

GOVERNING FOR WATER QUALITY IMPLEMENTING THE WFD IN GERMAN RIVER BASINS

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Abbreviations

AHP – Analytical Hierarchy Process

BMU - Federal Ministry of the Environment, Nature Conservation and Nuclear Safety (*‘Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit’*)

CC – Coordination Committee

CIS – Common Implementation Strategy

EC – European Commission

EEG – Renewable Energy Act (*‘Erneuerbare Energien Gesetz’*)

EPI – Environmental Policy Integration

EU – European Union

FD – Floods Directive

FGG – River Basin Community (*‘Flussgebietsgemeinschaft’*)

FWA – Federal Water Act

GrwV – Groundwater Ordinance (*‘Grundwasserverordnung’*)

ICPR – International Commission for the Protection of the Rhine

IRBM – Integrated River Basin Management

IRBMP – Integrated River Basin Management Plan

IWRM – Integrated Water Resource Management

LANUV - State Office for Nature, Environment and Consumer Protection North Rhine-Westphalia (*‘Landesamt für Natur, Umwelt und Verbraucherschutz Nordrhein-Westfalen’*)

LAWA - German Working Group on water issues of the Federal States and the Federal (*‘Bund/Länder-Arbeitsgemeinschaft Wasser’*)

LWG – Federal Water Act North Rhine-Westphalia (*‘Landeswassergesetz’*)

NLWKN - Lower Saxony Water Management, Coastal Defense and Nature Conservation Agency (*‘Niedersächsischer Landesbetrieb für Wasserwirtschaft, Küsten- und Naturschutz’*)

NWG - Lower Saxony Water Law (*‘Niedersächsisches Wassergesetz’*)

MKULNV - Ministry of Environment, Agriculture, Nature and Consumer Protection (*‘Ministerium für Umwelt, Landwirtschaft, Natur und Verbraucherschutz’*)

MU - Lower Saxony ministries for the environment and climate protection

OGewV - Surface Water Body Act (*‘Oberflächengewässerverordnung’*)

OOWV – Regional Water Association Oldeburg-East Frisia (*‘Oldenburgisch-Ostfriesische Wasserverband’*)

PLEN – Plenary Assembly

RB – River Basin

RBM – River Basin Management

RBD – River Basin District

RBMP – River Basin Management Plan

RC – Rhine Council

RMC – Rhine Ministerial Conference

SG – Strategy Group

SG-K – Subordinate Strategy Group

UBA – Federal Environmental Agency (*‘Umweltbundesamt’*)

uPBTs - ubiquitous, Persistent, Bioaccumulative and Toxic substances

WC – Weser Council

WFD – Water Framework Directive

WHG – Water Resources Act (*‘Wasserhaushaltsgesetz’*)

WMC – Weser Ministerial Conference

WVG - German Waterboard Law (*‘Wasserverbandsgesetz’*)

WWF – World Wildlife Fund

0. Abstract

The Water Framework Directive (WFD), as introduced in 2000, is a European directive aiming, to reach good water quality of all water bodies within Europe. Therefore, all EU countries are expected to implement appropriate measures to improve their water quality by 2027 at the latest. A Europe-wide comparison of water quality showed that within the central parts of Europe water quality is generally lower. Especially Germany stands out, as it is lagging behind in reaching the goals of the WFD. Thus, the aim of this study is to investigate the opportunities and challenges of the implementation of the WFD in Germany.

The literature study showed, that many issues faced, with the governance of the WFD in Germany, can be connected to three issues. First, on the cooperation between the WFD and other policy domains. Second, to the multi-scalar structure of the German government, responsible for the implementation of the WFD. And third, the role of river basin district authorities in the management of river basin districts.

In the scope of this study, the concept of connectivity was used to investigate the German water governance system. Based on the understanding of Termeer et al. (2011), three core areas of research were defined: (1) the connectivity of policy domains, (2) the connectivity of administrative scale levels, and (3) the integration of RBD Authorities into the management of RBDs.

First, results of this research showed, that the two major issues in the implementation of the WFD in Germany in the field of policy domains can be related to poor connections between the water sector and the agricultural sector, and to issues with land-use planning. Agriculture has shown to hamper the successful implementation of the WFD. This is mainly because the economic goals of agriculture are often conflicting with the environmental objectives of the WFD. Spatial limitations can result from urban settlements, ownership structures and specific land uses. Unfortunately, it is not always possible to find compromises or appropriate multi-purpose land use functions. Opportunities can be seen in the open communication between policy fields, in order to find solutions that have advantages for all of them. Furthermore, multi-purpose land-use planning as well as improved decision in support of efficient ecosystem services should be seen as opportunities, to improve the connectivity between the WFD and other policy domains.

Second, issues in the field of administrative scale levels could be connected to difficulties with willingness and financing. The willingness to implement measures on a local level is often lacking; this is mainly because the public interest in the area of water quality is low. Concerning the financing, there are possibilities for funding from the federal state or the EU. However, they are often too complicated to use or only limited. An opportunity can be seen in raising the awareness for the necessity of the

measures. This might lead to a better understanding and therefore also a better willingness and easier financing.

Third, when regarding the integration of RBD Authorities into the governance of river basin districts, the primary concern is to find uniform approaches on a basin-wide scale. In Germany, the management of river basin districts is not done on a river basin-scale but by the separate federal states. River basin districts are therefore split into several management districts. Federal states try to have identical approaches for all the river basin districts they own shares of. Consequently, it is difficult to have uniform approaches on a river basin-scale. Uniform nation-wide approaches are therefore often seen as a solution. An opportunity can be seen in improving nation-wide approaches, and thus approaches that cover larger parts of riverine systems. However, it is challenging to find uniform solutions that fit all.

Overall it is rather unlikely for Germany to reach the goals of the WFD by 2027. Therefore, it is especially hoped for the revision of the directive in 2019.

1 Introduction

Worldwide, water scarcity and water quality are increasingly becoming problematic issues (DESSIN Project, 2018). There is severe pressure on the resource of water, not only because of the overexploitation and other human activities, such as pollution through industry and agriculture but also because of climate change. These pressures are causing economic loss as well as adverse effects on human health and life, especially in the urban areas of Europe (DESSIN Project, 2018). Water scarcity and water quality were also perceived as issues by European citizens, as a press release by the European Commission (EC) in 2012 showed. About three-quarters of the surveyed European citizens are asking for additional measures by the European Union (EU), to manage water problems including water pollution through industry and agriculture. Especially in Germany, the demand for action by the EU is high (European Commission, 2017).

The Water Framework Directive (WFD) (Directive 2000/60/EC) was set up for the quality management of water bodies, and the assessment of their chemical and ecological status. The WFD aims to consolidate a European framework in the area of water policy in support of community action (Council Directive 2000/60/EC, 2000). It tries to address issues of water quality and contains elements such as the integrated river basin approach, stakeholder participation, and the balancing of costs and benefits (Wuijts, Driessen, & Van Rijswick, 2018). Additionally, it asks the EU member states to improve the quality of their water bodies so that they reach a ‘good’ or ‘high’ ecological status, taking into account the biological, hydro morphological as well as physico-chemical elements of a water body (Directive 2000/60/EC). Furthermore, the WFD requires the EU member countries to switch from national-regional management of water bodies to management based on their River Basin Districts (RBDs) (Aubin & Varone, 2004; Council Directive 2000/60/EC, 2000; Council Directive 2007/60/EC, 2007; T. Moss, 2004).

The term river basin describes the whole catchment area which is drained by a river. It is essential to manage river basins sustainably, for the conservation of fresh water resources. Therefore, it is also essential to maintain dynamic ecosystems. The quality of river basins can be influenced by any kinds of activities within the catchment area and can also have effects in the whole system (WWF, 2002). River basins offer us security by managing runoff from snow-melts and rainfalls and by giving access to freshwater. Besides hydrological reasons, rivers are also important from an ecological and economic point of view. This is because riverine systems provide very diverse terrestrial and aquatic habitats for animal and plant species (WWF, 2002). At the same time economic aspects, such as navigation and recreation should not be neglected.

The management of RBDs is called River Basin Management (RBM). As a concept RBM is meant to improve the relationship between up- and downstream changes in water quality and quantity, as well as

relevant land-use resources (The World Bank, 1993) When RBM is taking an integrative, cross-sectoral approach, it can be called Integrated River Basin Management (IRBM) (WWF, 2002). IRBM means taking land, water and natural resources into account when planning and managing an RBD (Watson, 2004). The WFD states that an RBMP and an IRBMP should be produced for every RBD.

There are two reasons why IRBM was proposed by the WFD (McNally & Tognett, 2002): (1) The management of river basins is particularly complex, as the uses of water and land within one basin are interconnected to its hydrological properties. Therefore, the respective policy fields need to be connected. Relating to this is a major problem is that what does relate to water policy and what does not, is not defined and it is unclear which policy fields should be considered in the management of water bodies (Aubin & Varone, 2004). In addition, (2) most river basins cross more than one country, resulting in conflicting uses and management conditions within one RBD (Wuijts et al., 2018). Thus, it is difficult to set up an efficient cross-level administration and to set up efficient cross-border RBM (Aubin & Varone, 2004).

In the following, an introduction to the problems that Germany faces in the implementation of the WFD will be given. Followed by a problem statement and the relevant research questions. Afterwards the theoretical approach and the research design for this research will be explained and the scientific and societal relevance of this study will be presented. Lastly, an outline for the whole study will be given.

1.1 Problems of implementing the WFD in Germany

This chapter will introduce the problems associated with the implementation of the WFD in Germany, it is subdivided into three sections. First, the status of German surface water bodies in 2015 when the goals of the WFD were first supposed to be met will be illustrated. Followed by the reasoning for why German water bodies could not be classified as 'good' in 2015. And third, the German governance approach in relation to RBDM will be introduced.

It is the German goal, along with the WFD, to reach the good or very good ecological condition of natural surface waters and a good ecological potential for artificial or substantially changed surface water bodies. These goals were supposed to be reached by 2015 (Bourblanc et al., 2013; Umwelt Bundesamt, 2016a). However, until 2015 only 8.2% of all German rivers were able to achieve a good or very good ecological status. Meaning, that the goal could not be reached. Therefore, the new goal of Germany in line with the WFD is to reach a good ecological quality of all surface water bodies by 2027 the latest (Bourblanc et al., 2013; Umwelt Bundesamt, 2016b). The distribution of the water qualities in Germany from 2015 is also shown in Figure 1-1. Thus, it is visualized that the Weser and the Ems are in a worse condition when compared to the Danube. Overall, about 36.1% of all surface water bodies in

Germany were in a moderate condition, 33.8% were in a poor condition and 19.2% were classified to have a bad ecological condition at that time (Umweltbundesamt, 2017).

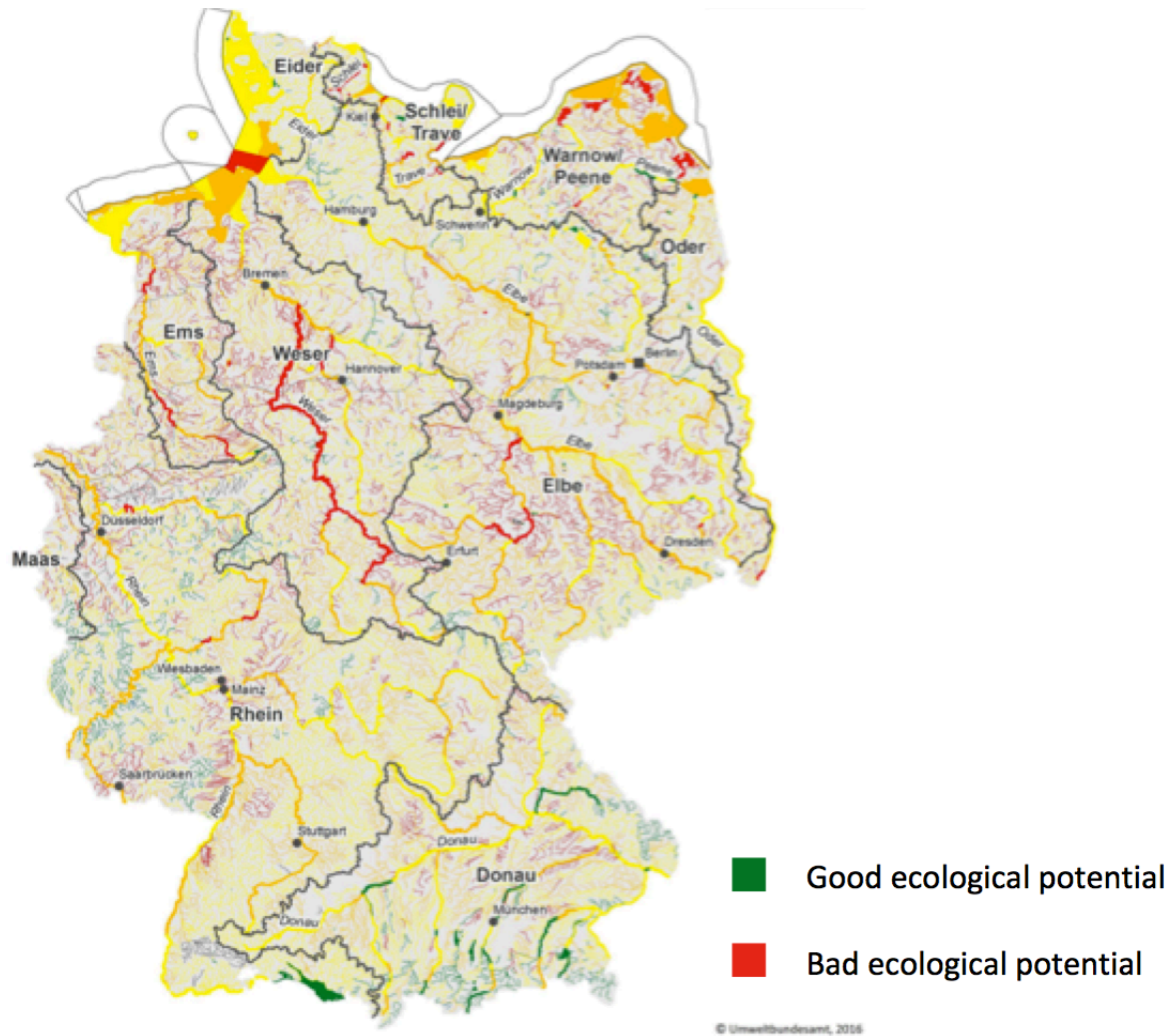


Figure 1-1 – Ecological-potential of German rivers, classified based on the WFD guidelines (Umweltbundesamt, 2016).

The two main reasons for Germany not reaching the goals were missing habitats for animal and plant species and the increased nutrient input through agriculture as well as sewage treatment (Umweltbundesamt, 2017). On a federal and national level, it is thus discussed if it is within the realm of possibility to reach the goals of the WFD by 2027. This is primarily because former changes to the natural system – such as the straightening of rivers and the introduction of sluices – cannot be changed back to natural any more (MU, 2018). However, with a significant reason for the bad status of German surface waters being the diffuse input of nutrients and harmful substances, there is still a lot of potential for improvement (MU, 2018).

The German water governance approach on the management of RBDs is affected by RBM, but not solely based on it. Meaning, that governance competencies lie within the federal states and are often further decentralised to the regional level (Mostert, 1998). For some RBD within Germany, there is not one national plan based on the RBD, but rather several territorial plans for each RBD based on the federal states, while for others there is also an RBMP based on the national scale (EC, 2012), see Table

1-1. The Federal state of Germany is subdivided into 16 federal states, and all of them have their own approaches and methodologies towards the creation of an RBMP (EC, 2012). Having this cluster of plans for the management of RBD can have negative effects on the basin-wide approach, as it is more difficult to generate effective basin-wide plans with a greater variety of actors involved.

Table 1-1 - German RBD and the levels of plan making (EC, 2012)

<i>RB</i>	Level of RBMP
<i>Danube</i>	Separate RBMP by the Federal States
<i>Rhine</i>	International RBMP + Separate RBMPs by Baden-Württemberg, Bavaria, Rhineland-Palatinate, North Rhine-Westphalia, Saarland, Thuringia, Hesse and Lower Saxony
<i>Ems</i>	International RBMP + RBMP by North Rhine-Westphalia
<i>Weser</i>	National RBMP + RBMP by North Rhine-Westphalia
<i>Elbe</i>	One national RBMP
<i>Oder</i>	One national RBMP
<i>Maas</i>	There is only one Federal State involved
<i>Eider</i>	There is only one Federal State involved
<i>Schlei/Trave</i>	One national RBMP
<i>Warnow/Peene</i>	There is only one Federal State involved

1.2 Problem Statement – The Governance of the WFD in Germany

When compared to other European countries, RBDs within Germany generally have a lower ecological and chemical status (EEA, 2018). Therefore, it can be said, that Germany is behind in the implementation of the WFD. One of the causes for this might be the governance; as Pahl-Wostl (2017, p. 2917) states: “Many water related problems can be attributed to governance failure at multiple levels of governance rather than to the resource base itself. At the same time, our knowledge of water governance systems and conditions for the success of water governance reform is still quite limited.”. She refers to water governance as a set of social, political, administrative and economic systems as defined by Rogers and Hall (2003).

In most parts of Germany, administrative bodies for the governance of RBDs are at the federal level (The World Bank, 1993). The corresponding agencies for RBDs exist, still, their role in decision making seems to be limited. Thus, the management of water resources is done on the basis of their territorial units instead of catchment areas. Producing RBMPs on a national scale for Germany seems to be difficult. All plans follow similar structures so that they can be compared easily (EC, 2012). However, some federal states work together to produce one plan for a particular river basin while others provide an individual plan for the same basin, leading to a “patchwork of information on how the WFD is being implemented.” (EC, 2012, p. 6). Therefore, the main problem that is addressed by this study concerns the governance of the WFD within Germany.

Furthermore, Germany is still struggling with achieving the goals of the WFD and other European directives also influence the implementation of measures. Additionally, it is unclear, which policy domains should be managed on an RBD level, this has also been stressed by T. Moss (2012): “improving spatial fit for water can create new spatial misfits with other policy sectors upon which sustainable water management is dependent”. Moreover, the connectivity between the different administrative bodies and between different policy domains, in the governance process, is not always clear. Within the federal states, administrative tasks for the governance of RBs are also performed by the communal level (Albrecht, 2013), meaning that coordination is also needed to be performed across scales.

To conclude, problems with the governance of the WFD in Germany can be associated with the following three issues: (1) the integration of RBD in the governance of RBDs, (2) the connectivity of policy domains and (3) coordination of the multi-scalar governance approach.

1.3 Research Questions

The focus of this thesis lies on the governance of the WFD on the local and regional scale within Germany. Therefore, the main research question for this study is:

What are the opportunities and challenges for the German governance approach to achieve the goals of the WFD?

To answer the main research question, the following sub-questions will be addressed:

- Which policy domains influence the implementation of the WFD and how?
- Which scale levels are involved in the management of water quality of rivers and how?
- What is the role of German RBD authorities in the governance of the WFD?

In the context of this research opportunities and challenges need to be defined. Opportunities can be defined as chances for success. Therefore, factors that will help to improve the governance of the WFD in Germany. Challenges in the scope of this research are defined as situations or conditions, which hamper the governance of the WFD in Germany and therefore the attainment of its goals.

1.4 Theoretical Approach

The research for this thesis was approached in four steps, focusing on the implementation of the WFD in Germany and on how different dimensions of governance are connected. The first three steps are based on the principles by Termeer et al. (2011), which were initially used to analyse governance approaches for climate adaptation. This approach by Termeer et al. (2011), will be further described in chapter 2. In the analysis, two case studies were approached separately, while for the fourth step both cases were regarded together. In the first step, the relevant policy domains influencing the implementation of the WFD were identified, also according to the role they play in the governance of the WFD within the two case studies. In the second step the relevant administrative scale levels were identified and their respective tasks and connections. The third step comprises an analysis of the respective RBD

authorities, representing the hydrological units, analysing their tasks and administrative impacts on the governance of the respective RBDs. And lastly in the fourth step opportunities and challenges for the implementation of the WFD within Germany were presented.

1.5 Research Strategy

The focus of this thesis lies on the governance of the WFD within Germany and is therefore analysed on the basis of two cases, the Emscher Valley and the river Hunte, see Figure 1-2, thus concentrating on a local and regional scale. Since the WFD was put into force in 2000, this study focuses on all measures that were conducted in the time after the year 2000. The two research areas were chosen to represent the federal states of Lower Saxony and North Rhine-Westphalia. Interviews have been conducted with representatives from authorities on the local, regional and national scale. Organisations involved in the governance of the WFD in Germany include the EU, the federal authorities and nature protection organisations.



Figure 1-2 - Location of the Hunte and the Emscher (Scribblemaps.com, n.d.).

The cases of the Emscher and the Hunte are examined via a case study research to assess the opportunities and challenges of how the WFD is governed within Germany. The information needed is derived from literature and document analysis as well as from interviews. Both case studies have been part of programmes for the implementation of measures for improved water quality.

The first research area is the river Hunte, located within the federal state of Lower Saxony and the Weser RBD. Its catchment area is mainly used for agriculture, but also includes urban areas such as the city of Oldenburg. Furthermore, the river is partly used as a shipping route.

The second research area is the river Emscher located within North Rhine-Westphalia, within the Rhine RBD. It is known for being used for sewage from industry and mining for more than 100 years and also has been heavily modified during this time.

Background information for both research areas is given in Table 1-2.

Table 1-2 - Background information for the two case studies, Hunte and Emscher (EGLV.de, n.d.; Hunte 25, 2010)

	Hunte	Emscher
<i>Main Land Use Function</i>	Agriculture and farming	Industry and Settlement, Sewage
<i>Historical Modifications</i>	Straightening of the river; filled depressions and river arms; homogenization of the river bed	Open sewage channel; heavily modified and polluted
<i>Main Intention</i>	Lengthen the course of the river; create a variety of river beds	Development of the river, integrating settlements, infrastructure, other projects and open space
<i>Main Authority</i>	Areal Cooperation Hunte	Emscher Association
<i>Overall Status (WFD)</i>	Poor (Mercury in Biota)	Poor (Mercury in Biota)

1.6 Scientific and Societal Relevance

This study elaborates on the status of Germany in governing the WFD and on the possibility to achieve the WFD goals by 2027. By analysing the opportunities and challenges, that Germany faces in the governance of the WFD, recommendations will be given, to improve the governance of riverine systems.

Even though the implementation of the WFD started in 2000, national goals in Germany are still not met (Umweltbundesamt, 2016). Therefore, this research is relevant from a scientific point of view. This study will show how hydrological and administrative bodies influence water governance and the governance of the WFD in Germany. It will add to the discussion about the management of RBDs. Further, the study looks at two governance approaches within Germany, the ones of Lower Saxony and North Rhine-Westphalia. By indicating the opportunities and challenges for Germany in the governance of the WFD, this study will add up on many studies examining the implementation of the WFD on a national and regional level.

Stakeholders can be found at different administrative levels and solutions have to be found in accordance with all of them, therefore this research can be regarded as notable from a societal point of view. Some of the relevant stakeholders, relevant in the implementation of the WFD within Germany, are the EU itself, the German government, the Federal States, the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear safety, as well as private stakeholders. All of these have to be considered in the outline of RBMPs. This thesis tries to contribute to the debate on the national

implementation of the WFD within Germany. Even though much research has been done on RBM and the implementation of the WFD in Germany, goals still have not been reached.

1.7 Outline of the Thesis

The outline of the thesis is visualised in Figure 1-3. This thesis is divided into seven chapters. It starts with a short description of the problem context, followed by a problem statement in Chapter 1. Chapter 2 provides a theory and literature review as well as the conceptual framework of the thesis and discusses the different aspects of water governance, the European Water Framework Directive and Integrated River Basin Management. Chapter 3 describes the methodology of this thesis, the approach used and the separate techniques of a case study, document analysis, a stakeholder analysis, semi-structured interviews and the approach for data analysis and coding. Further, the documents used, and interviews conducted will be presented.

In Chapter 4 is setting the stage by introducing general actors on the national level within Germany relevant for both case studies in chapter 5 and 6. Within chapters 5 and 6, the results for the separate case studies, the Emscher and the Hunte will be provided, followed by the outcomes of the research, the answers to the presented research question and the conclusion in chapter 7. This chapter will also give outlooks for the future, a reflection on the research and recommendations to improve the governance for water quality within Germany.

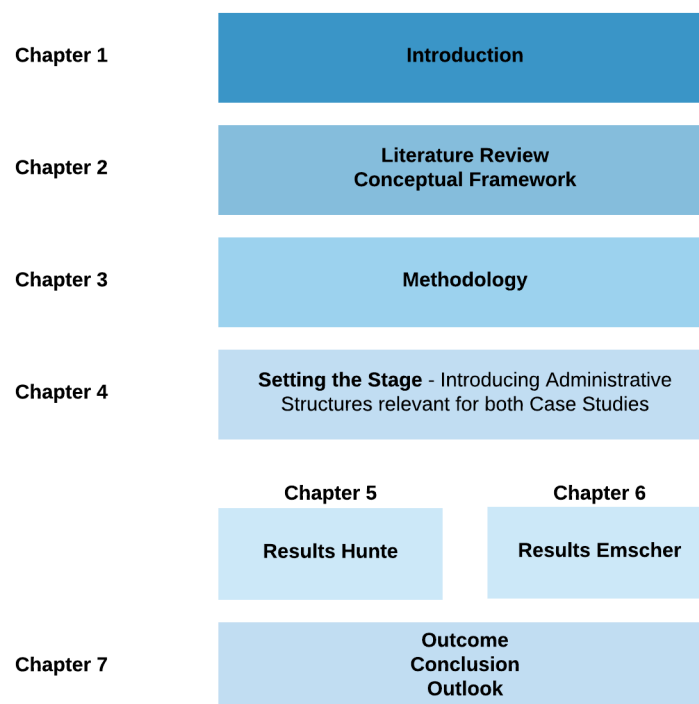


Figure 1-3 – Visualization of the thesis outline.

2 Conceptual Framework

In order to understand how the Water Framework Directive (WFD) has developed, this chapter starts with giving a brief overview of the history of European water governance. This overview will serve as a basis for explaining what the WFD entails, and how the concepts of Integrated Water Resource Management (IWRM) and Integrated River Basin Management (IRBM) relate to it. Subsequently, this chapter reviews and discusses critical issues regarding the governance of the WFD in European member states, and in Germany, where the two case studies are located.

Following from the problem statement, it turns out that there are three key issues within the governance of the WFD in Germany: (1) the involvement of different policy domains, (2) the responsibilities being spread across various administrative scale levels, and (3) finding the right scale for the management of RBDs. These issues will be further explained in the following.

First, when considering the involvement of different policy fields in the governance for water quality in Germany, it is important to bear in mind how these policy fields interact and how they are connected. Problems within the sector of water management cannot be solved without regarding other policy fields. Therefore, it is important to consider other policy fields. An example is the connectivity between the WFD and the agricultural sector, as agricultural activities often have a negative impact on water quality (Huiteima & Meijerink, 2014).

Second, issues related to the administrative scale levels and their responsibilities. In Germany, the responsibilities for water management are spread across several administrative levels. The implementation of EU directives is said to cause problems especially on the local level (Flynn, 2000), thus the connectivity across scale levels is seen as essential.

Third and last, it is difficult finding the appropriate scale for the management of water resources. Because in Germany most policy fields are governed by the federal states, therefore, it is reasonable to do the water management on a federal state level. However, RBDs also need to be regarded as systems, that are interconnected, and thus should also be managed as a unit. It would be more reasonable to do environmental management on the basis of environmental boundaries rather than political boundaries. Therefore, it is essential to have a good connectivity between the federal states and the RBD authorities.

This study uses the concept of connectivity, as introduced by Termeer et al. (2011), to investigate the governance of the WFD within the Hunte and the Emscher case studies in Germany. Thus, later within this chapter, the approach of Termeer et al. (2011) will be used to generate a framework to investigate on the governance approach of Germany to implement the WFD.

