Vorgelegt von Dipl.-Pol. Margarita Doneliene

“Eutrophication Governance in the Baltic Sea Region: Institutional Interplay and the Problem of Fit”

Dissertation zur Erlangung des akademischen Grades
eines Doktors im Fachbereich Politik- und Sozialwissenschaften
der Freien Universität Berlin nach der Promotionsordnung zum Dr.phil.

GutachterInnen:
Prof. Dr. Miranda A. Schreurs
Prof. Dr. Kristine Kern

Datum der Disputation: 20.01.2016

Berlin 2015

Acknowledgements

Human impact on the environment of the Baltic Sea has become the subject of numerous international and regional studies. I grew up in Lithuania and I have very personal attachment to the unique coastal nature, and of course I have personally witnessed the worsening environmental condition of the Baltic Sea. I hope the Baltic marine ecosystem can be rescued and preserved for future generations. This dissertation discusses the importance of institutional interplay in the Baltic Sea Region. The international institutions analyzed in this research keep developing and evolving. Therefore, the result of this study offers only a brief insight into a changing system of institutional interplay.

After finishing my research, perhaps, the most difficult part of this dissertation is to give only a brief thank you to all the people who really helped me along my way to submitting this dissertation. This research would not have been possible without the support of my supervisors, colleagues, friends and family.

First of all, I would like to thank my main supervisor Prof. Dr. Miranda Schreurs for her valuable academic support and friendly advice in every situation along the way. She also has encouraged and directed the weekly PhD colloquiums that offered the intercultural exchange in the theoretical and methodological fields. They have been very helpful for conducting my research and writing my dissertation. Special thanks to my second supervisor Prof. Dr. Kristine Kern, whose extraordinary knowledge about the political, economic and environmental situation around the Baltic Sea helped me to address the problem of institutional interplay and to understand the broader context of international marine cooperation. I also would like to thank the colleagues at the

Environmental Policy Research Center at the Freie Universität Berlin for their helpful feedback regarding my research.

I am also grateful to my family and friends for their understanding and help. I dedicate this dissertation to my mother, Nina Ernst who always believes in me and supports me in everything I do. Last, but not least I would like to thank my partner Achim Becker for his positive attitude and his patience.

Margarita Doneliene

Berlin, August the 20th, 2015

Table of Contents

List of Figures

List of Tables

List of Abbreviations

AKIS	Agricultural Knowledge and Information Systems
BALTEX	Environmental Research Network
BalticSTERN	Baltic System Tools and Ecological Research Network
BSAP	Baltic Sea Action Plan
CAP	Common Agricultural Policy
CBD	Convention on Biological Diversity
CBSS	Council of the Baltic Sea States
CCB	Coalition Clean Baltic
COP	Conference of the Parties
COPA	Committee of Professional Agricultural Organizations
DG	Directorate General
DG ENVI	Environment DG
EC	European Commission
ECA	European Court of Auditors
EEA	European Environmental Agency
EEZ	Exclusive Economic Zone
EM	Ecosystem Management
EP	European Parliament

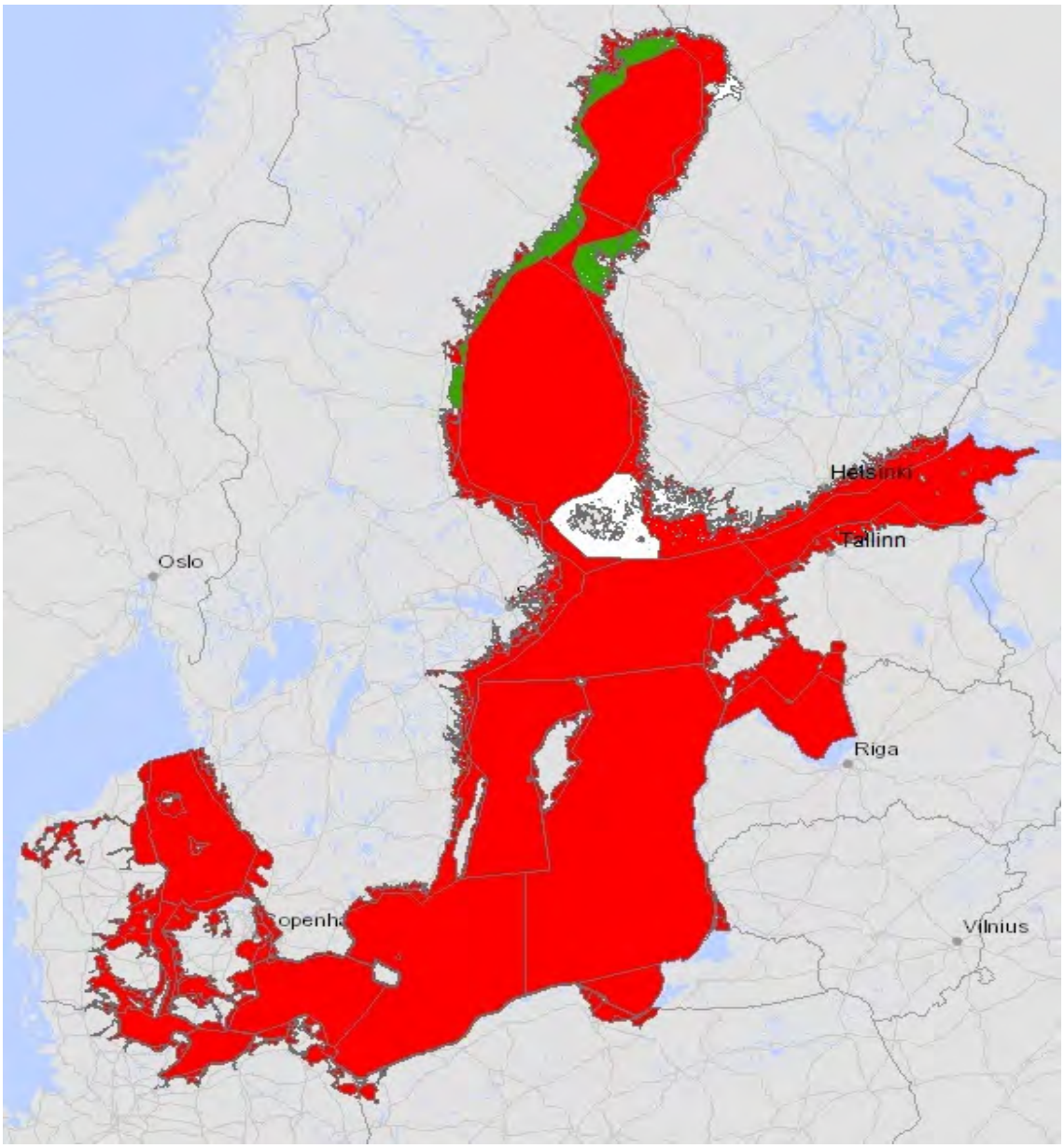
EPA	Environmental Protection Agency
EU	European Union
EUSBSR	EU Strategy for the Baltic Sea Region
GCS	Good Chemical Status
GES	Good Environmental Status
GEcS	Good Ecological Status
HELCOM	Helsinki Commission
IMO	International Maritime Organization
IMP	Integrated Maritime Policy
JCP	Baltic Sea Joint Comprehensive Environmental Action Programme
MARE	Marine Research on Eutrophication
MARPOL	International Convention for the Prevention of Pollution From Ships
MPAs	Marine Protected Areas
MSFD	EU Marine Strategy Framework Directive
NGO	Non-Governmental Organization
NM	Nautical Miles
OECD	Organization for Economic Cooperation and Development
OSPAR	Convention for the Protection of the Marine Environment of the North - East Atlantic
RBMP	River Basin Management Plan

SRU	German Advisory Council on the Environment
UBC	Union of the Baltic Cities
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNCLOS	United Nations Convention on the Law of the Sea
UNEP	United Nations Environmental Programme
UWWD	EU Urban Waste Water Treatment Directive
WFD	EU Water Framework Directive
WWF	World Wide Fund for Nature

To my Mother with Love

“There is the tragedy. Each man is locked into a system that compels him to increase his herd without limit - in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons” (Hardin, 1968: 244).

Map of Eutrophication Status of the Baltic Sea in Open and Coastal Sea Areas in 2007– 2011



Green Areas = Good Ecological Status; Red Areas = Less than Good Ecological Status (based on EU Classification)

Source: HELCOM
Baltic Sea Data and Map Service, accessed 21.10.2014

1. Introduction

Over 70 percent of the planet's surface is covered by water, while half of the world's population lives within 60 kilometers of the sea or ocean.[1] However, seas and oceans have increasingly become subject to anthropogenic sources of pollution. Protection of the marine environment is a complex topic. Questions about the protection of the marine environment have been addressed in multiple national and international reports and programs. Effective governance of marine pollution is one of the key challenges for global sustainability.

The European marine ecosystem includes four regional seas: the Mediterranean Sea, the North Sea, the Black Sea, and the Baltic Sea. Environmental governance of the regional seas requires international efforts that take into account the ecological, social and economic differences between marine regions. The Baltic Sea Region is a densely populated and highly institutionalized area. The end of the Cold War in the early 1990s changed the geopolitical order in the region. Eight out of the nine littoral countries in the Baltic Sea Region are currently members of the European Union: Germany, Poland, Lithuania, Latvia, Estonia, Sweden, Finland and Denmark; the only non-EU country in the region is Russia. The comparatively small Baltic Sea has unique flora and fauna, and is almost entirely cut off from the open ocean. The Baltic Sea is suffering from tremendous environmental challenges. Factors such as overfishing, pollution through hazardous substances and climate change are leading to the loss of biodiversity and environmental degradation.[2]

[1] See: UNEP, Cities and Coastal Areas. Accessed 12.02.2015
[2] See: UNEP, Baltic Sea. Accessed 12.02.2015

Marine environmental issues are mostly co-governed by several institutions that operate at the international, regional, national, and local levels. To prevent pollution from ships, the International Maritime Organization (IMO) has recognized the Baltic Sea as a Particularly Sensitive Sea Area (PSSA). According to IMO a PSSA is "an area that needs special protection through action by IMO because of its significance for recognized ecological, socio-economic, or scientific attributes where such attributes may be vulnerable to damage by international shipping activities".[3] The importance of enhanced regional cooperation is emphasized through recent academic research on EU fisheries governance, which is of the opinion that the ecological objectives of the new EU marine initiatives require regional-level stakeholder involvement (Dreyer and Sellke, 2015:121). One example of this is the World Wide Fund for Nature (WWF), which created the Baltic Ecoregion Program with the aim to promote regional sustainable fishing practices.[4] Environmental governance of the Baltic Sea is also affected by the Regional Seas Programmes of the UNEP, which address the degradation of the world's oceans and coastal areas. The Regional Seas Programmes are coordinated by the UNEP's Regional Seas Branch and represented through the regional Conventions, suited for specific regional environmental challenges. The Helsinki Convention, governed by the Helsinki Commission (HELCOM), as a member of the UNEP Regional Seas Programme, is responsible for environmental issues in the Baltic Sea.

