and responsibilities,
- non-transparent planning and financing,
- insufficient public participation addressing the public at large,

did not significantly improve. The recommendations were disregarded on how to improve the process like more transparency of the extended working groups of the ministry towards the public or on developing clear arguments towards the area cooperations on why their propositions will be integrated into the reporting or why not. Eventually, the opportunity was missed to take out criteria of the study for future benchmarking and monitoring of progress in participation.

Another particularity of participation of nature protection in Lower Saxony "the Wassernetz" which was already mentioned in 2.2.4 will be further described in 4.2.

3.4.3 Scope for improvement

Social learning – and the learning about social learning – teaches us to pay more attention to the performance of our water management system and to the context in which it takes place, rather than to prescriptive routine activities (Rotter et al 2009).
Whereas the institutional and organizational setting in Lower Saxony corresponds to all requirements in regard to participation, the problems or aspects that should be changed and improved can be found in the details of the process.
One of the main reason for dissatisfaction in the area cooperations was the lacking information on the availability of funds to implement additional measures. Further, for the area cooperations themselves the annual budget for each area cooperation of 15000€/year was for a long time not ensured. Another source of dissatisfaction was that in a new evaluation of HMWB in 2007/2008 the percentage of HMWB in Lower Saxony increased from 44% (according to first evaluations in 2005) to 84%.
The fact that nature protection is still only represented by NGOs was already critized (Ridder et al. 2007, 14) and is still the case. Although nature protection and water management are under one roof – the NLWKN – it cannot taken for granted that all aspects of nature protection will be considered in decisions regarding the implementation of the WFD. The incorporation of nature protection by including the representatives of the respective authority into the area cooperations would be an important signal that this issue is adequately considered.
The main frustration with the river basin management plans (drafts) and the programme of measures resulted out of the lacking spatial connectedness of measures. The procedure was even explained as being desired by the Gebietskooperationen: *„Daher haben die niedersächsischen Gebietskooperationen bei der Maßnahmenentwicklung großen Wert darauf gelegt, im Maßnahmenprogramm keine konkreten Einzelmaßnahmen an den Gewässern festzulegen, sondern im Rahmen einer programmatischen Ausrichtung flexibel zu bleiben"* (Anhörungsdokument Maßnahmenplanung Weser). The documentation and/or expression of the desire, interest or decision of a stakeholder group in an official document is very critical because it requires their agreement to such statements. Even if this is the viewpoint of some of the members of the area cooperation, it cannot be used as being representative for all of them. It is counterproductive for the future cooperation of these groups.

3.5 "Appropriation" of the WFD at the local level – the example of water abstraction and farming

The i-Five project deals with the implementation of the WFD at different levels. The focus on the local level raises different questions concerning for instance the context and the expectations concerning water management and the WFD, the instruments or institutions that are crafted or modified to meet the requirements of the WFD, and the issue whether these requirements trigger other local changes. If we want to transplant innovative instruments or institutions for implementing the WFD, we need to understand the impact of the WFD on local water management practices.

The appropriation of the WFD at local level takes place in very different forms according to the many different functions of water. The amended Lower Saxony Water Act of 2007 - as a result of the WFD – allows to further develop the already existing cooperation between farmers and water utilities or water associations (NWG) §§ 47, 51. In 2008 already 40% of all drinking water abstraction areas were managed based on such cooperative agreements. The cooperation of farmers is continually increasing leading to more than 10.000 (voluntary) contracts in the areas where these contractual agreement are offered. The additional services and activities are paid through the water abstraction charge that is at 0,05 €/m³ on potable water (cc chapter 2.1.3). This voluntary instrument is an example for effective groundwater protection beyond legal instruments defining standards and thresholds.
This development underlines too the principle that water management decisions should be taken at the lowest appropriate level and it provides a good example for the integration of stakeholders into water management decisions.

Box 11: "Flüsse suchen Partner"

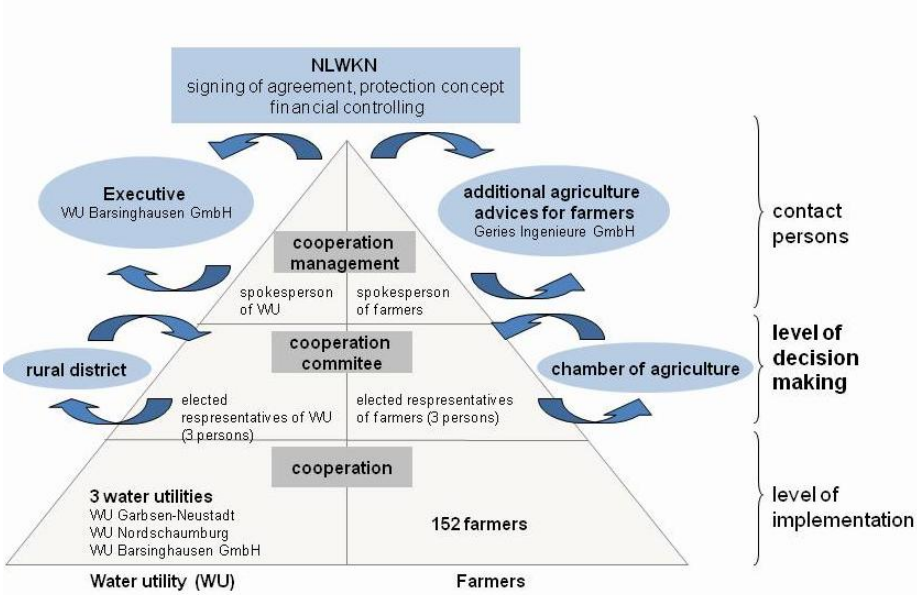
Another example for the appropriation of the WFD at local level is the pilot project "Flüsse suchen Partner" or „Rivers are looking for partners". The project aims to achieve less costly than with technical solutions an effective river development by giving rivers more space. This is supposed to lead to better water dynamics and morphological conditions of the rivers. A controlled water course development provides corridors for the natural dynamics of the rivers. Within these corridors rivers can run and meander freely including the natural damaging of river banks. Land use limitations and losses are compensated by the Land of Lower Saxony to landowners who participate in the pilot project and beforehand agreed to provide such corridors on their land. In case of river development beyond the zoning of the corridor, a buffer zone offers the potential of renegotiations of the size of the corridor with land owners or in case also of carrying out technical measures to stop the river of further development into a certain direction. The pilot projects are monitored to collect information on the effectiveness of the project and on the conditions under which such measures are advisable. Contact points for the pilot projects are the respective local governments, the chamber of agriculture, the local farmers association and the NLWKN. Information is also provided by the means of the area cooperations which further discuss this new instrument of local river management (WIB Nr.2, Oct. 2008 & Flyer by Agwa Ingenieurgesellschaft/ Landwirtschaftskammer Niedersachsen 2009).

This cooperative approach between water management and agriculture is not exclusively followed in Lower Saxony. For example, Hesse makes use of this approach: 67 cooperations between farmers and water suppliers (among other actors) exist for water protection zones and additionally six regional cooperations between agriculture and water management on groundwater protecting farming practises (see HLUG 2007).

One report on the future of water supply in Lower Saxony (MU 2002) points out the importance of local to regional development concepts that offer the possibility of guaranteeing a protection of groundwater in their entire spatial extension.

The many laws and acts dealing with the protection of groundwater (WFD, Water Budget Act, Federal Water Acts, Pesticides Acts, Fertilizer Acts,…) are not sufficient to protect the land beyond the drinking water protection zone. Beyond these thematically and/or spatially restricted administrative laws there is no

Figure 17: Appropriation of the WFD at the local level taking the example of drinking water supply (adapted & translated of NLWKN 2008, p.12)



groundwater protection covering completely the land. Voluntary cooperations and agreements complement the formal and rigid mechanism of administrative law in water protection zones. Regional to local water supply concepts can better take into account the manifold factors of the different local pressures on water.

3.6 Role of expertise

Implementing the WFD and especially setting environmental objectives and developing programmes of measures requires a lot of information. This chapter deals with the question how external expertise (outside of authorities dealing with the implementation of the WFD) is systematically integrated into the process, if at all. This question preceding is how can we systematically extract relevant information of stakeholders and fill gaps of missing information?

3.6.1 Generating new information and extracting stakeholder knowledge

One means to gather expert information and to later generalize this knowledge is to make use of case studies, models and pilot projects.

All Länder in Germany have conducted regional pilot projects to gain experiences on selected topics for further implementation of the WFD. In cooperation with diverse interest groups the pilot projects are supposed to clarify questions of management and to develop measures.

In the river basin district Weser - comprising the seven Länder - 26 regional pilot projects have been carried out; most of them to collect information on:

- Agriculture
- Improving connectivity
- Improving cost efficient measures.