2.1 Development of European Water Governance

To understand how the WFD can be positioned in the history and development of European water governance, it is essential to look back to its beginnings and to understand how it has evolved. Therefore,

this section will give a brief overview of the origins of water governance within Europe and discuss essential steps and milestones that were taken until the introduction of the WFD in 2000.

Early European legislation was not driven by environmental aspects, but rather by economics, security and social welfare (Selin & Van Deveer, 2015). Therefore, also the consumption of water resources within Europe has increased for years, with the expectation of the resource being self-purifying. In the 1960s research on the environmental field began – also raising public awareness for ecological and human threats - and the ecosystem concept was developed, leading to the integration of the environment in decision-making (Aubin & Varone, 2004; Selin & Van Deveer, 2015). First European environmental law developed in the 1970s (Selin & Van Deveer, 2015), and also the first measures for the improvement of surface water quality were taken. However, it was still assumed to be sufficient to dilute polluting substances to maintain the self-purifying capabilities of water. Later this led to a prohibition of specific hazardous substances because it was found out that they could not be diluted or absorbed by the environment. The further development of environmental policy included the introduction of various quality assessment and data collection methods and developed along a path of trial-and-error (Aubin & Varone, 2004).

Within Europe, concerns about water quality started to rise in the 1970s – when the first Club of Rome report was published - leading to the introduction of first environmental legislation on several levels – international, national, regional and local (Aubin & Varone, 2004). European Community Member States separately developed several national environmental policies. Furthermore, they also started to collaborate with regard to the goals of protecting public health, the environment and aimed to strengthen the Common Market, with water being one of the key topics (Aubin & Varone, 2004). As a result of the Stockholm treaty in 1972, collaboration in the environmental field between the EU member states increased to reduce cross-border pollution (Selin & Van Deveer, 2015).

According to Aubin & Varone (2004), the development of European water policy can be divided into three phases of regulation development. During the first phase (1973-1988), the primary focus was on protecting water used for human activities including the establishment of first quality standards for specific water bodies (Aubin & Varone, 2004). Water quality objectives dominated this first phase. The two central directives developed during this time were the surface water directive and the drinking water directive (Kaika, 2003). The second phase (1988-1995) added up to the first phase by enclosing more particular measures on water quality (Aubin & Varone, 2004). Directives developed during this second phase are the Urban Waste Water Management Directive, the Nitrates Directive, the New Drinking Water Directive and the Directive for Integrated Pollution and Prevention Control (Kaika, 2003). Lastly, the third phase started in 1995 with the prearrangement of the WFD and the evolvement of several trans-boundary water management approaches (Aubin & Varone, 2004).

In contrast to this general European water governance, the first formal national RBD organisations were established about 300 years ago, when along with the industrial revolution the use of waterways for trade and transport increased (Hooper, 2005). First institutionalised forms of international river commissions within Europe started to evolve with the establishment of an international commission for the river Rhine (ICPR, 2018; Jaspers & Gupta, 2014). In the beginning, this commission only entailed the navigation on the river, but later, from 1950 onward, also included issues concerning the quantity and quality of the water (Jaspers & Gupta, 2014).

With the establishment of the WFD in 2000, the EU stipulated the introduction of RBD concept for all water bodies along their hydrological boundaries, carried out by the respective member states (Directive 2000/60/EC, Article 3).

2.2 The European Water Framework Directive (WFD)

The latest stage in European water governance is the European Water Framework Directive from 2000. It aims to reach good ecological and chemical conditions of all water bodies within the EU by 2015, using Integrated River Basin Management, and thus the integration of multiple policy fields into the management of water bodies (Albrecht, 2013; Aubin & Varone, 2004; B. Moss, 2008). It can be described as a way of managing river basins sustainable (UM Baden-Württemberg, n.d.), because it considers biological, hydro morphological as well as physic-chemical elements (Kallis & Butler, 2001). For all of these three element groups definitions are given for a high, good, moderate and bad status. The responsible water authorities are in charge of setting the standards for each of their water bodies and to classify them (Kallis & Butler, 2001). This also includes the need for emission controls and the determination of the ecological status (B. Moss, 2008). The aims of the WFD are binding for the member states and entail the restructuring of management structures, with the incorporation of the RBD authorities (Albrecht, 2013; Aubin & Varone, 2004). Thus, measures should be coordinated at the level of the RBD, corresponding to large river basins (Kallis & Butler, 2001).

The UM Baden-Württemberg (n.d.) regards the WFD as one of the most important pieces of EU environmental policy. Being a framework directive, the WFD, besides some specific regulations, allows EU member states a substantial amount of freedom in the implementation (Bourblanc et al., 2013). Instead of setting standards and norms, the WFD prescribes procedures for the member states to reach partly self-set standards and objectives. Therefore, it can be regarded as a “token of a new mode of European governance” (Bourblanc et al., 2013, p. 1450).

Two central features incorporated by the WFD, are monitoring and public participation (Kallis & Butler, 2001). Monitoring of ecological, chemical and physical parameters is essential for the classification of the water body, the effectiveness of implemented measures, and for the need of additional measures (Kallis & Butler, 2001). The WFD also has the ambition to foster public participation, meaning the

consideration of stakeholders and the public in the implementation of measures. This should also help to reduce the clashes between the WFD and other public interests (Kallis & Butler, 2001; Newig, Schulz, & Jager, 2016). Thus, the WFD can be seen as the “most important [European] paradigm shift in the history of water resources management” (Tsakiris, 2015, p. 545).

The action program of the WFD involves measures to reach the following three goals (EC, 2015, p. 12):

- “reconcile environmental and economic objectives by relying on measures that offer clean water in sufficient quantities for nature, people, and industry;
- ensure the long-term sustainability and economic viability of EU agriculture and aquaculture;
- support energy production, sustainable transport and tourism development, thereby contributing to a genuinely green growth of the EU economy.”

Table 2-1 – Time schedule for the implementation of the WFD (Aubin & Varone, 2004).

Deadline	Implementation steps	Articles of the WFD
2000	Adoption of the water framework directive (22.12.2000)	Directive 2000/60/EC
2003	Transposition of the directive into national legislation Designation of the competent authorities in river basin districts	Art. 24 Art. 3
2004	Register of the characteristics of the river basin district Register of protected areas	Art. 5 Art. 6
2006	Implementation of the monitoring programme	Art. 8
2009	Publication of the management plan Publication of the programme of measures	Art. 13 Art. 11
2010	Implementation of full-cost pricing of water uses	Art. 9
2012	Entry into force of the programme of measures Combined approach of the emission controls for point and diffuse sources	Art. 12 Art. 10
2013	Repeal of a set of former EU water directives	Art. 22
2015	Good status for all waters	Art. 4
2019	Review of the directive	Art. 19
2024	Prohibition of emissions of priority hazardous substances (at the latest)	Art. 16

The WFD intends to achieve comparable standards for the EU member states, thus in Annex 5 of the WFD the quality elements for the classification of the ecological status are given and further definitions for ecological status classifications are made (Council Directive 2000/60/EC, 2000). The time schedule made for the implementation can be found in Table 2 1. As shown, the implementation of the WFD was planned gradually. However, the new institutional arrangements had to be made quickly, as the directive had to be transported into national legislation by December 2003. This posed problems, to the introduction of RBD and the rearrangement of integrated scale levels, as there was only a limited time to react

(Aubin & Varone, 2004). The timetable set by the WFD, especially with the first deadline being in 2015, is challenging for the member states and demands a steady working process (Griffiths, 2002).

2.3 Integrated Water Resource Management (IWRM)

The concept of IRBM builds on the idea of Integrated Water Resource Management (IWRM) and is essential for the management of water bodies. Both IRBM and IWRM are basic principles nowadays in water management – not only in the scope of the WFD but also from a more international perspective. Therefore, this chapter and the following sub-chapter will introduce the concepts of IWRM and IRBM.

Integrated Water Resource Management (IWRM) is a concept, which calls for the integration of all kinds of water and the different types of interests related to it (Jaspers & Gupta, 2014). It builds the basis for IRBM and thus also is one of the fundamental principles of European water governance. However, there are difficulties with putting IWRM into practice, primarily since the term is not defined precisely. Therefore it is unclear what should be integrated into water management (Jaspers & Gupta, 2014). The approach emerged in the 1980s and is the foundation of environmental management initiatives on the international and global level, that aim at more sustainable water management (Hooper, 2005).

IWRM consists of two fundamental principles: (1) coordination is better than fragmentation when considering decision-making for resource use, and (2) water is an essential resource for human life and the functioning of ecosystems (Hooper, 2005). With IWRM emerging on the international level in the 1990s, also the concerns for the health of ecological systems and the impacts of resource use on the watershed, within a riverine system, were increased (Hooper, 2005). It is the task of IWRM to bring together a diversity of stakeholders to collaboratively manage activities and impacts within the system. These stakeholders include governmental entities, community organisations, business organisations, industry organisations, other organisations, individuals, as well as the public (Hooper, 2005). “Water governance is about putting IWRM with river and lake basin management and public participation as critically important elements, into practice” (World Water Council, 2003, p. 122). Hence it can be concluded, that IWRM is the very basis of any type of water management.

2.4 Integrated River Basin Management

Building on IWRM, the WFD puts Integrated River Basin Management (IRBM) forward as a key approach. It can be defined as “[...] the process of coordinating conservation, management and development of water, land and related resources across sectors within a given river basin, in order to maximise the economic and social benefits derived from water resources in an equitable manner while preserving and, where necessary, restoring freshwater ecosystems.” – WWF (2017), as adapted from (GWP, 2000). This concept includes coordinated planning processes and management of land, water and natural resources within hydrological boundaries (Watson, 2004).

IRBM is part of the WFD with the aim to “achieve a good status of all surface and ground water bodies in the European Union until 2015” (Albrecht, 2013, p. 1). In order to perform IRBM, RBDs are identified and assigned, based on their hydraulical catchments. In the next step, each RBD gets assigned a competent authority, which is responsible for creating an RBMP for the entire RBD, under the consideration of IRBM aspects (Griffiths, 2002).

The five features which need to be included in an RBMP, in order to implement the concept of IRBM, are (Griffiths, 2002):

- Characteristics of the River Basin
- Environmental monitoring data
- Details of the impacts of human activity
- Analysis of the economic use of water
- Strategic plan for the achievement of a ‘good status’ – the Programme Measures

River basins have to be seen as dynamic systems, exposed to natural changes over time (WWF, 2017). Every type of management applied to a river basin, therefore, affects the whole riverine system (WWF, 2017). Within IRBM it is a challenge, to find a balance between various stakeholder interest. Furthermore, it is difficult to understand the impacts specific measures will have on the functions of the river system, along with leaving flexibility for uncertainties and uncertain future developments (Kok, et al., 2009).

According to the World Wildlife Fund (WWF) (2017), there are seven main elements to successful IRBM, these are: (1) a long-term vision agreed on by all major stakeholders; (2) cross-sectoral integration of policies, decisions and costs; (3) decision-making at river basin scale to guide local or sub-basin actions; (4) a strategic framework combined with effective timing, in order to take advantage of opportunities as they arise; (5) participation of relevant stakeholders in the transparent decision making process; (6) adequate investments by all levels and actors involved; and (7) a respectable knowledge base about the river system and its influencing socio-economic forces.

2.5 The Implementation of the WFD – A European Perspective

Having explained the history of the WFD, what it entails and the relating concepts, this section will give an overview of the implementation in Europe after the introduction of the WFD in 2000. Overall statistics for the whole EU region show that about 40% of all surface water bodies have already reached an ecological status that can be indicated as good or better (EEA, 2018). With lakes and coastal water bodies generally achieving a better status compared to rivers and transitional water bodies. As indicated in Figure 2-1 some regions are having a higher proportion of water bodies with a good or better ecological status – including Scandinavia, Scotland and the Mediterranean region (EEA, 2018) and are in contrast to central Europe, where the proportion of water bodies with a lower ecological status is higher (EEA, 2018).

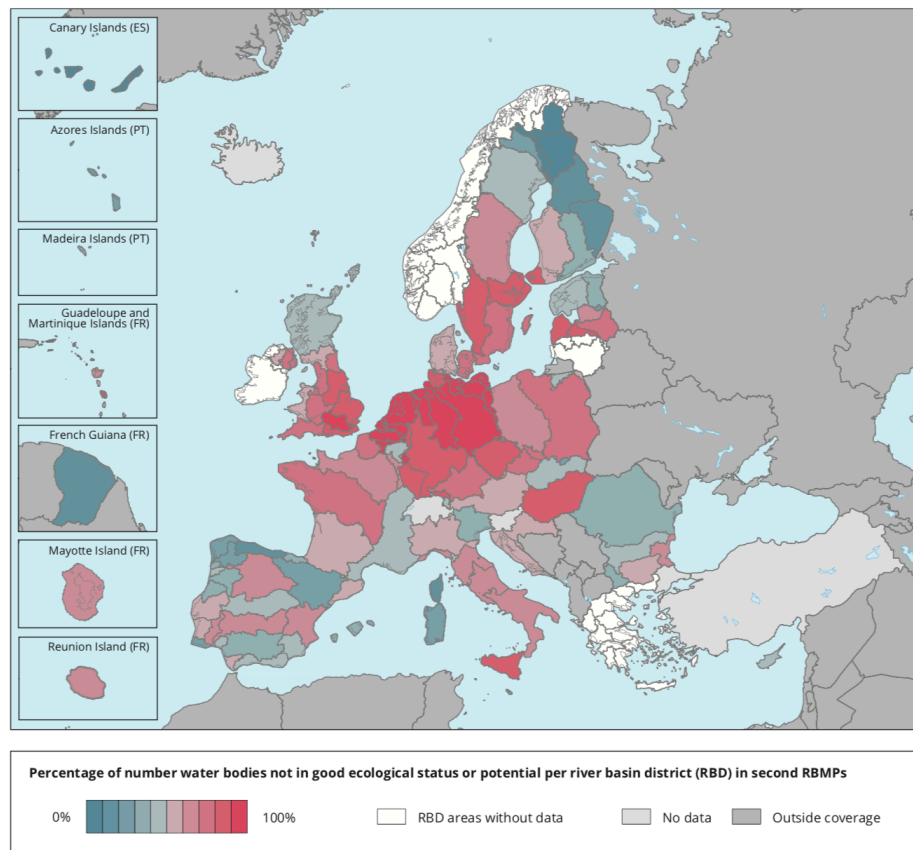


Figure 2-1 – Map indicating regions where a good ecological status has and has not been reached (red) (EEA, 2018).

Generally, it can be said that downstream sections of rivers – especially when concerning large European rivers, for example, the Rhine or the Danube – have a lower ecological status (EEA, 2018). This is because pollutants are often transported from upstream to downstream regions where they accumulate and reach higher concentrations. The polluting pressure is therefore usually higher in downstream areas (EEA, 2018).

The main polluting pressures on surface water bodies have been classified, by the EEA (2018); they are hydro morphological pressures, diffuse source pollution from agriculture and atmospheric deposition, as well as point source pollution, primarily from urban wastewater. When considering the ‘good’ chemical status of European surface water bodies as classified by the WFD 46% do not reach a ‘good’ status when ubiquitous, persistent, bio-accumulative and toxic substances (uPBTs) (e.g. mercury) are considered. Only 3% of all surface water bodies do not reach a ‘good’ chemical status when not considering uPBTs, indicating, that uPBTs are a significant problem for European water bodies (EEA, 2018). The percentages of surface water bodies reaching and not reaching a good chemical status with and without uPBTs for the separate Member States is shown in Figure 2-2. Again, central European states, such as Germany, Luxemburg, Austria, Belgium and Slovenia, as well as Sweden show a generally higher concentrations of priority substances, compared to regions which are situated in the outer regions of Europe (EEA, 2018). Variations between member states can, thus, be explained by differences in population

densities, industries and in geography, further, the interpretation of information has also been handled in different ways by the separate Member States (EEA, 2018).

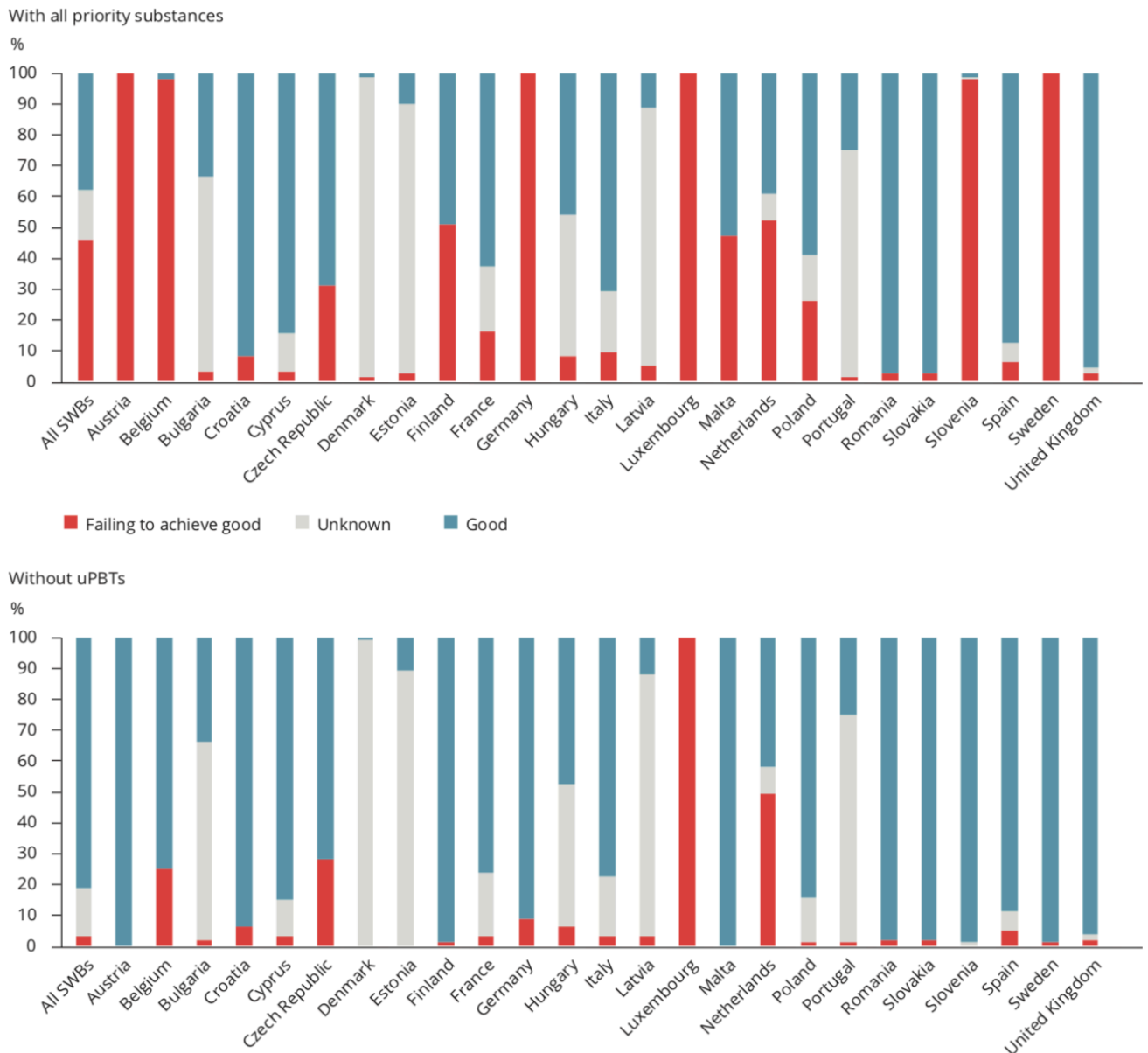


Figure 2-2 – Percentages of surface water bodies reaching or not reaching a good chemical status per member state, with and without uPBTs (EEA, 2018).

The WFD offers a significant degree of freedom; therefore, the speed of implementation varies strongly between the different member states (Bourblanc et al., 2013). Hence, Bourblanc et al. (2013) metaphorically refer to the member states as “tortoises” and “hares”. The member states, classified as tortoises have a slow pace of implementation, however, once started, it does not stop. The countries associated with a hare, are classified to have a quick start, however, are also easily delighted, and therefore difficult to keep on track. Over long periods – such as the implementation time of the WFD (27 years) it is difficult to say, who will reach the goal first, with the hare having a higher speed and the tortoise having a more direct path. Bourblanc et al. (2013) conclude that the strategies needed to support these different

approaches of member states – both hares and tortoises - in the implementation of the WFD are very different, and it is difficult to classify who will be more efficient.

When considering the extent to which governance of RBDs of selected European Member States has changed since the introduction of the WFD, it shows, that all countries that had no basin planning before the introduction of the WFD changed their management to include RBM on the RB unit after the introduction of the WFD, this also includes Germany (Jager et al., 2016). However, within these countries, the planning at the RB unit is still restricted to discrete management units which do not have a legal mandate or formal authority for governance within RBDs (Jager et al., 2016).

2.6 Problems with the Governance of the WFD on a European Level

Besides problems concerning the governance of the WFD in Germany, there are also problems that arise on a larger scale context. A lot of the issues a majority of the EU member states face – connecting to the implementation of the WFD – are similar (Maia, 2017). Therefore, this section will discuss issues concerning the governance of the WFD on a European level. Even more than 16 years after the introduction of the WFD, its implementation still represents to be a significant challenge for the EU member states (Maia, 2017; Tsakiris, 2015). This study focuses on the opportunities and challenges with the governance of the WFD. Thus, it is important to consider general problems all member states face when implementing the WFD. Therefore, the focus within this section will be on general points of criticism of the WFD and the challenges for the implementation that are posed to all EU member states. The criticism will also help to identify, if issues with the implementation of the WFD found in the case studies in Germany are connected to problems within Germany alone, or if they can also be related to Europe-wide problems.

On the basis of Maia (2017) and Josefsson & Baaner (2011), six critical issues with the implementation of the WFD could be identified, these refer to (1) the cause-and-effect relationship, (2) the cost-benefit analysis, (3) appropriate reference conditions, (4) the typology, (5) biological quality elements and (6) the One-Out-All-Out principle.

The first issue, according to Maia (2017), concerns the relationship between ecological flows and the status of water bodies. The primary reason for this issue is that in many cases, the effects of ecological flows are still not apparent. Therefore, more research is required to analyse the cause-and-effect relationship. The missing data on causes and effects also result in uncertainties, for instance, when concerning the effects specific measures will have on the water quality.

Second, there is the need for a more transparent provision of cost-benefit analysis for the RBMDs, as costs for the environment and the resources are often not adequately accounted for (Maia, 2017).

Therefore, the efforts of member states, to adhere to economic aspects as requested by the WFD, are still insufficient (Maia, 2017). Thus, overall reaching the goals of the WFD can be referred to as an “ecological dream with an economic ideal” (Bouleau, 2008, p. 235).

The third problem of the application of the WFD concerns the reference conditions for a good ecological status of a water body. The pristine ecological condition is what is aimed for within the WFD. However, this aim is controversial, since, on the one hand, it is difficult to assess these pristine conditions and on the other hand because many variables within the riverine systems have been fundamentally changed, thus are difficult to recreate (Hughes, Colston, & Mountford, 2005; Josefsson & Baaner, 2011). Riverine systems are natural systems that are subject to constant change, and therefore, it can be discussed if it makes sense to use any reference system to classify the status of a river (Harris et al., 2006).

Fourth, another problem with applying the WFD arises when looking at the typology of a water body. Due to the WFD water bodies can be classified into different types and there are specific references for the biology of each type. There is just a limited number of types, and a limited number of measures used for classification, and thus it is impossible for some water bodies to reach a ‘good status’ (Josefsson & Baaner, 2011). Making the typology more detailed and taking into account individual ecological and regional characteristics would allow for more interpretation of the ‘good ecological status’ (Josefsson & Baaner, 2011). Thus, it would be easier for some water bodies to reach the ‘good status’.

Fifth, when regarding the biological elements, as used for the classification in the WFD, Josefsson and Baaner (2011) criticise that using these elements for classification is not reasonable. It is not reasonable because ecosystems are exposed to processes of natural change and therefore also evolve and change over time. To expect a constant presence of particular biological quality elements would, therefore, neglect the natural evolution of ecosystems (Josefsson & Baaner, 2011).

Sixth, the final problem, the EU member states face in the implementation of the WFD is the One-Out-All-Out principle. The One-Out-All-Out-Principle states, that all the parameters considered for the classification of the water quality are measured independently, with the lowest of all scores determining the overall status of a water body (s1.4.2 Annex V). However, it can be criticised that “the status of an ecosystem is not necessarily unfavourable, simply because of the insufficient representation of a single indicator of one of the biological quality elements necessary for the criteria of ‘good status’” (Josefsson & Baaner, 2011, p. 473).

Referring back to the main aim of this study – to find the challenges and opportunities for Germany in the governance of the WFD – it is essential to keep in mind, that all European member states face these six issues. Thus, they will probably also appear in the Hunte and the Emscher case studies.

Solutions for these issues need to be found on a European level. As stated in article 19 of the Directive, the WFD will be revised in 2019, meaning that the commission will suggest changes based on inputs of the member states (Fuhrmann, 2017). It is unknown, what exactly will be revised in 2019. However, it is generally hoped for solutions for the six named issues and for an extension of the deadlines for reaching the goals of the WFD (Fuhrmann, 2017). These might also help to improve the governance of the WFD in Germany.

2.7 The WFD and IRBM within Germany

After having explained the historical background of the WFD, the comparison of European countries in the implementation and the issues with the implementation of the European level, this following section will tell how the WFD and IRBM are performed and implemented within Germany.

Out of all German surface water bodies, 82% got exemptions about reaching the goals in 2015 (Richter et al., 2013). Richter et al. (2013) argued that this is primarily due to the lousy coordination and coherence of policy fields while referring mainly to agriculture, transport and industry. It is, therefore, suggested that RBMPs of the next generation should be used for the better harmonisation between different policy fields.

Before the introduction of the WFD, water management within Germany was aligned to administrative borders, and was, thus, strongly affected by the federal states. It is still visible that administrative powers are divided between the federal states, which are responsible for water policy, and the federal government, which sets the standards for management and planning through legislation (Jager et al., 2016). Harmonisation between the federal states was first initiated in 1956 with the introduction of the German Working Group on Water Issues of the Federal States and the Federal Government (LAWA = ‘Bund/Länder-Arbeitsgemeinschaft Wasser’), a joint working group of all federal states. At that time, RBM also started to exist but only on a municipal and sub-basin level (Jager et al., 2016).

Today, water authorities are used to exchange information between the federal states; further, they are in charge of implementing the programme of measures, for the WFD (Richter et al., 2013). However, these water authorities are mostly parallel structures to the structures that already exist in the federal states (Evers, 2016), resulting in a total of 35 RBMPs produced for the 10 German RBDs (Jager et al., 2016). The federal states have the competence to coordinate the implementation of the WFD; it is mostly the task of Federal Ministries of the Environment to implement the WFD. The problem however is, those other directives are usually coordinated by different authorities or departments (Evers, 2016). As synergies between directives are often site-specific, meaning that not all kinds of directives are relevant for every site, this leads to a variety of site-specific conditions for cooperation’s between them (Evers, 2016). Consequently, RBMPs in Germany are rather produced on a regional basis than for the whole

catchments, resulting in high correspondence with regional circumstances, but also in lower correspondence with basin-wide conditions.

In Germany, the implementation of the WFD was divided into four time periods for the years 2000 – 2027, therefore the following implementation phases can be differentiated (Fuhrmann, 2017):

- | | |
|------------------|--------------------------------------|
| (1) 2000 – 2009: | Inventory and Monitoring |
| (2) 2009 – 2015: | 1 st implementation cycle |
| (3) 2015 – 2021: | 2 nd implementation cycle |
| (4) 2021 – 2027: | 3 rd implementation cycle |

Each of the implementation cycles can be further divided into four phases, (a) the implementation of measures, (b) a progress report, (c) a record of implemented measures and (d) drafts of new implementation plans for the next planning cycle (Fuhrmann, 2017). At the time of this thesis, Germany finds itself in the phase of 2c/d, the end of the 2nd implementation cycle, where inventories and drafts for the next planning period are made and delivered to the river basin district authorities (Fuhrmann, 2017).