The numerous EU policies and legal instruments also have a tremendous effect on the decision-making processes related to marine environmental protection of the Baltic Sea. The EU has developed more than 200 environmental directives and

[3] See: IMO, Particularly Sensitive Sea Area. Accessed 26.04.2015
[4] See: WWF Overfishing in the Baltic Sea. Accessed 12.02.2015

regulations since the 1970s (Gehring and Oberthür, 2006: 20). The EU is not only directly involved in decision-making processes in the region as a stakeholder, but it is also a signatory of HELCOM. The European Union has the strong position within HELCOM (Kern and Löffelsend, 2008: 137).

As stated above, environmental governance in the Baltic Sea Region includes different forms of institutions at the international, regional and European levels. Beyond this, numerous networks operate in the region in order to support regional cooperation. For example, the BALTEX as an environmental research network deals with the ecological system of the entire Baltic Sea drainage basin. The Council of the Baltic Sea States (CBSS) serves as a political forum for regional intergovernmental cooperation. The Union of the Baltic Cities (UBC) is a network addressing the potential of Baltic cities for democratic, economic, social, cultural and environmentally sustainable development of the Baltic Sea Region. Moreover, there is also cooperation between the scientific, technological, and private sectors and NGOs. However, despite this dynamic transnational networking and cooperation, "the Baltic Sea still faces unresolved pollution issues" (Kern and Löffelsend, 2008: 115).

Unresolved environmental problems can partly be explained by the fact that most bilateral and multilateral capacity-building initiatives after the collapse of the Soviet Union focused on strengthening the technical capacity of national states and paid much less attention to broader administrative, institutional, and political capacity issues (Schreurs, 1999: 45). Twenty-five years after the political regime change in the Baltic Sea Region there are a variety of institutions that encompass efforts "to clean up the Baltic Sea" (VanDeveer, 2011: 2). Despite the density of different institutions in the region, some of them concentrate on the existence and importance of networking, rather

than on assessing the causal mechanisms by which these networks possibly "do or do not influence policy outcomes" (VanDeveer, 2011: 3). In this context, the following general questions arise: how does institutional density impact the solution of environmental problems? Why does the Baltic Sea still have unresolved environmental problems despite the increased density of environmental institutions in the region? How do institutions influence each other and what are the effects of this influence?

The most persistent environmental concern in the Baltic Sea remains the steadily deteriorating situation of anthropogenic marine eutrophication (Wulff, 2007:14). The HELCOM's Monitoring and Assessment Strategy calls marine eutrophication the single greatest threat to the Baltic Sea environment (HELCOM, 2009: 3). Eutrophication is a process where marine water receives excess nutrients, mainly nitrogen and phosphorus. Nutrients cause the growth of harmful algal blooms, which in turn consume the oxygen in the marine waters. The entire marine ecosystem is in danger because many marine species cannot survive in the environment without oxygen. This dissertation addresses marine eutrophication as the most complex and severe environmental problem of the Baltic Sea. The next section summarizes the studies that address the impact of anthropogenic eutrophication on the marine environment.

1.1. Explaining Anthropogenic Marine Eutrophication

Anthropogenic eutrophication occurs when water is overly enriched with nitrogen and phosphorus, produced as a result of human activity.[5] Diaz, Rabalais and Breitburg define anthropogenic eutrophication as an "increase in the rate of production and accumulation of organic carbon in excess of what an ecosystem is normally adapted to processing" (Díaz, Rabalais, and Breitburg, 2012: 11).

With excessive algal blooms the supply of oxygen can decline to the point where no living organisms can survive. Sediment samples provide evidence of the strong negative effects of these algal blooms on the marine ecosystem (HELCOM, 2006a: 6). The condition where algae die, sink to the bottom, and are decomposed by bacteria, which use up the available dissolved oxygen, is called hypoxia (Rabalais and Gilbert, 2008 et al.). The number of hypoxic zones in coastal waters has increased dramatically since the 1960s (Rabalais et al., 2010). Hypoxic areas are sometimes referred to as dead zones. As a result of the increased eutrophication, seven out of the world's ten largest marine dead zones are located in the Baltic Sea.[6]

In addition to anthropogenic factors there are also some natural conditions that contribute to increased eutrophication. Nitrogen is described as a crucial element that plays an important role for life on earth. "The nitrogen cycle is one of the most important nutrient cycles for natural ecosystems. Plants absorb nitrogen from the soil, and animals eat the plants. When they die and decompose, the nitrogen returns to the

[5] See: The EU Nitrate Directive, http://ec.europa.eu/environment/water/waternitrates/index_en.html. Accessed 19.02.2014

[6] See: NASA, Earth Observatory. Assessed: 06.06.2011

soil, where bacteria convert it and the cycle starts again."[7] The Baltic Sea is shallow, has a low level of salinity and has a poor water exchange with the Atlantic Ocean. These natural factors cause slow water renewal, which in turn makes the Baltic Sea very sensitive to eutrophication. Once nutrients are discharged into the sea, they remain there for a long time, sometimes for decades.

The nutrient concentrations are usually affected by seasonality. However, the Baltic Sea experiences constant year-round hypoxia due to the severity of eutrophication (Karlson et al., 2004, Díaz, Rabalais, and Breitburg, 2012: 13). Concentrations of nutrients in winter give the fuel for subsequent phytoplankton spring blooms. In spring, phytoplankton binds the dissolved nutrients in the surface waters. In summer a surplus of phosphorus promotes the blooms of nitrogen fixing cyanobacteria (id.14).

Marine eutrophication started to occur in the Baltic Sea in the 1930s (Fonselius, 1969 et al.) and by the 1950s the level of hypoxia had increased dramatically. By the beginning of the 1970s the Baltic Sea was already considered one of the most polluted seas in the world. The ecological condition of the Baltic Sea began to deteriorate because of growing industrialization, urbanization and intensive agriculture (Laakkonen and Laurila, 2001: 264). Agricultural runoff, inadequate municipal and industrial wastewater treatment facilities, oil spills, and industrial discharges represent major threats to the Baltic environment (VanDeveer, 1999: 13; HELCOM 2002a: 1, 15).

However, since the beginning of the 2000s nutrient management related to industrial and municipal discharges has proven effective and improved water quality, although agricultural nutrient runoff continues to increase. By the 1980s the

[7] See: The EU Nitrate Directive. Accessed 19.02.2014

agricultural runoff had replaced nutrients removed by sewage treatment and caused deterioration of the water quality in many coastal areas (Smith et al. 1987; Díaz and Rosenberg, 2008; Díaz, Rabalais, and Breitburg, 2012: 15). The hypoxic zones developed in the Baltic Sea since the 1990s are directly linked to agricultural runoff.

Earlier academic research on marine eutrophication in the Baltic Sea was limited to analysis of the causes of eutrophication. Social sciences tend to concentrate on the "causes of observed degradation, rather than on the social and political responses to such a perceived transgression of natural limits" (Haas, 1990: 5). When industrial and agricultural activities were less intense, the Baltic Sea could naturally conquer eutrophication. However, with the current level of anthropogenic disturbances, the idea that marine ecosystems can restore themselves to a natural state is unrealistic.

Marine eutrophication in the Baltic Sea was for a long time considered a local coastal problem. Some scholars argue that "marine eutrophication will never become an issue which is likely to make the headlines in most of the EU's member states" (Schumacher, 2012: 74). The lack of interest can be explained by the fact that eutrophication lacks "the definitional, ideological, and symbolic clarity typical for many other environmental issues", which makes it not as popular as, for example, climate change (Tynkkynen, 2013: 12). Currently, although eutrophication is recognized to be a serious ecological and social problem, there is no working supranational legislation specifically created to address eutrophication. Because of the absence of binding legislation, the need for well-established institutional cooperation is immense. Beyond cooperation, marine eutrophication requires adequate policy responses. The next section introduces the institutions involved in and affecting eutrophication governance of the Baltic Sea.

1.2. Institutional Interplay and the Problem of Fit

Institutions at the global, pan-European and regional levels influence marine eutrophication in different ways and with different effectiveness. The governance of marine eutrophication in the Baltic Sea involves both institutions at the same level of governance (horizontal level) and at higher and lower levels of governance (vertical level). The growing number of involved institutions inevitably leads to institutional density. With the high density of environmental, legal and political instruments there may be functional and political overlap and duplication of work. These conditions focus attention on how institutions interact with each other.

The relationship between two or more institutions and the interactions where one institution influences the development, operation, effectiveness or broad consequences of another are known as institutional interplay (Gehring and Oberthür, 2006). Institutional interplay may result in synergies and disruptions, which in turn may increase or decrease the effectiveness of governance. The phenomenon of institutional interplay may take place at the output, outcome or impact levels (Underdaal, 2002: 14). The output level refers to the decision-making process, generated institutional knowledge and ideas, such as new policies, legislation, or recommendations. This institutional knowledge may result in the outcome of a change in the behavior of involved actors. Finally, behavioral change may impact the ultimate target of governance (Gehring and Oberthür 2009: 131). The analysis of the output, outcome and impact levels of interplay is relevant for measuring institutional effectiveness.

This dissertation focuses on the output level effects of institutional interplay related to eutrophication governance of the Baltic Sea. These outputs constitute action plans, new legislation and recommendations that result from the institutional

interactions. The national implementation of policies related to marine eutrophication in the Baltic Sea is not addressed in this dissertation. This study offers a discussion about how institutional interplay affects protection of regional seas.

The aim of this dissertation is to explain why marine eutrophication is not improving. The analysis begins with an exploration of the institutional linkages that result in synergies or disruptions.

Marine environmental conditions in the Baltic continue to deteriorate. About 50 percent of all nutrients in the sea come from the agricultural sector.[8] These nutrients include mostly nitrogen and phosphorus. Moreover, the use of fertilizers, high animal stocking rates and to some extent the intensity of land preparation are the main pressures on water and the atmosphere (Glebe 2006: 94). The eutrophication of the marine ecosystem of the Baltic Sea should thus be understood as being linked to the EU's Common Agricultural Policy (CAP).

There are three main transnational institutions that address marine eutrophication governance in the Baltic Sea: the Marine Strategy Framework Directive (MSFD), Helsinki Convention, governed by the Helsinki Commission (HELCOM), and the Water Framework Directive (WFD) (see Table 1). Institutional interplay between these institutions might be a cause of the ineffectiveness in eutrophication governance.