Box 12: WAgriCO
The project WAgriCo „Water Resources Management in Cooperation with Agriculture“ devoted its 3-year life span to create more acceptance for groundwater protection measures by intensively including the farmers into the discussion of measures. Results were also that a more focused planning of measures especially in regard to non-point pollution were realized and as well the integration of these measures into national agrarian-

Additionally, within the entire basin of the Weser one joint project is conducted to analyse the nutrient situation and accordingly develop measures (www.fgg-weser.de). Most of the projects are funded by the responsible Länder. The 17 pilot projects (including the Aller case study and the WiB) located in Lower Saxony are respectively funded by Lower Saxony with some exceptions which are funded through European instruments as RTD FP6, Interreg or Life. Most pilot projects funded by the Land are carried out under the responsibility of a maintenance association.
The advantage of the pilot projects is the opportunity to integrate external expertise into the WFD process in a sustainable manner. Still, weaknesses exist in some projects especially concerning a medium to long-term monitoring of results. In some cases it would be conducive to further integrate externals into monitoring activities to further guarantee a high standard and facilitate dissemination of information and results. Also, what is lacking is not only the exchange of the actors in the pilot projects but also a general evaluation of all pilot projects making a conclusion of what worked well and should should be followed up and what failed or needs major revisions and adaptations for being operational.

Another means of exchanging information at the Länder level is the annual Water Forum Lower Saxony (Niedersächsisches Gewässerforum) which takes place in September 2009 for the 7th time with around 450 participants. Changing topics and crosscutting issues from surface water management, groundwater, climate change, flood control to technical aspects of water management are addressed and presented to the interested (expert) public.

Lower Saxony missed the chance at the beginning of the implementation of the WFD to initiate an open discussion on different topics and at different administrative levels to identify opportunities that go beyond a mere compliance with a new directive. Such a stakeholder knowledge elicitation process could have e.g. inspired the ongoing administrative reform, the organization of implementing the WFD in Lower Saxony, the discussion on the financing of measures and on the cost-benefit analysis of measures. The same applies to the lacking exchange among the different area cooperations (cc chapter 4). It would not only have helped to exchange information but also offered to streamline implementation.

3.6.2 The integration of external expertise

In Dietz & Stern 2008 the following five key principles for effectively melding scientific analysis and public participation were mentioned to be key:

1) ensuring transparency of decision-relevant information and analysis
2) paying explicit attention to both facts and values
3) promoting explicitness about assumptions and uncertainties
4) including independent review of official analyses and/or engage in a process of collaborative inquiry with interested and affected parties
5) allowing for iteration to reconsider past conclusions on the basis of new information

In the case of the Weser there is no explicit strategy to incorporate external expertise in the sense of systematically integrating science into the operationalisation of the WFD. In the WFD implementing administrative bodies in Lower Saxony there is the mentality to first give it a try themselves or thinking about

internal solutions before considering to include external expert knowledge. Nevertheless at different levels, science enters in form of advise: as mentioned in chapter 3.4 the advisory board Lower Saxony/Bremen for the implementation of the WFD meets once a year. Five universities participate on a more or less regular: Leibniz University Hannover, ICBM (Uni Oldenburg), FH Nordost-Niedersachsen, University of Bremen, University of Osnabrück.

Additionally to the regional pilot projects on implementing the WFD, the Land Lower Saxony finances other projects on issues of concern for environmental management. Generally, consortia are created which incorporate different research institutes and/or universities and the NLWKN. Examples are here KLIFF and KLIFWA on climate change, adaptation and water management.

One system that was developed for all German Länder for conducting a fish-based evaluation of the ecological status in flowing waters is fiBS (fischbasiertes Bewertungssystem). It was developed in 2005 and is now available in an updated and improved version freely accessible in the Internet as excel-based software application. The testing of water bodies must be representative and according to a described procedure. In practice the system proved the difficulty to define correct reference conditions as basis for all classifications. The development of the handbook that explains the use of fibs was funded by the Federal Ministry for education and research. The working group for this handbook comprised 19 different organizations from public administrations from the different Länder to research organizations, consultancies and associations.

As Lower Saxony is not very transparent in regard to the integration of external expertise, it is again advisable to look to another Land. The Land Hesse uses the expert system FIS MaPro for the planning, control and documentation of measures. As the purpose is also to develop one coherent catalogue of measures it guarantees also a coherent integration of expert knowledge into the planning – if sufficiently fed into the system. FIS MaPro supports the water management administration in Hesse to implement the WFD. Besides documentation and databank management it offers features like the visualization of recognized deficits and develops effects of measures on deficits in form of a matrix. One aspect that is criticized is that the expert system is only available in the Intranet of the upper and superior water authority and for those who implement the measures as associations and municipalities the access is not provided. Still, such an expert system offers a possibility to work systematically and transparent towards the planning of measures if aspects of the system will be changed and improved.

Although initiatives to integrate external expertise into the decision-making process and into the process of selecting measures were taken, there is no strategy how and when this should be done. The integration of the results of a master thesis or a feasibility study in the selection of measures are first attempts but the question remains how this integration of external expertise can be institutionalized in addition to the area cooperations..

4 The i-3 in the case study area: Area cooperation

This section elaborates on the specific characteristics of the i-3 "area cooperation" and its relation with the above mentioned themes. It builds the starting point for the assessment of transplantability of the i3s.

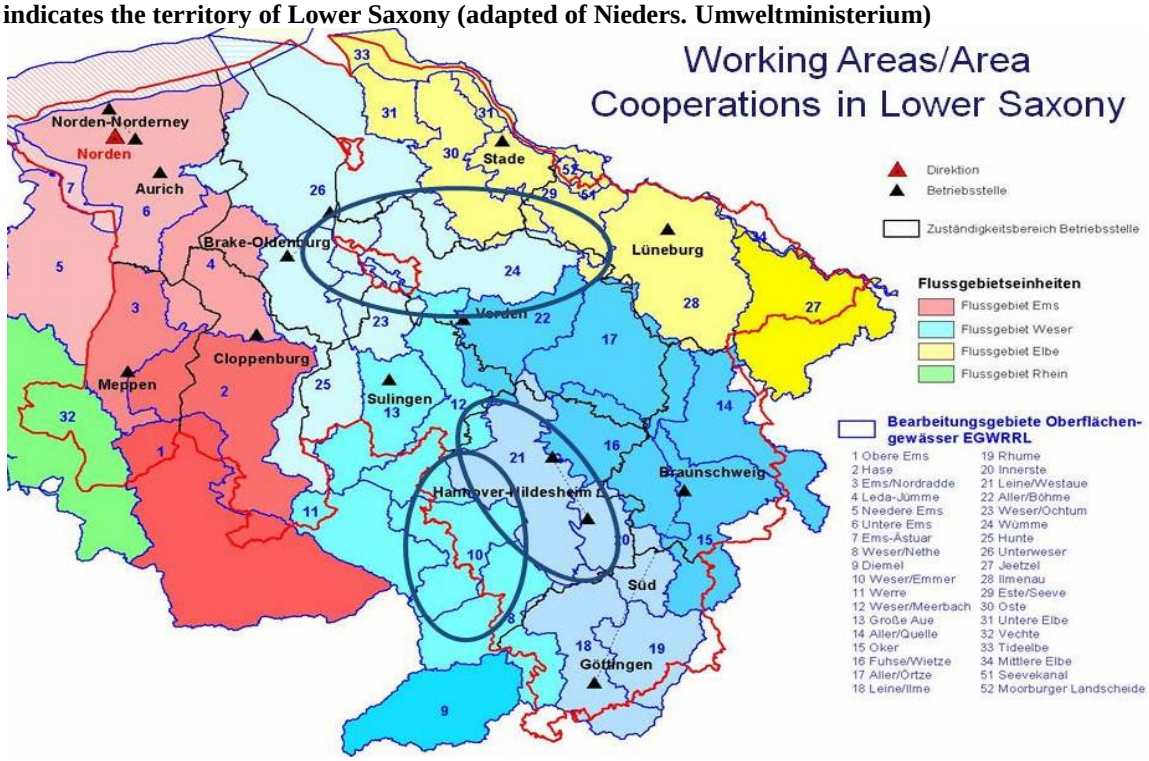
4.1 Functioning and characteristics of the area cooperations

In autumn 2005 the Lower Saxony Ministry of Environment intended to establish for the complete land area-cooperations, i.e. an instrument to actively involve organized stakeholders in the implementation of the WFD. Around 30 'area co-operations' cover the whole of Lower Saxony. Even though the hydrologically defined working areas for surface water add up to 34, the idea is mostly followed that one area cooperation corresponds spatially with the hydrological working area. Due to practical reasons as e.g. transboundary issues or special situations as in the coastal areas eventually 28 area cooperations were established.

The intended composition for the area cooperations was 10 permanent members and additional non-permanent members according to demands and tasks (see listing below). Members are no persons but organizations. Permanent members are: districts, cities, municipalities, water management boards and associations, agriculture and forestry, water providers, industrial representatives, environmental associations/nature protection, and the NLWKN. According to local-regional situations the following may join: fishery associations, dike associations, hydropower operators, administrative representative for inland water transport, Agency for geology and mining of Lower Saxony, roadworks administration and other special administrations. Approximately 15 members have a vote and other non-permanent members have an advisory status but no vote. As local environmental authorities, representatives of the municipalities, the water management associations and environmental associations are represented in the area cooperations, these organizations carry out – or are responsible – for the physical implementation of measures are already involved at the planning stage of measures.
In practice 15 to 20 members meet twice a year. Before 2009 the area cooperations met around 3 to 4 times a year. With the finalization of the draft programme of measures, a reduction to 2 meetings a year was imposed by the MU. This is partly criticized e.g. from the side of nature protection but welcomed by other organizations.