Besides having those phases for the implementation, Germany used the possibility to extend the deadline for reaching the goals of the WFD for nearly all its water bodies. However, it seems that Germany will also delay the implementation of measures for the final deadline which is in 2027, and therefore will wait for further deadline extensions, beyond 2027 (Weiger, 2018). According to Weiger and the BUND (2018), there are only a few cases and projects within Germany, where there are active water authorities that are driving the implementation of the WFD forward and due to the powerful lobbies of agriculture, the shipping industry, traffic as well as the mining industry a rigorous realisation of measures and the directive is often impossible.

2.8 The Concept of Connectivity

The German water management system is fragmented into several layers. Additionally, the involvement of a variety of policy fields, and the introduction of RBD authorities led to further fragmentation within the governance of the water sector. As the governance of water is known for fragmentation, connectivity is considered as a promising concept (Edelenbos & Teisman, 2011). Fragmentation is often expressed through different departments and layers within a governmental system and segmented responsibilities within the respective layers (Edelenbos & Teisman, 2011).

In this study, the approach of Termeer et al. (2011) was used to investigate on the concept of connectivity. According to Termeer et al. (2011) connectivity refers to: “bringing actors, issues, sectors, and scale levels together to realize creative [governance] options that do justice to different values, interests, and motives.” (p. 166). Connectivity is therefore supposed to support the efficiency and legitimacy of decision making, by bringing different actors, sectors, issues and scale levels together (Termeer et al., 2011).

Governance can, thus, be perceived as key to allow for and to hamper the connectivity between levels (Biesbroek et al., 2013).

However, realising this connectivity within a fragmented system is not an easy task. Termeer et al. (2011) developed a framework in order to investigate the potential governance arrangements for climate adaptation, with the goal to indicate resilient governance systems. They argue that due to climate change governments are in need of adaptive systems that will allow them to react on expected as well as unexpected developments. In order to do this, Termeer et al. (2011) used three concepts: (1) organising connectivity, (2) (re)allocating responsibilities and (3) dealing with controversies. As the focus of this study lies on the governance of the WFD in Germany, the dimension of connectivity is seen as particularly important. This importance is especially due to the fact that climate change is expected to affect the hydrological properties of riverine systems (Grafton et al., 2013).

Termeer et al. (2011) further subdivide the dimension of connectivity into four sub-dimensions: (A) Connecting Policy Domains, (B) Connecting Scale Levels, (C) Connecting the Old and the New and (D) Connecting Leadership.

First, the connectivity of policy domains as introduced by Termeer et al. (2011) refers to the synchronisation of policy domains. Climate adaptation – as well as water governance – leads to land-use claims, which need to be integrated with existing land uses. Multi-functional solutions are seen as one potential solution for conflicts in land-use claims. Furthermore, every policy domain has its own networks, procedures and assumptions. Therefore, it is often difficult to find innovative solutions, that align with the existing methods and laws (Termeer et al., 2011).

Second, the connectivity of scale levels addresses the multi-level structure of governmental systems (Termeer et al., 2011). It is essential to create government arrangements, which are capable of combining the planning and financing approaches from the national, regional and local level in order to create long-term robustness (van Buuren, Buijs, & Teisman, 2010).

Third, connecting the old and the new refers to experimentation (Termeer et al., 2011). However, it is difficult to conduct experiments within governmental systems; therefore, it is about the organisation of appropriate spaces for creativity and innovation. It is thus not about testing a hypothesis, but about questioning established policy objectives (Termeer et al., 2011).

Fourth and the last sub-division of Termeer et al. (2011), connectivity of leadership, means connecting individuals in fragmented governmental systems. It is the task of politicians and governmental actors, to improve the coordination across levels and sectors. Therefore, they have to generate room for discussion and networking to generate integrated decision making (Termeer et al., 2011).

In the context of this study, in particular, the first two sub-dimensions are seen as relevant – connecting policy domains and connecting scale levels. As already discussed, connecting policy domains is essential for the integration of the water sector with other policy fields. It is difficult to separate the

governance for water quality from other government fields. As already mentioned, water quality is influenced by other policy domains; thus, they should be considered in an integrated governance approach. Furthermore, the concept of connectivity of scale levels is seen an important concept, this due to the German governance system for the WFD, consisting out of multi-level administrative structures and due to the river basin district authorities, which pose a separate management structure. The main problem is to find the right scale for the governance of RBDs, in order to achieve the best results for water quality, without suppressing other policy fields. The institutional fit between the existing institutional system in Germany and the new institutional arrangements introduced by the WFD is lacking, and this is argued to be problematic for the implementation of the WFD (Knill & Lenschow, 2000; T. Moss, 2004). However, the introduction of the WFD was seen to present new opportunities and to encourage the institutional interplay between spatial planning and water management (T. Moss, 2004).

It has to be mentioned, that in the context of this study, the second sub-dimension of Termeer et al. (2011) 'connecting scale levels' was further sub-divided, to match the problems that could be indicated with the governance of the WFD in Germany. Thus, on the one hand, there is a focus on the administrative levels and their responsibilities, and on the other hand, there is a focus on the integration of river basin management authorities in the management of riverine systems.

Therefore, in total three dimensions of connectivity are considered in this research: (1) connecting policy domains, (2) connecting administrative scale levels and (3) involving the respective RBD authority. The other two dimensions, named by Termeer, et al. (2011) – the connectivity of the old and the new, and the connectivity of leadership are regarded as less relevant for the issues associated with the governance of the WFD in Germany and therefore are not further considered.

2.9 Connecting Policy Domains

As already discussed in the previous chapters, for the implementation of the WFD it is essential to connect policies from several domains, to allow for creative and multi-purpose land-use solutions, considering several policy domains. This need for connectivity was also recognized by Termeer et al. (2011) concerning governance for climate change. They state: "Innovative solutions are often difficult to align with existing laws and procedures" (Termeer et al., 2011, p. 167). The EU generating an increasing number of directives and thereby expands its authority to various policy domains. Each policy domain is the answer to a different societal demand. Therefore, the likelihood of tensions between the different policy domains is high (Sweet, Sandholtz, & Fligstein, 2001).

With the implementation of the WFD, especially the connection of different policy domains is difficult in practice. Frederiksen, et al. (2015) address three particular issues that are not considered in the WFD: (1) environmental management in spatial planning; (2) sectoral policies that address water goals; and

(3) the coordination of timing as well as the levels of public participation and planning processes with various environmental legislative backgrounds and the exchange of relevant information.

Therefore, it is essential to consider an integrated perspective, to improve the institutional fit and performance, as well as to encourage multi-purpose management, public participation and key stakeholder involvement (Frederiksen, Mäenpää, & Hokka, 2008). As Huitema and Meijerink (2014, p. 21), in regard to environmental policies, highlight: “It was relatively easy to point out the existence of contradictory policies.” They take agriculture as an example where the impacts of water extractions and pollution through pesticides and fertilisers are often overlooked.

Furthermore, infrastructure also often results in impacts on the hydrology (Huitema & Meijerink, 2014). Thus, it is essential to think integrated with all policy sectors: “[...] issues that were previously seen as self-contained sectors are now cross-cutting issues that affect a wide range of actors, sectors and priorities” (Jaspers & Gupta, 2014, p. 58). Multiple policy domains have to be considered to allow for the efficient use of space for the implementation of measures or to create multi-purpose land-use-functions. The implementation of the WFD will pose to be problematic in combination with conflicting interests, especially when they have an economic background. Finding the right balancing between different environmental and societal interests, in a way that is complementary rather than overpowering, can be described as difficult (Lafferty & Hovden, 2003). Therefore, it is essential to be aware of the policy domains, that are hindering the implementation of the WFD, and of those that have complementary goals.

In the context of this study, policy domains that appear in connection to the WFD will be analysed according to the issues they cause when applied in combination with the WFD and how the respective authorities handle them. The types of problems that can be distinguished highly depend on the local context within the case studies. Thus, the different types of problems were only defined after the analysis of the case studies and are different for the two analysed case studies. In total 5 types of problems could be identified. These are: (1) the WFD and agriculture, (2) the WFD and nature protection, (3) the WFD and the Floods Directive, (4) the WFD and spatial pressure and (5) the WFD and industry. In order to find the opportunities and challenges for the implementation of the WFD in Germany, this study will use the concept of connectivity of policy domains, based on Termeer et al. (2011) to investigate on these 5 identified problems.

2.10 Connectivity of Scale Levels

The challenge in the connection of various scale levels, regarding planning and financing of measures, is to act in support of long-term robustness (van Buuren et al., 2010). The notion of governance does not solely include national governmental actors, but also a variety of global and local governance, thus a series of public and private organisations, co-operatives, and the relationships between them (Ballabh, 2008).

In this study, the dimension of scale levels is further subdivided into two sub-dimensions, the dimension of administrative scale levels, and the dimension of involvement of the respective RBD Authority in the management of the RBD. This sub-division is necessary because, within Germany, RBD authorities form a parallel structure, to the administrative bodies on the federal state level. Administrative scale levels refer to governmental administrative structures in the management of RBD; they are in charge of putting the WFD into practice. Therefore, referring to the way responsibilities are spread across the various governmental layers. The integration of RBD authorities addresses the role RBD authorities play in the management of RBD. The WFD has asked for RBD authorities to be in charge of the administration of RBDs.

However, in Germany, these organisations exist, but the management still obliges to the federal states, with the RBD authorities forming a dual administrative structure. This duality is argued to be problematic for the implementation of the WFD, as the institutional fit between the existing institutional system in Germany and the new institutional arrangements introduced by the WFD is lacking (Knill & Lenschow, 2000; T. Moss, 2004).

Within the scope of this study, the connectivity of scale levels is seen as important, as the governance of the WFD in Germany is done on several levels (Albrecht, 2013).

Connecting Administrative Scale levels

An example of how to connect administrative scale levels is the notion of multi-level governance, which was introduced as a concept for the analysis of EU-politics (Große Hüttman & Wehling, 2013). It describes the connection between partnerships and decision-making within the EU and how different political levels are involved. There is a mutual dependence between the layers making the EU turn into a federal system (Große Hüttman & Wehling, 2013). It is supposed to show that the EU is not a hierarchy, different administrative levels are included in the decision-making process. Critics of the concept say that responsibilities and legitimation of multi-level governance are diffuse, while supporters stress it to be a solution for issues with accepting the EU (Große Hüttman & Wehling, 2013).

In Germany, before the WFD was introduced, the Federal Water Act (FWA), as well as federal water acts of the separate federal states, were the guiding principles in German legislation (Albrecht, 2013). There was a duality in the legislation of river basins in Germany, with both the state and the federal states being able to legislate. “Spatial scales relate most obviously to the territorial delimitation of political power, to the physical area over which one political structure, rather than another, holds sway”, (Meadowcroft, 2002, p. 170). Furthermore, “[...] public administration in Germany is characterised by

strong functional division of responsibility which has in the past hampered institutional interplay”, T. Moss (2004, p. 90).

- International River Basin District**
e.g. River Basin Management Plan for the International District of the Elbe River Basin, coordinated by the International Commission for the Protection of the Elbe River (ICPER)
- National Part of the International River Basin District**
e.g. River Basin Plan for the German Part of the international District of the Elbe River Basin, coordinated by the Elbe River Basin Community
- „Länder“ Part of the River Basin District**
e.g. Saxon contribution to the river basin management plan of the Elbe River Basin, Coordination: Highest Water Authority
- Communal Part of the River Basin District**
e.g. cities and districts within the catchment area of the Elbe within Saxony, Coordination: Lower Water Authorities

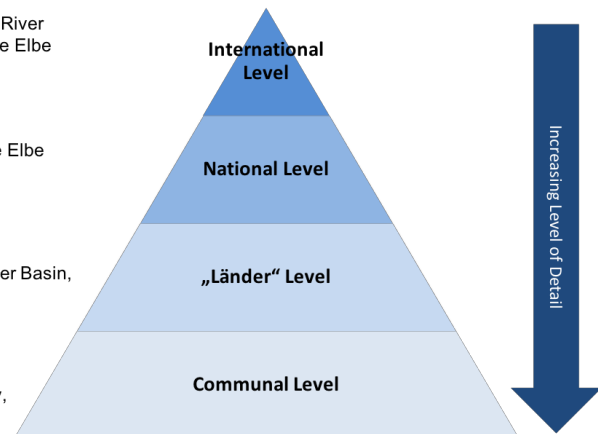


Figure 2-3 - Scheme of river basin management plans on different planning levels (Albrecht, 2013, p. 5).

Using the example of Germany, there are four different governmental layers (Figure 2-3). Starting at the top of the pyramid is (1) the supranational level, in this study it is represented by the EU. The second level in planning is represented by (2) the respective EU member state, in this case study Germany. The third layer of the pyramid represents (3) the regional level. In the scope of this study, the regional level is represented by the federal states of Lower Saxony (Hunte case study) and North Rhine-Westphalia (Emscher case study). The bottom layer of the pyramid represents (4) the communal layer of planning, it can be represented by cities and districts (Große Hüttman & Wehling, 2013).

This study will look at three specific aspects of multi-level governance within Germany, in order to investigate on the connectivity of administrative scale levels: (1) the responsibilities; (2) the willingness and (3) the financing of measures.

The first aspect of multi-level governance is the aspect of responsibilities on administrative scale levels. When concerning the responsibilities within a multi-level administrative system, there is the need to reduce the effects of spill-overs on the local scale (Flynn, 2000). Local level authorities often have to cope with a superabundance of tasks assigned from higher authorities. Thus, there is the need for “highly co-ordinated intergovernmental relations between local, regional, national and EU levels” (Flynn, 2000, p. 79). The implementation of directives by the EU is said to pose challenges for authorities on lower scales (Kastens, n.d.). Often too many tasks and responsibilities are assigned to the local scale, leading to the incapability of local actors to deliberately execute them. Deficits in implementation can often be traced to the ‘remoulding’ of European laws to local scales and authorities (Flynn, 2000). Therefore, it is essential, that planning and financing responsibilities across scales are connected in a way that supports the governance of the WFD.

Second, regarding the willingness to implement environmental measures, the environment is often not prioritised by politicians. Willingness is often related to the finances available, therefore if the financing is limited environmental measures are often neglected (Flynn, 2000). It is questionable if society is willing to pay the high costs, for the implementation of the WFD, without a direct justification and socio-economic benefits (Brouwer, 2008). The willingness to pay therefore dependent on societal, political and sectoral preferences concerning the environmental objectives, costs of the current water use, as well as the ability to pay (Brouwer, 2008).

The third and last aspect of multi-level governance is considering the costs. It is expected, that the implementation of the WFD within the EU will probably cost billions of Euros in total (De Nocker et al., 2007). These costs will need to be spread and coordinated between all levels. With the overall benefits to the community being unclear, it is difficult to motivate financing, in particular from lower levels (Bateman et al., 2006). Therefore, appropriate funding is needed from higher levels.

Financing and willingness to implement measures are significant issues for the implementation of the WFD (Brouwer, 2008). It can be summarised, that whether costs are perceived as appropriate or not, depends on sociological and economic factors. Therefore, it can be said that: “Whether the costs of reaching the defined environmental WFD objectives are disproportional depends on the willingness and ability to pay by different socio-economic groups and sectors in society to whom these costs are transferred and who are expected to pay for them” (Brouwer 2008, p.599). It thus is important to spread the costs across scale-levels and to have a transparent overview of the expenses.

Involvement of the Respective RBD Authority

Huitema and Meijerink (2014), zoom in on the dilemma concerning RBDs because they are essential structures in the governing of water quality. They say, that these RBD authorities, on the one hand, enhance the spatial fit within the river basin itself, whereas, on the other hand, RBD authorities depend on other actors, for the realisation of their own goals. Therefore, institutional interplay as defined by T. Moss (2004, p. 5) is essential: “Institutional interplay refers to boundary problems of a different kind. The boundaries at stake here relate not to physical boundaries, but to political responsibilities and social spheres of influence.”. Thus, it is important, to connect RBD authorities to administrative bodies on all levels, as these also incorporate political decision making and societal opinions. Key points to be addressed in the dimension of ‘Involvement of the RBD Authority’, therefore are: (1) the connectivity between RBD authorities and federal states, and (2) decision making within RBDs.

Looking at administrative fit of RBD authorities and federal states in the German governance of the WFD, it is expected, that RBD authorities will help to solve problems resulting from up- and

downstream localities and jurisdictions by focusing on the connections between those, but also on the ecological aspects (Huiteima & Meijerink, 2014).

However, it is essential to keep in mind, that water management cannot be treated without considering other policy fields, which are mostly managed by federal states. Therefore, it can be discussed, if river basins are the right scale for the management of such problems. This issue of administrative fit is also considered by Huiteima and Meijerink (2014, p.26): “Climate change cuts through and across jurisdictions, sectors (such as water and energy), and does not stop and start at the boundaries of a river basin.”. Within separate countries, water authorities and administrative authorities often have power struggles (Laster & Livney, 2009). Efficient water management cannot be done without taking other policy fields into account. Therefore, it is important to have a good connectivity between RBD authorities and the federal states. Further RBD organisations need to rise above their mandate to ensure that multiple nexuses are considered (Jaspers & Gupta, 2014). Consequently, it is vital that RBD authorities, take into consideration more than just water-related policy fields, through a good connectivity to authorities within the federal states.

When considering the decision making within RBDs, RBD authorities represent an important point of intersection. The WFD asked for the introduction of a new governmental scale based on RBD (Newig et al., 2016). Each RBD has a different approach on how to handle RBM; therefore it can be said, that for each federal state the management approach for a certain RBD is different (EC, 2012). However, with society indeed being unable to take all kinds of interlinked issues into account, RBD organisations seem to be the most valuable entity. Therefore, it can be said that when regarding the administrative fit of RBD authorities, it is essential to consider administrative structures on the federal scale. The management of water resources by hydrological boundaries is not a new concept, but instead already arose in ancient times, due to competition and control over water (Jaspers & Gupta, 2014). It is thus vital to connect the decisions made in the separate federal states at the level of the RB, to produce a uniform RBM for the whole catchment area. This study looks at how the WFD is approached in Germany, as part of this, it will look at how two RBD authorities are integrated into the process of water management.

2.11 Conceptual Framework

The conceptual framework, as presented in this section, will be the theoretical basis for this research: This research aims to find the challenges and opportunities for the implementation of the WFD. The study will be split into three sections, using the three dimensions of connectivity: (1) connectivity of policy domains, (2) connectivity of administrative scale levels and (3) involvement of the respective RBD authority. For each of the dimensions key points to address in research were defined, as summarised in Table 2-2. These key sectors will be used to structure the research and will be the main points to be addressed.

Table 2-2 - Key points to be addressed of the dimensions used for the conceptual Framework.

Dimension	Key Points to be Addressed
Connectivity of Policy Domains	<ul style="list-style-type: none"> • WFD and agriculture – integration between water management and the agricultural sector • WFD and nature protection– integration between water management and the environmental sector • WFD and the Floods Directive integration within the sector of water management • WFD and spatial pressure – finding appropriate spaces for the implementation of measures • WFD and industry – integration between water management and the industrial sector
Connectivity of Administrative Scale Levels	<ul style="list-style-type: none"> • Responsibilities – for the implementation of measures • Willingness – to implement measures • Financing – to support the implementation of measures
Involving the respective RBD Authority	<ul style="list-style-type: none"> • RBD Authority and Federal States – cooperation between the RBD authority and the federal states • Decision Making within the RBD decision making on a basin-wide scale

3 Methodology

This section will discuss the methodological strategy developed to study the implementation of the WFD in Germany. This thesis is resting on qualitative research, using two case studies: the river Hunte and the river Emscher. The methods used have been chosen to get appropriate data to answer the central research question: What are the opportunities and challenges of the German governance approach to achieve the goals of the WFD? In order to answer this research question, the following information is needed: (1) Which policy domains influence the implementation of the WFD and how? (2) Which scale levels are involved in the management of water quality of rivers and how? And (3) what is the role of German RBD authorities in the governance of the WFD?

Three methods have been chosen for data collection in order to get the information necessary to answer the research questions: stakeholder analysis, document analysis and semi-structured interviews. The stakeholder analysis has been conducted, to find and analyse the roles and relations of different actors in local RBM, while the document analysis was used as a basis and as background knowledge for the interviews.

Furthermore, reasons for choosing the case studies of the Hunte and the Emscher will be given. This study aims to investigate on the governance of the WFD in Germany. Thus, this research considers many different points of view and therefore tries to look at the problem from different angles, by considering interviewees from several administrative layers and from different authorities.

3.1 Qualitative Research

Qualitative Research – in contrast to quantitative research - means the collection of “descriptive data, people’s own words, and records of people’s behavior” (Taylor, Bogdan, & DeVault, 2015, p. 14). It aims to understand the underlying motives of human decisions, and therefore to understand the how and the what within the decision-making process (Kothari, 2004).

However, findings in qualitative research always have to be considered not to be generalizable and only applicable for a specific case (O’Leary, 2004). The level of detail is high for a specific situation, rather than for an entire category (Borland Jr., 2001). Qualitative research was chosen as the appropriate way of analysis as: “Human and social systems are complex. Understanding phenomena related to such systems demands a holistic approach, which can produce not only detailed descriptions of situations and events but also an in-depth understanding of the actors involved, their feelings and the interactions among them.” (Gagnon, 2010, p. 1).

When conducting qualitative research, the researcher has to be aware that it is not possible to establish an absolute truth, and further, that the relative truth is also bound to its context as well as personal perceptions of the individual. Therefore, the approach can be described as inductive, value-laden (subjective), holistic and process oriented (Borland Jr., 2001). Furthermore, the researcher also needs to

consider, that he/she can influence each aspect of the research and therefore needs to seek for ways to increase the certainty about relative truths while decreasing subjectivity and increasing the objectivity (Borland Jr., 2001).

For this study, a qualitative research approach was chosen to gain in-depth data for the two specific case studies, the Hunte and the Emscher, in relation to the governance of the WFD. The qualitative research will be concentrating on the three dimensions of connectivity, as described in chapter 2. The results will be used to answer the research questions of this study, concerning the governance of the WFD in Germany.

3.2 Case Study Selection

Within the scope of this thesis, two cases were analysed using a case study approach. “The case study is a research strategy which focuses on understanding the dynamics present within single settings” (Eisenhardt, 1989, p. 534). It can include one or more cases as well as several levels of analysis (Yin, 1981). Similar cases were chosen because they are meant to answer the same research question, and therefore results from both cases could be connected for the final discussion.

These two case-studies were chosen for several reasons, as also shown in Table 3-1. Firstly, with the aim of this study to investigate on how the implementation of the WFD is governed, it was decided to look at two different administrative settings, and therefore at case studies situated in different federal states and in different RBDs. This will also help to indicate issues, that are connected to the governance of a certain case study. The second point for deciding on those two research areas was the presence of a project within the scope of the WFD goals and the availability of data. In the case of the Emscher Valley there is a project for the whole catchment, with the aim to transform the channelised river - primarily used for industrial sewerage - back into a more eco-friendly habitat for plants and animals (EGLV.de, n.d.). The Hunte used to be part of a financing programme within Lower Saxony. Therefore, the project ‘Hunte 25’ was initiated for the whole catchment area to coordinate the implementation of measures. The river Hunte has been straightened in former times, therefore the project was mostly about the re-connection of old branches (NABU Oldenburger Land, n.d.). A third reason for choosing those two cases is because the federal states of Lower Saxony and North Rhine-Westphalia are the easiest for the researcher to access when concerning their location.

Table 3-1 - The Reasons for Choosing the two Case Studies

	Hunte	Emscher
Federal State	Lower Saxony	North Rhine-Westphalia
Catchment Area	Weser	Rhine
Part of Federal project	‘Hunte 25’	‘Das neue Emschertal’
Availability of Data	✓	✓
Geographically Accessible	✓	✓

3.3 Document Analysis

In a document analysis, documents – pre-produced texts, which were not produced by the researcher – are used as a source to obtain data (O’Leary, 2004). In the context of this research policy documents were analysed, as described in chapter 3.6, in order to give a formal context to the research and to provide background information. A list of the documents that were used and analysed can be found in Table 3-2. For the analysis of the documents, relevant passages were highlighted and then analysed using coding, as described in the following chapter 3.6.

Table 3-2 - List of Policy Documents Used for Analysis.

<i>Name</i>	Document Name	Acronym	Publisher	Year	Content
<i>Water Framework Directive</i>	2000/60/EC	WFD	European Commission	2000	European guidelines for the improvement of water quality
<i>German Waterboard Law</i>		WVG	German Parliament	2002	Tasks of Water and Ground Associations
<i>Flood Directive</i>	2007/60/EC	FD	European Commission	2007	European guidelines for improved flood protection
<i>Water Resources Act</i>		WHG	Federal Government of Germany	2009	German water law
<i>Lower Saxony Water Act</i>		NWG	Federal State of Lower Saxony	2010	Competencies for water management within Lower Saxony
<i>Federal Water Act NRW</i>		LWG	MKULNV	2018	Competencies for water management within North Rhine-Westphalia

3.4 Stakeholder Analysis

In addition, this study uses a stakeholder analysis as a method to find and analyse the relevant stakeholders. Therefore, it is essential to indicate **who** has to be taken into account and **why** this actor should be taken into account (Crosby, 1991). Stakeholders form structures and relationships with an organisation – also called networks – which increase the understandings for potential impacts that changes the organisation takes might have (Burt, Kilduff, & Tasselli, 2013). It has to be considered though, that every stakeholder analysis is in danger of being incomplete (Butts, 2008).

For this analysis, stakeholders at different governance scales were considered, this is due to the four different scale levels involved in water management, as described in chapter 2.8. Therefore, stakeholders on the local, regional, provincial and national scale were considered. The stakeholders identified were analysed using the document analysis, and also by inquiry during the interviews. For both cases, relevant

stakeholders in the implementation of the WFD were identified, and their respective administrative levels, relations and tasks were analysed, using the data from the interviews and the document analysis. Generally, stakeholders can be found on these four different governmental levels, as introduced in figure 2-3. For the two respective cases studies of this research the following stakeholders could be identified for the respective administrative levels, which are listed in table 3-3 below.

Table 3-3 - Stakeholders analysed for both cases on the International, National "Länder" and Communal Level.

	Hunte	Emscher	Both
<i>International Level</i>		ICPR	EU
<i>National Level</i>	FGG Weser	FGG Rhein	BMU, UBM, LAWA
<i>"Länder Level"</i>	NLWKN	MKULNV, LANUV	
<i>Communal Level</i>	Areal Cooperation Hunte	Emscher Cooperative, Regional Administra- tions	Cities, Districts, ad- ditional interested actors.

3.5 Semi-Structured Interviews

Another method used are semi-structured interviews. This method has been chosen as a qualitative method to gain case-specific information. Therefore, a guideline has been developed to frame the content of the interviews. Semi-structured interviews make use of some guiding questions by the interviewer, but also allow for new questions to arise during the interview (Whiting, 2008). Kothari (2004) gives advice on conducting interviews; they mention: "The interviewers approach must be friendly, courteous, conversational and unbiased. The interviewer should not show surprise or disapproval of a respondent's answer, but he must keep the direction of interview in his own hand, discouraging irrelevant conversation and must make all possible effort to keep the respondent on the track." (Kothari, 2004, p.99). It was tried to get interviews with all the stakeholders listed in Table 3-3, however, it was not possible to schedule interviews with all the stakeholders listed. The list of the interviews conducted can be found in Table 3-4, Table 3-5 and Table 3-6.

Table 3-4 - List of Interviews Conducted for the Hunte Case Study and Reasons for choosing the Interviewees.