[8] See: HELCOM: Plc-Air And Plc-Water Popular Report 2004. Accessed 25.07.2012

Tab. 1. International Institutions addressing the Problem of Eutrophication in the Baltic Sea

Institution	Governance Level	Topic
MSFD	Pan-European, Legally Binding	Holistic management approach for the European Marine Waters, Ecosystem Approach
HELCOM	Regional, Not Legally Binding	Regional Marine Protection, BSAP, Ecosystem Approach
WFD	Pan- European, Legally Binding	Management of the European River Basins, Estuaries and Coastal Areas

Compiled by the author

The EU Marine Strategy Framework Directive (MSFD) is the first European directive that concentrates specifically on the marine environment. It aims to protect the European seas by achieving and maintaining the "Good Environmental Status" (GEnS) of the EU marine waters by 2020. The HELCOM adopted the Baltic Sea Action Plan (BSAP) with the same objective - to achieve a "good environmental status" in the Baltic Sea by 2021. Achieving "good environmental status" as aimed at by both institutions will require reducing human-induced marine eutrophication by controlling nutrient loads. Both the MSFD and the HELCOM's Baltic Sea Action Plan are based on the Ecosystem Approach. The Ecosystem Approach was developed by the United Nations' Convention on Biodiversity (UN CBD). It represents a strategy for the integrated management of land, water and living resources recognizing the complexity of environmental issues. Finally, the Water Framework Directive (WFD) was adopted in 2000 and offers a framework for community action in the field of water policy for river basins, estuaries and coastal areas. It plays an important role in the governance of marine eutrophication because coastal areas belong to the Baltic marine environment.

The second step analyzes "human-environment relations" (Young, 2002: 56). Although the EU CAP was not designed to deal with water protection, the need to accelerate the process of integration of environmental aspects into the CAP is tremendous. The reduction of nutrient loads from agriculture is a complicated task. The interaction between eutrophication governance, represented by the three institutions listed above, and the CAP shows lack of coordination. The CAP promotes the increased production of agricultural products, and not the protection of water quality and marine environment. Farmers, supported by the CAP, get financial grants for agricultural production, price support and direct payments regardless of the effects of their agricultural production processes on the environment. In theoretical terms, this is termed institutional misfit. The CAP, despite its numerous reforms, does not take any responsibility "for the major part of nitrate inflow into coastal waters" (Salomon 2006: 1328). Moreover, the massive financial support of the EC for the agricultural sector will likely keep increasing nutrient loads in the Baltic Sea. Farmers and agricultural lobbies often show high resistance to change in their unsustainable practices even though they might be aware of their harmful effects. The agricultural sector supported by the EU CAP has little or no motivation to change.

The governance of the European marine environment emphasizes the importance of the relationship between "a system-to-be-governed" which embodies the natural and the social-cultural sub-systems and a "governing system" represented by institutions and organizations with "a functional responsibility to steer the system-to-be-governed towards a set of goals" (Gilek et al, in Gilek and Kern, 2015: 141). Fit, or a positive relationship, between an institution and the ecosystem can lead to a desirable outcome in the form of a solution for environmental problems. However, the problem of

fit is "generic and occurs whenever and wherever humans interact with biogeophysical systems" (Young, 2002: 58). The misfit between the institution and the ecosystem is caused by imperfect knowledge about the ecosystem, rent-seeking behavior, actors who are only concerned about their own benefits, and institutional constraints, such as jurisdictional or decision-making limitations (Young, 2002: 58).

Three case studies are explored in this dissertation. The first addresses the interplay between the Ecosystem Approach, HELCOM and the MSFD. The second introduces the interplay between the MSFD and the WFD. Finally, the third analyzes the misfit between the CAP and the protection of the Baltic Sea. The dependent variable, or the phenomenon that will be explained is the effectiveness of eutrophication governance in the Baltic Sea. The independent variables are institutional interplay and institutional misfit. For operationalization of the variable of institutional interplay, the synergies and disruptions resulting from interplay are analyzed. Institutional misfit is analyzed by elaborating on a cluster of explanatory factors: the state of knowledge about the marine ecosystem, rent-seeking behavior, and institutional constraints. The main research question, which will be answered in the following chapters, is *how does institutional interplay between the MSFD, HELCOM and the WFD, and institutional misfit between the CAP and the marine ecosystem of the Baltic Sea affect eutrophication governance?* The first hypothesis suggests that marine eutrophication is not improving because of disruptive institutional interplay in eutrophication governance. The second hypothesis suggests that the misfit between the EU CAP and the environmental needs of the Baltic Sea marine environment contributes to ineffectiveness of efforts to solve marine eutrophication in the Baltic Sea. Theories of regime effectiveness and institutional interplay, along with the approach of institutional

misfit are being chosen to answer the central research question and to frame the empirical case studies. This dissertation goes beyond the simple study of regime effectiveness and concentrates on the institutional interplay that affects the complex decision-making processes behind eutrophication. The approach of institutional interplay expands the theory of regime effectiveness.

Understanding the political approach of regime effectiveness is helpful for the in-depth case studies, which will follow. An international regime is considered to be effective when it resolves the problems that led to its creation (Young, 1999: 3; Underdal, 2002: 4). Institutional interplay at the output level is considered to be effective when it results in synergies. The common interest that unites the research on regime effectiveness and the research on institutional interplay are the outputs of an institution, such as norms and decisions. Synergetic interplay mostly increases the effectiveness of the institutions involved (Gehring and Oberthür, 2008: 195). Disruptive interplay may decrease the effectiveness of the institutions.

The phenomenon of institutional interplay explains how institutions mutually affect each other (Stokke and Oberthür, 2011: 5). The concept of institutional misfit can help in understanding the complicated relationship between agricultural policy and marine eutrophication in the Baltic Sea.

This dissertation starts with the introduction, followed by an introduction to the theoretical approach employed and a methodological chapter. The theory chapter frames the findings of the empirical part, while the methodological chapter explains the case selection and the research design. The fourth chapter introduces all institutions influencing marine eutrophication in the Baltic Sea. The fifth chapter introduces the case studies.

Chapter six includes the analysis of the case studies and hence, the evaluation of the independent variables. It also presents the main findings of the dissertation. The analysis is based on the theoretical approaches presented in chapter two. It explains the output level effects of the synergetic and disruptive institutional interplay, along with the adverse effects of the Common Agricultural Policy on the health of the marine environment. Agricultural run off is the main cause of eutrophication. There is a misfit between the goals of the CAP and the goals of the institutions designed to protect the marine environment. Finally, the last chapter presents conclusions.

2. Theoretical Approach

The theoretical approach frames the empirical analysis of the relationship between institutions influencing eutrophication governance in the Baltic Sea. Given the complexity of marine eutrophication, it is not possible to capture the inter-institutional relationships with a single theoretical approach. The crucial theories for understanding output level effectiveness are regime theory and the theory of institutional interplay, including the approach of institutional fit and institutional linkages.

The interplay among the involved institutions influences the level of effectiveness of efforts to solve eutrophication. Before explaining the phenomenon of institutional interplay, international regime theories, which help explain the notions of institutional interactions, cooperation and effectiveness, are discussed.

Although this dissertation concentrates on the theory of institutional interplay, the concept of multi-level governance is also drawn upon. The concept explains how governance without central hierarchy of the state can function as "interdependent governance" (Kohler-Koch, 2004). Multi-level governance is turned to because the case studies include the non-hierarchical, functional interactions among institutions that are situated at different levels of social organization.

2.1. Environmental Issues and the Concept of Multi-Level Governance

In the early 1970s the international community began to realize that rising environmental problems need special attention and that the existing national institutions are not capable to coordinate and manage global environmental catastrophes. An

environmental issue becomes global when it affects the global commons: the atmosphere, the ocean, or other resources (O'Neill, 2009: 29). "The entire ecology of the planet is not arranged in national compartments" (Kennan, 1970: 2). Numerous international institutions were established to deal with growing environmental degradation.

Institutions have to interact with other institutions in order to effectively manage common environmental issues. Multi-level governance is defined as "a system of continuous negotiation among nested governments at several territorial tiers" (Marks 1993: 392). The expanded definition claims that the authority of states is shared with supranational, subnational and non-governmental institutions (Marks, Hooghe, and Blank, 1996: 371). States confront "the varying policy externalities arising from the provision of public goods" (Hooghe and Marks, 2001: 5). If these externalities occur at the different trans-national or international levels, then the governance of these externalities also go beyond state authority. The concept of multi-level governance explains the distribution of authority from the local, national and supranational levels to the global level, and can also include private and public actors.

There are two ideal types of multi-level governance. The EU combines Type I and Type II governance. Type I governance distributes authority through the "non-overlapping jurisdictions at a limited number of levels" (id. 6). It refers to the more stable arrangements. In the EU, Type I governance is represented by the simultaneous empowerment of subnational and supranational institutions (Keating and Hooghe, 1996; Hooghe and Marks, 2001: 9). Type I governance includes for example, the complementary processes of European integration and regionalization when central state authority is spread above and below the national state (Börzel 2001; Hooghe and

Marks, 2001:10). The reform of institutions of Type I multi-level governance is typically complicated and path dependent because "the transaction costs of allocating an additional competence to an existing jurisdiction are often less than the costs of establishing a new jurisdiction" (Hooghe and Marks, 2001: 15).

Type II governance constitutes a "complex of overlapping jurisdictions" and is more flexible. In the EU this type of governance is represented by the public/private, international, regional, national and local types of interaction. Type II governance is shared among a wide variety of institutions. In the context of this dissertation, the concept of multi-level governance refers to Type II governance. It describes coordination and interplay between the European directives and the regional authority, represented by a regional environmental regime. The next step in the theoretical approach is to explain the relationship between institutions where governance happens at multiple levels.

The following section explains the meaning of the term and operation of international regimes, and why some regimes are more effective in solving environmental issues than others.

2.2. Theory of International Regimes

In order to explain the term, "international regime", the term "institution" has to be explained first. Keohane defines institutions as "persistent and connected sets of rules (formal and informal) that prescribe behavioral roles, constrain activity, and shape expectations" (Keohane, 1989: 3). This definition of an institution clearly distinguishes the international institution from international organizations. International institutions, established to solve global environmental issues, represent the sets of rules and norms and emerge as mechanisms to alleviate international environmental problems. International organizations constitute "physical entities" with staff, offices, budgets and equipment which implement the norms and rules created by international institutions (Young, 1989: 5).

The theory of international regimes takes the focus from international organizations and shifts it to international institutions. International regimes can be seen as specialized arrangements that involve well-defined activities, resources, or geographical areas (Young, 1989: 13). International regime theory also suggests that the complex reality of modern politics cannot be explained by a single behavioral pattern of a single institution. International environmental institutions interact with one another and it is difficult to understand the effects of one institution in isolation from the others. Therefore, it is necessary to study the roots or sources of the behavior of all institutions involved (Young and Levy, 1999: 20).