While the MU provides basic funds and the general organisational frame, for the detailed internal rules in procedures, the area cooperations are in charge. Most of the area cooperations have drawn their formal rules for internal procedure in which the executive management and other duties as moderation are determined. In some cases these rules make it explicit that members of the area cooperations must be nominated by the NLWKN. All administrative representatives are organized according to municipal or district boundaries. This differs only in the case of the water management associations which are organized according to hydrological conditions and boundaries.

Figure 18: Area cooperations in Lower Saxony: the bluish shaded areas belong to the Weser basin. The red line indicates the territory of Lower Saxony (adapted of Nieders. Umweltministerium)



The general objective for the area cooperations has been the active involvement of interest groups into the implementation of the WFD to develop typical and innovative measures for the region. Main tasks are (see MU 2005d)

- **For Monitoring:** Accompany monitoring concepts for the respective area under the consideration of regional particularities.
- **For the Definition of Management questions:** Define the most important water management questions in the area; conduct a deficit analysis based on the C-reports.
- **For the programme of measures:** Initiate and conduct the discussion on measures.
- **For the river basin management plans:** Development of generally valid management goals; final identification of heavily modified (HMWB) and artificial (AWB) water bodies; justification for the extension of deadlines for a stepwise implementation of management goals; examination of the necessity of lower environmental objectives.

As the NLWKN is the authority that is responsible for technical and regional aspects of implementing the WFD, it is also their task to moderate between the supreme environmental authority and regional to local interest groups. This new role (Kastens 2007, 64) manifests their position in the executive management of many area cooperations.

An evaluation on public participation with regard to implementing the WFD from Spring 2007 (Ridder et al. 2007, 11) revealed that more than 80% of members of the area cooperations represent the interest of their organisation as part of their regular employment. Less than 10% of the volunteering persons mainly representing environmental organizations or fishery associations receive a financial compensation. The average time invested into the area cooperations was around 5-10 hours per month. It can be assumed that since 2009 the necessary expenditure of time is less, since the meeting frequency was reduced.

The diversity of the area cooperations is manifested by its different settings of responsibilities in regard to the executive management, the overall direction and the process moderations for the area cooperations. Although in most cases the management was left with the NLWKN in some cases as e.g. the Oker area cooperation the executive management is carried out by the district (Landkreis Wolfenbüttel) and the process moderation is with the water and soil association and in Aue/Lühe it is the water maintenance association who took over that responsibility.

For the purpose of analyzing the instrument of the area cooperations in Lower Saxony three area cooperations were looked at in more detail (see blue circles in Figure 18). The organizational set-up of those area cooperations in question looks like following:

Table 3: Organisational set-up of area cooperations (Weser-Emmer, Leine-Große Aue; Wümme)

	Executive Management	**Direction and Moderation**
Weser-Emmer (No.10)	NLWKN	District (Landkreis Hameln-Pyrmont)
Leine-Große Aue (No.21)	District (Region Hannover)	NLWKN & District (Region Hannover)
Wümme (No.24)	NLWKN	Water and Soil Association

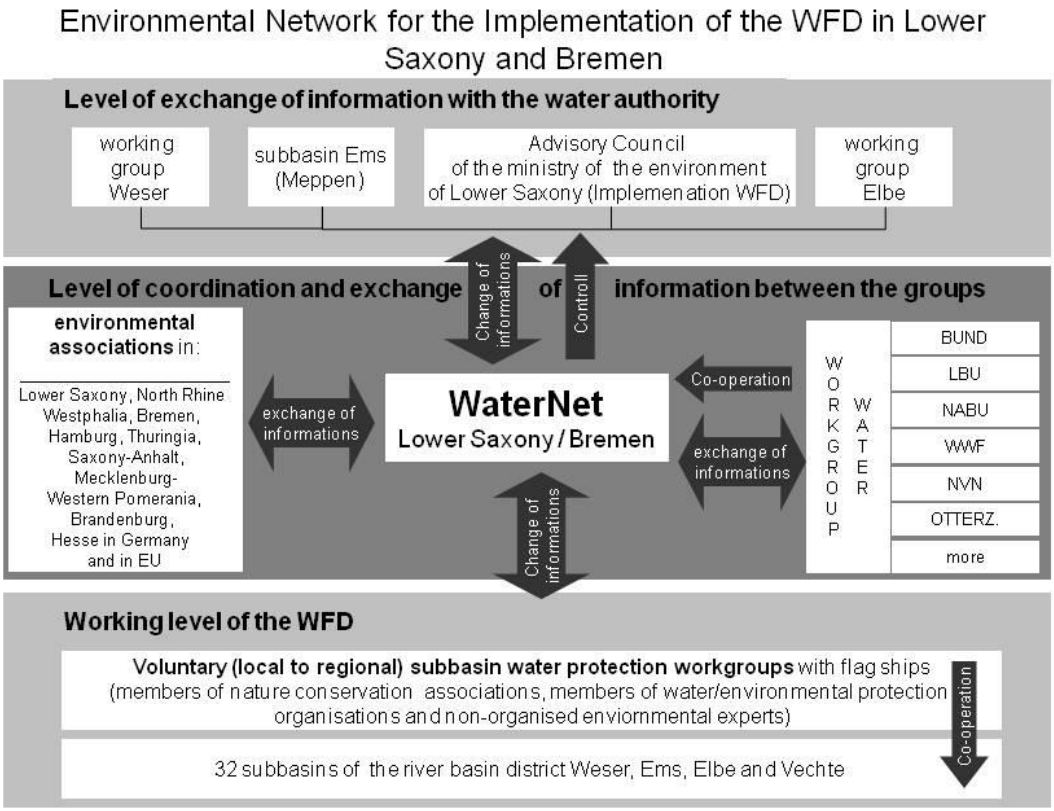
4.2 Achievements of the area cooperations for water management

There is no doubt that networking and communication among actors of water management improved (cc Borowski et al. 2008). More actors know about each other and trust developed (Interview 8 & 9). More people are informed and involved in decision-making. Information is not only more effectively communicated downwards (from the ministry/the NLWKN to the actors in the field) but also upwards. What remains to be improved is the horizontal dissemination of information to other area cooperations: e.g. on the success or failure of a pilot project and measures in one working area.

The two interest groups of nature protection and of municipalities have established their own mechanisms to address this problem.
The representatives of nature protection in the different area cooperations come from various organizations in Northern Germany not only dealing with nature protection as main focus but also including anglers' associations. E.g. the representative of the area cooperation Wümme is coming from a locally active NGO (NordWestNatur) historically developed out of an initiative to protect the local wetlands. In the case of the area cooperation Leine-Westaue it is the representative of a local association on limnology and water protection and for Weser-Emmer the representative is coming from the NABU – one of the larger associations in Germany engaged in nature protection. These different organizations have joined in the umbrella organization Wassernetz which functions also to guarantee the vertical and horizontal exchange of information (cc chapter 2.4). Additionally to the meetings in area cooperations the members have to link up with the Wassernetz during meetings in Hannover 2-4 times a year which adds up to their workload being in many cases voluntary. Despite some disadvantages the overall advantage is that all these organizations have the opportunity to make a common statement on the draft and final plans which is far more influential than individual comments. Also the meetings of the Wassernetz offer the opportunity of mainstreaming information which makes the individual representatives in the area cooperations more effective. The Wassernetz can be therefore considered as a learning community and the Land Lower Saxony should have a high interest to support such initiatives.

Similar to this approach is the Municipal Environmental Campaign U.A.N. responsible for the project „wib" which is the water information exchange platform for municipalities and rural districts on issues of the WFD. The "wib" offers representatives of local authorities a contact point for questions in regard to the WFD, an information pool and a communication platform. The UAN organizes within the wib that representatives of local authorities participating in area cooperations come together twice a year to exchange their experiences. The role of the UAN during these meetings is twofold: on one hand they mediate between the municipalities and the environmental ministry by collecting questions and ideas and feeding it into the annual meeting between the UAN and the ministry. On the other hand the UAN brings in expert knowledge into the discussions at municipal level.