Interview	Organisation	Date / Notes	Reasons for choosing
Petra Neumann Sonja Saathoff Employees	NLWKN Brake-Oldenburg	29.05.2018 Total duration ~60 minutes Transcribed ~45 minutes	“Länder Level”: the NLWKN branch in Oldenburg-Brake is the representation of the environmental ministry in Lower Saxony for the area of the Hunte.
Ute Kuhn Direction	FGG Weser	13.06.2018 Total duration ~60 minutes Transcribed ~36 minutes	National Level: representative of the RBD Weser.
Katharina Pinz Direction of the water manage- ment branch	NLWKN Lüneburg Expert Group Surface Waters	21.06.2018 Total duration ~55 minutes Transcribed ~40 minutes	“Länder Level”: representative of the NLWKN water management branch
Robert Sprenger Professional Man- agement Operator	City of Oldenburg	11.07.2018 Total duration ~55 minutes Transcribed ~ 43 minutes	Communal Level: representative of a Lower Water Management Authority in Oldenburg.
Dr. Jens Salva Employee	Landesfische- reiverband Weser-Ems in Oldenburg	09.08.2018 Total duration ~40 minutes Transcribed ~ 28 minutes	Communal Level: representative for nature protection for aquatic ecosystems.

Table 3-5 - List of Interviews Conducted for the Emscher Case Study and Reasons for choosing the Interviewees.

Interview	Organisation	Date / Notes	Reasons for choosing
Rudolf Hurck Department Head Water Management and Landscape Planning	Emscher Genossen- schaft (Emscher Cooperative)	19.06.2018 Total duration ~70 minutes Transcribed ~60 minutes	Communal Level: representative of the project on a local scale. The Emscher Co-operative is strongly involved in the measures implemented in the region.
Joachim Drüke Employee Water Management	Regional Administration Arnsberg	29.06.2018 Total duration ~60 minutes Transcribed ~50 minutes	Communal Level: the regional administration in Arnsberg represents one of the Upper Water Authorities in the region and is responsible for sections of the Emscher catchment area.
Tobias Staats Employee	Flussgebietsge- meinschaft Rhein	03.07.2018 Total duration ~50 minutes Transcribed ~45 minutes	National Level: representative of the German part of the RBD Rhine.
Anne Schulte- Wülwer Leidig Direction	International Commission for the Protec- tion of the Rhine	12.07.2018 Total duration ~60 minutes Transcribed ~50 minutes	International Level: representative of the International part of the RBD Rhine.

Table 3-6 - List of Interviews Conducted for both Case Studies and Reasons for choosing the Interviewees.

Interview	Organisation	Date / Notes	Reasons for choosing
Thomas Langemann Legal Secretary	LAWA	04.06.2018 Questions were answered via E-mail	National Level: representative of the LAWA on a national scale.

The guiding questions have been built around the Framework of Termeer et al. (2011), therefore they have been organized into four categories: general, connecting policy domains, connecting scale levels and integrating RBD authorities.

In the category of ‘general’ questions, the main aim was to identify the position of the interviewee within their respective organization, to identify the tasks of the organization within the governance of the WFD in Germany and to find out about the interviewee’s perceptions of the implementation process of the WFD in Germany.

Questions in the field of ‘connecting policy domains’ concentrated on the connectivity of the WFD and other policy fields, conflicts between them and spatial issues in the governance of the WFD. The category of ‘connecting administrative scale levels’ addressed questions about the cooperation between the various administrative levels, also in terms of responsibilities, willingness and financing. Lastly in the category of integrating the RBD authority, the cooperation between the RBD authority and the federal state, the function of the respective RBD authority and the spatial fit of RBM were addressed. The actual guiding questions used in the interviews are listed in the appendix (chapter 9.1).

3.6 Data Analysis and Coding

For the data analysis and the corresponding coding the software ATLAS.ti was used. ATLAS.ti is a programme for the analysis of qualitative and mixed methods data analysis, was used for analysing the data obtained from the interviews and from the document analysis. In combination with text documents, the software allows to highlight and code chosen variables within the documents and allows for easy representation of the obtained data (ATLAS.ti, 2018).

For the performance of the coding four categories were used, similar to those used for the interview guides. These categories were based on the three categories of connectivity used in this research and the research questions, and an additional category for general information. The codes and categories used for these four categories are presented below.

Codes used for the category of connecting policy domains are:

- *Bringing Directives Together*: Considering multiple directives in the implementation of measures, ensure that water goals and environmental legislation are addressed.
- *Spatial Restrictions*: Due to other directives, which hamper or prevent the implementation of the WFD.
- *Regional Regulations*: Having additional regulations, to clarify conflicts between directives.

For the category of connecting scale levels, the following codes were used:

- *Responsibility*: The distribution of responsibilities in the implementation of measures.
- *Financing*: Organizing the financing of measures.
- *Areal Cooperation*: Having an areal cooperation to improve cooperation between regional actors.
- *Regional Agency*: Tasks and responsibilities of regional authorities.
- *Willingness*: The willingness of stakeholders to implement the WFD and respective measures.
- *Ministry*: Tasks and responsibilities of respective Ministries.

Within the category Integrating RBDs, the following codes were used:

- *Different Approaches Federal States*: Investigating on benefits and issues resulting from different approaches within the separate federal states.
- *RBD Authority*: Tasks and responsibilities of RBD Authorities.
- *Cooperation Federal States – RBD Authority*: Cooperation between the Federal States and the respective RBD Authorities.
- *LAWA*: Tasks and responsibilities of the LAWA.

Codes used for the category General:

- *Prospects of achieving the WFD*: Is it seen as likely that the WFD will be implemented successfully.
- *Problems of implementing the WFD*: What are the issues and concerns with implementing the WFD.

In the next step, tabulation was used to order the respective information for analysis. Triangulation has been used in the interviews where possible, by asking similar questions to several of the interviewees of the separate cases, to gain insights into different perspectives as well as general issues and opinions.

The data and information presented in the next chapters was obtained using the methodologies mentioned above. Concerning the interviews, it was problematic to get a sufficient number of interviews, as the resonance from interviewees to calls and e-mails was generally low. Therefore, the number of people contacted was much higher compared to the number of interviews conducted.

4 Setting the Stage

Before getting in the separate case studies however, it is important to introduce administrative and hydrological actors and structures on the national level of Germany, which are therefore relevant for both case studies. This chapter will therefore ‘set the stage’ for the case study analyses that will follow in chapters 5 and 6. This chapter will introduce actors and laws found on the national level of Germany and therefore relevant for both case studies. The chapter is further sub-divided into three sections. The first section addresses the administrative structures within Germany applicable within the sector of water management. Within the second part of this chapter, the general role of RBD Authorities is further explained. And in the third part of this chapter water law on the national level is introduced.

Because the case studies concentrate on the connectivity of administrative levels as well as integration of RBD authorities on the federal scale, this chapter will introduce relevant bodies on the national scale, that are relevant for the governance of the WFD within Germany.

4.1 Administrative Units in Germany

On the ‘Länder’ Level structures are different for each federal state and therefore also for each of the case studies. The highest authority in Germany for water management is the Federal Ministry of the Environment (BMU). Furthermore, on the national level and subordinate to the BMU there are the Federal Environmental Agency (UBA) and the Working Group on Water Issues (LAWA). The administrative units of Germany and their respective tasks are presented in figure 4-1. Further descriptions are given in the sub-chapters below. The case study specific information about structures in Lower Saxony and North Rhine-Westphalia will be given in the respective chapters 5 and 6.

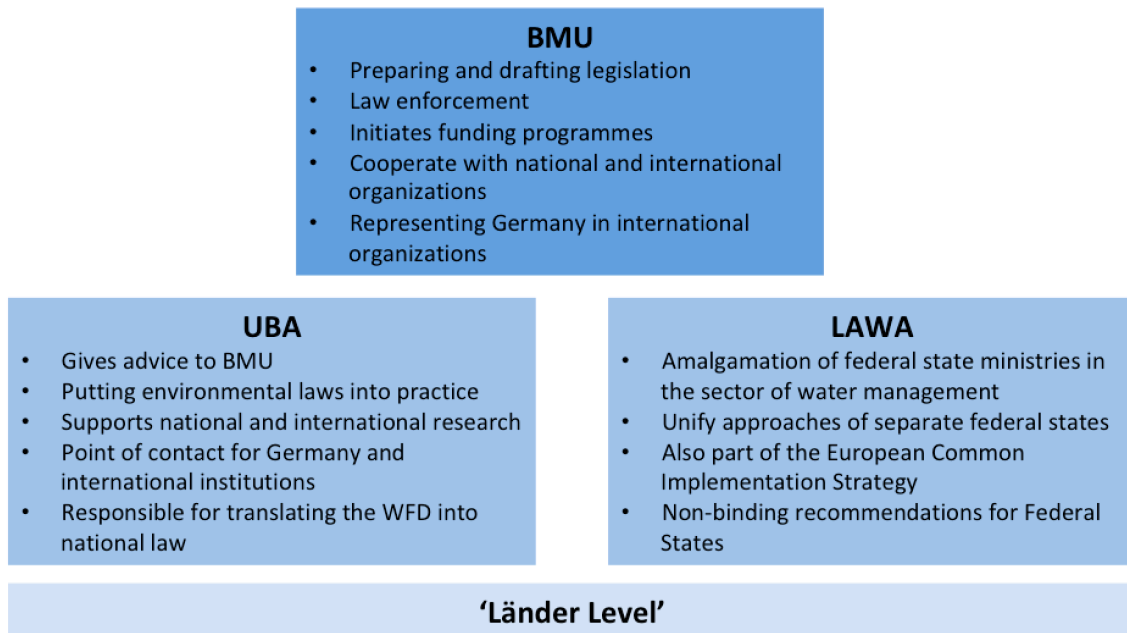


Figure 4-1 - Administrative units in Germany and their tasks.

4.1.1 The Federal Ministry of the Environment (BMU)

The Federal Ministry of the Environment, Nature Conservation and Nuclear Safety (BMU = ‘*Bundesministerium für Umwelt, Naturschutz und nukleare Sicherheit*’) is inter alia responsible for the natural human livelihood, while maintaining the variety of animal and plant species, as well as their habitats (BMU, 2018). Responsibilities of the BMU include the preparation and drafting of legislation for the federal government. Legislations are then decided on by the German Bundestag or by the Federal Council. In addition, the BMU controls the enactment of statutory ordinances, and thereby sets out more details on the subject matter of law, more precisely the BMU is responsible for law enforcement (BMU, 2018). The BMU initiates funding programs, which can be used by citizens, societies and federations, companies or municipalities for financial support (BMU, 2018). Additionally, the BMU has the responsibility to cooperate with national and international organisations. Together with the separate ministries from the federal states, the BMU matches structures, develops programmes and strategies, in order to achieve an efficient implementation of regulations within Germany (BMU, 2018). Furthermore, the BMU represents Germany within the EU and in international organisations such as the UN, the OECD and the WTO. For its own transparency, the BMU makes intensive efforts in public relations, also including processes of citizen participation (BMU, 2018).

4.1.2 The Federal Environmental Agency (UBA)

The Federal Environmental Agency (UBA = ‘*Umweltbundesamt*’) is the main environmental protection agency within Germany. It is one of the business segments of the BMU, and its primary task is “to ensure that our [Germanys] fellow citizens have a healthy environment with clean air and water, free of pollutants to the greatest extent possible” (UBA, 2018), thus the UBA is responsible for the environmental branch of the BMU. Based on data from the state of the environment, relations within it and

projections, the UBA gives advice to other administrative bodies, such as the Federal Ministry of Environment (UBA, 2018).

Further, the UBA is in charge of putting environmental laws into practice. It can be seen as an early warning system to recognise and prevent future damages to humankind and the environment (UBA, 2018). The UBA also supports research within national and international institutions and functions as a point of contact for Germany to international institutions (UBA, 2018). In relation to water quality, the UBA is therefore responsible for translating the WFD into national law and for further federal legislation concerning environmental interests.

4.1.3 Working Group on Water Issues (LAWA)

The German Working Group on water issues of the Federal States and the Federal Government (LAWA) is part of the BMU and is an amalgamation of the federal state ministries of Germany in the sector of water management (LAWA, n.d.). The LAWA was founded in 1956 as a merger of federal ministries responsible for water law and water management. Its intentions are to unify the approaches between the separate federal states. LAWA members are the department heads of the highest state authorities for water management and water law, and representatives of the federal government (LAWA, n.d.). In order to fulfil its goals, the LAWA has established permanent committees about the following issues: water legislation, hydrology, water and sea conservation, ecology, flood prevention, coastal protection, groundwater, water supply, sewage and the handling of pollutants (LAWA, n.d.). The LAWA is one out of several working groups within the BMU, and therefore also has to coordinate its own work with those.

Further, the LAWA also has to coordinate its work with the EU and the WFD. Already before the WFD was put into practice in 2000, the LAWA was part of a Europe-wide collaboration for a uniform implementation of the directive, called Common Implementation Strategy (CIS). The CIS has the goal to form a common information exchange between the participants and to develop guidelines for the different interpretations and possible applications of the directive. Furthermore, approaches and solutions for shared information and data management get discussed, and pilot projects are performed (LAWA, n.d.). The LAWA makes recommendations to the federal states to unify the different approaches, however these recommendations are not binding, leading to some federal states using the same strategies and guidelines while others use adapted or own ones.

4.1.4 Federal State Specific Regulating Bodies

Responsibilities within the federal states are typically divided into two or three administrative levels, the most upper water authority, the upper water authority and the lower water authority. Furthermore, Lower Water Authorities can be supported through Water and Ground Associations. The most upper water authorities are usually represented by the federal ministries of environment, while the upper water authority is represented by state agencies, state administration departments and district presidents.

Lower water authorities are usually represented by administrative offices of the districts and district-free cities, as stated within the respective water laws of the federal states.

Lower water authorities can have additional support through so-called Water and Ground Associations as stated in §1 of the German Waterboard Law (WVG = 'Wasserverbandsgesetz'). Usually these Water and Ground Associations are responsible for the management of water bodies, including flood protection, water supply and disposal, ecosystem protection and the integration of agriculture into the water sector (§2 WVG). There are no additional support structures for the upper and most upper water authorities.

4.2 Hydrological Units - River Basin District (RBD) and their Authorities

RBDs cover all rivers which contribute to a larger river, which is mouting into the ocean (Federal Environmental Agency, 2011). Within Germany, there are ten RBDs and eight of these are shared with other countries. Only the Weser and the Warnow/Peene are managed only on a national basis. The largest RBD within Germany are the Danube, the Rhine and the Elbe. The RBD within Germany are indicated in Figure 4-2. The figure also indicates the neighbouring countries that are also involved in the RBD management.



Figure 4-2 - RBDs within Germany, sections that lie outside are hatched, the positions of the Hunte and the Emscher are indicated in red (Federal Environmental Agency, 2011).

Each RBD has its own authority, for example, the RBD Weser, which usually is in charge of the coordination between the different federal states, that own a share of the catchment, and of how tasks and

functions within the whole catchment are interrelated. This explicitly relates to reaching the goals of the WFD and the FD (FGG Weser, 2018). Internally, RBD authorities are also structured, but this structure is different for every RBD (Heidebroek, n.d.). One RBD can include several hydrological catchment areas, for example, the hydrological catchment of the river Hunte within the RBD of the Weser or the hydrological catchment of the river Emscher within the RBD Rhine.

4.3 Laws Concerning the Protection of Water Bodies

Responsibilities and accountabilities for the management of water bodies and the implementation of the WFD are clearly set in German Law on the protection of water bodies. Water law tries to convey between different claims, such as livelihood for humans and nature, transportation, extraction as well as recreational purposes, and tries to prevent excessive use of the resource (Umwelt Bundesamt, 2018).

In Germany, it is the task of the federal government to provide framework acts (Mostert, 1998). The German Law on the Protection of Waterbodies (*‘Gewässerschutzrecht’*) is the sum of all regulations, which are related to the protection of water bodies, also including the law on nature protection, the law on soil, the waste law and even the criminal law (Umwelt Bundesamt, 2018).

Implementation of the WFD into German national law was made through the adjustment of the Water Resources Act (WHG = *‘Wasserhaushaltsgesetz’*), the Surface Water Body Act (OGewV = *‘Oberflächengewässerverordnung’*) and the Groundwater Ordinance (GrwV = *‘Grundwasserverordnung’*) (FGG Weser, 2018). A comprehensive water body protection solely based on national law is not conceivable nowadays; therefore coordination and bundling of legislation on a European and international level are perceived as essential for the efficient protection of water bodies (Umwelt Bundesamt, 2018).

The WHG includes regulations for the protection and the use of surface- and groundwater bodies on a national level. Due to the reform of the federalism in 2006, the federal states are allowed to deviate from the WHG, except substance- and plant-based regulations. The legal secretary of the LAWA mentioned: “This shows that for many areas in the water industry already nationwide regulations have been made on the basis of the WHG also considering, for example, the nationwide OGewV [surfacewater act], but many areas of the water law are not affected, and the federal states may deviate from it”¹. Thus, national law exists, but there are many exceptions made on federal state level. The federal states depart from the law because each has its own water management, conditions and problems - taking the population density, the degree of agricultural use, the presence of coastal areas and the probability of flooding as examples. Therefore, federal states also need to have their own approaches for the management of water bodies.

4.4 Concluding on the National Level of Water Governance

To conclude with this section, it becomes clear that on the national level there are structures for a clear implementation of the WFD set by the BMU and the UBM. Through the LAWA there are great efforts to align the different approaches of the separate federal states to each other.

However, administrative structures on the federal state level will remain different, and the problems the various federal states are facing are also diverse. On a hydrological scale, river basins are administered by RBD Authorities and are often further divided into sub-catchments. Concerning German national law, efforts were made to put the WFD into national law, supplemented through nationwide regulations. However, due to diverse problems and conditions within the federal states, there are many exceptions. The following two chapters will give information on the two cases studies and on how the WFD was implemented in those.

5 Case Study: River Hunte – implementing the WFD in a rural area



Figure 5-1 - Impression of the Hunte close to Oldenburg (de.academic.ru, n.d.).

The first case study, within the scope of this research, is the river Hunte, Figure 5-1. The Hunte is situated in Lower Saxony and is a tributary to the river Weser – thus it is located within the Weser RBD (Hunte 25, 2010). The Hunte can be seen as a good example for the issues faced with water quality in Lower Saxony, as it represents the common land usage of Lower Saxony, and thus will represent the typical issues faced with the implementation of the WFD. The catchment area of the Hunte is primarily characterised by arable use (64%), grassland (15,8%) and woodland (11%).

Furthermore, the average population density of the area is 147 people per km² and there are only few industries in the area (Niedersachsen, Bezirksregierung Weser-Ems, & NLWK, 2005). The Hunte has a total length of 173 km and springs in the west of Osnabrück, then flows through the North German Plain and mouths into the Weser close to Elsfleth (Hunte 25, 2010). The location and the course of the river Hunte is shown in Figure 5-2.

The river Hunte has been part of the pilot project ‘Hunte 25’ – named as such because the Hunte as a RBD within Lower Saxony has the number 25 – initiated by the Hunte Wasseracht and the federal government of Lower Saxony. The project was initiated for the implementation of measures to fulfil the objectives of the WFD in the area (Hunte 25, 2010).

This following chapter presents the results for the case study Hunte, relating to the three dimensions of connectivity as defined in chapter 2. The chapter starts with a short description of the current status of the Hunte, including measures that were already taken and those that are planned, in order to improve the water quality. Next, the three concepts of connectivity, will be applied on the Hunte case study, in order to investigate on the governance of the WFD within Germany.

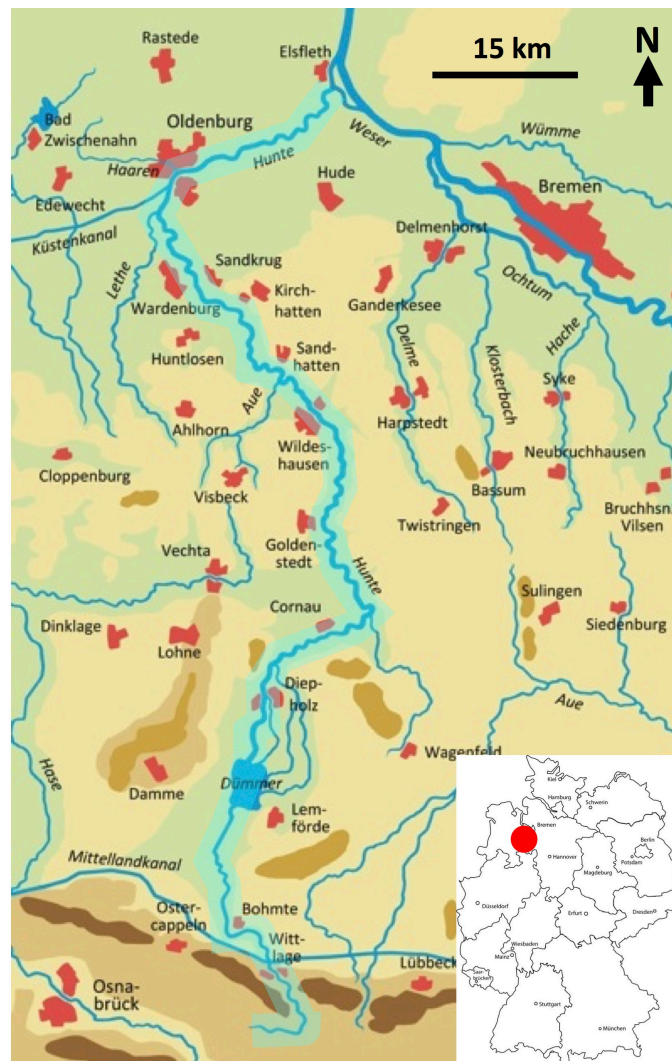


Figure 5-2 - Map showing the course of the River Hunte (highlighted in blue) and its position within Germany (Stock, n.d.).

5.1 The Project ‘Hunte 25’

During the 19th and 20th-century, several land improvement measures were conducted in the catchment area. The river was straightened, hollows and river arms were filled, and the river bed was homogenised (Hunte 25, 2010). The river Hunte was first assessed according to the standards of the WFD in 2005. At that time the following exposures to pollution and structural issues could be determined (Niedersachsen et al., 2005):

- Point sources of pollution: 22 communal sewage treatment plants, three sites of direct industrial discharges and potential polluting inputs through sealed grounds in the area of the city of Oldenburg.
- Diffuse sources of pollution: nitrogen and phosphor inputs through the ground water and agriculture.
- Flow regulations: several passage obstacles for migratory species (power plant dams in

Oldenburg and Wildeshausen, dykes and dams separating the tidal section of the Hunte from the non-tidal section, as well as pumping stations).

- Morphological changes: straightening and deepening of the river bed, rockfill dams, sheeted piling, further passage obstacles for migratory species through anthropogenic structures.

The primary intention of the Hunte 25 project was to lengthen the course of the river, by reconnecting formerly cut off oxbow lakes. Furthermore the project intended to create a greater variety of river beds and banks, to create a larger diversity of habitats, especially for migratory species like salmon or sea trout, but also for mussels and water beetles (Hunte Wasseracht, n.d.). The new Hunte includes elements such as steep and flat banks, dolly banks as well as a variety of flow velocities. A further measure realised within the project included an immission oriented induction of rain and mixed waters from the area of Oldenburg (Hunte Wasseracht, n.d.).

Hunte 25 was one out of 17 projects financed by the federal state of Lower Saxony, in the course of the so called stream programme; next to the revitalisation of the oxbow lake, also other measures were conducted, including an analysis of the possibilities for the implementation of the WFD within the city of Oldenburg. Furthermore a project about iron ochre sedimentation in the Lenthe – a tributary to the Hunte – was conducted (Hunte Wasseracht, n.d.).

However, since the Hunte is not assigned as federal water body anymore, a self-regulatory administration is nowadays in charge of implementing measures. For the realization of the project, the areal cooperation Hunte (*'Gebietskooperation Hunte'*) was established by the Lower Saxony Ministries for the Environment and Climate Protection (MU) in 2004, with the intention to strengthen the dialogue between administration, important actors in water management and the public, on a regional level. The working plan orients itself on the regulations of the Lower Saxony Water Law (NWG = *'Niedersächsisches Wassergesetz'*) (Hunte Wasseracht, n.d.).

The overall status of the Hunte according to the WFD can still be considered as poor, especially when considering the chemical status. However, the ecological status can be classified in a range between poor and moderate, with some of the measures even classified as good (MU, 2016b).

5.2 Connectivity of Policy Domains

The first concept of connectivity investigated on in the Hunte case study is the connectivity of policy domains. Therefore, the according findings gained will be presented within this chapter.

When concerning the connectivity of policy domains within the area of the Hunte, the major issue is the connectivity of the WFD with the agricultural sector, as it has a strong lobby within Lower Saxony. However, further important issues could be identified from the interviews, when concerning the connectivity of the WFD with other policy domains in the Hunte case study. These could be classified into

three groups: (1) connectivity of the agricultural sector and the WFD; (2) connectivity of nature protection and the WFD and lastly (3) the coordination of the Floods Directive and the WFD.

5.2.1 Connectivity of the agricultural sector and the WFD

Within Lower Saxony, the agricultural sector has a powerful lobby and therefore has a substantial economic influence on the region, often conflicting to the objectives of the WFD, since nitrates and fertilizers seep into water bodies. In general, agriculture is a major problem and has shown to be difficult to control (lower-saxony.de, n.d.). As a representative of the Weser-Ems Fishery Association mentioned: “If I have intensive agriculture, this does not work with the goals of the WFD, because drainage and intensive land use counteract the objectives of the WFD.”² Thus, it will not be possible for the Hunte to reach the goals of the WFD, when maintaining the intensive agriculture in the area.

Furthermore, there is the issue that farmers disregard rules that were set to them. A representative from the city of Oldenburg mentioned: “There is always [...] the problem that farmers work too close to water bodies”³. Thus, it is often unclear, if farmers actually incorporate rules and standards set to them. It is difficult to monitor their actions and, thus, also to make them responsible when certain standards are not met. This was also mentioned by a representative from the Weser-Ems fishery association: “And the willingness [of the farmers] to comply with the necessary distances to water bodies [when putting manure on their land] is not there.”⁴ To tackle this problem, in the area of Oldenburg, there is the case of the Buschhagen flat, an area which is now owned by the city of Oldenburg, concerning this a representative of the city of Oldenburg stated:

“There [in the Buschhagen flat] we have very extensive agriculture, without fertilisers, without manure. Therefore, it is clean. [...] [In contrast to this,] there is the area of the Donnerschwer meadows [...] where we have intensive agriculture [...], and we [the city of Oldenburg] only have a limited degree of influence on what is happening there.”⁵

As the land is owned by the city, the city can decide on the kind of agriculture performed. However, in the area of the Donnerschwer meadows – an agricultural area that is privately owned - the influence of the city is only limited. Thus, in this area the influence from agriculture on the water quality is bigger and cannot be controlled.

Additionally, there is also the issue that farmers are not willing to provide their land for the implementation of WFD measures. This was also mentioned by a representative of the NLWKN: “A lot of farmers also resist against the usage of areas for the WFD.”⁶, this can be related to the willingness of individuals to implement measures for the WFD, as further explained in the next chapter.

Furthermore, also concerning the connectivity of the agricultural sector and the WFD the Renewable Energy Act (EEG – ‘*Erneuerbare Energien Gesetz*’), encourages the use of biogas plants for the production of renewable energies. As an employee of the FGG Weser stated: “The EEG is promoted so

much when considering biogas plants and others, that nutrient pollution can, however, catch up from behind.”⁷. The Renewable Energy Act, thus, promotes an intensive agriculture with high inputs of nitrates into ground and surface water bodies, which has a negative impact on the water quality. Therefore, it can be said that both directives, the WFD and the EEG, have conflicting goals.