Two key definitions of international regimes are presented below. An early definition of international regimes describes them as "implicit or explicit principles, norms, rules and decision-making procedures around which actors' expectations

converge in a given area of international relations" (Krasner, 1983: 1-21). Levy, Young, and Zürn have described international regimes as "social institutions consisting of agreed upon principles, norms, rules, procedures and programs that govern the interactions of actors in specific issue areas" (Levy, Young, and Zürn, 1995: 274).

Every international regime has several key components that constitute its core. The first component of an international regime is a cluster of rights and rules. Regulations or directives determine conditions under which a certain regime has to operate. In some cases there are also penalties and rewards for altering the behavior in desired directions.

The second component of an international regime is a procedural component. Regimes include recognized practices for handling situations where social or collective choice is required. The notion of social and collective choice may include decisions on the distribution of goods and services, or on filling a certain position, and on establishing certain terms. Social choice mechanisms constitute institutional arrangements that solve problems arising within a regime. These mechanisms include the voting systems, bargaining, administrative decision-making, adjudication, unilateral action of coercion and penalties (Young, 1989: 19). A situation, in which conflicts arise and require a solution of the problem of social choice at the international level, can be settled either by the regime itself, or by international ordering mechanisms, such as the International Court of Justice or the central assembly of the United Nations.

In addition to the substantive and procedural components of an international regime, there is the mechanism of compliance. It is not easy to establish an international regime that will function smoothly and will result in a situation where all participants comply. Therefore, there is an institution or a set of institutions publically authorized to

formally promote classic mechanisms of compliance, such as sanctions. However, international society typically relies on less formal compliance mechanisms. International law as a social institution involves "hard" and "soft" laws. International hard law generally represents treaties and imposes binding obligations on states to enforce law. Soft law is not legally binding and is "vague and open to greater discretion" (VanDeveer, 1997: 288). International soft law may be embodied in resolutions or declarations, as well as many other quasi-legal instruments. States may use soft law to solve coordination problems because the higher sanctions of hard law in the international system sometimes increase the net loss to the parties. States choose soft law when "the marginal costs in terms of the expected loss from violations exceed the marginal benefits in terms of deterred violations" (Guzman and Meyer, 2010: 171).

Having explained the definition and the working structure of international regimes, it is vital to understand which factors constitute the effectiveness of international regimes. The main purpose of international regimes is to coordinate behavior in situations where the absence or failure of coordination will or can lead to suboptimal outcomes (Underdal, 2002: 17). Usually, there is a difference between the conditions for the effective international regime and the effective consequences of its operation (Young, 1989: 23). Information and willingness to accept the terms of the regime represent effective conditions for regime operation. Regimes are considered effective when they are economically and politically efficient. The following section explains the approach of regime effectiveness.

2.2.1. International Regime Effectiveness

International regimes commonly emerge in response to a certain issue or group of issues. Underdal has argued that a regime is considered effective if it eliminates or ameliorates the particular issue that led to its creation (Underdal, 2002: 4). However, there are several other approaches that define the effectiveness of regimes.

Some individual regimes are more effective than others with regard to some specific criteria, and many regimes work better during some stages of their life cycles than others (Young, 1999: 1). Three distinct stages in the lifetime of a regime are the processes of a regime's formation, negotiation, and implementation. These differ sufficiently and may affect regime's effectiveness in different ways (Underdal, 2002: 13). Hence, any attempt to measure effectiveness has to be directed exclusively at one of these stages.

Regime effectiveness also differs in respect to the subsequent dimension of the regime: legal, economic, normative and political (Young and Levy, 1999: 4). A legal approach would describe effectiveness in terms of obligations written into treaties, however, it doesn't focus on solving problems that led to its creation. An economic definition would expand the legal approach and add the efficiency criterion, explaining how a regime generates the right outcome at least costs. Regime effectiveness in terms of normative principles focuses on factors such as fairness or justice, stewardship and public participation. Finally, a political approach defines effectiveness in terms of effective constellations of actors, their interests, and institutional arrangements that address problems.

The political approach of regime effectiveness explains that effective regimes cause changes in the decision-making process, in the behavior of actors, in the interests

of actors, or in the policies and performance of institutions in ways that contribute to positive management of the targeted problem, but does not necessarily solve the problem that caused a regime's creation (Young and Levy, 1999: 5). The political approach to regime effectiveness deals with broad problem-oriented rather than specific action-oriented goals and emphasizes the behavioral mechanisms that lead to success or failure in efforts to solve international problems through the creation and operation of institutional arrangements (Young and Levy, 1999: 6).

One of the examples of regime effectiveness from a political sense is a Kyoto Protocol, which as an international agreement linked to the United Nations Framework Convention on Climate Change, meant to stabilize greenhouse gas emissions by setting internationally binding emission reduction targets. In political terms, the creation of the Kyoto Protocol was an effective tool, even though it did not solve the problem that led to its creation. Specific regulatory rules, protocols, and operational targets are the means to particular ends, rather than ends in themselves. They are intended to activate actions towards achieving the objectives of the regimes. "The political effectiveness is measured by activities that move the system into a right direction to achieve the objectives rather than full compliance" (Young and Levy, 1999: 6). Political effectiveness, however, is not necessarily connected to either the legal or the economic sense of the term. A politically effective regime might be highly economically inefficient, or produce low levels of compliance.

Some regimes impact the behavior of actors that are responsible for a problem's creation in the first place and other regimes do not have this impact. The regimes that have little or no behavioral impact are considered ineffective. Regimes are initially created to solve problems that arise within the specific behavioral complex. Thus, some

researchers interested in regime effectiveness study whether the regime affects the management of the problem that motivated its creation by inducing changes in the behavior of the states and other actors whose behavior is directly involved in the relevant behavioral complex (Young and Levy, 1999: 11).

The theoretical concept of regime effectiveness or "the effectiveness of governance institutions" distinguishes between three levels of effectiveness (Underdaal, 2002: 14). The Table 2 depicts the levels of regime effectiveness.

Tab. 2. Different Levels of Regime Effectiveness

Levels of Regime Effectiveness		
Output (Knowledge, Ideas)	Outcome (Behavior of relevant Actors)	Impact (Target of Governance)

Based on Underdaal, 2002: 14. Compiled by the author

International or EU institutions do not affect the state of the environment (or any other ultimate target of governance) directly. They create collectively agreed on knowledge or norms, which constitute institutional output. To become effective, institutional output must result in a behavioral outcome. An outcome constitutes an observable influence on the behavior of relevant actors. Finally, behavioral outcome may or may not result in an impact on the targeted part of the environment or another ultimate target of governance.

Another approach to study regime effectiveness originates from the perspective of the character of the problem and in terms of a regime's problem-solving capacity. Malign problems tend to require higher levels and "more complex arrangements of cooperation" (Underdal, 2002: 15). Malignancy of the collective problems is determined by incongruity and/or asymmetry. The incongruity is defined by the manner

of how the involved parties calculate their cost-benefit relation and whether the involved parties are biased in favor of either the costs or the benefits of a particular course of action.

The problem of incongruity depends both on the objective distribution of material consequences and on the ability of the actors to recognize the value of these consequences. Problems of incongruity are difficult to solve through voluntary institutional cooperation especially when a problem is asymmetrical. Asymmetry means that involved actors either have different values or their interests are negatively correlated. The more asymmetrical is the problem, the more difficult it is to find the solution that would be accepted by both involved parties (Underdal, 2002: 22).

The concept of problem–solving capacity measures regime effectiveness by arguing that some problems are solved more effectively than others because they are in the focus of more powerful institutions. Figure 1 depicts the casual relationship between problem malignancy and regime effectiveness.

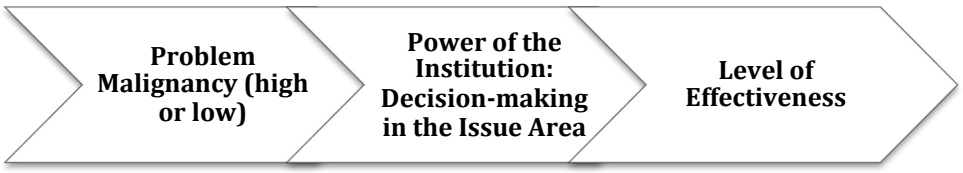


Fig. 1. Causal Relationship of Regime Effectiveness
Based on Underdaal, 2002: 22. Compiled by the author

Although some regimes are not effective in solving the problem they were initially created for, most of the time regimes do have some significant positive impact. New knowledge or ideas, for example, can lead to change in actors' perception and

subsequently affect their behavior. However, the concept of problem malignancy and problem-solving capacity at the output level is not always sufficient for measuring regime effectiveness. The effectiveness of specific institutions often depends "not only on their own features, but also on their interactions with other institutions" (Young at al. 1999/2005).

2.2.2. The Effects of International Regimes

There are several dimensions to the effects of international regimes (see Table 3). For example, if the regime affects the behavioral complex in which it is embedded, it is an internal effect. Behavioral complex means the constellations of actors, interests and interactions focused on the specific issue area. On the other hand, there are also effects that are external to the behavioral complex of actors, interests and interactions. Such effects occur outside the issue area in which they are embedded (Young and Levy, 1999: 11). External effects are usually unintended consequences of institutional arrangements. The direct effects of international regimes are primarily tied to compliance with regime rules and participation in programmatic activities of the regime (id. 12). This dimension of effectiveness can be measured through the examination of compliance records. However, the category of direct effects includes actions that go beyond compliance. The essential point is to identify responses of the regime to the specific issue that can be linked directly to the operation of a regime. Such effects are among the most important consequences of the formation and operation of international environmental regimes. Indirect effects of an international regime response to a regime's rules, however, are not directly linked to the operation of the regime. They

emerge as a chain reaction from direct effects. One of the examples of an indirect effect of a regime is a switch from coal or oil to natural gas, which may result in increased demand for new technologies and lead to a change of investment and employment patterns (id.14). Indirect effects of international regimes can play a role in the process of institutional evolution and change views on large-scale environmental problems. In some cases failure causes indirect effects (ib. 14). Many of the indirect impacts operate through an impact on environmental politics, either within the regime's issue area or in other areas.