Figure 19: Environmental Network for the Implementation of the WFD in Lower Saxony and Bremen (by Wach, BUND LV Niedersachsen)

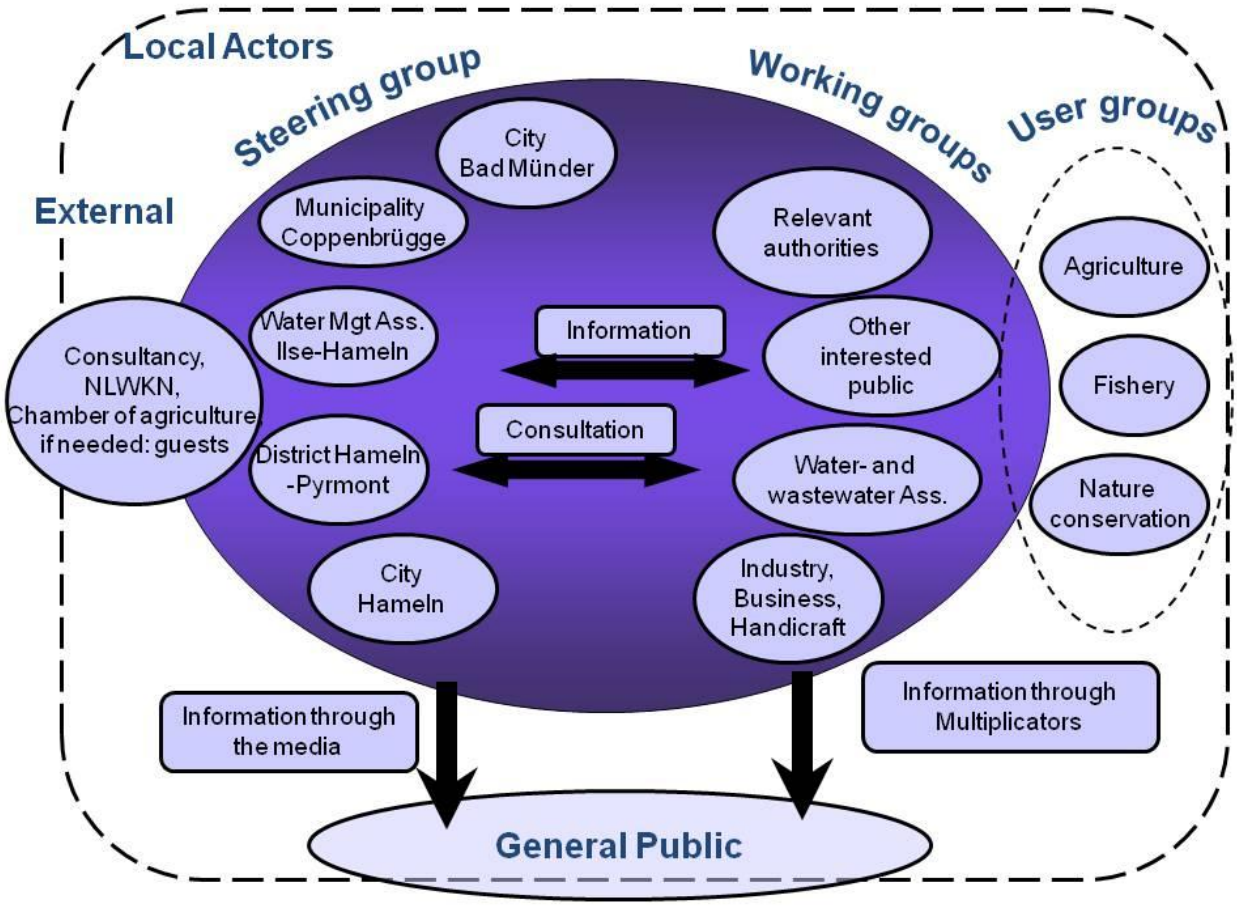


Both interest groups – the municipalities and the nature protection groups – share the problem that despite their systems to exchange information and develop common viewpoints, there is no guarantee that their individual members follow a shared strategy.

The already mentioned pilot projects gathered experiences in various fields and covering very different problems in water management. Whereas the focus of the pilot project Hamel was on the issues of connectivity and erosion, the project members have also developed a potential project management structure which could be adapted to similar processes of local to regional water management. According to this set-up a potential steering group could be composed out of the relevant local authorities, the NLWKN, the local water management association and in many cases a consulting or engineering company implementing the project. The steering group is responsible for the executive and project management. User groups meet separately and can exchange and communicate their specific information and questions directly

to the steering group. Working groups should comprise all local actors including user groups and the interested public. Here, most of the planning and detailed work will be done. This example offers a possibility to operationalise a participatory project management structure below the level of the area cooperations.

Figure 20: Possible participatory project structure based on the pilot project Hamel (adapted/GEUMtec 2007)



"Public relations must be intensified…" was one of the statements of an evaluation of participation in relation to the implementation of the WFD in Lower Saxony (Ridder et al. 2007, 18). This activity should get more attention at the level of the area cooperations as part of the process management to inform the general public. Information material on the WFD is available but hardly reaches the public. Some area cooperations have developed very informative and appealing information material but these activities depend on the level of activity of the area cooperation. Also, most of the information material was developed being part of the pilot projects which raises the question how the development and publication of follow-up material will be financed as the pilot projects are ended? One possibility would be the 15.000,-€ annual budget which is at the disposal of the area cooperations. Unfortunately, it is not a guaranteed budget but must be every year newly granted. This uncertainty is not very conducive for the planning of measures and activities. Examples on how the area cooperations spend this money are

- on the implementation of small, less costly measures at the rivers;
- external moderation of meetings and workshops;
- production of flyers and other information material;
- outsourcing of studies on the effectiveness of potential measures and activities.

Press releases in local to regional newspapers often results out of pilot and model projects initiated by members of area cooperations. Indeed, this seems to be the most appropriate level to also reach the general public due to the more localized nature of information. Unfortunately, a more consistent approach to publish plans and results coming out of the area cooperations can only be guaranteed providing them with the mandate for dissemination which requires the adequate funding. One step forward would be to provide the area cooperations with an additional annual amount e.g. of 3.000,- € which should be earmarked for dissemination activities.

4.3 Problems and potentials of the area cooperations

While networking and learning have increased in Lower Saxony due to the area cooperations, this new instrument also faces some problems in their implementation.

Problems/difficulties in and for the area cooperations:

- The area cooperations serve a double function: on one hand an instrument for participation and on the other they should facilitate the integration of local and regional interests.
- The legitimacy of their decisions is critical due to its composition of members and the way how representatives delegated to. An example is here especially the representatives of districts and municipalities: they can only bring in ideas and propositions that concern their area; other areas are left out since there is no established process of exchange and learning among all representatives of this stakeholder group. This may lead to situations that one mayor represents 10 different municipalities. Concerning the localization of measures the mayor can hardly take over a neutral position towards the other municipalities once his/her municipality is negatively or positively affected. To ensure the representativeness of the involved individuals it is necessary that (potentially resource intensive) intra-stakeholder group meetings take place so that the participating representative can feed back his/her experiences and information. Alternatively, the option that each municipality sends one representative would require specifically designed (professional) facilitation to ensure effective meetings. The problem of legitimacy is also given in the case of the representatives of the environmental/nature protection group. Representatives are supposed to bring in their regional to local knowledge but also speak with one voice for the Wassernetz as umbrella organization. As they come from different organizations different goals may also raise internally the issue of legitimacy (cc Newig 2005).
- The cooperation in monitoring and the development of the RBMPs is a typical example for the difficulty to legitimise participatory activities as originally these task belong to public administration.
- Decisions taken in the area cooperation are only advisory and not binding: decision-making remains at the level of NLWKN and the MU. With the NLWKN being in the double role the risk is that the participants in the area cooperations feel their contributions being redundant since the limited impact of their decisions shows especially with controversial decisions (e.g. definition of HMWB). This strongly impedes the motivation to participate in the area cooperations.

It seems to be in contrast to these challenges, that the MU evaluated the area cooperations according to their identified organisational efficiency as positive.

Table 4: Criteria used for efficiency by the MU to evaluate area cooperations according to the Meta-criterium "organizational efficiency" as meta-criterion according to Thom and Wenger in 2002 (see presentation by Ms Buchs at Workshop 2009)

Economic-technical criteria	Flexibility-oriented criteria	Internal demands-oriented criteria
•goal orientation of the organisation •required input to lead and coordinate •processing of information and decisions	•capacity for action, adaptation and innovation; •capacity for organisational learning	•social efficiency and individual learning capacity

Evaluating the area cooperation according to MU criteria supported the perception of the area cooperations as providing a good organizational efficiency, since (among others):

- the structure is flexible (number and composition of members);
- clear goal-orientation according to the selection of designating institutions;
- limited coordination required because of low hierarchical structure; and
- (prompt and complete) display and distribution of information guaranteed (due to composition of participants and distribution of information through the executive management).

This was considered to contribute to the selection of cost-efficient measures (see presentation of Ms Buch at WS October '09). At the level of area cooperation the cost-effectiveness analysis is not operational since traditional cost-effectiveness analysis for each measure cannot be conducted. As a traditional cost-effectiveness analysis for each measure hardly can be conducted, aspects were summarized in the area cooperations that support such selection. One of these supportive aspects is the incorporation of expertise and local knowledge through the means of the area cooperations.
One aspect that according to the same authors also determines the efficiency of organizations is the „speed and quality of processing information and the consecutive decision-making process". One of the underlying criteria of this aspect - the clear existing rules for setting priorities and for a goal-oriented solution of conflicts - was not considered in the evaluation. But it is exactly the missing rules of the process in general and related to the setting of priorities what would be required to make the area cooperations a more focused and powerful actor in water management.

However, some interviewees were rather concerned that e.g. during the selection of measures the display and distribution of information has not happened in time and complete. The information on how to select measures (the guidance documents on planning/selecting measures (cc 3.1.2 Leitfaden Maßnahmenplanung Bd A & C) and the checklist with nine steps to designate a HMWB or AWB was delivered that late that area cooperations had only four to five weeks left to make their decisions to be forwarded to the NLWKN and the MU. Thus, some interviewees felt a high risk that the indirect participation of area cooperations in decision-making can be taken by the MU or NLWKN as reason for legitimizing actions that would not be supported by the area cooperations.

For an appropriate understanding on the efficiency of the area cooperations, evaluation procedure also concerning their operation might be advisable.