5.2.2 Connectivity of nature protection and the WFD

The next policy domain, that needs to be connected to the WFD is nature protection. There are cases where species or habitats are favourable for conservation, even when a good ecological status is not reached (de Smedt, 2012). For example, it can be the case that semi-natural and water-dependent ecosystems have evolved within a waterbody, which are protected under the Habitats Directive (Council Directive 92/43/EEC) but do not represent the pristine state of that waterbody, which is asked for by the WFD (Josefsson & Baaner, 2011). The in the scope of the Habitats Directive, Natura 2000 areas were assigned in order to protect wildlife and fauna and their natural habitats (Deutschlands Natur, 2018). However, since the WFD often aims for similar goals as the Natura2000 and the Habitats Directive, there generally is mutual support between the two directives. As an employee of the NLWKN mentioned:

“With water bodies, on occasion, there is the situation that Natura2000 areas have to be considered, therefore that natural protection aspects have to be considered [when implementing the WFD], and the other way around, that nature protection has to consider aspects from the WFD. Sometimes this results in conflicting goals, for example when considering wood areas.”⁸

Thus, it is necessary to find compromises between the two directives. This is one of the reasons, why in order to combine the goals of the Habitats Directive and the WFD, the area between Oldenburg and Elsfleth will be designated as a nature protection area, however, as mentioned by a representative from the city of Oldenburg:

“with the Hunte being a navigation route [...] of course the focus lies on species that we want and have to protect, however, navigation cannot be prohibited, and therefore there are no problems with the WFD”⁹

Thus, the possibilities for nature protection are also limited, also by conflicts internally, as well as the function of the river as a navigation channel often being prioritized over other interests and why nature protection is only limited to certain aspects.

5.2.3 Coordination of Floods Directive and WFD

The Floods Directive (FD) is the last policy domain mentioned, which needs to be connected to the WFD, in this Hunte case study. The FD sometimes asks for hard measures, such as dykes and dams, which certainly hamper the passage for migratory species. To improve the connectivity between the

WFD and the FD, measures get assessed according to their impact on both directives. As the direction of the FGG Weser mentioned: “One tries to find connections between flood protection and WFD, by trying to categorize measures.”¹⁰ Actions that help both directives are then preferred over actions that only help one. Especially considering the FD, measures conducted for flood protection often also support the goals of the WFD, there are only certain cases, where hard measures are needed for flood protection, which then need to be compensated, e.g. to allow the passage of migratory fish species.

In the scope of flood protection, sections of the Hunte have been dyked in. In these areas it is not possible to recreate the natural flat land character, as back in 1927, as stated by a representative of the city of Oldenburg “[...] this is because of the necessity of the Hunte to provide water to the Coastal Canal”¹¹. The Coastal Canal is an important shipping route used for the transportation of goods, thus it is important to maintain certain water levels. On the one hand, it was possible to realise a fish ladder, next to a waterworks. On the other hand, there is the example of a dyked area, which cannot be removed or relocated due to spatial pressure as well as the necessity of the Hunte to provide sufficient amounts of water to the Coastal Canal (*Küstenkanal*). Thus, there generally is a willingness to compromise between the two directives, so that both directives can benefit. However, it is not always possible to make those compromises and thus in those cases one directive has to be prioritized.

5.2.4 Concluding on the connectivity of policy domains

This section will give a short summary of the issues identified in the Hunte case study and related to the connectivity of policy domains. To conclude, the WFD and agriculture, the WFD and nature protection as well as the WFD and the FD are the three main issue, when considering the connectivity of policy domains within the Hunte case study. Cutbacks in water quality often result from the agricultural use of the land within the catchment, but also from lacks of appropriate spaces and from other policy domains. A summary of the policy domains, that were perceived as problematic is given below.

The WFD and Agriculture – Agriculture is often favoured over nature protection, due to a strong lobby. This is often perceived as a major issue and has shown to be difficult to solve, in the region it was tried to connect the two policy domains through expropriation.

The WFD and Nature Protection – In some cases species and habitats that do not represent the pristine state are favoured, therefore some areas are protected and the objectives of the WFD cannot be applied. This is, however, not considered as a major issue, because it is possible to make compromises between the two directives.

The WFD and the FD – It is necessary to evaluate both, WFD and FD measures, according to the effects they will have on the respective other directive. Measures, that have the least negative impacts on both directives should be preferred.

5.3 Connectivity of Administrative Scale Levels

The second dimension of connectivity, investigated on in the Hunte case study, is the dimension of administrative scale levels. Administrative scale levels within Lower Saxony and the Hunte region, generally are perceived as well organised. The two major issues in the area can be related to a missing willingness to implement measures on the local level, and the lack of appropriate financing for the implementation of the measures, from higher authorities. These issues will be further elaborated in the following sub-chapters. This chapter therefore is further subdivided into three sub-sections: first an introduction of the relevant administrative structures, as well as their responsibilities, secondly discussing the issues associated with willingness to implement measures and thirdly discussing the issues related to the financing of measures in the Hunte case study.

5.3.1 Responsibilities for the implementation of measures

In order to understand the connectivity of the different scale levels, it is important to understand how the responsibilities are spread across the different scales. Within Lower Saxony, the competence for the implementation of the WHG – as introduced in chapter 4.3 – is regulated within the NWG and obliges to the upper and lower water management authorities. §127 of the NWG states, that the most upper water management authority is represented by the MU and its tasks are to create the legal framework for the implementation of the WFD. The lower water management authorities are represented by districts, district free cities and large independent cities. Their task is to monitor the compliance with the requirements of the system ordinance (Niedersachsen, n.d.). Figure 5-3 presents the involved authorities within the water management of the Hunte, according to their respective levels of upper and lower water maintenance authority.

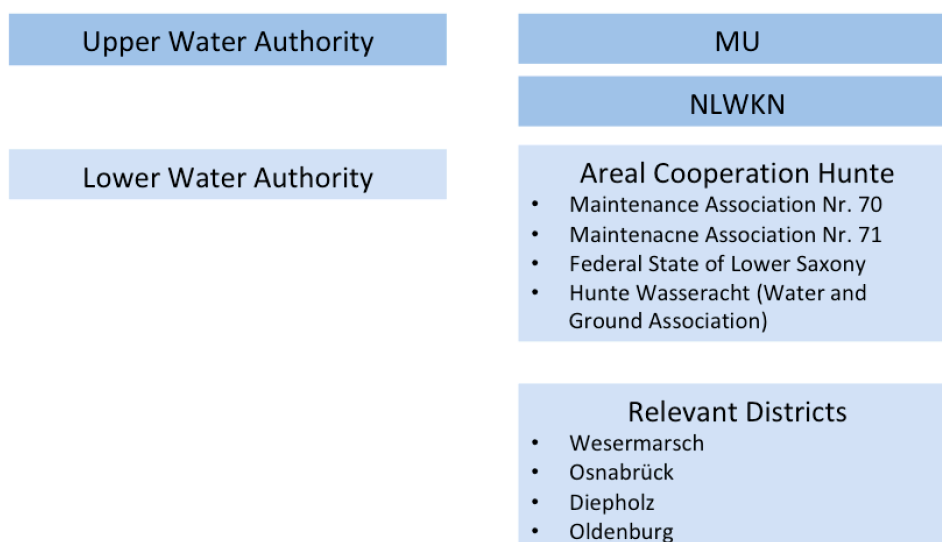


Figure 5-3 - Relevant administrative levels in the water management for the Hunte case study.

The maintenance of a surface water body is dependent on the classification of that water body (§ 38-40 NWG). The Hunte is classified as a water body of second order, therefore the maintenance obliges to the Water and Ground association Hunte Wasseracht. Furthermore, the Hunte lies within the supervisory

authorities of the districts of Osnabrück, Diepholz, Oldenburg and Wesermarsch (§63, Attachment 4 NWG). For the implementation of measures competencies lie with these districts, the Water and Ground associations and the communes.

A distinction can be made between Water and Ground Associations and Maintenance Associations. Maintenance Associations have the primary task to assure that rainwater within the catchment area can be drained safely towards and through the river Hunte. At the same time Water and Ground Associations also have additional administrative tasks (Ostermann, 2011; Unterhaltungsverband Hunte, n.d.).

As formerly being one of the focus water bodies within Lower Saxony the Hunte was prioritized for measures to be financed and conducted. Thus, it used to be easier for the responsible authorities to obtain the necessary financing. Additionally, the connectivity of scale levels in the Hunte case study can be considered as very well organised. However, there are some issues with which actors bear the responsibility to realize measures on the communal and “Länder” Level.

Upper Water Management Authority

On the level of the Upper Water Management Authority, within Lower Saxony, the implementation of the WFD is primarily done through the Lower Saxony Water Management, Coastal Defence and Nature Conservation Agency (NLWKN = *Niedersächsischer Landesbetrieb für Wasserwirtschaft, Küsten- und Naturschutz*) within the business division of the MU (MU, 2016a). The NLWKN advises districts, municipalities, and Water and Ground Associations on what accomplish, in order to improve the water quality within the scope of the WFD. Furthermore, the NLWKN also implements measures in very few cases. Further, the NLWKN performs assessments of RBMPs. The NLWKN compiled and published data sheets for all water bodies within Lower Saxony, listing their core pressures and suggesting potential measures to treat these in line with the WFD. As mentioned by an employee of the NLWKN: “The suggestions by the NLWKN incorporate the reasonable measures that are needed to reach the objectives of the WFD.”¹² Thus, it is necessary to implement the suggestions of the NLWKN, in order to reach the goals of the WFD. However, the implementation of measures is the responsibility of the lower water management authorities and is based on the principle of voluntariness. Therefore, the implementation of measures often depends on the willingness of local authorities. Measures recommended by the NLWKN for the area of the Hunte within the second implementation cycle (2015 – 2021) include (MU, 2015):

- Water body protection lines and areas
- Adjustment of agricultural techniques in the surrounding agricultural areas
- Controlled Drainage
- Linear Passage for migratory species
- Autonomous hydro morphological progression (for the improvement of habitats)

- Floodplain development
- Improving the cross-linkage between water bodies (by reconnecting cut-off meanders and lateral tributaries)
- Management of sediment transportation
- Adjustment of the maintenance of water bodies

Lower Water Management Authority

The Lower Water Management Authorities in Lower Saxony consist out of Areal Cooperations, as well as the relevant cities and districts. Thus, within Lower Saxony 30 areal cooperation's, based on the sub-basin scale, were introduced, to accompany the implementation of the WFD in 2005 (Niedersachsen, n.d.). The areal cooperation Hunte (*'Gebietskooperation Hunte'*) is the accordant areal cooperation for the Hunte and has the goal to include local stakeholders in the implementation of the WFD within the area, and to involve the public. The cooperation includes inter alia the following authorities, associations and institutions (Neumann, n.d.):

- Water and Ground Association Hunte-Wasseracht
- NLWKN-operating agency Brake-Oldenburg
- Administrative districts Diepholz and Oldenburg
- German Water and Shipping Authority Bremen
- Oldenburgisch Ostfriesischer Wasserverband (OOWV, a regional water association)
- Landesfischereiverband Weser-Ems e.V. (Fishery Association Weser Ems)
- Chamber of Agriculture Lower Saxony
- Forestry Office Lower Saxony Neuenburg

The organisational structure of the areal cooperation Hunte is shown in Figure 5-4. Head of the cooperation is the Hunte-Wasseracht and management obliges to the NLWKN-branch in Brake-Oldenburg (Neumann, n.d.). The areal cooperation primarily serves as a room for discussion and decision making, however no measures can be implemented by the cooperation itself. It can be discussed, if having a large group of participants within the areal cooperation's is supportive or aggravating for decision making process, as the process of decision making gets harder to moderate and the potential for discussion and dialogue is reduced (Newig et al., 2016).

In order to minimize this problem, it is no longer necessary for every district to send a representative to the area cooperation. In the case of the area cooperation Hunte, only two out of five districts – Oldenburg and Diepholz - send their representatives to the meetings. These representatives are therefore also responsible to provide the information to the other districts. Members of the area cooperation were not provided formal decision-making (Newig et al., 2016). Therefore decisions made within the area cooperation Hunte are not binding, but rather recommendatory (Kastens & Newig, 2008).

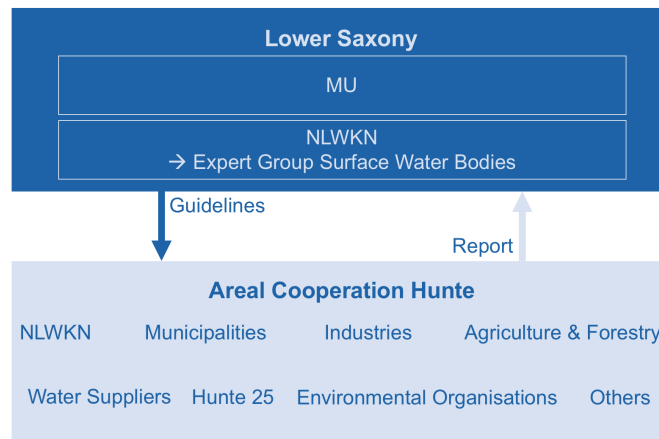


Figure 5-4 - Organisational structure of the Area Cooperation Hunte (Adapted from: Hunte 25, 2010)

The former status of the Hunte as a focus water body within Lower Saxony allowed for it to be part of a so-called Water Body Alliance (*‘Gewässerallianz’*). This also allowed the Hunte to have a Waterbody Coordinator, within the Water and Ground Associations. This position is financed by the state to explicitly implement measures by forming a stronger communicational link between the level of the federal state of lower Saxony and the regional bodies and to improve the coordination of the water body. This Water Body Coordinator was however only financed for a relatively short period of time, of about 2 years. Thus, nowadays the communicational link between the regional and the federal level is weaker.

Summary of the responsibilities for the implementation of measures

This section will give a short summary about the different administrative levels, involved in the governance of the Hunte and their respective responsibilities, when it comes to the governance of the WFD. Therefore, all relevant authorities and their responsibilities within the Hunte Case Study are listed in Table 5-1. Having this overview will help to better understand the positioning of the relevant authorities, relationships between them and their responsibilities.

Table 5-1 - Relevant authorities and their responsibilities in the Hunte Case Study.

Level	Authority	Task
<i>Upper Water Management Authority</i>	MU	<ul style="list-style-type: none"> • Create legal framework for the implementation of the WFD
	NLWKN	<ul style="list-style-type: none"> • Advise Lower Water Maintenance Authorities • Only implements measures in few cases • Assessments of RBMPs
<i>Lower Water Management Authority</i>	In general: Lower Water Management Authority	<ul style="list-style-type: none"> • Monitor compliance with system ordinance
	Cities & Districts, Water-and-Ground Association Hunte	<ul style="list-style-type: none"> • Implementation of measures
	Maintenance Association	<ul style="list-style-type: none"> • Drainage of Rainwater
	Areal Cooperation Hunte	<ul style="list-style-type: none"> • Include local stakeholders in the implementation of the WFD • Room for discussion

Major issues, related to the responsibilities for the implementation of measures in the Hunte case study, can be related to the fact, that it is no longer regarded as a focus water body within Lower Saxony. Helpful structures, such as the Waterbody Coordinator, thus, are no longer available, to ease up the implementation of measures. Further issues can be related to the willingness to implement measures on a local level, and the financing available for the implementation of measures, both of these issues will be further discussed in the following two sub-chapters.

5.3.2 Willingness to implement Measures

As a second sub-section to this chapter, this section will discuss the willingness of actors in the Hunte case study, to implement measures for the WFD. When concerning the issues associated with the willingness to implement measures within the Hunte case study, it can be said, that the lack of willingness has resulted for three main reasons, as further discussed within this chapter. These three reasons are the voluntary basis for the implementation of measures, the lack of good boundary conditions for the implementation of measures, considering the availability of space and financing, and lastly the missing social commitment for water bodies in general.

When concerning the voluntary basis to implement measures, willingness seems to be a big problem, as indicated in the interview with an employee of the NLWKN: “Here in Lower Saxony everything is on voluntarily basis. No one is forced to do anything, it is always just recommended”¹³, therefore

individuals do not feel responsible to implement measures, which is mostly done on the local level. This leads, to measures often not being implemented, since other political interests are prioritized.

Furthermore, the willingness to implement measures is influenced by many boundary conditions, such as the availability of space, financing and the willingness of citizens and owners. An employee of the NLWKN mentioned: “Many residents / users of the region also resist because space is needed”¹⁴. She further elaborated, that due to the general lack of willingness measures are often not implemented. This should be noticed on a higher level of authority, so either the EU or the federal government of Germany should realize that measures are not implemented on a local level and, thus, they should increase the pressure to implement measures. However, it also has to be considered, that, as mentioned by the direction of the FGG Weser: “In a community, there is not only the environment [as a pressing political issue], they sometimes have to deal with completely different issues, that is of course where they see their priorities”¹⁵. Thus, the public interest in investing in other issues being higher and more urgent. Hence, investments for the implementation of measures in accordance with the WFD, are often postponed.

An additional problem is the missing social commitment for water bodies, as a representative from the Weser-Ems Fishery Association mentioned:

”People have to get more sensible, how important the resource water actually is, in order to generate societal action, for the people to see an intact environment as their basis for living.”¹⁶

The awareness about the necessity of the measures is, thus, often missing. A representative of the NLWKN further stresses this point by mentioning:

“As long as water bodies do not stink, nothing will be done [...] there are many people who like it as it is”¹⁷

Thereby, it is stressed, that people tend to judge on water quality, by the perceptible properties, which directly affect their quality of life and not by the actual status of the water. This gap of interest in water has to be closed by an improved public involvement, in order to make the population more sensitive, in considering this issue. Thus, to improve the support of citizens in the implementation of measures.

To solve this issue of missing willingness, interviewees on the one hand, refer to more pressure needed to enforce the implementation of measures, however on the other hand, they also refer to the voluntariness being essential, as circumstances are different for all cases. According to the interviews conducted, it can be said, that more could be achieved if the political pressure towards implementing measures was bigger. Especially influential and sensitive people who stand up for the WFD are generally missing, thus, the representative of the NLWKN stresses: “without somebody local who cares, you can have a

lot of money, but nothing will be overspend”¹⁸. Therefore, it is essential to have people in influential positions who mind about the quality of water bodies, in order to generate a good basis for the implementation of WFD measures. Thus, it can be said, that the obligation on the communal level is missing and there should be better financial and personnel arrangements.

Again, as the lobby for agriculture is very strong, especially when compared to the relatively weak lobby for nature protection, interests for water quality are often in a weak position. This was also mentioned by a representative of the NLWKN: “Here within Lower Saxony we have a real problem with agriculture, as it has a very strong lobby.”¹⁹, further she mentions: “Water bodies of course do not have a lobby, apart from nature protection associations.”²⁰ Therefore, the support for topics concerning the agricultural interests are generally higher, than those concerning environmental interests. This is also shown in political elections, where politicians are driven by goals they can achieve during their legislative period, and water quality is rather not one of those.

Generally, it is seen as an advantage for several actors to work together to implement measures and to achieve the goals of the WFD. However, at the moment within Lower Saxony the biggest issue is, that there are only very few actors, who are willing to implement measures, that is also mentioned by a representative of the NLWKN: “No one is doing anything at the moment, why then do it together, [...] they would only get together in doing nothing.”²¹. Therefore, it is seen as difficult to get actors to work together, to improve the implementation of measures, since it is seen as difficult to find individual actors who are willing to work on WFD measures.

Summary on Willingness to Implement Measures

This section will give a short summary regarding the main issues associated with the willingness to implement measures in the Hunte case study. Three main issues could be identified:

Voluntary basis for the implementation of measures – The implementation of measures on the local level is voluntary, thus it is often not prioritized and therefore not done as local actors do not feel responsible. This is a big issue, since other policy fields are often prioritized.

Lack of good boundary conditions – Amongst others, the availability of space is often a major issue, restricting the possibilities for the implementation of measures. Further boundary conditions are the availability of financing, and the support of citizens and owners.

Missing social commitment – The acknowledgement of people for the necessity of the measures is often missing. Additionally, they are often not aware of the actual status of water bodies, instead they tend to think that water bodies have a better status compared to what is actually the case.

5.3.3 *Financing of Measures*

The third and last sub-division of this chapter, addresses issues related to the financing of measures within the Hunte case study. Generally, there are three major issue related to the financing of measures in the Hunte case study. First the Hunte is no longer one of the focus water bodies within Lower Saxony and, thus, the financing of measures is impended. Secondly, the funding from the EU, is generally perceived as complicated and complex and therefore is often avoided. Third, the subsid programmes available are often simply not used. Thus, the implementation of measures in the Hunte case study is often hampered due to bad financial support. These three issues will be further explained in the following.

For some water bodies it is especially difficult to get the financing, because, as an employee of the NLWKN stated: “in Lower Saxony, we concentrate on the waters, where you can achieve something quickly, you would not focus on the problematic cases [...], but first on those waterbodies where you have space and where you assume, there is a good colonisation potential.”²² These selected water bodies then are considered as focus waterbodies. Generally focus waterbodies in Lower Saxony can be classified into two groups: (1) water bodies with a moderate status or potential, where the chances are highest to reach a good status or potential on a medium-term and (2) waterbodies that still have relatively intact ecosystems and habitats so that typically inhabiting species of the waterbodies will also recreate (Pinz, 2018). This shows that federal authorities prioritize water bodies that will show fast results, over those that can be considered as more problematic. Meaning that water bodies which cannot be classified in either of these groups have difficulties to get their measures financed by the federal state of Lower Saxony (MU, 2016b).

Thus, the Hunte used to be part of this so called stream programme (*Niedersächsisches Fließgewässer-Programm*), which was especially intended to improve the financing of measures (MU, 2016a). Therefore, via the stream programme, the Hunte was prioritized over other water bodies when it came to getting measures financed. The stream programme already existed before the introduction of the WFD and primarily intends to improve the passage for migratory species. However, nowadays the Hunte is no longer part of the programme, as it was only assigned as part of the programme for the first implementation cycle (2009-2015).

Considering funding from the EU, at the moment, there is a lot of EU-co-financing available for the financing of measures for the WFD, which also means that processes can get elaborated, procedures are very formalistic, and one has to pay attention, not to get into a regress. A representative from the Weser-Ems Fishery Association mentioned:

“The EU funding instruments are too complicated. [...] In our view the federal state [of Lower Saxony] would need to invest more, to make it easier for people to implement measures, if they are willing to implement measures.”²³

Therefore, there is a tendency to refrain from these EU-subsidy programmes and to go back to state funding, because it is easier. A representative from the NLWKN further stresses: “These EU-subsidies are complex, and this discourages many.”²⁴ Thus, more guidance is needed, to improve the usage of EU-subsidy programmes and thus to decrease the financial stress on the implementation of measures.

Furthermore, there is also the problem that some subsidy programmes are simply not used. The direction of the FGG Weser reasons this by stating: “Either the subsidy programmes need to be improved, or an acceptance for the [water related] problems needs to be generated.”²⁵ Indicating, that there is still work necessary to improve the usage of these subsidy programmes. The exact reason for the avoidance of these subsidy programmes is however unclear. So either, the problem is, that the programmes are not easy to use, or the problem is that the awareness for the issues, addressed by the programmes, is missing. Therefore, it can be said that these subsidy programmes are not perceived as helpful structures by the relevant authorities.

Summary on Financing of Measures

This section will give a short summary regarding the issues associated with the financing of measures in the Hunte case study. Three main issues could be identified:

Focus water bodies – The financing from the federal state of Lower Saxony prioritises selected water bodies, thus it is difficult for other water bodies to get their measures financed.

EU Funding – EU funding is perceived as very complex and is therefore often avoided.

Subsidy programmes are not used – Subsidy programmes are often not used by the respective authorities; thus, they need to be improved.

5.4 Involving RBD Authority Weser

This chapter will address the third and last domain of connectivity: Involving the respective RBD Authority. For the case study of the Hunte, the RBD Authority Weser is the main administrative unit on the level of the RBD. This chapter is subdivided into two sections, and therefore will begin with an explanation of the administrative tasks of the RBD Weser in relation to the MU and the NLWKN in Lower Saxony. Afterwards this chapter will address the issues related to the involvement of the RBD Authority Weser in the governance of the WFD

5.4.1 Administrative Tasks of the RBD Authority Weser

The RBD Authority Weser can be seen as a parallel structure to the administrative levels within the federal states, therefore as a parallel structure to the MU and the NLWKN within Lower Saxony, as shown in Figure 5-5. The main tasks of the RBD Authority Weser are the federal-state-crossing implementation, matching and coordination of tasks concerning the water management of the Weser - especially concerning its pollution and for flood protection - data collection and management for the water quality of the Weser catchment – therefore also for the Hunte – and a provisioning of warning plans in case of an endangered or polluted water (FGG Weser, 2018). The RBD Authority Weser can be understood as an association of the seven riparian federal states.

The RBD Authority is representing the management, however it is financed through the federal states and consists out of their representatives. This is supposed to help representing the positions and situations of the different member states (FGG Weser, 2018). The RBD Authorities were introduced to coordinate between the different states, however, they do not have any decision-making authority over the federal states.

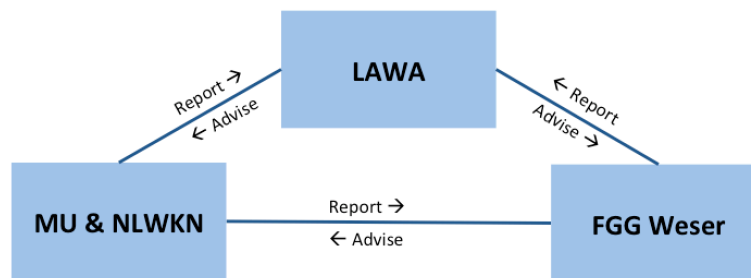


Figure 5-5 - Relation between the FGG Weser, the LAVA (German Working Group on water issues of the Federal States and the Federal Government) and the MU (Lower Saxony Ministries for the Environment and Climate Protection) & NLWKN (Lower Saxony Water Management, Coastal Defence and Nature Conservation Agency).

5.4.2 Issues with the integration of the RBD Authority Weser in the governance of the WFD

When concerning the integration of the RBD Authority Weser into the governance of the WFD, the main aim of the authority is to make the federal states use similar approaches for the implementation of the WFD. These approaches are then also represented within the reports to the EU. However, the federal states have different boundary conditions for the governance of the WFD, which then need different governance approaches. A representative of the NLWKN mentioned: “Lower Saxony [...] is operating in four RBDs, [...] and if every RBD would develop its own specifications, then we [...] would be divided into four parts. That is not how it works.”²⁶ Within Lower Saxony it is seen as advantageous to have one uniform approach for all the RBDs, because having the governance of RBD on an RB-level would result in conflicts with the governance of other policy domains, which are regulated on a federal state level, and would thus result in spatial misfits within the governance. Hence it is difficult, to produce uniform approaches for a whole RBD, since the federal states also want uniformity within their territory. Therefore, national uniform law – as discussed in the LAVA - is preferred over RBD specific law,

because it allows for uniformity within the separate federal states and within the German shares of RBDs.

There are some strategies, which apply for the whole of the Weser and have been agreed upon by all the involved federal states, for example the strategy for migratory fishes. However, to agree upon one of those strategies the approval by all riparian states is needed, because unanimity is essential in the decision making. If this unanimity is not given every federal state will use its own approach and there will be no common RBD strategy. Not having a common strategy, may lead to several different strategies of the federal states. Thus, it may happen, that the positive effects of efforts from one federal state diminish at the borders to another federal state. From the perspective of the RBD Authority Weser, as mentioned by the direction: “Working together on a goal is almost necessary, if one goes out, the whole system does not work.”²⁷ Furthermore, she also mentions:

“[...] every federal state tries to adopt a uniform procedure, irrespective of the share of a river basin they are working on. [...] To guarantee this even more than in the first [implementation] round, there is indeed this LAWA river basin management program”²⁸

To ensure this nationwide uniformity, also the RBD Authorities take part in the meetings of the LAWA, to create a Germany-wide approach. As the problems within the separate RBDs are very diverging, these shared approaches can only be created for problems that affect all states. Due to the different problems within the separate federal states deviant federal approaches are not to be avoided, therefore many meetings and discussions are needed to have the same general direction. Thus, it is generally aimed for uniform approaches, as they are also expected to increase the effectiveness of the governance of the WFD. However, as boundary conditions also need to be taken into consideration, it is often difficult to formulate approaches in a way, that considers specific circumstances of the separate federal states.