Tab. 3. Domains of Effects of the International Regimes

Internal Effects	External Effects	Direct Effects	Indirect Effects
Occur within the regime complex of the issue area	Occur outside the regime complex	Indicate compliance with regime rules or are linked directly to the operation of a regime	Indicate compliance with rules, but are not directly linked to the operation of the regime

Based on Young and Levy, 1999: 10. Compiled by the author

However, some environmental issues are difficult to solve even despite the existence of well-established institutions. A regime that seems attractive on paper may have little capacity to solve complex environmental problems in practice (Young, 2002: 52). In order to analyze the relations between ecosystem properties and institutions, scholars of international regimes have adopted the concept of institutional fit. The mitigation or resolution of an institutional misfit does not necessarily result in a solution to governance problems. An institution that fits well with one ecosystem may not fit well with the properties of another ecosystem (Young, 2002: 56). Understanding the

mismatches between ecosystem properties and institutional attributes helps to "design and implement cooperative measures" in order to solve the issue in question (Young, 2002: 56). The section below explains the concept of institutional fit.

2.3. The Concept of Institutional Fit

The concept of institutional fit focuses on an individual institution or set of institutions designed to govern a given ecosystem, or other topic of interest (Ekstorm and Young, 2009: 16). It is based on the idea that ecosystems are not only linked with social institutions (rules and norms), but that their positive interplay is essential for resolving environmental problems.

The analysis of institutional fit explains the context of how the relations between humans and the environment occur and addresses the essential problems of these relations. Institutional misfit may emerge during the course of implementation, when institutions move "institutional arrangements from paper to practice" (Mitchell 1994, cited in Young, 2002: 71). The problem of institutional misfit may however, occur when human systems follow well-defined courses of institutional path dependence. Thus, the institutional misfit between ecosystem properties and institutional attributes often persist over long periods of time. Legislative processes and agency practices are highly resistant to change, even when their arrangements are not suited to dealing with current environmental problems.

Institutional misfit contributes to the deterioration of ecosystem services and constitutes the failure of an institution or a set of institutions to take into account the nature, functionality, and dynamics of the ecosystem in question (Young, 2002: 70).

Identification of the functional misfit exposes the underlying gaps in governance of the system of interest (Ekstorm and Young, 2009: 16). The problem of fit can be resolved through the effective management of institutional interplay.

The conflict of interests among involved institutions complicates efforts to design and implement cooperative measures (Young, 2002: 58). When there is a strong or good institutional fit between the ecosystem and the institution, this should lead to a desirable outcome in terms of solving environmental problems. There are three mechanisms that produce institutional misfit, and they and are not mutually exclusive:

- Imperfect Knowledge
- Rent-Seeking Behavior
- Institutional Constraints.

When institutional misfit between ecosystems and institutions is related to a lack of knowledge, it can be particularly severe. There could be lots of reasons that cause the lack of knowledge, for example it may imply the lack of interest of the responsible institutions to the ecosystem in question, but also the lack of availability of data. Imperfect knowledge is the category that is very difficult to measure. Uncertainty is a factor common to most environmental problems, but often more severe in connection with large-scale ecosystems. The institutional efforts to govern human actions cannot succeed in the absence of usable knowledge regarding the ecosystems in questions. In some cases the lack of knowledge takes the form of lack of awareness or understanding regarding the important facts about the ecosystem. In other cases ignorance involves lack of understanding of casual mechanisms at work in large ecosystems (Young, 2002: 64). The linkage between rent-seeking behavior and imperfect knowledge is well known in the literature on institutional misfit.

Although rent-seeking behavior sometimes involves deliberate manipulation, most individuals are socialized to convince themselves that their actions advance the common good. It is often very difficult for a public agency to alter the behavior of actors and to make them comply with rules of the international regime. The problem arises from the difference between individuals and states and from separation between those who formulate the rules and those who are subject to them.

The rent-seekers can be described as "actors who are trying to induce (or prevent) political or institutional changes in order to garner individual or group specific rents" (Huppert, 2013: 266). There are political, economic and strategic rent-seekers. Political rent-seeking behavior occurs when politicians or bureaucrats strive for political favors in return for rents they have granted, for example, as support in upcoming elections or as reciprocal political concessions. Strategic rent-seeking behavior refers to two particular cases. Firstly, it occurs when private companies try to "influence the processes of agenda setting and public policy formulation in ways that further their own strategic interests" (id. 266). Secondly, it relates to public officials and organizations that deviate from their entrusted formal mandates in order to secure their own position. An example of the economic rent-seeking is spending money on political lobbying for government benefits or subsidies in order to be given a share of wealth that has already been created, or to impose regulations on competitors, in order to increase market share (id.277).

The rent-seeking behavior is a way of organized thinking, which is based on tension or even conflicts "between pursuing of individual gains and promotion of social welfare" (Tullock, 1989, cited in Young 2002: 72). The pursuit of individual gains without reference to how these actions affect the social welfare of others represents a

rent-seeking behavior. Institutions frequently devote themselves to improving their own situation without regard to consequences of their actions for others, including future generations. Rent-seeking behavior can lead to a misfit between ecosystems and institutions in two major ways. Firstly, the institutional rent-seeking behavior creates situations in which renewable resources are thoughtlessly overexploited for consumption. Secondly, these resources become "subject to manipulation by the actors seeking to promote their own interests through political processes" (Young, 2002: 74).

Institutional constraints constitute a third factor that causes institutional misfit. Institutional constraints arise because institutions solving the large-scale environmental issues often experience uncertainty about who has the authority to make decisions regarding the human uses of valuable resources or ecosystems. The most prominent examples of the misfit between the ecosystem properties and an institution are cases "involving jurisdictional institutional constraints and the use of simplistic scientific models as management tools" (Young, 2002: 58). The increased conflicts between the ecosystem and the institution require a holistic management of human activities affecting the ecosystem in question. The institutions that ignore the significant elements of an ecosystem cannot produce sustainable solutions to the environmental issues.

Institutional conflict occurs when a choice or reward of one institution influences a choice or reward of another. Some examples of the institutional conflict constitute the case of institutional interdependence: "the steam locomotives generate sparks and expose trackside farmers' crops to the risk of fires, but the elimination of these risks by regulating the use of locomotives would limit the freedom of their owners" (Paavola, 2007: 98). To resolve institutional conflicts, institutions "either

establish, reaffirm or redefine entitlements in environmental resources" (Adger et al., 2003; Paavola, 2007: 96).

Conflict of interests between involved parties exists in the governance of all environmental resources, including conventional renewable and non-renewable natural resources and the quality of air and water. Certain environmental resources, such as for example marine biodiversity, are jointly consumed. These resources are available for several actors (states) simultaneously, and their quantity and quality cannot be individually provided. (Paavola: 2007: 95). The problem of fit deals with compatibility between ecosystem and institutional arrangement.

Summarizing, the effectiveness of social institutions depends on the functions of the fit between the institutions themselves and the biophysical domains in which they operate (Young and Underdal, 1997:12). Institutional fit is "of central importance for the analysis underlying almost any action related to sustainability" (Folke et al. 2007:19). Certain ecosystem properties are relevant to the better understanding of the analysis of misfit.

2.3.1. The Environmental Properties of the Ecosystems

The property of an ecosystem refers to the relationships among its different elements. This cluster includes complexity, homogeneity and interdependence.

Complexity measures the number of distinct parts of an ecosystem and the extent to which the functions of these individual components are distinct. Complex systems have large numbers of elements playing functionally distinct roles that are essential to their maintenance (Young, 2002: 61). The level of complexity of the

ecosystem is considered particularly high if the elements of the ecosystem are layered vertically or relate to one another hierarchically. The large marine ecosystems are extremely complex. The ecological disturbances affecting individual elements of the marine ecosystem are likely to destroy the entire system.

Homogeneity of the ecosystem refers to the degree of similarity among individual elements of ecosystems. Homogenous systems include groups of living organisms that resemble one another in biological and physical forms.

Interdependence refers to the tightness of links among elements or subsystems of an ecosystem (Young, 2002: 62). The category of interdependence emphasizes connection between individual ecosystems and their environment. A central statement of modern ecology is based on the statement that "everything is related to everything else" (id.68). Ecosystems have differing criteria of net primary productivity, production of harvestable surpluses, and rates of regeneration after more or less severe depletion of individual elements. The low rates of productivity of targeted species lead to depletion that is so severe that the system is unable to recover (Young, 2002: 68).

Conventional resource management fights the disturbances that cause environmental problems separately from each other, but such an approach has only short-term benefits because the environmental disturbances "are endogenous to the cyclic processes of ecosystem development" (Holling et al. 1995). They grow and return later on a broader scale. As long as it is assumed that a bio-geo-physical system will return to some earlier state after the severe disturbance, there will be no convincing reasons for the responsible institutions to adopt some precautionary measures in regulating human actions affecting the ecosystem in question.

Institutions created to govern human actions affecting ecosystems are typically embedded in other larger social institutions. The linkages of institutional interplay may indicate that institutions are embedded, nested, clustered into, or overlapped with other institutions. The issue-specific regimes are mostly embedded in overarching principles and practices. Nested institutions create broader institutional frameworks in terms of functional or geographic linkages, and cover a less detailed field. Clustered institutions constitute a set of different arrangements in the most similar issue areas groups. Finally, overlapped institutions represent the mutual effect of two individual regimes, formed for different purposes and with unintentional mutual influences.

Before exploring the theory of institutional interplay, it is vital to explain that institutions interact with each other based on the form of functional interdependencies, or as a consequence of politics of institutional design and management. In the case of functional interdependency, institutions usually address some substantive problems that are linked in biogeophysical or socioeconomic terms. The politics of institutional design come into play when actors forge links between the issues and institutions intentionally in the interest of pursuing individual or collective goals (Young et al. 1999). The political and functional linkages among institutions provide the general knowledge about the driving mechanisms of institutional interplay and are described in the next section.

2.4. The Functional and Political Linkages of Institutional Interplay

The functional linkages or actions that escape human control can be described as "facts of life", meaning when the transaction of one institution affects the effectiveness

of another through connected activities. A functional linkage is a place when two or more institutions address some substantive issues that are compounded in biological, geological, physical or socioeconomic processes operating in the same area. (Young, 2002: 85).

Political linkages, on the other hand, indicate the deliberate relationship among different institutions. Initially, some scholars believed that political linkages occur when two or more arrangements are considered as parts of a larger institutional complex and thus establish a permanent working relationship between the two institutions (Young, 2002: 111). There are three categories of political linkages: *formative links, operational links and strategic links.*

2.4.1. Formative Links

Formative links usually emerge during the formation of an international institution and include decisions of the issue framing, the choice of negotiating arenas and the bargaining over content. The formation of an institution as a response to newly emerging issues has an influence on institutional interplay. During institutional formation, actors can address a broad range of similar issues within the same institution (regime). On the other side, the problem can be defined narrowly. In this case, a range of the different regimes that focuses on numerous separate issues might be created. The more regimes are being created, the more interplay can be observed. International regimes are usually issue-driven. In the effort to create the effective regime, the issue framing is ranging from the full scope of issues within one regime to highly restrictive formulation in which a regime issue is defined as detailed as possible. Both narrow and

wide issue formulation have advantages and disadvantages.