The potential for the implementation of measures depends besides financial capacity also on the inherent problems of an area – and an area cooperation- which is related to geographic features. In areas where connectivity problems dominate the quality situation of rivers, it is easier to intervene than in areas where e.g. guaranteeing drainage for farming is dominating all water management discussions. Area cooperations dealing almost only with agricultural sites and agriculture-related problems as e.g. on groundwater, have much more problems to identify and implement clear-cut measures than area cooperations dealing with connectivity problems and having also nature protection sites in their area.

Quick gains and success facilitate cooperation in area cooperations. Therefore participation is in some areas favoured by quasi-natural characteristics. The same applies to the availability of sites for implementation: public property facilitates implementation of measures as well as favourable legal conditions. Old water milling rights can counteract the intentions to restore the connectivity of water courses. These aspects require consideration once the activity and results of different area cooperations are compared. The differences in activity and effectiveness of the area cooperations may lead to overall differences in the quality of the participation process. Resulting eventual impacts on the quality of the water management as such must be observed.
Additionally to the already named aspects, the financial advantage of area cooperations that conducted pilot projects are considerable. They had the financial means and therefore the opportunity to initiate various activities beyond the regular meetings (it must be taken into consideration that all communities and regions had the opportunity to apply for a pilot project).
Summarising the effectiveness of different area cooperations, many aspects have to be taken into consideration and many of them are beyond the control of the area cooperation. Still, the influence of the executive management, process management and leadership should not be underestimated although scientific evidence could only be achieved once conducting a scientific analysis including a more in depth analysis focussing on the activities of all area cooperations in Lower Saxony.
What can be assumed is that easy success and quick results will have a positive feedback on the participatory process of the area cooperations, as already proved in other participatory processes. That means that if area cooperations succeed well, it will receive a further stimulus to continue. In area cooperations where a difficult legal situation, lacking sites for measures and low financial capacity is given, special attention should be given to the development of additional incentives for the area cooperations to continue. This is especially true for those area cooperations in which areas are identified as priority areas in a hydrological sense (cc chapter 3.1.2).

A recent discussion at the level of the MU and the NLWKN on the future of the area cooperations raised confusion among its participants. The reduction of annual meetings from four to two was already criticised. The idea to reduce the number of members from recently 15-20 to ten (as initially intended) would hardly be welcomed. It is generally possible to create a participatory process with permanent end non-permanent members with differing votes. But such a process needs a very strict and good moderation that makes it clear to all sides at what time and for which reason which party is involved. If a process is just ongoing without making such distinctions you cannot turn it back without losing the confidence of the participants. This is the case with the area cooperation: their membership composition became a kind of customary law. The discussion on how to change and adapt the area cooperations that they can effectively do their job and cope with future tasks can only be led with them and not - as it is the case - on them. Respecting these simple rules, the ideas on how the concrete planning of measures in the area cooperations should be rather replaced by more strategic and coordinative functions could be debated. A discussion with the area cooperations allows to raise the question too, in how far the original goals of the area cooperations were and can be further achieved in its recent organizational form and structure or other forms adapted to future requirements.

Possibilities and recommendations:
The first experiences with the instrument “area cooperations” lead to the suggestion that the area cooperations build an intermediary level in water management that should be less involved in the direct planning of measures but should rather become an information platform than an instrument of active involvement. Active involvement should take place at a lower level (e.g. GEPL or the concrete implementation of measures) where merely organisations and individuals should be involved that are directly affected. This active involvement should be compulsory but the form may vary.

Besides for information, area cooperations can be responsible for

- the coordination of processes,
- the organisation of processes, and for
- accompanying processes which includes the task of public relation activities.

Area cooperations can be used as adaptive structures that offer the possibility for participation of permanent and non-permanent members – if adequately managed. This would also need support from the MU, e.g. through ensuring funding and also providing more openness with regard to the organizations (e.g. the number and form of meetings per year). The intensity of involvement of its members varies and it can be assumed that the initiated social learning process differs from individual to individual. One criteria of participation is the voluntary contribution of members. Here, it must be added that the area cooperation members to a large extent represent the professional interests of their organization.
One of the most evident and urgent action should be to improve the exchange of information between the area cooperations on best and worst practices. Further, a rule and checklist could be developed for the spatial development of municipalities: they could be obliged to cross-check for possibilities of implementing measures according to the programme of measures once sites are for sale or exchange, activities of town and country planning are taking place or compensation measures according to the nature protection law of Lower Saxony should be carried out (NNatG i.d.F. 11.04.1994).

For a better appropriation of the area cooperations to the local level, the following issues have to be considered:

- Giving more responsibility for WFD implementation to the water management associations (Unterhaltungsverbände) would mean that sufficient funding at that level would be necessary.
- Improving the capacity and competence of Lower water authorities to take over the project management of implementing (additional) measures may include the option of developing “competence centres” that serve and represent several Lower water authorities.
- Clarification of the role of the water development plans (Gewässerentwicklungspläne/GEPL) in implementing the programme of measures. The GEPL represent the level where implementation starts. Several GEPL could eventually cover one working area
- Redefining the role and tasks of the area cooperations in implementing the WFD according to future needs.

Many bottlenecks of implementing the WFD are perceived at the level of the area cooperation as problems of uncertainty in the process. The problems result out of the lacking definition of what should be done at which level and who is responsible for it.
Participants at the i-five workshop (October 2009) asked for

- a better definition of responsibilities for the implementation of measures
- transparency on the financial restrictions from the beginning, and
- clear definitions in regard to the institutional decision-making are provided.

In summary, for achieving the environmental goals, the implementation of measures requires more acceptance, more space and more money.

As mentioned in the preceding chapter area cooperations intensified existing networks and created new ones. This outcome should be maintained and its continuous development further supported. The composition of area cooperations and number of meetings should be adapted to the needs of the participants of the different area cooperations. The exchange between area cooperations should be intensified and better structured to facilitate learning from each other. The knowledge management should be improved that only appropriate information will enter the process. The process shall not be misused to validate data or decisions taken at higher level without providing sufficient time and background information to the area cooperations to enable them to make their proper decisions.
This would lead to an acknowledgement of the diversity among the different area cooperations, using it as a strength to improve the appropriation to the regional/local level.

The implementation of the WFD must include the adaptation to impacts of climate change. Here, the area cooperations could offer some innovative ideas beyond water management issues. Some synergies with the EU flood directive could be triggered once the topic floods will be included into the discussions of the area

cooperations. Floods is an adequate topic to especially function as „door opener“ for the topic sustainable water management at municipal level.

Another possibility of strengthening the area cooperations would be to introduce the idea of “animateurs” or “ambassadors”, i.e. to learn from the French i-five-i-3. Persons that take over this role, function as mediator between local to regional politics, adminstration and other water actors. Such positions could be created at the NLWKN to support the persons already in charge for the area cooperations. Their positions and tasks should be on cross-sectoral networking and may go beyond water management. One important task besides mediating, networking, informing and promoting the WFD (and other environmental directives) would be to advise and support the local authorities. Due to the activities of the “ambassadors” it can be assumed that measures will be more effectively combined from a cross-sectoral and a spatial perspective. Taking this into consideration the investment into new personnel may pay back.

Improving the quality of our water bodies and groundwater is eventually not only linked to the extent industrial, agricultural and municipal pollution can be controlled but also to the effectiveness of decentralized administration. As additional measures have to be taken at local level it is counterproductive that the income of local authorities is continuously decreasing whereas at the same time additional tasks from higher levels (Bund and Länder) are delegated to local levels (cc chapter 2.1.1.3). The risk is high that not only willingness and to a certain extent the competence is lacking but that finally the required personal and financial capacity is just not there and the initiation of additional measures according to the WFD remains a theoretical one.
It seems that if the practical implementation of water management measures has historically been structured in a “hydrological” way as e.g. in France, the implementation of the WFD at the practical level is less problematic. If the whole water management system relies on “classical” administrative boundaries disregarding hydrological boundaries it becomes more difficult because the all questions in regard to “who pays where” and “where do we need money” need to be completely renegotiated and clarified.

4.4 Summary of conditions and issues to be checked for a comparison of area cooperations and their adaptability

Participation – and therefore participatory instruments as the area cooperations – depend to a certain extent on quick and visible success. If the possibility of these first and easy gains is not given, it may add to the various causes for the different effectiveness of area cooperations. The diverse causes for success or non-success of participation can be distinguished into general external causes that probably apply everywhere and can be influenced only on a medium to long-time scale and process-related causes that should be observed and can be controlled to a larger extent. In most cases potentials followed up bear other dangers that one should be aware of.