5.4.3 Concluding on the involvement of the RBD authority Weser in the governance of the WFD

A summary of the issues, concerning the integration of the RBD Authority Weser in the governance of the WFD, and their descriptions is given in this section. Two major issues relating to the RBD Authority Weser could be identified:

RBD authorities and Federal States – Federal states are aiming for uniform approaches for all of their and uniform LAWA approaches being preferred over RBD approaches. However, it being difficult to find uniform national approaches, because of different boundary conditions in the separate federal states.

Decision making within the RBD Weser – Decisions made by the RBD authority Weser are not binding. Furthermore, resolutions made within the RBD need to be agreed upon by all federal states, and thus are often challenging to make.

5.5 Concluding on the governance of the WFD in the Hunte Case Study

To conclude on the findings of the Hunte case study, it can be said that it is perceived as challenging to govern for the WFD, since there are difficulties in all three domains of connectivity, that were addressed in this study. However, there are also some opportunities, for the governance of the WFD to be improved.

On the one hand the implementation of measures is often restricted because the agricultural sector is often prioritized. The catchment area of the Hunte is dominated by agricultural uses, which are in conflict to the environmental aims of the WFD. It is often difficult for the environmental sector to enforce regulations. Furthermore, it is often problematic to attain the necessary financing and to gain local support for the implementation of measures. A major issue is, that the problems concerning the water quality are not recognized as such by local actors. Furthermore, the financing for measures in the Hunte case study is often difficult, as the river is no longer prioritized for financing from the federal state of Lower Saxony, and as money from EU-subsidy programmes is often difficult to use.

On the other hand, the administrative structures for the governance of the WFD are in place and are perceived as good and supportive for the successful implementation of measures for the WFD. The connection to the RBD authority Weser is perceived as good and supportive for the implementation of measures, even though every federal state has its own approaches. Still on the level of the RBD Weser, it is also often difficult to find uniform approaches for all federal states. This is because the boundary conditions in the separate federal states are different, and because the federal states try to have uniform approaches for all of their river basins. This is why national uniform approaches are often preferred over RBD uniform approaches.

Overall, it will be unlikely for the Hunte to reach a good ecological status until 2027. At the moment there are not enough measures to improve the water quality and as the Hunte will also need some time to react on measures implemented, it is very unlikely that the goals of the WFD will be met by 2027. Thus, it is hoped for an extension of the WFD deadlines, even beyond 2027.

6 Case Study: River Emscher – The Sewage of the Ruhr Area



Figure 6-1 – Impression of the Emscher close to Dortmund (Schmölter, 2005).

The second case study used within this research, to study the governance of the WFD within Germany, is the Emscher, Figure 6-1. The Emscher Valley is situated in North Rhine-Westphalia between the rivers Lippe and Ruhr, it flows into the river Rhine – it is thus part of the Rhine RBD. The Emscher is therefore coordinated by the RBD Authority Rhine, which acts within Germany, and by the International Commission for the Protection of the Rhine (ICPR), the members of whom are the countries Switzerland, France, Germany, Luxemburg, the Netherlands, Austria, Lichtenstein, Belgium and Italy (ICPR, 2018). In North Rhine Westphalia RBD authorities have ever been most prominently, especially in the Ruhr area, where the Emscher Valley can be found (Mostert, 1998). Therefore, the Emscher Genossenschaft (Emscher Association) was already established in 1904, to deal with issues like water quantity and quality, as well as infrastructure (EGLV.de, n.d.).

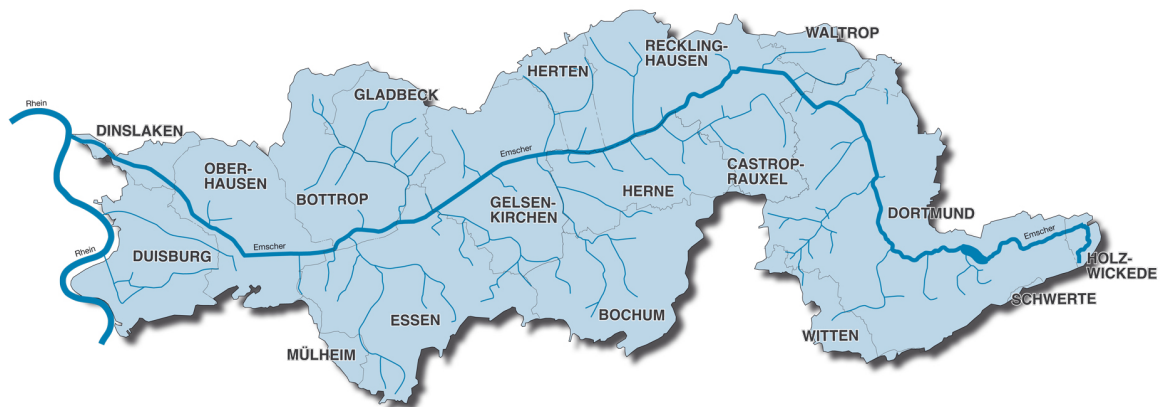


Figure 6-2 - Map of the Catchment Area of the Emscher Valley, also showing the different administrative districts. (Umwelt.nrw.de, n.d.)

Figure 6-2 shows the course of the Emscher and it also presents the city districts, which are involved in the management of the Emscher catchment. The total length of the Emscher itself amounts up to about 80 km and it has a catchment area of about 865 km² (EGLV.de, n.d.). The largest portion of the catchment area of the Emscher is used for urban settlements (48%), followed by agriculture (18%), and forests and grassland areas (12%). The area therefore has a strong urban character, also represented by a relatively high population density of 230 inhabitants per km² (EGLV.de, n.d.). Within the area of the Emscher, as a result of former coal mining nearly all water bodies are being used as open sewage channels, which, among other things, has led to mining subsidence and contaminated sites.

This chapter will introduce the Emscher case study and will discuss the results found for the Emscher case study, starting with a description of the current status of the Emscher. Next, the three concepts of connectivity will be applied on the Emscher, to investigate on the governance of the WFD within Germany.

6.1 The Project ‘Das neue Emschertal’

During the last couple of years the Emscher Valley, located in North Rhine-Westphalia, gained more and more glory for its transformation from being the ‘sewer’ of the German Ruhrgebiet towards being re-naturalated today (Burger, 2015). In the course of the renaturation, a great variety of different projects already were and also still will be realized, within the scope a superordinate project ‘*Das neue Emschertal*’ (EGLV.de, n.d.). Scale wise the Emscher Valley project is often compared to other German large-scale projects like the Berlin Brandenburg Airport and the Elbe Philharmonic Hall in Hamburg. However, in contrast to these large-scale projects the Emscher Valley is setting a very positive example by staying within the scope of the planned financial framework (Burger, 2017).

The river Emscher has been heavily modified and polluted since the beginning of the industrialization in 1899, only in 1996 first measures towards re-naturalization of the river were undertaken (EGLV.de, n.d.). In 2006 the master plan for the future of the Emscher region was published (‘*Masterplan Emscher Zukunft*’). It did not only consider the development of the river itself, but also integrated settlements, infrastructure and management of open space (EGLV.de, n.d.). So far about 128 km of the whole Emscher system - with a total length of 345 km - have been reconstructed.

Measures that were already implemented in the restructuring of the Emscher include: an ecological restructuring (2 km length in 1991), the launch and modernisation of sewage treatment plants (1994 in Dortmund-Deusen; 1997 in Bottrop; 2001 in Dinslaken), the construction of sewage canals and rain-water catchment basins (between Holzwickede and Dortmund, 1996), the reconstruction of the aqueduct in Castrop-Rauxel (2008-2012), a separate sewage channel for the Emscher (2009-), flood control

reservoirs (Dortmund - Mengede and Castrop-Rauxel – Ickern 2013) and the restoration of a near-natural river mouthing into the Rhine in Dinslaken (2013-) (EGLV.de, n.d.).

Along the Emscher not only purely water related but also many integrative projects have been realized. One of these projects is the ‘*Green by Blue*’ (‘*Grün durch Blau*’) project in Herten, which is also including topics like climate change, education, art and culture, industry, city development, urban drainage, the modification of the watercourse, infrastructure, and biotope networks (Emschergenossenschaft, 2014). The principle of the sub-projects was to use the water management of the Emscher as a trigger for integrated projects, to cooperate with a diversity of actors and to form synergies between them as well as to reach the planning goal of an integrated management (Emschergenossenschaft, 2014).

Despite the implementation of these projects, large parts of the Emscher Valley system still do not comply with the management goals of the WFD, the two main reasons are: (1) the renaturation of the system is not finalized yet and (2) the natural system needs more time to react on the measures that have already been implemented. This was also mentioned by a Representative of the Emscher Genossenschaft: “[...] there is still sewage left in the system, the water bodies have not been redesigned yet, or [...] the time for development after finishing the ecological improvements has not been long enough for flora and fauna to develop accordingly.”²⁹. As only a third of the whole Emscher Valley system has been restructured yet, structurally there is still much potential for improvement.

However, it is very uncertain when and if a good potential can be reached. For instance, as the Emscher has been used for sewage for more than 100 years, this also has an effect on the resettlement of species. Therefore, the representative of the Emscher Genossenschaft mentioned: “These water bodies have been open sewage channels for about 100 years, therefore the potential of species resettlement is quite low.”³⁰. Because of the long history of human intervention with the natural system of the Emscher, there is no data available on what a reference ecosystem should entail, therefore it is problematic to restore.

For a long time, the majority of the measures implemented within North Rhine-Westphalia concentrated on hydro-morphological structures. Chemical parameters were often neglected. However, because of the high population density, many water bodies within North Rhine-Westphalia, especially in the Ruhr area, have a high share of sewage from treatment plants that is released into the rivers, and many of these treatment plants need adjustment to comply with the requirements of the WFD. Furthermore, due to the high building density it is not possible to recreate an absolute natural system. As a representative of the Emscher Genossenschaft explained: “Having the background of a dense population, and the high building density, it is reasonable that it is not possible to create structures like those that can be realized in largely untouched systems.”³¹. However, in the region of the Emscher also a lot of integrative projects could be realized, this is especially due to the economic impulse the project has given to the region. This was also mentioned by a representative of the Emscher Genossenschaft: “it has also been recognized

within the region, that this transition is needed, for the region to have a future.”³². The restructuring of the Emscher, is therefore not only an ecological improvement but also integrates an economic and social factor.

The implementation of measures is lagging behind in the German Shares of the river Rhine. However, as already mentioned, water bodies also need some time to react to the implemented measures. One of the issues is seen in the communication of the status and of the respective goals. An employee of the FGG Rhein – the relevant RBD authority for the Rhine - mentioned: “That because of the EU ‘One-Out-All-Out’-principle’, [...] when there is one exceedance the whole water body is represented as negative.”³³. Therefore, it is often difficult to improve the status of a water bodies, since the classification of a water body is always dependent on its worst parameter. For the Emscher this also often poses problems, since the good quality is often difficult to reach because single parameters cannot be met.

The restructuring of the WFD in 2019 is seen as a chance to hold on to the goals of the WFD, even beyond 2027, also to further address stress topics such as nitrates, mass balance and water body protection. This was also mentioned by a representative from the FGG Rhein: “In Germany, we want to hold on to the goals of the WFD, we would like to maintain the WFD as it is.”³⁴. The Emscher could also profit from an extension of the WFD, also to hold on to the ambitious goals even beyond 2027.

6.2 Connectivity of Policy Domains

The first concept of connectivity which is investigated in the Emscher case study is the connectivity of policy domains. Thus, in this chapter, the results for the concept of connectivity of policy domains for the Emscher case study will be presented.

Within the Emscher Region the connectivity of different policy domains is not seen as a major problem, since integration between policy fields is especially done via the Ministry of Environment, Agriculture, Nature and Consumer Protection (MKULNV = *‘Ministerium für Umwelt, Landwirtschaft, Natur und Verbraucherschutz’*). This was also mentioned by a representative of the Emscher Genossenschaft: “The Ministry of Environment for example is constructed in a way, that [...] allows for a cross-linkage of the relevant policy domains on a political level, within the ministry.”³⁵ Thus, the connectivity between the mentioned policy domains should not be an issue.

Therefore, the MKULNV is not only responsible for water management, but also for other policy fields. However, as the director of the ICPR mentions, there is the problem that “it is not thought in an integrated way everywhere.”³⁶. The main issues with water quality in the area still result from historically contaminated sites, and therefore are not directly related to current conflicts with other policy fields. However, there are four additional issues that could be identified for the Emscher case study, relating to the connectivity of policy domains. These are: (1) the spatial pressures; (2) connectivity of industry and

the WFD; (3) the coordination of the Floods Directive (FD) and the WFD and lastly (4) the connectivity of the agricultural sector and the WFD.

6.2.1 *Spatial pressures*

First, and this is a major issue concerning the connectivity of policy domains, spatial pressure results from the urban regions within the Emscher valley. The Emscher region is a densely populated area, furthermore there is a high density of industries and other land-uses in the region. However, space is also needed for the implementation of measures. If there is a planning approval process (*‘Planfeststellungsverfahren’*), then there is the chance of getting landowners expropriated. The representative of the Emscher Genossenschaft mentions: “If there is a planning approval, we have the possibility to get an expropriation, though it is difficult to apply for one.”³⁷. Processes of planning approval are difficult to enforce and can only be used in the case that land owners are not willing to provide their land. Furthermore, it is preferred not to work against the will of the land owners, to increase the local support for the implementation of measures.

Spatial pressure also concerns the implementation of the FD and the WFD. In the Emscher region there are examples, where it was possible to provide the appropriate spaces. One of the examples for this is the mouth of the Emscher into the Rhine, where a former weir is currently being transformed into a naturalistic estuary (EGLV.de, n.d.), also see Figure 6-3. However, this is often not the case, thus there are difficulties with implementing measures. Next to the problem of not having enough space for the realization of measures, there is also the problem that space that was already available that had to be given up for other purposes. This is stressed by a representative of the Emscher Genossenschaft: “And then [...] we also need to sacrifice lands, that we have earmarked for water development, which are then no longer available.”³⁸. The land formerly assigned for water developments is often reassigned, because the responsible cities and districts decide to prioritize economic developments over ecological measures.

Generally, in the region a lot of space could be made available for the restructuring of the Emscher, a representative of the Emscher Genossenschaft states: “The land along the water bodies, especially along the Emscher, which were formally used as backyards, [...] the view on these areas [...] has changed, therefore we, from a spatial planning perspective, can see it as potential room for development.”³⁹. The space that could be made available primarily consist out of former structures, that are no longer used for their initial purpose. Therefore, it can be said that the availability of space for the implementation of measures in the Emscher region, is restricted and bound to the willingness of land owners to give up their land. The connectivity of policy domains in the field of spatial planning is this difficult, as the WFD cannot always be prioritised over other policy domains, concerning the human welfare. It can be concluded that spatial pressure often results in limitations on the possible implementations of measures.



Figure 6-3 - The current Emscher mouthing into the Rhine (left) ('Kötelbecke', 2015) and the planned new Emscher mouthing (right) (EGLV.de, n.d.).

6.2.2 Connectivity of industry and the WFD

Second, problems in the region mainly result from industry and sewage. Sewage enters the Emscher through production sites and discharges, as a representative from the Emscher Genossenschaft mentions: “we believe that when it comes to material contamination, the possibilities of sewage treatment plants are limited.”⁴⁰ The technological possibilities to clean the sewage are restricted, thus the water that is released into the Emscher, via the sewage plants, is contaminated. A further issue with the industry was mentioned by an employee of the Emscher Genossenschaft: “If the owners of industries are no longer situated in the region then they also do not feel responsible to take responsibility.”⁴¹ With the owners of industries not located within the region, it is difficult to make them aware of the pollutions they cause in the region and to the Emscher.

Additionally, the Emscher has a complex load situation of pollutants, that is influenced through historical polluting plumes from industry. The treatment of these plumes is a huge problem, as due to their position underneath the urban areas it is often difficult to access them, this is also stressed by the representative of the Emscher Genossenschaft: “load situations are often complex [...] on the source areas there are the cities, there is no linkage between the water bodies, there is the situation regarding the contamination”⁴². Thus, it is difficult to improve the water quality of the Emscher without improving the load situation of the underground, which are mostly connected to former industries.

6.2.3 Coordination of Floods Directive and WFD

Third, on an RBD Rhine level the connection between the WFD and the FD, is in significant need for improvement. As the director of the ICPR argued: “The protection of the water body and the protection of people have to be brought back into harmony.”⁴³, flood protection often incorporates hard measures, which, however, complicate the implementation of the WFD. In the past the integration has been hampered by the separate introduction of the directives, e.g. the WFD in 2000 and the FD in 2007. The goals of the two directives are contradictory, since the FD concentrates on the protection of mankind, while the WFD concentrates on the protection of water bodies. Furthermore, the WFD does not consider any goals related to water quantity. Since both directives have been enacted on the same spatial dimension

– rivers and other water bodies - the integration between the WFD and the FD is especially important. The connectivity of the WFD and the FD, can therefore be considered as difficult, as the FD often asks for hard structures such as dikes, while the WFD asks for soft structures, such as natural and near-natural riverbanks. Thus, the connectivity between the WFD and the FD also has to be regarded as one of the most important, because both directives need to be realized within RBDs. To better connect the two policy domains compromises, need to be made between them, or one has to be prioritized over the other. In the Emscher valley there are about 128 km of dykes, along the Emscher and its tributaries (EGLV.de, n.d.). Furthermore, there are a few water-retaining structures, one of them is the current Emscher mouth-ing into the Rhine. For many of the alternatives, that can be considered for both the WFD and flood protection a lot of space is needed. It is however, not always possible to provide appropriate spaces, relating back to spatial pressures in the area.

6.2.4 Connectivity of the agricultural sector and WFD

Fourth and finally, and seen on the scale of the river Rhine, especially agriculture seems to be a policy sector that is hard to integrate with water management. This was also mentioned by the direction of the ICPR: "Agriculture is another important sector, that needs more cooperation, both between the different ministries as well as between the different states."⁴⁴ Agriculture is thus, also one of the main policy fields which need to be governed on the scale of RBDs. However, as a representative from the Emscher Genossenschaft argued "In the Emscher region, we for example do not have the problem, that we have large scale agricultural influences and we do not have [...] nature protection areas or similar requirements, that would apply next to the WFD."⁴⁵

Since the Emscher region is mostly used for industry and settlements, agriculture is less of a problem. Still and seen for the whole Rhine region, an employee of the FGG Rhein mentions: "especially in the area of agriculture there are topics, which cannot be solved solely from the perspective of water management."⁴⁶ Agriculture can thus be regarded as a policy domain, which causes major issues with the governance of the WFD within the Rhine region. When regarding issues resulting from agricultural activities, connected to the pollution of water bodies within the Rhine region, the direction of the ICPR mentioned: "A loss of fertilizers to the ground water is actually also a loss for the farmers."⁴⁷ Therefore, an optimized use of fertilizers and nutrients in the agricultural sector would be beneficial for both sides, the agricultural sector and the water management sector. The connectivity of agriculture and the WFD can thus be seen as problematic on the RBD Rhine scale, however it is not a real issue in the Emscher region, since there is only little agricultural activity. Still, both sides, the WFD and the agricultural sector should be interested in improving the situation.

6.2.5 Concluding on the connectivity of policy domains

To conclude, spatial pressures and the connectivity of the WFD with the industrial sector are the two major problems in the Emscher region. The implementation of measures for the WFD is highly dependent on the availability of space. In the case of the Emscher, there are some examples where it was

possible to provide appropriate spaces. A summary of the policy domains, that were perceived as problematic when considering the connectivity to the WFD is given below.

Spatial Pressure - Availability of space is restricted and depends on the willingness of land-owners to provide their land and on other claims for land uses. Connectivity is often difficult, since the WFD cannot be prioritized over other interests.

The WFD and Industry - Industry and sewage cause pollution in the Emscher, technologies are not efficient enough yet to clean the sewage sufficiently. Furthermore, historical contaminants pass through the ground water into the Emscher. Connectivity of the two sectors is difficult, since it highly depends on the available technologies for sewage treatment and the appropriate treatment of contaminated sites.

The WFD and the FD - The FD often asks for hard measures to protect human lives. However, this is not in line with the aims of the WFD. To connect the two policy domains, compromises need to be made, or one directive has to be prioritized over the other.

The WFD and Agriculture - The use of fertilizers and pesticides in agriculture has a negative influence on the quality of ground and surface water bodies. Because the lobby of agriculture is strong, however, measures to improve the water quality are often neglected. Connectivity of the two policy sectors is therefore difficult. Certainly, a more efficient use of fertilizers and pesticides should be beneficial for both policy domains.

6.3 Connectivity of Scale Levels

The next dimension of connectivity which is evaluated in the Emscher case study is the connectivity of administrative scale levels. When considering the connectivity of scale levels improvements are still needed. Key issues are associated with the financial budgets available and with the communication between the separate administrative levels.

Within North Rhine-Westphalia the management of a water body obliges to the water authorities. The implementation of the WHG is regulated within the Federal Water Act (LWG = ‘*Landeswassergesetz*’). As mentioned by a representative of the regional administration Arnsberg: “There are actually a lot of institutionalised cooperation levels developed from practice [...]. This is not what is missing [...]. It might even be overregulated here and there”⁴⁸. Thus, the structures needed for the governance of the WFD are all in place, it is however, difficult to govern for water quality, because of overregulation. A big advantage is the Ministry of Environment (MULKNV), which also includes other policy fields and thus improves the connectivity to other policy domains. Therefore, the representative of the Emscher Genossenschaft comments: “this interconnectedness between the separate policy fields given on the political level within the ministry. But how far it reaches to lower authorities, does for sure depend on the separate authorities and their representatives.”⁴⁹. As a result, the connectivity of higher

administrative scale levels can be described as good, while the connectivity of lower administrative scale levels is often unclear.

Based on the key points to be addressed in the category of connectivity of administrative scale levels, this section is structured into three parts. In the first part, the responsibilities for the implementation of measures of the most upper, the upper and the lower water management authorities in North Rhine-Westphalia and in the Emscher region are introduced and discussed. Followed by the second part, which will discuss about the willingness in the region to implement measures for the WFD. Lastly the third part of this section will discuss on the financing of measures for the WFD.

6.3.1 Responsibilities for the implementation of measures

In this chapter the upper and lower water management authorities relevant for the Emscher case study are introduced. This will help to understand the relevant structures and how decision making, and responsibilities are spread across the different levels.

Most Upper Water Authority

Within North Rhine-Westphalia the most upper water authority is represented by the Ministry of Environment, Agriculture, Nature and Consumer Protection (MULNV) is in charge of implementing the WFD. Therefore the MULKNV designs and publishes the programme of measures and is responsible for the necessary public relations (Flussgebiete NRW, 2017). Furthermore, the ministry coordinates the performance of the respective lower maintenance authorities. In addition, subordinated to the MULKNV the State Office for Nature, Environment and Consumer Protection North Rhine-Westphalia (LANUV = *'Landesamt für Natur, Umwelt und Verbraucherschutz Nordrhein-Westfalen'*), is a specialized body for the support of courts and enforcement authorities on a district level (LANUV, 2018). This includes the recording of data, their assessment and the operation of measurement systems (LANUV, 2018).

Upper Water Maintenance Authority

In North-Rhine Westphalia upper water maintenance authorities are represented by regional administrations. They produce the programmes of measures which are then brought to discussion with the lower water maintenance authorities. Therefore, the regional administrations take over many tasks assigned to the lower water maintenance authorities. Within North Rhine-Westphalia there are five different regional administrations. The responsibilities for the Emscher lie with the regional administration of Münster, even though Arnsberg and Düsseldorf also own shares of the catchment (Flussgebiete NRW, 2017). Furthermore, within the regional administrations every sub-basin has a so-called WFD-office. As an employee of the Emscher Genossenschaft mentions: "These offices have, inter alia, the task within

their sub-basins [...] to coordinate the activities connected to the implementation of the WFD.”⁵⁰. Thus, WFD offices form a connection between the regional authorities and the authorities on the Lower Water Maintenance level.

Lower Water Maintenance Authorities

The lowest level, concerning the maintenance of water bodies within North-Rhine Westphalia are the lower water maintenance authorities. Every river sub-catchment has its own agency at the regional administration, representing the lower water maintenance authorities. These authorities offer round tables, for all stakeholders, to get involved in discussion and prepare the programmes of measures, so called aerial forums. Within North Rhine-Westphalia about 12 sub-catchments were defined; each is managed by one of the authorities (Flussgebiete NRW, 2017). However, these aerial forums have shown to be too ambitious, therefore nowadays they are utilized less often. This is with regard to the representative of the regional administration Arnsberg, who stated:

“It was planned to have an aerial forum for sub-catchments, like the Emscher, on a yearly basis. [...] In practice it has however shown that having this kind of event on a yearly basis is too much. [...] That is why we have changed to have such an event only every second year, and by now also for the whole administrative district.”⁵¹.

Thus, also showing that the administrative structure of aerial forums has proven to be too ambitious in offering structures for an improved governance of the WFD and that a forum based on the administrative district seems to be more reasonable. Therefore, within the aerial forums, there are so called ‘core working groups’ for each sub-catchment, also offering round tables for the relevant stakeholders. The realisation of tasks within these core working groups is, however, seen as difficult, since they are not recognised as authorities, by the respective water management authorities. Thus, an employee of the regional administration Arnsberg states:

“These core working groups partly are a good platform, in order to intensively exchange views and discuss about certain topics. The implementation of these topics and of what has been discussed, is then however always the task of the responsible [...] lower water management authorities or of the responsible regional administration. [...] And a regional administration does not allow for such an informal committee to interfere in important, significant decision making”⁵²

Thereby he underlines that these aerial forums are not efficient, because they are not properly considered in the decision making of regional administrations, since they do not have any administrative tasks in the governance of water bodies. Instead the management obliges to the water maintenance authorities. Thus, an employee of the regional administration Arnsberg further states:

“One has to be aware, that the management is a task that is concretely implemented by the water authorities. [...] [resulting in a] field of tension between on the one hand the WFD-offices [...] and the responsible district authorities and lower water management authorities on the other hand. [...] It is simply unthinkable, with the employees that Maintenance Authorities [in North Rhine-Westphalia] have, to strengthen and enable all of these [...] Authorities, so that they can fulfil those actual formally required tasks.”⁵³.

The lower water authorities are in charge to guarantee the compliance of the waterbodies within their administrative boundaries to the management objectives of the WHG. They are responsible for taking actions to reach these objectives, e.g. by monitoring to find root causes, adapting the planning, a better coordination, meeting administrative orders and by approving measures (Flussgebiete NRW, 2017). Lower water authorities are situated within the districts and district-free cities. The possibilities of lower water maintenance authorities are often limited, this is because they only have limited numbers of personnel in combination with many tasks assigned to them.

In the case of the Emscher the water management is done by the administrative districts of Arnsberg, Münster and Düsseldorf, including overall 13 districts and district-free cities and 22 communes (T. Moss, 2004). Tasks in the area of water management are conducted by the administrative districts, state environmental agencies, the lower water authorities and by the Emscher Association (*‘Emscher Genossenschaft’*) (EGLV.de, n.d.). Together these institutions form a cooperation, guided by the Emscher Association (Flussgebiete NRW, 2017). Therefore, the Emscher Association can be seen as a special authority, as it is an ‘administrative authority of public law’ for the whole Emscher Region.

The Emscher Association is the owner of the water body Emscher and of the connected plants and is obliged to the maintenance of the river. It has the task to take nature and landscape into account in the regional planning, and furthermore to set standards for regional plants in order to reach the management objectives. The main actors in the initiation of projects involve the Emscher Association, the municipalities and the authorities in charge of road construction – especially when concerning the drainage of rainwater.

Concluding on responsibilities for the implementation of measures

All relevant authorities and their responsibilities within the Emscher Case Study are listed in Table 6-1. This will help to get a better overview about the positioning of the relevant authorities and their relevant tasks.

Table 6-1 - Relevant authorities and their responsibilities in the Emscher Case Study.