The structure of narrowly formulated regimes requires greater investments of time and energy in order to manage interactions and institutional linkages with other regimes. On the other side, while a more comprehensive regime brings more institutional linkages to the surface, it also requires more attention to internal complexities and contradictions. Issue framing deals with the interests of the key actors, their beliefs about the problem area and their impact on a potential agreement (Young, 2002: 117).

The arena choice is related to the shared understanding of an issue area and has great consequences for institutional interplay. The actors in the same arena use the same normative tools and share the same norms and perceptions of an issue. The choice of arena can be described as "the outcome of political and organizational imperatives, arising from framing decisions and the calculations of actor interests" (Young, 2002: 120). The choice of arenas for regime formation constitutes conscious acts, that are usually affected by the state of knowledge about the issue and by the political context of an issue at the time of regime formation. For example, the establishment of the Helsinki Convention in the seventies was rather influenced by the tense relationship between Eastern and Western Europe than by the environmental issues of the fragile Baltic Sea.

Institutional bargaining constitutes the notion that information about the agreement is imperfect and that the regime's participants don't know what effect cooperation would have on their position (Young 2002: 123). In this case the uncertainty provides participants with incentives to design mutually beneficial agreements. If the participants of the regime know their own gains from the cooperation, then they will try to maximize their interests. In this case, actors will add

additional arguments to the content of the agreement in order to convince other participants in the common gain of the mutually acceptable agreement. Such behavior is motivated by distributional interests and may lead to the strengthening of political linkages. However, the broader content of the regime does not necessarily lead to meaningful reduction in the scope for interplay (Young, 2002: 124).

2.4.2. Operational and Strategic Links

As stated above, the formative links center on institutional interplay related to the course of regime formation. The operational links, however, are known for their efforts to move regimes from paper to practice. Operational linkages belong to the day-to-day practices and can be describes as inter-institutional coordination (Young, 2002: 126). The operational links are important for the analysis of institutional interplay (Young, 2002: 128). Operational settings include procedures such as the supply of financial resources, working compliance mechanisms and provision of dispute-settlement services. Environmental regimes usually have no independent source of funding and rely on allocated resources. Compliance mechanisms, such as for example, monitoring of conformance with regulatory requirements, are usually provided by the agencies created for these purposes.

Some scholars think that operational links are not important at the international level even though they can be significant at the domestic level because the international society does not have a body of public governance (id.130). Thus, the international regimes created to solve specific problems often have to provide their own services. For example, the International Maritime Organization, as a specialized agency of the United

Nations, supplies administration services for a number of international conventions. In other cases, individual regimes, such as for example the ozone regime or the regime dealing with transboundary hazardous wastes have their own secretariats. These secretariats are coordinated by the umbrella organization of the United Nations Environmental Program (UNEP).

Strategic linkages are in place when actors try to use institutional overlaps for their own purposes (Young, 2002: 132). This linkage is also called "forum shopping", meaning that actors are looking for the forum that suits their interests the best.

Institutional relations constitute a complex process and sometimes they do not fit either deliberate political action or unavoidable facts of life (Stokke 2001: 13). Therefore, the concept of regime interplay includes more facets than just functional and political linkages. When the regional and global institutions, for example, operate in the same issue area, their interaction patterns can differ profoundly implying the relationship between these regimes and whether or not one regime can unilaterally affect the operation of and the compliance with another regime (Gehring and Oberthür, 2008: 22). Exploitation of institutional interplay occurs when actors deliberately take advantage of institutional overlaps to pursue their own agenda.

2.4.3. Institutional Overlaps

Trying to explain the complex relationships between international institutions, scholars draw attention to the issues of treaty fragmentation and regime density in the international system. Fragmentation of the legal environmental treaties has been described as "leading to inefficiencies and lack of synergy" (Scott, 2011: 3). The term

of institutional fragmentation refers to disconnect between institutions and has "particular resonance with international environmental law" (Scott, 2011: 3). Fragmentation implies the lack of coordination between international institutions, treaties and organizations within a specific issue area. The increased density of international institutions results in overlapping relation between agreements.

Institutional overlaps "are actions created for different purposes, mostly without reference to one another "intersecting on a de facto basis, producing substantial impact on each other" (Young, 1996: 2). However, the higher the density of institutional arrangements, the higher is the possibility of the institutional overlap. Development of effective procedures to resolve institutional overlap is critical in order to manage regimes effectively.

Institutional overlaps can generate severe conflict of interests in the affected issue areas. Moreover, the interactions of overlapping institutions can lead to disruption of institutional interplay, or to a conflict of interests. Conflicts of interests can lead to continued deadlocks, which in some cases, however, can be solved by ad hoc negotiations (Young, 2002, 132). Ad hoc negotiations constitute the major tool for handling institutional overlaps, although a solution to problems linked to institutional overlaps do not guarantee there will be effectiveness in solving the issue in question. In some rare cases, however, institutional overlaps may have a positive side effect. This can happen, for example, when growing density of institutions leads to increased interest in the problem in question, which in turn may positively contribute to its solution.

Successful institutional interplay is a response to overlapping and fragmented international institutions. The next section explains the theoretical perspective of

institutional interplay and how institutional interplay affects the effectiveness of solving international environmental issues.

2.5. The Concept of Institutional Interplay

Institutional interplay (interaction) is defined as "the relationship of an institution to and interactions with one or more other institutions" (Young 1996: 1-24). Furthermore, "institutional interaction or interplay arises in situations in which one institution affects the development or performance of another institution" (Stokke and Oberthür, 2011: 4).

Interplay forms a causal relationship between two (or more) institutions with one of these institutions being the *source institution* exerting influence on the *target institution* or the issue area governed by it. Institutional interplay requires the identification of the source and target institutions. The source institution represents the rules and decisions from which influence originates. The target institution is the object of the influence of the source institution. Without this causal influence there would be just a case of coexistence of two or more institutions (Oberthür and Gehring, 2006: 6). "No interaction occurs without a noticeable effect on the target institution or the issue area governed by it" (Oberthür and Gehring, 2006: 8).

The effect on the target is a crucial factor in the concept of institutional interplay. While a source institution generates many effects that might potentially trigger interaction, only a minority of these effects results in the actual institutional interplay. Institutional interplay implies that the observed change in the target institution is caused by the source institution. The case of institutional interplay is proved to be effective if observed changes within the target institution or the issue area governed by

it would not occur in the absence of the source institution or its relevant parts (King, Keohane and Verba, 1994: 75-85).

The causal mechanisms of institutional interplay represent individual cases of bilateral interaction where one international institution or legal instrument affects the effectiveness or institutional development of the other institution. Causal mechanisms help to understand how and under which conditions institutions are capable of exerting influence on each other. According to the theory of institutional interplay, there are four causal mechanisms: Cognitive Interaction; Interaction through Commitment; Behavioral Interaction and the Impact-Level Interaction. The analytic concept of the causal mechanisms provides a micro-foundation for the analysis of institutional interaction and helps to understand how and under which conditions governance institutions are capable of exerting influence on each other (Gehring and Oberthür 2006: 7).

The types of complex interaction, where more than two institutions are involved require the disaggregation into bilateral cases. Moreover, when an institution is involved in different arrangements, such as funding mechanisms or a system for implementation review, the interplay is disaggregated into numerous cases of interaction for each arrangement. Another example is when two institutions have different properties. In such a case each of these properties has to be analyzed as a separate case of interaction (id.29). For example, if a number of different EU directives influence an issue area, they have to be disaggregated into bilateral institutional interplay.

2.5.1. Cognitive Interaction

Cognitive Interaction is based on persuasion and might be conceived as a particular form of the inter-institutional learning (Oberthür and Gehring, 2006: 36). If the information, knowledge or ideas produced within one institution influence the decision-making process of another institution, it means that cognitive institutional interaction takes place. "Cognitive interaction is based on the premise that actors must aim at reducing "analytic uncertainty" and will be prepared to adapt their perceptions to new information" (Keisuke, 1993; cited by Oberthür and Gehring, 2006: 35).

In the case of the cognitive interaction, the source institution produces some new information, such as for example, a report or an institutional arrangement that reveals new insight on a certain problem. The new information must result from a collective decision-making process of the source institution. For example it must be created by the secretariat of the international institution, or by a ministry of the member state. It is important because individual effort of one actor would not qualify as an output of the institution (ib.: 36). The information received from the source institution must change the order of preference of the target institution. Finally, these changes affect the collective negotiation process of the target institution and hence, its output as well. The source institution does not pressure the decision-making process of the target institution, however once sufficiently relevant actors adapt their preferences to new information, the decision-making process of the target institution will be automatically affected (ib.: 37).

If cognitive interaction occurs without an intention from the source institution, then target institution uses aspects of the source institution as a policy model. If the source institution applies a cognitive causal mechanism on purpose (intentionally), this

suggests that the source institution requires assistance from the target institution. In the case of intentional cognitive interaction, the issue area must overlap, because otherwise adaptation by the target institution would be meaningless for the source institution (Stokke, Oberthür, 2011: 38). However, the adaptation requested by the source institution must beneficially influence the effectiveness of the target institution since the members of an institution cannot be expected to harm their own institution.

2.5.2. Interaction through Commitment

Institutional interaction through commitment that influences the decision-making process of the target institution occurs if commitments of the source institution affect the target institution. Members of the target institution might less easily avoid interaction through commitment than cognitive interaction. While the latter is purely based on ideas and knowledge sharing, the former is based on a change of preferences of relevant actors motivated by substantive costs and benefits (ib.: 37). Interaction through commitment usually takes place when actors who are already bound to an obligation originating from the source institution participate in the consequent decision-making process of the target institution on a related subject.

Interaction through commitment usually occurs when the members of the source institution agree on an obligation that might be relevant for the target institution. Certain actors that are members to both institutions commit to this obligation and then change their preferences related to the target institution. Such modifications affect the collective decision-making process of the target institution and its output.

Mostly, the mechanism of the interaction through commitment relies on state action because states are directly bound by obligations in the framework of the interacting institutions (ib.: 39). Activation of this causal mechanism requires that memberships of the target and source institutions overlap at least partially because without overlapping memberships, no members of the states of the target institution would be committed to obligations established under the source institution (Stokke, Oberthür, 2011: 39). A jurisdictional overlap between interacting institutions is necessary both in relation to their issue areas and their memberships. The overlap of issue areas brings side benefits, such as the extension of commitments to potential competitors.

2.5.3. Behavioral Interaction

In the case of behavioral interaction the source institution influences the target institution at the outcome level. All international governance institutions are designed to influence the behavior of relevant actors in order to achieve their objectives (ib.: 40). Behavioral interaction is characterized by a high ability of the source institution to influence the target institution unilaterally.