General external causes:	Potential/Problem	Danger
• Historical relations of interest groups involved	• already existing networks facilitate quick gains • Looking for existent functional networks and making use of it	• Creating an exclusive club of insiders • Already existent opinions on an issue with lacking openness for new ideas
• Regional particularities: how does infrastructure with regard to e.g. administration and communication facilitate or hamper connectedness of	• Using well functioning systems and areas as starting point for activities and dissemination	• Focusing on easy access areas and well functioning areas although the pressure for change and adaptation is higher somewhere else

individuals and groups?		
• Available land for measures and ownership of this land (private or public?);	• Making use of land in public ownership for quick implementation	• Implementing measures at semi-optimal places
• Situation of historical legal rights not only to land but also to water use.	• Making use of favourable conditions	• See above
• Type of water management problem: e.g. connectivity is more an issue to be discussed at local to regional level than non-point pollution;	• Focus on “easy” to solve problems & facilitate quick gains	• Leaving out fundamental problems – shifting problems to other (higher) administrative levels • The problems solution potential at local level is not exploited
Process-related causes:		
• Clear definition of the role of area cooperations at the beginning of the process.	• Respecting this rule facilitates management of stakeholders’ expectations	• Lack of adaptability towards interests of participants and appropriateness for process
• Issue of the “right scale”: what can area cooperations achieve at this intermediary scale between local and regional level?	• appropriate definition of the tasks of an area cooperation to match that what they really can achieve – depending on their position in vertical decision-making!	• Expectations raised that cannot be met
• Implementation happens at a lower level: how can/should structures look like to make active involvement appropriate below the level of area cooperations?	• Integration of substructures for project management and the planning within the scope of the already established regional (water) planning instrumenst (e.g. GEPL) • intra-stakeholder group processes necessary to link up with both scales!	• diverse interests at local scale might hamper higher scale discussion process
• Personnel engagement and leadership of executive and leading body;	• Exchange of Experiences; Training on minimum skills and procedures	• process depends on individuals
• Financial and personnel capacity and know how in particular of organizations implementing the measures (e.g. water management associations, NGOs and municipalities);	• Increase the capacity at local level for adaptive water resources management	• competition with other local processes • delegating of legal responsibilities to lower level

Taking the idea of implementing the instrument area cooperation somewhere else, the first and most important question would be: Is something as a formal to semi-formal instrument already existent intervening

at the same level between local to regional? And if yes, can this group of people in their recent composition cover also the topic of water management or can the group accordingly adjusted?

For an effective implementation of participatory process, not only at the beginning the potential of new instruments has to be checked if expectations match what the instrument can offer. It is also necessary to evaluate on a regular basis (e.g. after each milestone) if the process has to be adapted. The evaluation should also take place jointly with the participants, if further their active involvement (i.e. their contribution of time and resources and acknowledgement) is expected. For example, the area cooperations were established with a very close link to the reporting duties of the WFD. Thus, with the major reporting duty being achieved, their potential is now not further used. Although stakeholder resources might appreciate that a process is not just continued without a reason, for establishing a continuous approach in participatory river basin management and a sound implementation of measure and of the revision of the different "WFD reports" the potential of area cooperations could be fostered and better be used.

Summarising the benefits of area cooperation for water management can be:

- Increased networking which may lead to social learning and social cohesion among water actors.
- More coordination between sectors and levels on the implementation of measures.
- More locally/regionally adapted measures.
- More commitment of local actors towards water management.
- Raise of local funds (not necessarily in cash but in kind).

5 Discussion of Results

This chapter discusses the results with regard to the further options for the area cooperation in Lower Saxony and the implementation of the WFD.

5.1 The meaning of area cooperations for the future implementation of the WFD in Lower Saxony

For comparison of water management in different countries key functions and themes in the implementation process were identified. Participation was one of these themes in the German case study.

The main legislative power for water management issues in Germany is at Länder level. For complying with article 14 of the WFD and in particular to fill the requirement of "active involvement" with life, the German Länder have chosen different ways. In Lower Saxony as one of the larger German Bundesländer other instruments of participation seem to be appropriate than in the so-called Stadtstaaten (city states as Hamburg) or smaller states as Schleswig-Holstein and the Saarland. The instrument of formalizing round table structures according to hydrological working areas as "area cooperations" seems to be an effective and manageable way to seek active involvement of organized stakeholder groups.

Still, the effectiveness could be improved in Lower Saxony if their defined tasks and their composition of members matched their position in vertical decision-making. This would facilitate the management of expectations towards such an instrument: Engaging in area cooperations requires much efforts and resources from the stakeholders. Even though area cooperations can only present recommendations to the competent authorities, there needs to be a procedure which makes the consideration of these recommendations in the final decision making transparent. Such a procedure should entail a feedback mechanism to the area cooperation communicating how and why a recommendation was adopted or not.

Also, involving representatives of stakeholder groups needs support from the not directly involved members of the stakeholder groups- e.g. through intra-stakeholder processes. If these are not supported, the legitimacy of the process is questionable to those not involved and thus not represented. The link to other (local) members of the stakeholder group would also contribute to a strong improvement of the local appropriation of the WFD implementation process.

With the current deficits of interaction between the different representatives, the level at which area cooperations meet is still too abstract for concrete planning of measures. It makes planning groups at lower level necessary. Substantial experience is already gathered in establishing the water development plans (GEPL) in a participatory manner. Providing some formal requirements on such a process – especially on the conditions for considering the outcomes in higher level decision making– the participants would be enabled to create their own planning process. Such a "GEPL board" offers the advantage that members who directly implement measures also have a say during its planning. An example how such a board may look like was given in chapter 4.2 the pilot project Hameln.

In the current setting, the role of the area cooperations could be changed to a more strategic one in guaranteeing consistency of plans and compatibility of neighbouring plans instead of planning measures. Once such a structure from the ministry over the NLWKN to area cooperations and the GEPL boards is functional, information flow among the different levels would be formalized and thus hopefully improved. Interviewees expressed a strong need for the ongoing existence of area cooperation to guarantee a main-streaming and coordination of information to the lower level and vice versa. At this point the already mentioned proposition of introducing "ambassadors" could help.

5.2 Discussion and recommendations for the future process of implementing the WFD in Lower Saxony

Two new institutions in Lower Saxony created for complying with the requirements of the WFD are first of all aiming at supporting coordination and integration: the FGG Weser[10] and the area cooperations. A further example is the new agreement that accompanies the process of implementing between the Länder Bremen and Lower Saxony on cooperation on issues in regard to the WFD including the submission of joint reports. Also the inter-ministerial working group – or extended working groups – are steps towards more cross-sectoral cooperation on the issue of water management.

These activities show that the need for improving effective cross-sectoral and cross-scale environmental policy-making is acknowledge. Jordan et al (2000) even requested "…strong central coordination to iron out contradictions between sectoral policies". This underlines also the results of this case study nine years later: the highly decentralised water management administration in Germany increases the necessary coordination to implement a basin approach.

In this context it is often difficult to conclude whether the regional diversity reflecting in the different area cooperations accounts for a benefit or a threat towards the local appropriation of the WFD implementation.

The existent federal system as well as structure and size of local governments not only in Lower Saxony but also in other German Länder are considered by many the main challenge for timely implementing not only the WFD but also other EU policies as e.g. the EU environmental impact directive. Interestingly the recent decentralization attempts of France were counteracted by the creation of the central organization ONEMA in 2007 which rather corresponds with the "old" France having a strong and central power ruling out the process. This decision back towards more centralization should be carefully considered in Germany too. It is not a debate only based on economic reasoning but it must incorporate one of the crucial requirements of IWRM: to follow a participatory approach which includes that water management decisions should be taken at the lowest appropriate level with consideration for the complete basin (cc GWP 2000. IWRM. TAC Background Papers No.4). This challenge to find the balance between more centralization without putting

[10] The FGG Weser was not established by Lower Saxony alone but by all riparian countries.

local decision-making and participation at stake must be met. It is clear that this demand goes far beyond water governance but governance as such.

One major conflicting interest in implementing the WFD remains between the two sectors agriculture and water management. This is manifested by the fact that at top level activities that support water protection are partly channelled through the MU to the NLWKN and partly through others. Here, policies and funding made available at European level must be much better main-streamed to support each other. Another issue regarding European funds is the availability of matching funds for the implementation of measures with ELER-funds. An increased financial contribution of the polluter or water user should be requested to fully comply with the "polluter/user pays principle" and to increase at the same time the overall budget available for the implementation of measures.

The integration of scientific expertise was not especially supported in the area cooperations. In general, the decision on involving external experts is case based. For raising broader public awareness, a dialogue between science and general public can be developed at its best in a very specific, project based context. This link is so far not developed for implementing the WFD. It does exist in some cases and is also followed up – as e.g. in the case of the Wümme – but there is yet neither a systematic approach to it nor ideas on developing it.

With regard to making use of local knowledge, an institutional exchange between different countries on the status quo of implementing the WFD might be helpful to forward discussions on how to better adjust spatial planning and water management. The better integration of water management issues in regional planning may help to guarantee a better combination of measures including aspects of nature and flood protection.

For this, the lower water authorities have to be motivated to take over more responsibilities. Two approaches seem to be useful in this context: one is rather educative and would try to open eyes for the opportunities the lower water authorities may have in regard to the implementation of measures; the other approach is rather top-down by shifting responsibilities (including the funding) for the implementation of selected measures to that level.

Summarising, there is potential at the level of Lower Saxony to increase the transparency of processes, decisions and the financial situation what could contribute to a better implementation of the WFD by also improving coordination among administrative levels and organizations. As with most transition processes they develop best if supported from the "basis" and at the higher decision making level. Thus, both the local level representatives and the higher level have to seek exchange to develop the political will for a change. Such a shift of paradigms in management styles cannot be expected just by the introduction of one new European policy - but it may function as a trigger.