Level	Authority	Task
<i>Most Upper Water Maintenance Authority</i>	MKULNV	<ul style="list-style-type: none"> • Implementing WFD • Design & publish programme of measures • Coordinates performance of lower water authorities
	LANUV	<ul style="list-style-type: none"> • Support court and enforcement authorities on district level • Data recording • Assessment and operation of measurement systems
<i>Upper Water Maintenance Authority</i>	Regional administrations	<ul style="list-style-type: none"> • Produce programme of measures
	WFD-offices	<ul style="list-style-type: none"> • Coordinate activities connected to WFD • Offer round tables for discussions
<i>Lower Water Maintenance Authority</i>	Cities and districts	<ul style="list-style-type: none"> • Need to guarantee the compliance with the WHG
	Emscher Genossenschaft	<ul style="list-style-type: none"> • Responsibility as owner of the water body • Regional planning • Initiation of projects

6.3.2 Willingness to implement Measures

The second key point to be addressed within the dimension of connecting administrative scale levels is the willingness to implement measures. When it comes to the implementation of measures in the Emscher case study obligations are clearly set. Therefore, the Emscher Association is the main authority responsible for the implementation of measures, besides communes also have a responsibility for implementation. However, the implementation of measures within North Rhine-Westphalia is often perceived as voluntary. As the representative from the regional administration Arnsberg mentions: “On the one hand there is an explicit assignment of obligations, therefore there is no voluntarism, this however does not mean that it really works out”⁵⁴. This is primarily because obligations have not been communicated correctly in the past, furthermore it is seen as essential to have this voluntarism, as it is not possible to enforce a programme against the will of the citizens. This was also highlighted by the representative of the Emscher Genossenschaft: “All measures, especially when they cost money, are in conflict [...] to other measures or other deficits.”⁵⁵. Hence, it is important that citizens of the affected regions understand the necessity for measures of the WFD to be implemented. This can be more difficult, when other policy domains are thereby neglected.

A shared recognition, that the water quality needs improvement, is therefore seen as essential to convince affected parties and stakeholders, that action needs to be taken. This shared recognition often founders, because the local level is missing the personnel to allow for adequate management of the implementation of measures and to raise the awareness of the public. If water issues are addressed or not, often depends on the engagement of the personnel within the communes and districts. This is also

highlighted by the direction of ICPR: “If appropriate resources are available, and if there is appropriate support, in that case I think, a lot is possible. It is, however, connected to work, and communication, and conviction.”⁵⁶. Thus, the willingness to implement measures depends on the resources available, especially for strengthening the public relations. The willingness to implement measures is closely linked to the financial resources provided by the state, because their availability can allow for better public relations and allow easier financing of measures.

For the Emscher case study, the willingness for the implementation of measures is driven through the new image incorporated in the restructuring of the Emscher. This is also mentioned by a representative from the Emscher Genossenschaft: “The reconstruction of the Emscher is, also from the viewpoint of the region and the government, an outstanding project. All stakeholders have a great interest in the process, and in the implementation of measures.”⁵⁷. Furthermore, he mentions: “[...] these water bodies and water system represent a burden for the region, which is a disadvantage in the competition with other metropolitan regions within Europe”⁵⁸. Thus, mutual support for the measures within the region was high, as the Emscher is changing its image from an industrial sewage channel, to a more nature-like river system.

6.3.3 *Financing of Measures*

The third key point to be addressed concerning the dimension of connecting administrative scale levels is the financing of measures. Generally, financing is recognised to be a potential threat for the implementation of measures (Bateman et al., 2006). However, it is not recognized as a major threat in the Emscher region, because a lot of financial resources could be mobilized from European founding and from tax money. Normally re-naturation projects can be financed from the federal budget by about 80%, and in exceptional cases even 90%, where the remaining 10% can be financed through donations or other compensatory measures. As mentioned by the representative of the Emscher Genossenschaft: “[...] within North Rhine-Westphalia the financing of measures of the WFD is for a considerable proportion done through the water tax [*Wasserentnahmeentgeld*].”⁵⁹. Therefore, financing within the water sector is perceived as easier, when compared to the sector of nature protection, where it is significantly more difficult to get the necessary financing. The numbers of personnel available within the nature protection sector are also much lower when compared to the water sector and there is a general imbalance between the two sectors which could be improved through better communication, better financing of authorities as well as more personnel and experts.

Further financing for the measures within the realms of the WFD could be done through credits from the European Central Bank. Additionally, some sub-projects could be funded through the European Regional Development Fund. However, the largest shares of the necessary investments so far could be financed through taxes paid by the citizens and the industry, which can be used due to the reconstruction of the sewage system, as part of the Emscher re-newal. As the representative of the Emscher

Genossenschaft states: “The biggest share of the investments that we have to make is in the area of sewage channels, of rain water treatment and of sewage treatment plants, in these cases the financing is ultimately done through the fees, the contributions of the members.”⁶⁰. Therefore, in terms of financing, it is a big advantage for the region, that the restructuring of the rivers also incorporates a restructuring of the sewage system. Concerning the financing of measures, a distinction therefore has to be made between hydrological measures, and waste and drinking water. As the direction of the ICPR mentions, it is much easier for waste and drinking water to get the necessary financing, because the financing is clearly set, the director of the ICPR thus states: “especially for hydrological measures it is not as easy [to coordinate the financing].”⁶¹. Therefore, it can be concluded, that it is a big advantage for the Emscher case study, that it includes the restructuring of the sewer system.

Next to the financing being available for the implementation of measures, it has to be mentioned that the financing which is necessary to equip authorities with employees and for the financing of public relations is lacking. This lack of financing was mentioned by the representative of the Emscher Genossenschaft: “Public relations need to be improved, and also the personnel needs enhancement, therefore the state should [...] offer more financing.”⁶². Therefore, the financing that is lacking in the Emscher case study is related to the relevant authorities.

6.3.4 Concluding on the connectivity of administrative scale levels

Issues connected to the connectivity of administrative scale levels, can thus be found in all three key points: responsibilities, willingness and financing. A summary of the issues associated with these three named points and the implementation of the WFD can be found below.

Responsibilities – In North Rhine-Westphalia WFD-offices and round-tables exist, to improve the governance of the WFD. However, they are not properly accepted by other authorities, therefore they are often not used or overruled by other authorities.

Willingness - The implementation of measures is often perceived as voluntary, because obligations have not been communicated correctly. However, it is also important to have the implementation of measures on a voluntary basis, to increase the support of citizens.

Willingness - A shared recognition, that water quality is important is necessary, to foster the implementation of measures. Because of the restructuring of the sewage channel, the necessity for the measures is generally recognized by the citizens.

Financing – Rather not perceived as a problem, there are possibilities for financing from the federal state of North Rhine-Westphalia and from the EU. Many measures implemented in the region can also be financed through the water tax. However, more financing is needed to equip local authorities with personnel.

6.4 Involving the RBD Authority Rhine in the governance of the WFD

The third and last connectivity, considered in the Emscher case study, is the involvement of the RBD Authority Rhine in the governance of the WFD, it will be addressed within this chapter. This chapter will first explain the administrative tasks of the RBD authority Rhine and will then concentrate on the three issues indicated, in order to investigate on the role of the RBD Authority Rhine, within the governance of the WFD in the North Rhine-Westphalian share of the Rhine.

6.4.1 *Administrative tasks of the RBD Authority Rhine*

The responsibility of the RBD Authority Rhine are to approve strategies and programmes within the German shares of the catchment area of the river Rhine, thus also for the Emscher catchment. Within the RBD Authority Rhine, North Rhine-Westphalia is represented by the MKULNV. It can thus be positioned on the same level as the federal ministries for environment. The RBD Authority Rhine includes eight federal states and the German federal government. There are five main tasks performed by the RBD Authority Rhine, these are: (1) The reconciliation and coordination of the implementation of European directives (including the WFD and the FD). (2) The establishment of a joint position – of the German federal government and the federal states - in the ICPR. (3) The coordination of the establishment and implementation of water monitoring programs and the evaluation of measurement data. (4) The coordination in the establishment and implementation of water monitoring programs and the evaluation of measurement data. And lastly (5) informing the public about the activities of the RBD Authority Rhein (FGG Rhein, n.d.). Thus, the RBD Authority Rhine plays a vital role in the governance of the WFD in Germany.

6.4.2 *Issues with the integration of the RBD Rhine in the governance of the WFD*

There are two main issues with the integration of the RBD Authority Rhine into the governance process of the WFD. The first issue is, that there is the need for consensus between all federal states to make decisions on the RBD level, otherwise they cannot be made. The second issue is that the federal states want to have homogeneity within their own territory, thus are interested in having uniform approaches for all of them.

The need for consensus between the federal states, relates to the decision making within the FGG Rhein. The conducted interviews showed, that it is seen as important, to have shared strategies within the RBD Rhine, especially so that the efforts of one state do not disappear when crossing the borders to another federal state. This was also mentioned by an employee of the Emscher Genossenschaft: “There has to be a consensus about what is aimed for [...] RBD are important structures, to make sure, that the efforts of one federal state do not vanish at its borders.”⁶³. Therefore, decision making within the RBD Rhine is based on the principle of unanimity. This was also mentioned by the representative of the FGG Rhein: “For the Rhine decisions are made under the principle of unanimity. Therefore, when one federal state

has a veto, [...] then a resolution cannot be made.”⁶⁴. Decisions by the RBD Authority Rhine, therefore, need to be made concordant by all members. The potential for decisions is thus often hampered, as individual states might not agree to a certain resolution. As a result, resolutions need to be altered and alleviated, so that they suit all the federal states.

Second, concerning the homogeneity within the federal states, federal states own shares of several RBDs, and they aim for uniform approaches in all of them. Therefore, the LAWA is seen as an important structure, to increase the homogeneity for both, the RBDs and the federal states. The representative from the FGG Rhine mentioned: “We have a lot of issues, that not only concern the RBD Rhine, but also other RBDs nationwide. In those cases, the LAWA is involved”⁶⁵. The LAWA can, thus, be seen as an important structure, for the nation-wide homogenization of the governance of the WFD. However, it is also often difficult to make nation-wide decisions, as the conditions within the federal states and within the RBDs can be very different. This has also been mentioned by an employee of the LAWA: “Many federal states deviate from the regulations of the LAWA, because the conditions and the problems are not the same for all federal states.”⁶⁶. Thus, federal states are allowed to have a substantial amount of freedom in the implementation of German federal law and of LAWA resolutions.

Overall, it is seen as essential to have both, RBD strategies and national strategies, to allow development into similar directions. Many decisions can be made on a very local level, and every region can decide on its own targets and time limits. This has also been stressed by an employee of the FGG Rhein: “Every region has to decide on its own objectives. [...] Thus, we can develop individual objectives for regions such as the Ems, the Ruhr or the Wupper.”⁶⁷. Therefore, regions and RBDs can be broken down into smaller units – as it was done with the sub-catchments – to get closer to individual cases, such as the Emscher.

6.4.3 Concluding on the involvement of the RBD authority Rhine in the governance of the WFD

It can be concluded that the involvement of the RBD authority Rhine in the governance of the WFD is only limited, but it has to be seen as an important structure for uniform approaches within the German shares of the Rhine RBD. There are two main issues with involving the RBD authority Rhine in the governance process in the federal states. These are listed below.

RBD authorities and Federal States – Federal states try to have uniform approaches within all of their RBDs. Therefore, it is often difficult to have uniform basin-wide approaches and nation-wide or individual approaches are often preferred.

Decision making within the RBD Rhine - All members of the RBD need to agree, in order to decide for the whole RBD. Additionally, it is often difficult to formulate resolutions in a way that all member

states will agree. Thus, the RBD authority Rhine can be seen as an arena for discussion and solution finding between the involved federal states.

6.5 Concluding on the governance of the WFD in the Emscher Case Study

To conclude on the findings on the Emscher case study, it can be said, that the implementation of measures, as well as the governance of the WFD was mainly driven through the recognition, that change was necessary. It was important for the region to change, to keep compatible with other European urban centres. Furthermore, the project incorporated a new vision for the region, formerly being the sewer of the Ruhr area, into an area with high welfare potential.

In the region major issues with the connectivity of policy domains concern spatial pressures, the connectivity to the industrial sector and the connectivity to the floods directive. Here, solutions are difficult to find, because of current land-uses or because of conflicting interests. When regarding the connectivity of administrative levels, it can be said, that connectivity in terms of financing and willingness is perceived as good and less problematic. When concerning the connectivity of responsibilities, however, there is the issue, that structures that are in place to connect the local and the regional level, are not used in a proper way and are often ignored. Lastly, when concerning the involvement of the RBD authority Rhine into the governance of the WFD, it can be concluded, that the role RBD authority Rhine is only limited. Thus, objectives on a local, federal state or national level are often preferred over those on a river basin level.

7 Conclusion: Opportunities and Challenges

The Water Framework Directive is a European Directive aiming for the improvement of the water quality of water bodies within Europe, and therefore for each water body to reach natural or near natural ecological, chemical and physical status. The WFD was introduced in 2000 and its goals are supposed to be met by 2027. The EU member states have approached the WFD in different ways and also face different problems with the implementation. Thus, their progress is very diverse. Germany is one of the countries that is lagging behind in the implementation of the WFD.

The aim of this research is to analyse the implementation of the WFD in Germany. Therefore, the main research question of this study is:

What are the opportunities and challenges of the German governance approach to achieve the goals of the WFD?

This final chapter of this study will therefore discuss the results to this main research question, and also to the associated sub-questions:

- Which policy domains influence the implementation of the WFD and how?
- Which scale levels are involved in the management of water quality of rivers and how?
- What is the role of German RBD authorities in the governance of the WFD?

The chapter is further sub-divided into four sections. In the first section answers to the research questions will be given. After that, the second section will give recommendations to improve the identified issues. The third section will position the contribution of this research in planning theory practice and finally in the last section recommendations for further research will be made. But first, this chapter will shortly reflect on the two case studies used for this research, in order to estimate the transferability of the results on other cases.

For the use of the data obtained from this study, it is important to keep in mind the very different backgrounds of the two analysed case studies, the Hunte and the Emscher. Main problems associated with the river Hunte, are typical for the situation within Lower Saxony, as the federal state is strongly characterized by agriculture and its strong lobby. In contrast to that the Emscher rather represents an extreme, as the river was heavily used for industrial sewage. One of the main advantages for the Emscher is, that former mining activities within the area will stop, and therefore industrial sewage into the Emscher will reduce. Therefore, there is the chance to create a new image for the region. This also incorporated the need for an economic stimulus to keep the region in competition with other European urban regions. However, both regions have their problems with actually reaching the goals of the WFD, even though projects have been initiated to improve the water quality.

7.1 Empirical Reflection and Conclusion

This section will give a reflection, as well as a conclusion to the posed research questions. Therefore, first the answers to the sub-questions will be discussed and afterwards the answer to the main-research question will be given and discussed. This chapter is therefore sub-divided into four sections, each addressing one of the research questions. Thus, the three sub-questions and the main research question.

7.1.1 *The WFD and other Policy Domains*

In the following, the first sub-question of this research will be discussed. This question is as following: *Which policy domains influence the implementation of the WFD and how?* The results from the case studies show, that for both cases, that the overall linkage of water management, the WFD and other policy domains is perceived as well organised. The WFD generally allows for the consideration of other directives and guidelines and therefore allows for an approach based on the whole rather than a sector-oriented approach. However, there are some policy domains and directives, which cause problems in the implementation of the WFD and the reaching of its goals. These problems often result in cut-backs for the implementation of the WFD, and thus, for less ambitious WFD goals. Policy domains, which were perceived as problematic to connect to the WFD in the separate cases Hunte and Emscher are listed in Table 7-1.

Regarding the results from both case studies, especially two policy fields should be mentioned, that are causing problems with the connectivity to the WFD. These are (1) the FD and (2) the linkage to the agricultural sector. Furthermore, there are also issues with the connectivity of policy domains that only present in one of the case studies. These are Environmental Protection, in the case study of the Hunte as well as Spatial Planning and Industry in the case study of the Emscher. In the following the results concerning these issues will be presented.

Table 7-1 - Policy domains that cause problems with the implementation of the WFD in the two case studies Hunte and Emscher.

Hunte	Emscher
<ul style="list-style-type: none"> • Agriculture • FD • Environmental Protection 	<ul style="list-style-type: none"> • Spatial Pressure • Industry • FD • (Agriculture)

First, a main issue, mentioned in both cases, is the connectivity between the Floods Directive and the WFD. Although, both directives are managed by the same authorities, their connectivity is often difficult in terms of finding measures that support both directives. The major issue is, that the FD asks for the introduction of hard measures in order to protect human lives and property. However, these hard measures are often in conflict to the goals of the WFD. It is, thus, essential to classify measures

according to their effects on the ecology and on the flood protection, in order to find solutions, that are beneficial for both directives and have the least negative impacts on either directive.

The second major issue with the connectivity of policy domains, concerns the connectivity of the WFD and the agricultural sector. This is more of a problem for the Hunte case study, than for the Emscher case study, because the Hunte area is more agricultural. The major problem is, that fertilizers and nitrates from agricultural activities often end up in ground and surface water bodies. Connectivity of the agricultural sector and the WFD, within Germany, is often challenging. In Lower Saxony agriculture has a very strong lobby and is important for the federal economy. Therefore, agriculture is often prioritized over other political aims, and it is difficult to enforce measures and regulations that support the goals of the WFD within the agricultural sector. However, it should be mutual interest, to optimize the use of fertilizers and nitrates in agriculture, because it would mean less economic loss for the farmers and lower impacts of nitrates and fertilizers into water bodies. A more efficient use of fertilizers and nutrients would thus be beneficial for both sides.

An issue, which is more of a problem in the Hunte case study, but not so much in the Emscher case study, is the connectivity of the habitats directive and Natura2000 areas with the WFD. The connectivity of the two policy domains, does not seem to be conflicting, as both directives are obliged to nature protection, still the goals of the Habitats Directive are sometimes contrary to the goals of the WFD. This means, that the Habitats Directive can also include habitats and species which do not represent the pristine status as asked for in the WFD. Therefore, it is often hard, to implement measures for the WFD, because areas are under protection of the Habitats Directive. In the cases where the goals of the WFD and the Habitats Directive cannot be connected, one of the directives needs to be prioritized.

An issue for the Emscher case study, is the connectivity of the industrial sector with the WFD. Problems associated with the connectivity of industry and the WFD in the area are related to industrial sewage and historically contaminated sites. Here it is especially important to find appropriate technologies for sewage treatment, to prevent the release of contaminated waters into the Emscher. Historically contaminated sites are also often problematic, as it is unclear, what their exact extend is and how they will behave in the future. Thus, solving the issues related to industry is mostly dependent on the available technologies.

Furthermore, in the Emscher case study the connectivity of the WFD and spatial planning poses problems. Measures needed for the implementation of the WFD can often not be realized because appropriate spaces are not available. The availability of space and the (multi-purpose-) use of space is, however, essential for the implementation of many WFD measures. Space is often lacking, because it is used for other land-use purposes, such as urban settlements, or because it is privately owned and thus cannot always be utilised from the government. Space is a valuable resource, which is limited, hence it is

important to use the available space effectively, e.g. by multi-purpose land-use solutions. Therefore, the connectivity between WFD measures and spatial planning needs to be improved, in order to achieve positive effects on several spatial claims.

To answer the research question, the connectivity of the WFD and other policy sectors showed to be problematic. This is also outlined in Table 7-2.

Table 7-2 - Which policy domains influence the implementation of the WFD and how?

<i>Policy Domain</i>	Problem	Recommendation
<i>Floods Directive</i>	Hard measures (FD) vs. Soft measures (WFD)	Search for solutions that are beneficial for both directives
<i>Agriculture</i>	Nature protection (WFD) vs. Economic income from agriculture (Agriculture)	More efficient use of fertilizers and nutrients
<i>Habitats Directive</i>	Protecting rare species and ecosystems (Habitats Directive) vs. Protecting the pristine state (WFD)	Search for options that are beneficial for both directives
<i>Industry</i>	Industrial Sewage and historically contaminated sites	Improve technologies for sewage treatment and for the observation of polluting plumes
<i>Spatial Planning</i>	Spatial limitations	Create more multi-purpose land use solutions

If and how issues with the implementation of the WFD get solved, is primarily dependent on the responsible people, and therefore the administration. The next section of this chapter will therefore address the relevant administrative scale levels and how they are interlinked.

7.1.2 Involved Scale Levels

This chapter will address the second sub-question for this research: *Which scale levels are involved in the management of water quality of rivers and how?* It can be said that administrative scale levels for the involved scale levels are structured a little different for the Emscher and the Hunte case study, also see Table 7-3. In the Hunte case study, there are only two relevant layers, the federal layer and the local level. Whereas for the Emscher there is an additional administrative layer between the federal and the local level. In both federal states the respective highest level is represented by the ministries of environment. The lowest level for both cases is represented by the Lower Water Management Authorities, often incorporating cities, districts as well as water-and-ground associations. In North Rhine-Westphalia, where the Emscher is situated, there is the additional medial level, represented by regional district authorities. Furthermore, for both case studies, the national and international level are also relevant. In both cases the Lower Water Management Authorities are in charge of the implementation of the WFD.

The organisation between the different scale levels is generally perceived as good in both case studies. For the case study of the Hunte, the communication between levels and the division of tasks was described as trouble free. Especially due to the areal cooperation Hunte, the communication and coordination between local actors could already be improved. In the case of the Emscher, overall the communication and coordination are also perceived as good. However, there are some minor issues between the regional administrations and the local authorities, where some of the structures in place for the management of the implementation of the WFD are not used efficiently. Therefore, in the case of the Emscher, it is necessary to rethink or improve some of the structures in place.

Table 7-3 – Relevant administrative levels in the implementation of the WFD.

<i>Level</i>	Hunte Case Study		Emscher Case Study	
	<i>Represented by</i>	<i>Responsibility</i>	<i>Represented by</i>	<i>Responsibility</i>
<i>Most Upper Water Maintenance Authority</i>			MULKNV, LANUV	<ul style="list-style-type: none"> • Implementation of WFD • Design & publication of programme of measures • Coordination of Lower Water Maintenance Authorities
<i>Upper Water Maintenance Authority</i>	MU, NLWKN	<ul style="list-style-type: none"> • Create legal framework for the implementation of WFD • Advise Lower Water Maintenance Authorities in the implementation of measures • Assess RBMPs 	Regional Administrations	<ul style="list-style-type: none"> • Produce programme of measures & discuss with lower water management authorities
<i>Lower Water Maintenance Authority</i>	Areal Cooperation Hunte, Cities, Districts, Water-and-Ground Associations	<ul style="list-style-type: none"> • Implementation of Measures • Monitor compliance with requirements of system ordinance 	Emscher Genossenschaft, Cities, Districts	<ul style="list-style-type: none"> • Guarantee the compliance with the WHG • Maintenance of the river • Set standards for regional plans • Implementation of measures for WFD

Furthermore, when investigating on the relevant administrative scale levels, this study also looked at the willingness and the financing for the implementation of measures.

Willigness

When considering the willingness to implement measures, in both cases issues could be identified on lower administrative levels. In the analysis of the case-studies, two major issues could be identified: (1)

lack of resources (personnel and financing) in combination with too many tasks assigned to local authorities and (2) lack of public interest in water quality.

The first identified issue is often not connected to the rejection of proposed measures but are rather connected to a lack of financing and of personnel in combination with the high number of tasks, assigned to authorities on the local level. Next to many other functions lower authorities also have to implement measures for the WFD, and thus they are in charge of a great variety of tasks. Due to the lack of resources (personnel, financing), however, other interests are often favoured. Because the public interest in other fields, such as the economy, education and infrastructure, is often higher, these fields are also favoured over the WFD. Therefore, having active politicians and active people in leading positions, that support the goals of the WFD, is seen as one of the main drivers to successfully implement measures for the WFD.

The second identified issue is, that public interest in water quality is often missing. Low quality of water bodies is often not directly visible for the public, as negative properties are not directly influencing the people. This is because the chemical, biological and hydro-morphological restrictions of water bodies are rather unknown to the public. Furthermore, the effects of implemented measures are often not directly visible. Leading to a low public understanding for the necessity to implement measures. The problem with the public interest is a bigger issue in the Hunte region, as the bad quality of the Emscher was also perceived by the local population. Thus, local support for the measures is also greater within the Emscher region.

Generally having a low willingness is more of a problem in the Hunte region. This can be justified, as for the Emscher region the implemented measures have more of a positive effect on the local economy and the appeal of the region. Furthermore, the measures implemented in the case study have a visible impact on the water quality. Therefore, the public support for the measures implemented is higher. Whereas for the Hunte, the effects implemented measures have on the quality of water, often remains invisible for the public and the economic benefit resulting from the implementation of measures remains low.

Financing

When addressing the financing of measures, the two cases can be regarded as very unequal, therefore they are regarded independently from each other. In the case of the Emscher, financing was regarded as supportive, while for the Hunte it can be considered as more problematic.

In the case of the Emscher major shares of the financing could be done through the European Regional Development Fund and through fees - which could be used, because in the course of the Emscher

rehabilitation also sewage channels were renewed. Furthermore, financing from the federal state of North Rhine-Westphalia is considered as fairly easy, because at least 80% of the costs of measures can be covered by the federal state.

In the Hunte case study financing is seen as more problematic. Financing for environmental measures from the federal state of Lower Saxony is limited and is primarily reserved for selected water bodies. There is the possibility to use financing from the EU, however formalities are very complex and, therefore, EU financing is rather not used. Financial resources for the implementation of measures in the Hunte region are therefore only limited.

Both case studies are affected by one common problem, concerning the financing of measures and already named under the aspect of willingness. It is the missing financing for local authorities, leading to a lack of personnel. Local authorities are often overstrained with tasks and are lacking the necessary personnel in order to execute all of them.

Concluding on involved scale levels

Overall it can be said that the implementation of measures is in particular task of local level authorities, where also the most problems arise. Authorities on higher levels, are also involved in the implementation of the WFD, however, they rather advise the local level, supervise the overall process and organise the financing. The actual implementation of measures is highly dependent on the willingness on the local level and the available financing. Which is often difficult, due to limitations in personnel and resources.

7.1.3 Integration of RBD Authorities in the German Water Governance

The third sub-question posed in this research is: *What is the role of German RBD authorities in the governance of the WFD?* The WFD demands for RBDs to be managed on the basis of their hydrological boundaries. In Germany however, the management of RBDs is done based on political and not on natural boundaries. RBD Authorities on the basis of natural boundaries are in place for all major RBDs, however their tasks are only limited.

The main task of RBD Authorities is the federal-state crossing implementation of the WFD within their RBD and the coordination between the federal states, that own a share of that RBD. This coordination mostly relates to reconciliations regarding topics that have to be considered on a basin scale. Resolutions that are made within RBD Authorities, need to be agreed upon by all federal states that are members of the respective RBD. If not, this resolution cannot be made. Thus, RBD Authorities primarily give federal states an arena, where they can come together, discuss their issues and to find shared solutions. As such they also offer working groups, where certain issues can be discussed, and solutions can be developed. Other tasks of the RBD Authorities involve data collection, and the provision of warning plans.

The major issue in Germany is that Federal states are involved in several RBDs. Due to the management of other policy fields being mostly based on federal state level. This means that doing only the management of water resources on a different scale could result in clashes with other policy domains. Therefore, with the management being based on federal state level, the respective federal states try to organize uniform approaches for all of the RBDs they are involved with. They do this instead of having several different approaches within their territory. Therefore, it is also preferred to have a uniform nationwide approach to water management by the LAWA. Because this would reduce internal differences within the federal states. However, resolutions on the LAWA level can only be made, when all federal states agree. Due to many different boundary conditions within the federal states, it is often difficult to find one uniform approach for all. Meaning that the resolutions that can be implemented are also often fairly loose and cannot be made obligatory.

Issues, regarding the integration of RBD Authorities in Germany can be summarized, as listed in Table 7-4.

Table 7-4 – Issues related to the Integration of RBD Authorities in the German Water Governance.