Behavioral interaction does not depend on a decision within the target institution, because it occurs as the result of the uncoordinated behavior of actors within the two institutions involved. “Interaction influencing the behavioral performance of the target institution will always originate from the behavioral effects of the source institution. Effect of the institution on the behavior of actors outside their issue area are always a secondary effect of behavioral effect within its own domain, irrespective of whether the interaction is intentionally created or not” (ib.: 40).

The causal mechanism of behavioral interaction takes place when the source institution produces an output with an effect on the behavior of actors outside the decision-making process. This output constitutes the prescriptions, or behaviorally relevant knowledge, decision, financial assistance (ib.: 40). Relevant actors adapt their behavior in response to the output by acting differently from what would be expected in the absence of this output (including the negative side effects). Finally, the behavioral change in the source institution either directly affect the performance of the target institution or affect the outcome level of the target institution. Thus, the behavioral effect affects the target institution and hence the effectiveness of the target institution.

2.5.4. Impact-Level-Interaction

For the same reason as in the case of behavioral interaction, impact–level-interaction is characterized by a high ability of the source institution to influence the target institution unilaterally. Impact-Level Institutional Interaction takes place when the source institution produces an output, which might trigger behavioral effects and the states and non-state actors operating within the issue area governed by the source institution adapt their behavior in response to this signal. Then these behavioral changes have an impact on the ultimate target of governance of the source institution and this impact affects the target institution's ultimate target of governance.

2.5.5. Ideal Types of Institutional Interaction

Research on institutional interplay moves beyond the basic causal mechanisms described above and develops a more sophisticated framework for the analysis of individual cases of interaction, namely the Weberian Ideal Types. The construction of models or ideal types is a well-known method of social science inquiry. However, the types and classes have explanatory power only if their existence is based on a distinct logic (Weber, 1976: 11). Ideal types are deductively generated models that reflect mutually exclusive rationales inherent in different social interaction phenomena, to which real-world cases can be compared (Gehring and Oberthür, 2006: 14).

There are two ideal types of cognitive interaction and three types of interaction through commitment. The researchers were unable to identify the ideal types of behavioral interaction. Behavioral interaction occurs within the issue area but outside the decision-making process of either of the institutions involved.

The main statement that distinguishes the two ideal types of cognitive interaction is that "while learning cannot be imposed, it may or may not be triggered by the source institution" (ib.: 327). Cognitive interactions can be either triggered deliberately, or indeliberately. If cognitive interaction *is not deliberately triggered*, members of the target institution use the institutional arrangement linked to the policy idea of the source institution as a policy model.

If cognitive interaction *is deliberately triggered*, the source institution largely frames the learning process. The source institution intends to trigger a feedback from the target institution and hence to progress its own effectiveness, which automatically causes the case of behavioral interaction (id.330). A deliberately triggered cognitive interaction results in the source institution asking for assistance from the target

institution. This request results in an increased learning process imposed on the target institution. The source institution intentionally produces some decision, which triggers interaction with the target institution. “A request for assistance will usually be formally transferred by the secretariat of the source institution to the secretariat of the target institution, and it will be officially fed into the decision-making process of the latter” (id.330). A request for assistance mostly results in synergy.

The three ideal types of interaction through commitment are characterized by a key difference in the objectives, memberships or means of governance of the institutions involved.

Differences in objectives of the institutions usually create a demand for jurisdictional delimitations and cause disruption in institutional interaction (id.336). Thus they restrain the effectiveness of both institutions involved. Cases of interaction through commitment that have differences in objectives indicate the delimitation of jurisdiction. It happens when two institutions address roughly the same issue, but have different objectives. Such interplay results in disruption where the involved actors end up in conflict over the same subject. The socially constructed delimitation of the issue area creates conflict, rather than cooperation that would possibly lead to the solution of the problem in question. Interaction through commitment might also take place between two institutions with different membership. In this case two different institutions pursue identical objectives and employ the same means. Under these circumstances, interested actors would promote governance by, for example, creating a smaller nested institution in order to affect decision making in a larger institution addressing a similar range of issues. Such interaction raises the effectiveness of both institutions involved (id. 327).

In case of the different institutional means, the diffusion of an obligation from one institution to another one with identical objectives and memberships activates an additional means of implementation, which can be transformation into binding international law under the certain convention, or transformation into EU supranational law. Such interaction enhances the effectiveness of all institutions involved.

The concept of institutional interplay plays an important role in the studies on international governance because it helps in understanding the driving forces and governance conditions that structure the realm of institutional interactions. As was stated above, the research on regime effectiveness in line with the research on institutional interplay concentrates on the main question of "how, and to what extent institutions affect the state of the environment or other ultimate targets of governance" (et al.: Young, 1999; Haas, Keohane and Levy 1993, Oberthür and Gehring 2006: 18).

The empirical part concentrates on the specific cases of inter-institutional influence related to marine eutrophication in the Baltic Sea Region and explores how institutional interactions affect this issue area. Generally, the rules that are modified by cognitive interaction or interaction through commitment may affect the outcome and the impact level of the target institution. Behavioral interaction may be responded to at the output level of the target institution and may lead to subsequent effects at the impact level.

2.6. Impact of Institutional Interplay on Regime Effectiveness

The research on institutional interplay as an explanatory factor of causal influence is based on the theory of the establishment and effectiveness of the international regimes. International environmental regimes do not exist in isolation from

other institutions, or other policy fields. Although environmental regimes are usually targeted at the specific issue areas, their influence is going beyond their own domains (Oberthür and Gehring, 2006: 1).

There are four casual pathways that imply how institutional interplay may influence the effectiveness of international regimes: ideational, normative, utilitarian and management (Stokke 2001: 12). The "process of learning" plays a major role in institutional interaction because an institution with substantive and operational rules can serve as a model for other institutions negotiating another regime. Hence, ideational interaction helps to understand the spread of general normative principles. Normative interaction is driven by a commitment and refers to situations where the norms of one institution either contradict or validate those of another institution. The utilitarian interaction is driven by an incentive, meaning that the decisions taken within one institution changes the costs and benefits of those of another institution. Finally, the forth pathway is related to political management of the inter-institutional influence.

The research on institutional interplay and institutional complexes has expanded the multiple studies on regime effectiveness (Stokke, Oberthür, 2011: 5). The regime's effectiveness theory, however, has mostly concentrated on the impacts of individual institutions within their own governance field. The concept of institutional interplay focuses on the effects institutions have on each other and hence, analyses the broader consequences that institutions may have beyond their own domains (Underdal and Young 2004; Stokke, Oberthür, 2011: 5).

Scholars of regime effectiveness differentiate between the levels of regime effectiveness. The output level constitutes the decision-making process and includes the establishment of rules, norms and generation of knowledge and ideas. The outcome

level, along with the impact level, represents the consequences of the international regimes.

The differentiation of the levels of effectiveness of institutional interplay occurs in the same way. Institutional interaction exists at the output level and thus, has an impact on the decision-making process. When interaction occurs on the outcome level, it impacts the behavior of the actors. Finally, the interaction on the impact level affects the target of the governance in the specific issue area (Oberthür and Gehring, 2006: 43). Institutional interaction may occur at any of these levels.

All causal mechanisms of institutional interplay start with a significant output of the source institution (ib.43). Causal mechanism of the cognitive interaction and interaction through commitment occurs when the output level (decision-making process) of the source institution directly affect the output level of the target institution.

In case of behavioral interaction, an output of the source institution changes the *behavior* of relevant actors within the source institution, before it can exert influence on the behavior of actors relevant for the effectiveness of the target institution (ib.: 42). Thus, the behavioral interaction occurs on the outcome level. The impact-level interaction operates on the impact level of effectiveness, while the output of the source institution affects the behavioral and impact levels of the source institution, before it directly affects the impact level of the target institution.

2.6.1. Effects of Institutional Interplay: Synergies and Disruptions

International environmental regimes do not exist in isolation from other international environmental institutions or from institutions in other policy fields.

Moreover, international institutions exert influence on the development and effectiveness of other international policy instruments within the same policy field and beyond it. Such political influence either creates synergy by supporting the policy of the affected institution or it may undermine and disrupt the effectiveness of this institution. Thus, inter-institutional influence may either positively contribute to the international environmental governance or worsen the existing difficulties of this governance.

Successful institutional interplay can lead to the synergies and as a result support the policy of the affected institution. Such interplay leads to the increased effectiveness of both source and target institutions. Beneficial effects will create synergy between the two institutions because the policy direction of the target institution is affected by the measures originated from the source institutions.

On the other side, the disrupting interplay may reduce the efforts of the international cooperation and decrease the effectiveness of the respective institutional policy. The phenomenon of the institutional interaction explains how international regimes and/or the EU legal instruments may affect or be affected by other institutions. Institutional interaction occurs both within the same policy field and beyond it (Stokke and Oberthür, 2011: 5).

Adverse effects will mostly result in disruption of target institution policies because measures originating from the source institutions undermine the effectiveness of the target institution's measures or they force the target institution to adopt unwanted rules. The objectives of the target institution represent the major yardstick for assessing the consequences of a case of institutional interaction. An institutional objective indicates the direction of collectively desired change, or the aim of maintaining a desired status quo against some collectively undesired change (Gehring, 1994: 433-

449). The effects of institutional interaction are generally experienced within the target institution, both, in the decision-making process or in the area governed by the target institution. If the effects support the objectives of the target institution, they create synergy between the two institutions involved. If they contradict the target's objective, they result in disruption. The effects of the interaction may also be neutral if they do not clearly hinder or support the objectives of the target institution.

Most institutions interact with other institutions both at the same level of social organization and at different levels of social organization (Young, 2002: 23). Horizontal interplay deals with the problems at the same level while vertical interplay represents the links between arrangements that deal with related issues at adjoining levels of social organization. The most common interactions on the vertical level are those between national and local levels. The most common example of the horizontal interplay features the political arrangements within the same political system, for example at the European level.

A majority of the cases of institutional interaction within the same policy field create synergy. The disruption happens more often at the international level, while synergy dominates at all levels, namely in horizontal interaction between the EU legal environmental instruments, and in vertical interaction between international and the EU instruments (Stokke and Oberthür, 2011: 12).

However, analyzing the cases of the environmental institutional interaction, it is obvious that both horizontal interactions between the EU institutions and interactions between international institutions and the EU (vertical level) sometimes result in disruption and in the conflict of interests. It mostly happens because institutions have considerably divergent objectives and may be supported by different constituencies (ib.:

13). For example, the relations between the climate change regime and non-environmental institutions, such as the oil and gas companies, have been disruptive more frequently than the climate change regime's relations with other environmental institutions (ib.: 59).