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For the purpose of the case study altogether 10 expert interviews were carried out:

1. Herr Harting (NLWKN Verden), 7.10.08
2. Herr Henneberg (FGG Weser) & Frau Heddinga (NLWKN Hannover) 16.10.08
3. Herr Fuchs (HLUG) 3.02.09
4. Herr Janning (Abteilungsleiter Wasserwirtschaft MU Hannover a.D.) 4.02.2009
5. Herr Henneberg (FGG Weser) 31.03.2009
6. Frau Buchs, Herr Nietsche, Herr Gade (MU Niedersachsen) 22.04.09
7. Frau Buchs (MU) telefonisch, 04.05.09
8. Frau Flasche, Frau Bork-Jürging (UAN). 9.06.09
9. Herr Oertel (NWN)22.07.09
10. Herr Franke (GeumTEC) 05.08.09

One regional workshop (14.10.2009) presented and validated intermediary results and worked on questions in regard to the area cooperations.

The workshop comprised the following participants:

1. Herr Stephan Bauer (NLWKN Hannover)
2. Frau Christiane Bork-Jürging (Kommunale Umweltaktion Hannover /Projekt Wasserrahmenrichtlinie-Info-Börse)
3. Dr. Ann Kathrin Buchs (Umweltministerium Niedersachsen)
4. Dr. Michael Franke (GEUM.tec Hannover)
5. Herr Simon Henneberg (Geschäftsführer FGG Weser)
6. Dr. Britta Kastens (Uni Osnabrück/USF)
7. Frau Carola Kienscherf (Wasserverband Peine/Projekt Alleragentur)
8. Herr Harald Windeler (Untere Wasserbehörde Region Hannover)
9. Herr Jörg Janning (DBVW: Deutscher Bund der verbandlichen Wasserwirtschaft; Referatsleiter a.D. Grundwasserschutz Umweltministerium Niedersachsen)
10. Dr. Jörg Cortekar (Uni Göttingen)

Appendix

1. List of figures

2. List of tables

Table with research questions

This table should enable the reader to identify the initial research questions according to the inception report (www.i-five.eu) and their respective answers in this report. The questions are composed of those that were answered in all case studies equally and others that were answered case study-dependent. Naturally, the more precise the question was, the easier it is to identify its answer in the report. Complex questions or composed questions are answered in several chapters with different levels of detail.

Chapter Inception report	Questions	Discussed in case study report in chapter:
4.2	**Institutional structure and changes for im-plementing the WFD**	
1.1	Were environmental objectives set before and, if so, by whom? Were they binding?	in 3.1; 2.2.1
1.2	Who had to take measures and who had to pay for them? What is the situation now?	3.1, 2.2
1.3	Was there cost recovery for water services or were there other financial transfers between water users and water services providers (including for ecological services)? What is the situation presently?	3.1, 2.2.2.2
1.4	What was the organizational structure for water management and other relevant policy sectors? What is it now?	2.1, 2.2 & 3.1
1.5	For how long have important institutions been in place? If they are recent, what existed before (only in the postwar period)?	2.1 and 2.2
2.1	How many water bodies have been designated as artificial or heavily modified?	2.2.2.2
2.2	How many river basin districts have been identified and have they been split up in subareas? Do they match existing administrative or political areas or not?	2.2.2.1
2.3	Who has been designated as competent authority and what are its tasks and relations with other government bodies?	Mainly 2.2.2.2 & 2.2.2.3., 2.1
02.04.10	Has pollution control changed?	2.2.2.2
4.3	**Coordination across scales**	

1.	Which water management organizations at which scales are involved in the decision-making process regarding the environmental objectives and the measures (who decides on what) and how is their interaction organized?	in 2.2.2 & 2.1
2.	What has changed as a result of the implementation of the WFD? How have environmental objectives and cost-effective sets of measures been identified in practice for the first RBMP (including possible use of the exemptions), what are the main challenges addressed by these changes, and which challenges remain, if any?	3.1.2/.3.2/ 2.2.2
3.	**Does the financial set-up of the water management institutions correspond to their obligations to implement measures?**	2.2; 3.1.1
4.	How are the definition of environmental objectives and the selection and implementation of measures (including exemptions) organized across scales - **from the area cooperations (Gebietskooperationen) to the FFG Weser level and among the relevant administrative units at each level (the "Federal States" and their institutions)?** Which factors and actors play a role? How are different approaches agreed upon at higher levels communicated to lower levels, and how are they implemented? What are related challenges and potential solutions?	3.2
5.	What is the role of financing and especially of restrictions concerning financing possibilities? To what extent are the available budgets known and to what extent do the costs of measures play a role in the planning process? What are the financially secured budgets? Are there alternative sources for financing measures? According to which criteria is the revenue of the Wasserpfenning (an environmental tax on water abstractions) distributed/ used? (The draft RBMP will be used here as a first basis of our work.)	3.2. & 4 (limited), Update 3.1

6.	What would be needed (and under which circumstances) for optimizing the process of selecting cost-effective sets of measures, so that information/ knowledge at the lower administrative levels is used but at the same time an integrated planning at a higher scale is possible? How can financing restrictions at all levels be taken into account better in the planning process?	3.2. & 4
7.	In how far can the area cooperations function as an instrument of decentralized water management and for linking scales?	4
8.	Should the planning of measures at the level of the area cooperations get a more legally binding character? How much responsibility are the members of the area cooperations willing to take? How much decentralization is possible and advisable?	4
9.	What would be the financial consequences of this?	4
10.	Have there already been changes, and if so, which, in the organization of financing and decision-making in order to make the area cooperations operational or, more generally, to implement the WFD?	4
4.4.	**Integration of sectors**	
1.1	How is territorial management organized at different government levels? Which sectors deal with "territorial management" and what is the place of the “water sector” in this?	3.1.1
1.2	What are the major differences between the different sectors (policies, laws, responsible organizations, mismatch in boundaries at different scales)?	3.1.1/3.3
1.3	Do the geographical boundaries match with each other and with the boundaries of river basins and water bodies?	in 2.2.2
2.1	Have any specific institutions and instruments been created or adapted for promoting cross-sectoral governance that includes the water sector (new administrative bodies, new procedures, commissions, specific cooperation processes, …)?	2.2.2, 4.1 & 5.2
2.2	To which extent have local contextual factors, such as good relations, cultural factors or individual “leaders”, facilitated or hampered cross-sectoral governance?	3.4, 4.2 & 4.3
3.1	Has the WFD changed the organization of territorial management?	3.1.1
3.2	To which extent does the WFD currently influence the (cross-sectoral) decision making process, the level of public participation, the content of planning documents and list of actions of other sectoral policies implemented on the same territory?	5

4.5.	**Public participation**	
1.	At which (administrative) levels and how does participation take place?	2.2.4 & 3.4
1.1	Who are the target groups at different administrative levels?	2.2.4 & 3.4
1.2	How are the different target groups informed of the possibility to participate?	2.2.4
1.3	What is the degree or level of participation?	2.2.4 & 3.4
1.4	Which means (instruments/ methods/ tools) are used to reach the target group or groups?	2.2.4
1.5	How formal or informal are the tools and methods used?	4.1
1.6	How many people participated at which phase of the process, and what role(s) did they play? If they represented groups or organizations: did they continuously represent their group or organization or did the representatives change?	2.2.4, 3.4 & 4.2
1.7	What were their resources (time, knowledge, …)?	4.1
1.8	Are there any known conflicts between the participants? Did the participatory process influence the conflict and in what way?	4
2	How are the outcomes of participation considered in decision-making?	2.2.4, 3.4 & 4.3
2.1	For which phase of the implementation of the WFD was participation organized and how?	2.2.4
2.2	How are the outcomes of participation integrated into decision-making? Are there legal requirements to take the outcomes into account or are the outcomes purely informative for the authorities, who have discretionary powers to decide what to do with the outcomes? What informal rules are followed in practice, what is politically accepted and what not? Is there a requirement to give feedback to participants concerning the use made of the outcomes, is this common practice, and how is feedback given, if at all?	3.4 & 4
2.3	Are the participants satisfied with their involvement? What are or were their expectations of the participants and in how far were they met?	3.4 & 4
2.4	Do people see scope for improvement, where and how?	3.4.3 & 5
2.5	How can the effectiveness of the participation that was carried be measured? Were criteria and indicators developed beforehand? Did ideas/ plans exist to undertake an assessment/ evaluation? Examples of quantifiable indicators include: · How many stakeholders participated? · How many different items (pieces of information, wishes, proposals, …) were suggested by the participants and what percentage was taken over by the authorities and incorporated in subsequent decisions? · Are participants mobilizing their own resources (how much) and contributing to the project materially? Examples of qualitative indicators are: · Did the participants show any behavioural changes? · Are they “empowered”? Do they achieve increased self-reliance and control?	3.4.2 & 4.1.2
2.6	Are there any factors that make the participation process unique for the specific situation?	4
4.6	**“Appropriation” of the WFD at the local level**	
1.1	Beside official institutions responsible for the implementation	2.1.1.4/6 (partly), 3.5 &

	of the WFD, what local organizations show an interest for the implementation of the WFD and what are their interests? Which local interests are translated in terms of the WFD? Who supports the objectives of the WFD? Are there conflicting interests? Do local people accept the risk of not reaching a good water status?	4.1.2
4.7.	**Role of expertise**	
1.	What information do the stakeholders get and is their local expertise used in the implementation process? This question will also get attention in the evaluation of the public participation process in each case (see section 4.5).	3.4, 3.6 (limited), 4
2.	What collaboration has there been between the technical experts and the staff involved in setting environmental objectives and developing and implementing measures? What expertise is actually used? For practical purposes, the case studies may focus on one or two of the most important research projects or on the role of a central working group dealing with research.	3.2
3.	Is expertise actually used in decision-making at the political level?	'3.6
4.	Are there any special tools used in the implementation process? Only the tools will be discussed	2.1.2 & 3.6