Issue	Description
RBD authority and federal states	The management of other policy fields is often done on federal state level. Therefore, the management of water on RBD level would result in difficulties in the coordination.
Decision making within RBD	This is often difficult, due to different boundary conditions and as member states aim for uniform approaches within their territory. Furthermore, due to different boundary conditions within the federal states it is difficult to formulate resolutions as binding. Therefore, there is a lot of freedom in the implementation

7.1.4 Opportunities and Challenges of the German Implementation of the WFD

After all, coming to the answer of the main research question of this study: *What are the opportunities and challenges of the German governance approach to achieve the goals of the WFD?*

As the analysis of the two case studies, Hunte and Emscher, has shown, in Germany there are several opportunities and challenges, when it comes to the implementation of the WFD. In the scope of this study the concept of connectivity was used in order to investigate on the German water governance system. Based on the understanding Termeer et al. (2011) of the concept, three core areas of research were defined: (1) the connectivity of policy domains, (2) the connectivity of administrative scale levels, and (3) the integration of RBD Authorities into the process of water management. As part of this research, all three areas showed some opportunities as well as challenges.

Regarding the first concept of connectivity, the connectivity of policy domains, it can be said that with the governance of the WFD in Germany, three challenges could be identified. First the integration of water management and the agricultural sector - where the economic goals of the agriculture often counteract the environmental goals of the WFD – second, the availability of appropriate spaces for the implementation of measures – as space is often restricted for example due to ownership, urban settlements and flood protection measures – and third the connectivity between the WFD and the floods directive – where hard measures are sometimes necessary for sufficient flood protection. Opportunities in the area of policy domains can be seen in future developments, which could be enhanced with regards to the identified problems. Examples of future developments could include a more sustainable agriculture; but also, arenas for stakeholders from different policy domains can come together and discuss their issues, to find shared solutions.

When addressing the connectivity of administrative scale levels, there are four main challenges that could be identified in the analysis of this research are hampering the implementation of the WFD in Germany. These are: the (1) lack of financing and personnel, leading to a lack of resources for the appropriate implementation of measures; (2) a lacking public interest in the topic of water quality, resulting in other interests being prioritized over the WFD; (3) complex and bureaucratic funding from the EU, which leads to more administration needed to implement measures, and (4) in some federal states – taking Lower Saxony as an example - insufficient funding.

When considering the opportunities in the area of administrative scale levels, it is essential to raise the public interest about the issue of water quality via campaigns. An increased public interest for the topic might also lead to easier access to financial resources for the implementation of measures. Furthermore, improved EU funding systems or a better guidance on how to make use of them would help to make better use them.

When considering the last concept of connectivity, the integration of RBD in water management, there are two main issues. The first issue is, that it is difficult to make resolutions, because member states often have different boundary conditions, thus, many exceptions need to be made and resolutions remain rather vague. The second challenge is, that because the management of most other policy fields is done on the federal state level, and therefore would result in conflicts of interests with RBM on the RBD level.

Opportunities are however seen with keeping the management on a federal state level and at the same time increasing the uniformity of nation-wide approaches. This is, because having nationwide approaches can guarantee the uniformity for both, the federal states and the RBD - at least within the national boundaries. Having a national approach will, thus, also decrease the problems within the federal states and within the RBD. However, it has to be considered, that finding uniform national approaches can be even more difficult than finding uniform approaches on a RBD or federal state level.

The opportunities and challenges found for the three concepts of connectivity investigated on in this study (connectivity of policy domains, connectivity of administrative scale levels and integrating RBD authorities) are summarized in Table 7-5.

Table 7-5 - Opportunities and Challenges of the German Implementation of the WFD.

	Connectivity Domain	Challenge/Opportunity
<i>Challenges</i>	Connecting Policy Domains	Integration of water management and the agricultural sector.
		Availability of appropriate spaces for the implementation of measures.
	Connecting Administrative Scale Levels	Lack of resources (financing, personnel)
		Lack of public interest
		(Partly) insufficient funding from the federal state
		Complex funding from the EU
	Integrating RBD Authorities	Member states often have different boundary conditions.
		Management of other policy fields is mostly done on the federal state level.
<i>Opportunities</i>	Connecting Policy Domains	Future developments to make agriculture more sustainable
		Find shared solutions, by offering stakeholders better arenas for communication
	Connecting Administrative Scale Levels	Offer campaigns to raise the public awareness for water quality
		Offer guidance for the use of EU funding
	Integration of RBD Authorities	Keep the management on the federal state level
		Improve nation-wide uniformity in approaches via the LAWA

7.2 Recommendations

Based on the opportunities and challenges indicated in the scope of this research, this chapter will give some recommendations. That might help the governance in Germany to improve the implementation of measures. On the basis of the opportunities, indicated in chapter 7.1, five recommendations were made and will be further presented below.

The first recommendation refers to the connectivity of the WFD and the agricultural sector. In that sense investments should be made in the field of fertilizer and nutrient use, to research on more efficient technologies and techniques for a more efficient use of those substances in the agricultural sector. Thus, the economic benefits for the agricultural sector would be greater, while the loss of fertilizers and nutrients into the ground would be lower. This is not only a problem in Germany, but rather in all agricultural regions in the world (Das, Munda, & Patel, n.d.). It has already been recognized by Das et al. (n.d.), that

the use efficiency of fertilizers and nutrients needs to be improved in order to reduce costs and to improve the water quality as well as the efficiency of agriculture itself. To guarantee secure food supplies, it is necessary to use fertilizers and nutrients in agriculture. At the same time the protection of the environment should be of equal importance (Kremser, 2002) Therefore, it should be an international interest to do more research and make use of techniques for the more efficient use of fertilizers and nutrients. However, in order to reach this goal, political power and financial support are essential (Kremser, 2002)

Second, when concerning the spatial pressure on the implementation of measures, management of the WFD should incorporate more integration of other policy fields, thus the aim of governments should be to create more multi-purpose land-use functions, when implementing the WFD. Next to reducing issues with spatial pressure, applying multi-purpose land-use functions might also help in improving the support of locals.

There are different techniques that can be used to improve integrated land-use planning, as also suggested by Vleck et al. (2017). One of them is the Analytical Hierarchy Process (AHP), which helps to create one index for multiple criteria. Furthermore, AHP is seen as a method which can help to improve the use of ecosystem services that can be provided by a certain environment (Vleck et al., 2017). Most importantly AHP is considered as a technique that can help to resolve environmental planning problems between agriculture, infrastructure and the environment (Vleck et al., 2017).

The third recommendation refers to the issues associated with the willingness to implement measures for the WFD. This research showed, that local support for the implementation of measures is often lacking. This could be improved, by introducing more public campaigns about the quality of water bodies and the necessity of measures.

Fourth, especially in Lower Saxony, the financing of measures could be improved, by offering guidance to authorities on the local level, to help with the funding programmes by the EU. This guidance would help local authorities with handling the complex funding from the EU, thus the financial resources available for the implementation of certain measures would increase. Additionally, the EU should be addressed, to improve the accessibility of EU funding for projects on all scales.

Lastly, and concerning the integration of RBD authorities, a recommendation is to keep the management on the basis of federal states. This is because RBM on a federal state level scale will allow for a better cooperation between the WFD and other policy fields. However, at the same time the cooperation between the federal states should be further improved, to strengthen the basin-wide approaches. Therefore, the work within the RBD and on the basis of the LAWA should be further intensified.

Concluding, it can be said that all these recommendations may help to improve the governance of the WFD, however, they will not solve all problems. Thus, it is important, that all involved national and international governmental layers keep investigating on issues with the governance of the WFD and on how to solve them.

Furthermore, it will not be possible to connect all policy domains without creating conflicts between them. There is a great variety of issues, concerning the governance of the WFD, and solutions are very diverse. Hence, sometimes solutions need to be found on an individual level, in other cases it is necessary to find solutions on a superordinate level and to consider more compromises, in order to achieve more mutual goals.

7.3 Position of this Research in Planning Theory and Practice

When considering the position of this research in planning theory and in planning practice, it indicates current problems with the governance of water bodies. Furthermore, this study lays the base for improving future governance approaches in the field of water quality.

In relation to planning theory, this study helps to improve planning approaches not only in Germany but also in other European countries. It is important to consider, that there is not one universal governance approach that can be applied to every case in order to reach the goals of the WFD. Thus, individual solutions need to be found for every case. This does not mean that there are no ideal governance approaches, but rather that there are multiple ways to achieve them. It is then dependent on the individual case; which elements need to be used to achieve the ideal governance specifically for that case. This study contributes to planning theory within the sector of water governance, by offering a framework for indicating the opportunities and challenges in the governance of the WFD. Furthermore, it presents the issues that could be identified within two case studies, and thereby offers a basis for the comparison with further cases.

Findings of this research indicate, that it is not sufficient for Germany to reach the goals of the WFD by 2027 with the current governance approach. Therefore, in relation to the current planning practice in Germany, that this study indicates the challenges with the governance for water quality and at the same time shows up current opportunities for improving the governance systems. As a result, this study highlighted areas within the governance of water bodies that need to be improved and suggested measures to improve them.

7.4 Further Research

This thesis lays the foundation for further research in the field of water governance. A great disadvantage of this study is, that it only uses two case studies, looking at examples within two federal states, to draw conclusions on the pan-German implementation of the WFD. Therefore, the first proposal for future

research is to redo this research on a bigger scale using a greater variety of diverse cases - either for all federal states, or for a certain federal state in particular.

Additional research is also still needed on the effects the implementation of certain measures will have and on how long it will take for the natural system to react accordingly. There are still many uncertainties, when it comes to the implementation of measures. This means that the effects that will be achieved by implementing a certain measure are often unclear. Thus, it can be difficult to get the necessary support to implement necessary measures. Therefore, it is important to provide clarification for the more efficient use of measures.

Furthermore, research is also needed in other policy fields, such as the agricultural sector and industry, and on what exactly their effects on the water quality are. It is important to find a way to adjust and to find solutions that are beneficial for all sectors, including the water sector.

An additional concept for further research would be a long-term study on certain cases, in order to invest on the progress, they make during time, on which issues they encounter and on the effects changes in and on the system may have.

Lastly, it should be considered, to do more research on how to make humans more sensible about water related issues. This is probably the most essential point, because having a higher awareness about the issues will also increase the mutual support to solve the issues. Thus, it would be easier to implement measures in support of the WFD.

Therefore, it can be mentioned, that each of the three dimensions, presented and used in this study, could be explored more in depth, and therefore could be the basis of an own study. Furthermore, it would be reasonable to conduct a similar research for other countries, to also compare with their opportunities and challenges.

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10 Appendix

10.1 Interview Guide

General

- What is your task within your company?
- What is the task of your company when considering the implementation of the WFD?
- Will Germany be able to achieve the goals of the WFD by 2027? (Why? / Why not?)
- What do you think about the governance process of the WFD in Germany?

Connectivity of Policy Domains

- Do you think it is difficult to bring directives from different policy domains together?
- Do you think there are spatial conflicts between the WFD and other directives?
- To what extent do you need to consider other policy domains when implementing the WFD?
- To what extent is the WFD prioritized to other directives?
- How are connections between different policy domains made?
- Do you think connections between different policy domains could be improved?

Connectivity of Administrative Scale Levels

- Is the cooperation of the different administrative levels well organized, when considering the implementation of the WFD?
- Do you see willingness to initiate projects as a problem?
- Do you see financing of projects as a problem?
- On which levels are decisions made?
- Who is responsible for the implementation of measures?

Integration of RBD authorities

- What is the cooperation between the federal states and the RBD Authorities?
- Which function does the RBD Authority have?
- Has anything changed about the administrative structures since the introduction of the WFD?
- Do you think it is problematic for the realization of the WFD that each federal state has its own approach?
- Do you think it is more reasonable to manage RBDs as a unit, or to leave the management to the federal states?
- Considering the management of RBD, is there anything you would change in order to improve the positive development of water quality?

11 Endnotes

¹ „Das zeigt, dass für viele Bereiche in der Wasserwirtschaft bereits bundeseinheitliche Regelungen über das WHG und wie z. B. auch über die bundesweite OberflächengewässerVO getroffen wurden, aber viele Bereiche des Wasserrechts davon nicht berührt sind und die Länder abweichen können“

² „Wenn ich eine intensive Landwirtschaft habe, dann beißt sich das mit den Zielen der Wasserrahmenrichtlinie, weil eine Entwässerung und eine starke Bodennutzung sind den Zielen der Wasserrahmenrichtlinie entgegen.“

³ „Es gibt [...] immer das Problem, dass die Landwirte zu nah an Gewässern [...] wirtschaften.“

⁴ „die Bereitschaft tatsächlich abstände einzuhalten, zu Gewässern erster und zweiter und dritter Ordnung, dritter Ordnung eher weniger, als erster und zweiter Ordnung. Die ist gelinde gesagt nicht da“

⁵ „da haben wir [...] sehr extensive Landwirtschaft, das wird nicht gegüllet, gedüngt [...] insofern ist das sauber [...]. In den Donnerschwer Wiesn das ist Landschaftsschutzgebiet, da haben wir natürlich intensiv Landwirtschaft und [...] da haben wir natürlich intensiv Landwirtschaft [...] da haben wir ja auch nur einen begrenzten Einfluss drauf, was da passiert“

⁶ „Viele Anlieger ehm, Nutzer der Region die wehren sich dann auch weil Flächen benötigt werden.“

⁷ „das EEG, da wird so viel gefördert, was in Richtung Biogasanlagen und Weiteres geht, was uns aber bei der Nährstoffbelastung vielleicht wieder von hinten einholen kann“

⁸ „man hat ja öfter mal an Gewässern die Situation, dass man dort Natura2000 Bereiche hat, also Naturschutzaspekte auch berücksichtigt werden müssen, oder dann halt umgekehrt, das aus der Naturschutzperspektive dann auch Wasserrahmenrichtlinienaspekte mitberücksichtigt werden müssen und manchmal hat man auch so widerstreitende Ziele, wenn es jetzt um Gehölbereiche geht oder so.“

⁹ „wohl ist die Hunte Seeschiffahrtsstraße [...]. Natürlich liegt dann der Fokus von uns auf den Zielarten, die wir auch schützen wollen und müssen. Gleichwohl wird man die Schifffahrt ja nicht verbieten können. Und insofern gibt es da keine Probleme mit der Wasserrahmenrichtlinie.“

¹⁰ „Man versucht ja auch solche Verbindungen zwischen Hochwasserschutz und Wasserrahmenrichtlinie zu finden, dass man versucht Maßnahmen zu kategorisieren“

¹¹ „[...] die Aufgabe die die Hunte hat, nämlich den Küstenkanal mit Wasser zu versorgen“

¹² „Maßnahmenempfehlungen. Empfehlungen was eigentlich sinnvoll wäre an den Gewässern umzusetzen um halt den guten Zustand zu erreichen“

¹³ „Hier in Niedersachsen ist alles auf freiwilliger Basis. Da wird ja keiner gezwungen irgendwas zu machen, es wird immer nur empfohlen.“

¹⁴ „Viele Anlieger/Nutzer der Region wehren sich auch weil Flächen benötigt werden.“

¹⁵ „In einer Kommune gibt es ja nicht nur die Umwelt, die haben ja teilweise mit ganz anderen Problemen zu kämpfen, dann sehen sie da natürlich ihre Prioritäten.“

¹⁶ „Die Leute müssen mehr sensibilisiert werden, wie wichtig die Ressource Wasser eigentlich auch ist. Um darüber auch sagen wir ein gesellschaftliches Handeln zu generieren, dass die Leute eine intakte Umwelt als Lebensgrundlage sehen.“

¹⁷ „[...] solange Gewässer nicht stinken, machen die auch nichts [...] und da sind viele Leute, die finden das gut so wie es ist“

¹⁸ „[...] ohne jemanden der sich kümmert vor Ort, da können sie ganz viel Geld haben, aber das wird dann nicht verausgabt“

¹⁹ „wir in Niedersachsen speziell haben ein irres Problem mit der Landwirtschaft, weil die hat hier eine starke Lobby“

²⁰ „in den Gewässern und da ist natürlich keine Lobby, außer die Naturschutzverbände“

²¹ „Es tut im Moment keiner was, wer soll sich dann noch irgendwie zusammentun [...] die tun sich nur im Nichts tun zusammen.“

²² „[...] wir konzentrieren uns ja auch in Niedersachsen auf die Gewässer, wo man auch schnell was erreichen kann, man würde sich jetzt ja nicht vorrangig auf die Problemfälle [...] konzentrieren, sondern erstmal auf die Gewässer wo man Fläche hat und wo man davon ausgeht, da ist ein gutes Besiedlungspotential“

²³ „Die Förderinstrumente sind zu kompliziert, mit EU-Förderung. [...] unserer Ansicht nach, müsste das Land [Niedersachsen] mehr investieren um es den Leuten leichter zu machen Maßnahmen umzusetzen, die Maßnahmen umsetzen wollen.“

²⁴ „Diese EU Förderungen sind kompliziert und das schreckt doch viele ab.“

²⁵ „Entweder muss ich die Förderprogramme verbessern, [...] Und man muss natürlich auch eine Akzeptanz schaffen für die Problematik.“

²⁶ „[...] Niedersachsen [...] ist in vier Flussgebietseinheiten tätig, [...] und wenn dann jede Flussgebietsgemeinschaft seine eigenen Vorgaben entwickelt, dann sind wir in Niedersachsen viergeteilt. Das geht gar nicht.“

²⁷ „Gemeinsam an einem Ziel zu arbeiten ist fast erforderlich, wenn da einer aussichert, dann funktioniert das gesamte System nicht.“

²⁸ „Jedes Bundesland versucht [...] eine einheitliche Vorgehensweise, egal an welchem Anteil an einem Flussgebiet sie arbeiten. [...] Um dieses noch stärker zu gewährleisten als in der ersten Runde, gibt es ja dieses LAWA Flussgebietsmanagement Programm“

²⁹ „[...] weil [...] noch Abwasser drin ist, oder, [...] aber die Gewässer noch nicht umgestaltet sind oder die Gewässer die Entwicklungszeit nach Abschluss der ökologischen Verbesserung eben noch nicht so lange erfolgt ist, dass da schon sich die Lebensgemeinschaften entsprechend ausbilden konnten.“

³⁰ „dass diese Gewässer ja mehr als 100 Jahre sozusagen offene Abwasserläufe waren, da gibt es kaum Besiedlungs-/Wiederbesiedlungspotential“

³¹ „im Hintergrund der dichten Besiedlung, der dichten Bebauung ist es natürlich nachvollziehbar, dass es uns nicht gelingt Strukturen herzustellen, wie Sie in einem weitgehend vom Menschen unbeeinflussten Zustand.“

³² „weil auch in der Region erkannt wurde, dass diese Veränderung zwingend erforderlich ist, damit diese Region eine Zukunft hat.“

³³ „Man hat viel erreicht, aber aufgrund auch des Prinzips EU ‚One-Out-All-Out‘ [...], wenn man dann eine Überschreitung hat wird der ganze Wasserkörper negativ dargestellt.“

³⁴ „Und in Deutschland ist es so, [...] man will die Wasserrahmenrichtlinie nach Möglichkeit, so wie es jetzt ist beibehalten.“

³⁵ „das Umweltministerium ist ja zum Beispiel so aufgebaut, das [...] diese Vernetzung zwischen den einzelnen [...] relevanten Bereiche durchaus auf der politischen Ebene im Ministerium gegeben [ist].“

³⁶ „Mein persönlicher Eindruck ist, dass nicht überall integriert gedacht wird.“

³⁷ „wenn eine Planfeststellung vorliegt gegebene Möglichkeit einen Enteignungstitel zu bekommen und den zu beantragen ist sehr schwierig“

³⁸ „Und wir dann an der einen oder anderen Stelle vielleicht auch mal... dann wieder Räume opfern müssen, oder Flächen die wir für eine Gewässerentwicklung mal vorgesehen hatten, die dann nicht mehr zur Verfügung stehen.“

³⁹ „Die Flächen entlang der Gewässer, insbesondere entlang der Emscher, die früher die Hinterhöfe waren [...] der Blick auf diesen Raum, der hat sich [...] sehr verändert, sodass wir den Raum inzwischen auch aus städtebaulicher Sicht als einen Entwicklungsraum ansehen.“

⁴⁰ „Wir glauben zumindest, was die stoffliche Belastung angeht, dass die Möglichkeiten auf einer Kläranlage begrenzt sind.“

⁴¹ „Wenn die Eigentümer eines Industriebetriebes nicht mehr hier in der Region sitzen und auch sich verantwortlich fühlen und auch Verantwortung übernehmen.“

⁴² „Belastungssituationen sind oft komplex [...] auf den Quellbereichen sitzen die Städte, es gibt keine Vernetzung zwischen den Gewässern, es gibt die Altlastensituation.“

⁴³ „Schutz des Gewässers und Schutz der Menschen wieder irgendwie in Einklang zu bringen.“

⁴⁴ „Die Landwirtschaft ist ein anderer wichtiger Bereich wo wesentlich intensiver zusammengearbeitet werden muss, sowohl zwischen den Ministerien, in den einzelnen Staaten als auch international.“

⁴⁵ „Im Emscher Gebiet haben wir jetzt zum Beispiel nicht das Problem, dass wir in großem Umfang landwirtschaftliche Beeinflussung haben, oder wir haben keine [...] Naturschutzgebiete oder ähnliche Anforderungen, die jetzt nochmal zusätzlich zu den Anforderungen der Wasserrahmenrichtlinie kämen.“

⁴⁶ „Dann haben wir durchaus noch, gerade im Bereich Landwirtschaft Themen, die wir aus Sicht der Wasserwirtschaft auch gar nicht lösen können.“

⁴⁷ „Ein Verlust von Düngemitteln ins Grundwasser ist eigentlich auch ein Verlust für die Landwirtschaft.“

⁴⁸ „[...] gibt es eigentlich eine ganze Menge an institutionalisierten aus Praxis entwickelten Kooperationsebenen [...], daran mangelt es eigentlich nicht, [...] es ist vielleicht sogar hier und da überreguliert.“

⁴⁹ „an sich ist die Vernetzung zwischen den einzelnen für die Wasserwirtschaft [...] relevanten Bereiche durchaus auf der politischen Ebene im Ministerium gegeben. Wie weit das dann nach unten sich auch fortsetzte, dass muss man dann sehen, das hängt auch sicherlich von der einzelnen Behörde und den einzelnen Behördenvertretern ab.“

⁵⁰ „[...] bei den Bezirksregierungen für die einzelnen Teileinzugsgebiete [...] sogenannte Wasserrahmenrichtliniengeschäftsstellen eingerichtet worden sind. Und diese Geschäftsstellen haben unter anderem eben auch die Aufgabe in ihren Teileinzugsgebieten [...] die Arbeiten zur Umsetzung der Wasserrahmenrichtlinie zu koordinieren.“

⁵¹ „[Es] war vorgesehen, dass man für die Teileinzugsgebiete, also zum Beispiel für die Emscher, jedes Jahr ein Gebietsforum macht [...]. Es hat sich in der Praxis – jedenfalls bei uns – erwiesen, dass jedes Jahr eine solche Veranstaltung eigentlich zu viel ist. [...] Sodass wir dazu übergegangen sind, eine solche Veranstaltung alle 2 Jahre zu machen und inzwischen auch für den gesamten Regierungsbezirk.“

⁵² „Diese Kernarbeitskreise sind zum Teil eine gute Plattform um im kleineren Kreise intensivere bestimmte Themen einfach mal auszutauschen und zu diskutieren. Die Umsetzung, dieser Themen und dessen was man da so diskutiert hat ist aber dann letztlich natürlich immer Aufgabe zuständiger [...] Unteren Wasserbehörde oder der jeweiligen Bezirksregierung [...]. Und eine Bezirksregierung lässt sich nicht durch so ein informelles Gremium in tatsächlich wichtige, entscheidende Dinge reinregieren.“

⁵³ „Man muss sich dabei bewusst sein, dass letztlich Bewirtschaftung natürlich eine Aufgabe ist, die von den jeweils zuständigen Wasserbehörden konkretisiert vollzogen wird. [...] Dieses Spannungsfeld zwischen einerseits Geschäftsstelle [...] und jeweils den in Teilräumen zuständigen Bezirksregierungen oder eben auch unteren Wasserbehörden. [...] es ist einfach undenkbar, die 54 Wasserbehörden [in NRW] mit dem Personal was sie haben so zu ertüchtigen, und zu befähigen und in die Lage zu versetzen, dass jede dieser [...] Behörden, diese ihr eigentlich formal zukommenden Aufgaben erfüllen kann.“

⁵⁴ „Es gibt auf der einen Seite eine eindeutige Pflichtzuweisung in NRW, also es ist nichts mit Freiwilligkeit, das heißt aber natürlich nicht, dass es deshalb wirklich funktioniert.“

⁵⁵ „Da muss man sehr drum kämpfen, dass dieses Verständnis da ist. [...] Alle Maßnahmen stehen, gerade wenn sie Geld kosten, im Widerspruch zu anderen Maßnahmen oder zu anderen Defiziten.“

⁵⁶ „Wenn entsprechende Mittel da sind und das entsprechend gefördert wird. Ist glaube ich sehr viel möglich, aber es ist natürlich alles mit Arbeit und Kommunikation verbunden und Überzeugung.“

⁵⁷ „Der Umbau des Emscher Systems ist ja auch aus Sicht der Region, der Landesregierung ein herausragendes Projekt, also die Beteiligten haben ein großes Interesse daran, dass es voran geht, dass diese Maßnahmen umgesetzt werden.“

⁵⁸ „[...] dass diese Gewässer und das Gewässersystem eine Belastung für die Region darstellen und für den Fortbestand dieser Region im Wettbewerb mit anderen Ballungsräumen in Europa einen Nachteil darstellt.“

⁵⁹ „[...] in NRW erfolgt ja die Finanzierung der Maßnahmen der Wasserrahmenrichtlinie, zu einem ganz erheblichen Teil aus dem Wasserentnahmeentgelt.“

⁶⁰ „Aber der allergrößte Teil der Investitionen die wir tätigen müssen, ist ja im Bereich der Abwasserkanäle und der Regenwasserbehandlung und der Kläranlage, das erfolgt dann eben über die... letztendlich über die Gebühren, die Beiträge der Mitglieder“

⁶¹ „[Die Koordinierung der Finanzierung] ist gerade bei hydromorphologischen Maßnahmen, sie nicht so leicht zuzuordnen sind.“

⁶² „[Man] müsste die Öffentlichkeitsarbeit verstärken, wobei auch das Personal verstärken, der Staat müsste [...] mehr Finanzmittel zur Verfügung stellen.“

⁶³ „Man braucht natürlich einen, eine gemeinsame Verständigung darauf, darüber was man erreichen will. Und das ist auf alle Fälle hilfreich das zu tun, denn und darf nicht sozusagen... wer reine Maßnahmen ergreift, die aber dann an seiner Landesgrenze sozusagen verpuffen“

⁶⁴ „Beim Rhein ist es auch [...] Einstimmigkeitsprinzip. Also wenn ein Bundesland dann Veto einlegt, [...] dann kann man den Beschluss nicht so treffen.“

⁶⁵ „wir haben aber jetzt auch viele Punkte, wo wir das Flussgebiet sehen, oder auch die anderen Flussgebiete, das ist ein Thema, dass das geht jetzt zum Beispiel von der Thematik... betrifft nicht nur Flussgebietseinheit Rhein sondern ist eigentlich ne Bundesweite Thematik, dann wird es an die LAWA adressiert.“

⁶⁶ „Die Länder weichen im Übrigen von Regelungen des Bundes ab, weil die Wasserwirtschaft ja auch nicht in allen Ländern gleich ist bzw. die Probleme auch nicht überall gleich sind.“

⁶⁷ „Das muss dann jede Region für sich entscheiden [...] was da die eigenen Zielvorstellungen sind [...] [das hindert uns ja nicht für] Ems oder Ruhr oder Wupper auch eigene Zielvorstellungen und zeitliche und inhaltliche Ziele zu formulieren.“