Glossary of key terms, acronyms and abbreviations

ARGE	Arbeitsgemeinschaft zur Reinhaltung des Weser (working group for the Weser)
AWB	Artificial Water Body
BfG	Bundesanstalt für Gewässerschutz (Federal Institute of Hydrology)
BfN	Bundesamt für Naturschutz (Federal Nature Conservation Agency in Bonn)
BfS	Bundesamt für Strahlenschutz (Federal Office for Radiological Protection in Salzgitter)
BMU	Bundesministerium für Umwelt (Federal Ministry for the Environment)
BUND	Bund für Umwelt und Naturschutz Deutschland e.V.
BZR	Bezirksregierung (regional government)
CDU	Christlich demokratische Union (Christian Democratic Union)
DVGW	Deutsche Vereinigung des Gas- und Wasserfaches e. V. (German Association of Gas and Water Experts)
DWA	Deutsche Vereinigung für Wasserwirtschaft, Abwasser und Abfall (German Association for Water Resources Management, Wastewater and Waste)
EAFRD	European agricultural Fund for Rural Development
EU	European Union

FGE	Flussgebietseinheit (river basin district)
FGG	Flussgebietsgemeinschaft (River Basin)
GeoSUM	GEOgrafisches Informationssystem Umwelt
GEPL	Gewässerentwicklungspläne (water development plans)
GG	Grundgesetz (Basic Constitutional Law)
HLUG	Hessisches Landesamt für Umwelt und Geologie
HMWB	Heavily Modified Water Body
IWRM	Integrated Water Resource Management
LAWA	Landesarbeitsgemeinschaft Wasser (German Working Group on Water issues of the Länder)
LRH	Niedersächsischer Landesrechnungshof (Lower Saxony State Court of Auditors)
MU	Niedersächsisches Ministerium für Umwelt und Klimaschutz (Ministry of Environment and Climate Protection of Lower Saxony
MUNLV	Ministerium für Umwelt und Naturschutz, Landwirtschaft und Verbraucherschutz für Nordrhein-Westphalen (Ministry of the Environment and Conservation, Agriculture and Consumer Protection of North Rhine-Westphalia)
NABU	Naturschutzbund Deutschland e.V. (Nature and Biodiversity Conservation Union)
NGO	Non-Governmental Organization
NLT	Niedersächsische Landeskreistag
NLWKN	Niedersächsische Land (Lower Saxony Water Management, Coastal Defence and Nature Conservation Agency)
NNA	Alfred Toepfer Akademie für Naturschutz (Alfred Toepfer Institute for Environment Protection)
NSGB	Niedersächsische Städte- und Gemeindebund
NST	Niedersächsische Städtetag
NWG	Niedersächsisches Wassergesetz (Water Act of Lower Saxony)
RBMP	River Basin Management Plan
RROP	Regionales Raumordnungsprogramm (Subregional plan)
SEIA	
StAWA	Staatliche Ämter für Wasser und Abfall (State agency for water and waste)
UAN	Kommunale Umwelt-AktioN (Municipal Environmental Compaign)
UBA	Umweltbundesamt für Mensch und Umwelt (Federal Environment Agency in Dessau)
UHV	Unterhaltungsverbände (Maintenance Associations)
UMK	Umweltministerkonferenz
UTEG	Unter-Teileinzugsgebiete (sub units)
VDG	Vereinigung deutscher Gewässerschutz (Association for German Water Protection)
WFD	Water Framework Directive
WHG	Wasserhaushaltsgesetz (Federal Water Act)
WIB	Wasserrahmenrichtlinie-InfoBörse
WRRL	Wasserrahmenrichtlinie (Water Framework Directive)
WVT	Wasserverbandstag
WWF	World Wide Fund for Nature

How the current case study report implements the project proposal

Call for research

The i-Five project was submitted for the first Joint Call for Research of IWRM-net on IWRM "Towards Effective River Basin Plans". It addressed in particular the theme "Water Governance" and the outputs "investigate the right territory for water management" and "interconnecting the different administrative scales"; "techniques for efficient setting of objectives"; "techniques to integrate expert judgement, multi-disciplinary scientific knowledge and stakeholders' involvement"; and "decision-support tools" (Call for research proposals; Pilot Common Call, p. 4).

Objectives and research questions

According to the proposal (p. 12-13), "the i-Five project aims to support the implementation of the WFD by promoting the transboundary exchange of experiences, by broadening the range of methods and tools available to water managers, and by helping these water managers develop the best approach for their circumstances. The scientific objectives of the project are:

I. To identify and evaluate i-3's for promoting cooperation between (a) different scales, (b) different sectors, (c) governmental and non-governmental stakeholders, and (d) technical experts and lay persons.
II. To study different institutional settings, their dynamics, and how they affect the performance of different i-3's.
III. To study the potential for 'transplantation' of specific instruments and institutions in different institutional settings.

(…)

IV. To bring together and relate literature and approaches from different scientific disciplines, to implement an interdisciplinary approach and report about the experiences."

To meet these objectives, "the project will analyse ongoing WFD implementation processes in which particular i-3 are put into practice. The following research questions will be addressed:
Concerning objective I:

1. What are the characteristics of the i-3 under study (basic concept, underlying assumptions, operational design parameters, implementation procedure, ...)?
2. How is the implementation process of the WFD in general organised? Particular attention will be paid to:
   (a) the interactions between different scales (basin, national, sub-basin, local, cf. Karstens et al., 2007) and sectors (agriculture, urban development, ...)
   (b) the involvement of stakeholders in the process (WFD art. 14)
   (c) the involvement of technical experts and the role of their expertise
   (d) the adaptive management capacity of the selected institutional settings.
3. How was the i-3 developed and applied? The same points will get attention.
4. How did the i-3 function and what have been its effects to date?

Concerning objective II:

5. What are the characteristics of the national and local institutional settings (organisational structure, allocation of tasks and competencies, financing structures, decision-making procedures, 'adaptiveness'/ robustness and flexibility)?
6. Under what circumstances has the i-3 been applied (geographic, demographic, economic, socio-political, etc.)?
7. Which institutional characteristics and circumstances have been important for the i-3's functioning?

Concerning objective III:

8. In which institutional settings and under what circumstances can the i-3 work?
9. To what extent can the i-3 be adapted to / made to fit in different settings and circumstances?

Concerning objective IV:

10. What new insights and experiences can we add to the literature on polycentric governance, public participation and collaboration, science and technology studies, participatory analysis, comparative public administration and the WFD?"

The central themes follow directly from the first two objectives: "Institutional structure for implementing the WFD" addresses objective II and the other themes address objective I. The central themes guide the case study research. In the case study research, the research questions that correspond with objective I and II – research questions 1 to 7 – will be addressed. The case comparison is geared towards answering research questions 8 and 9 and thereby reaching objective III. Objective IV and research question 10 constitute a continuous thread running through both the case studies and the case comparison.

Expected results

"The tangible results of the i-Five project will comprise detailed information on i-3's for implementing the WFD with their requirements, and a 'Quick Scan' method that will help water management professionals to select, and modify where necessary, i-3's for their needs." The quick-scan "will afford a systematic review of on the one hand the i-3 design parameters important for implementation, and on the other hand of the most important aspects of the water management system of the area in question. The more matching features and requirements are found on both sides, the higher the potential for 'transplantation'. The 'Quick-Scan' method will provide information that is valuable especially to policy-makers and practitioners who consider adaptation and adoption of I 3s under different circumstances.

Dissemination and training

- According to the proposal, p. 19, training and dissemination activities will "comprises the following major activities:
- Continuous dissemination – from the beginning of the project – of project information and achievements by means of the i Five project website and use of project newsletters, media and other means for 'low threshold' communication (…).
- Dissemination of project results in scientific and policy-relevant (peer-reviewed) journals (…).
- Outreaching to other countries in addition to the three partner countries by using European platforms for exchange in water management (e.g. EUWI newsletter, WISE newsletter) and using existing links – as well as establishing new ones – to European projects with larger scope and impacts (…). Presentations given during events organised by these projects will gain European and other international attention.
- Development of a training package based on the i-3's and the 'Quick Scan' method.
- Conducting training and/or dissemination workshops.

Focal activities within WP4 are the workshops in France, Germany and The Netherlands that will be held in the last phase of the project. In addition to the training workshop for stakeholders coming from the case study areas - which are already held - each partner will also organise a training workshop for interested persons from other regions as well as persons involved at national level policy-making.

A tangible deliverable of WP4 will be a training package based on the identified i-3's, which will be published as a report and disseminated during the national workshops. This training and dissemination package will consist of the documentation of the i-3 plus the 'Quick Scan' method that provides criteria and questions concerning the applicability of the i-3 under different circumstances.