The scholarly literature on institutional interaction notably focuses on inter-institutional conflict rather than on cases resulting in synergy. In most cases of inter-institutional interplay, disruption and conflict occur rather as unintended side effects, because institutional interplay mostly results in synergy, rather than disruption. However, a potential for improvement exists more frequently in cases with disruptive outcomes rather than in cases with positive effects. "Positive effects of institutional interaction are commonly 'consumed' without further action, irrespective of the potential for further improvement that may exist" (Gehring, Oberthür 2008: 195).

The concept of institutional interplay plays an important role in studies on international governance because it helps to understand the driving forces and governance conditions that structure the realm of institutional interaction. The concept of institutional interplay focuses on the effects institutions have on each other and hence, analyses the broader consequences that institutions may have beyond their own domains (Underdal and Young 2004; Stokke, Oberthür, 2011: 5).

The theory of institutional interplay adds to the general understanding of inter-institutional relations and expands knowledge on institutional effectiveness. The effectiveness of an institution partly depends on its performance and partly on its interactions with other arrangements that have overlapping jurisdictions (Young, 1999: 49).

2.7. Analytical Framework: Applying the Theoretical Approach to the Empirical Study

The choice of the theoretical approach was driven by the cases addressed in the empirical part of this dissertation. Two case studies analyze the effects of the output level institutional interplay on eutrophication governance in the Baltic Sea Region. The third case study analyzes the effect of misfit between the ecosystem and the EU CAP with regard to marine eutrophication in the Baltic Sea.

Given that marine eutrophication is a very complex topic, there is a combination of theories that can be taken into consideration and be tested in order to explain ineffectiveness in the issue area. The ineffectiveness in eutrophication governance is the dependent variable of the study. The independent variables, which are synergy and disruption of institutional interplay, and institutional misfit, are derived from regime theory and the theory of institutional interplay.

The common denominator that unites the research on regime effectiveness and the research on institutional interplay constitutes the three levels of institutional effectiveness, namely, output, outcome and impact levels. The effectiveness of institutional interplay will be measured at the output level. This study explains how the institutional decision-making process and knowledge contribute to the solutions of the issue in question. Institutional interplay occurs between the decision-making processes both on vertical and on horizontal levels of social organization.

An important analytical step in applying the theory of institutional interplay is to identify the European institutions that can be seen as equivalents to international regimes. "The organizational actors that are usually denoted as 'European Institutions' such as the European Commission, the European Court of Justice, and the European

Parliament do not qualify. Although they play an important role in policy-making, they do not represent systems of norms, rules and related decision-making processes that are deliberately established to govern a given area of European relations" (Gehring and Oberthür, 2006: 24). Different EU policies also cannot be compared with international regimes. The policies of the European Union display considerable internal differentiation of instruments, policy approaches and processes. Thus, "neither the EU at large, nor its policy areas seem to constitute functional equivalents of international regimes and organizations" (ib.: 24). Therefore, the EU legal instruments such as directives and regulations are the only equivalent to the international regimes.

Both the establishment of the EU directives and the regulations and the establishment of the protocols and recommendations of the international regimes require strong intergovernmental participation (Gehring and Oberthür, 2006: 25). However, there are some structural differences between the operation of the international regimes and the legal instruments of the EU that need to be explained. Due to the comprehensive institutional frameworks of international regimes, it is frequently much easier to adopt the EU directive than to establish an international regime.

Firstly, the decision-making process of EU directives is embedded in an integrated framework, while the decision-making processes behind different international regimes are typically independent from each other. Secondly, the EU law-making process involves the European Commission, the Council of Ministers, and the European Parliament as supranational bodies. The European Commission plays a much stronger role in the realms of implementation and enforcement than the secretariats of international regimes. Moreover, the decisions of the European Commission and the

European Court of Justice are legally binding and can be enforced through the system of penalty payment.

The EU legal instruments, such as the EU directives share the fundamental characteristics of specific international regimes because their substantive norms and obligations are designed to guide the behavior of relevant actors. The set of nested and overlapping global, European and regional institutions represent the institutions governing marine eutrophication in the Baltic Sea.

Disaggregated cases of institutional interplay represent an explanatory factor. The political and functional linkages surrounding the cases of interplay characterize a first step of analysis. The established cases of institutional interplay constitute cognitive interactions, and interactions through commitment. In one case, the interplay results in synergies, which can be measured based on successful policy change and the adoption of the policy model within the target institution. The second case results in disruption, which is explained by spatial overlap. The disruptive interplay leads to a loss of the effectiveness in the target institution. This variable supports one of the hypotheses of the study that a disruptive interplay is a reason for the ineffective handling of marine eutrophication in the Baltic Sea.

The relationship between the marine ecosystem of the Baltic Sea and the EU CAP is analyzed using three sources that support operationalization of the independent variable of misfit. A conflict between the CAP and the eutrophication governance shows a lacking coordination between different sectors of the European policy-making process. The closer the fit between ecosystems or the issue areas and institutional systems, the better the relevant institutions will perform (Young, 2002: 20). Marine eutrophication is tied to agricultural production and therefore involves some economic

and political arrangements that may be in conflict with the fragile ecosystem of the Baltic Sea. Therefore, the variable of institutional misfit supports another hypothesis that the misfit between the EU CAP and the Baltic marine ecosystem is a major factor that can explain the failure to solve marine eutrophication problems in the Baltic Sea.

The ineffectiveness in eutrophication governance is explained by adapting the regime theory and the theory of institutional interplay. Doing this contributes to institutionalism theories. The theories, emphasizing the importance of institutional interactions at the regional and European levels, also draw attention to supranational leadership.

3. Methodology: Selection of the Case Studies

The condition of the Baltic Sea keeps deteriorating as a result of marine eutrophication. The following chapter explains the research strategy and methods used in order to answer how does institutional interplay between the MSFD, HELCOM and the WFD, and institutional misfit between the CAP and the marine ecosystem of the Baltic Sea affect eutrophication governance.

The choice of the case studies usually depends on the character of the original ecological problem (Young, 1999: 214). Thus, the case studies for this dissertation are selected in order to provide variation of variables required for answering the research question.

Marine eutrophication constitutes a major environmental problem for the entire Baltic Sea Region. The transnational eutrophication governance includes the "soft-law" measures represented by the HELCOM and the "hard law" instruments represented by the legally binding EU directives, namely the EU WFD and the EU MSFD.

Both the theory of the regime effectiveness and the theory of institutional interplay are used to frame the empirical research. A notion of the institutional interplay is based on the identification of the causal relationships between two or more interacting institutions. The European Union has developed a myriad of environmental legal instruments, primarily directives and regulations, which makes the EU a great case study for examining their interplay. As already mentioned in the theory of institutional interplay, only such EU legal instruments as directives can be seen as an equivalent to international regimes. The notion of regimes, used in the context of this study, represents systems of norms, rules and decisions, while the EU policies contain a wider

mix of instruments, policy approaches and processes. Thus, the EU directives and regulations are the only equivalent to international regimes. The two EU directives and the HELCOM, as a regional transnational environmental regime, are the most suitable case studies to explore the effects of institutional interplay.

In order to apply the theory of institutional interplay to the environmental issue of marine eutrophication, the institutional interactions have to be disaggregated into several bilateral cases with a clearly defined source and target institutions and clearly defined causal pathways. More complex explanations of the issue area are then expected to result from "particular forms of the coexistence of, and interplay between several cases of interaction" (Gehring and Oberthür, 2006: 24).

The first case study analyzes the output level effects of the institutional interplay between the HELCOM as a source institution and the MSFD, as a target institution. Both the HELCOM and the MSFD are strongly influenced by the Ecosystem Approach of the UN CBD. Therefore, the relationship between the Ecosystem Approach as a source institution, and the HELCOM and MSFD as target institutions, is also analyzed in the first case study. The preliminary result of this interplay is considered to be synergetic.

The second case study analyzes the output level effect of the interplay between the WFD as a source institution and the MSFD as a target institution. The preliminary result of this interplay is considered to be disruptive.

The agricultural runoff to the Baltic Sea is one of the main factors responsible for marine eutrophication. Marine eutrophication is a very complex problem. It is certainly affected by the numerous sectors beyond agriculture, such as transportation, industrial and municipal waste. However, other sectors are not taken into account in this

study, because, according to the monitoring of the HELCOM, the industrial and municipal runoff into the Baltic Sea has declined in the recent decade. The EU has successfully developed certain policy measures to deal with marine pollutants not related to agriculture.

The relationship between the ecosystem of the Baltic Sea and the CAP constitutes the third case study. According to one of the hypotheses, the institutional misfit between the CAP and marine ecosystem contributes to ineffectiveness in solving the problem of marine eutrophication in the Baltic Sea Region. Moreover, the CAP considerably limits the effectiveness of the environmental agreements in the region in general. The effect of the EU CAP on the marine environment of the Baltic Sea will be explained by applying the concept of fit.

3.1. Operationalization of Variables

The dependent variable, which needs to be explained in the empirical analysis, is the effectiveness of governance of the marine eutrophication in the Baltic Sea. The independent variables affecting the eutrophication governance effectiveness are the institutional interplay within eutrophication governance, and the misfit between agricultural policy and the marine ecosystem.

In order to operationalize the independent variable of the interplay between the institutions addressing marine eutrophication, two possible outcomes of interplay have been specified: synergy and disruption. The analysis of the synergetic and disruptive effects of the institutional interplay supports the first hypothesis that marine eutrophication has not been solved because of the disruptive institutional interplay that exists in eutrophication governance.

Different typologies of the functional and political linkages help to understand the synergetic and disruptive effects of interplay and explain why the effectiveness of one institution depends on the output provided by the other. The relationship between the HELCOM, the WFD and the MSFD includes both political and functional linkages and will be analyzed in the first two case studies.

The third case study explores the institutional misfit between the EU CAP and the ecosystem of the Baltic Sea. There are three factors that affect institutional fit: the imperfect knowledge, rent-seeking behavior and institutional constraints. Analysis of these factors operationalizes the independent variable of misfit.

In explaining the institutional misfit between the CAP and marine ecosystem, the following steps of analysis will be applied. Firstly, the marine ecosystem will be modeled to "the scale of relevance" (Ekstrom, Young, 2009: 3). The scale of relevance for this study constitutes the entire marine environment of the Baltic Sea including coastal areas, exclusive economic zones and open waters.

Secondly, for this study ecological components of hypoxia caused by marine eutrophication are of relevance. Hence, the pollution that causes eutrophication will be analyzed leaving other marine pollution aside. This strategy does not diminish the danger of other sources of pollution affecting the marine ecosystem, which might be of interest for further research.

The next step is to determine the "institutional gaps" in the CAP that cause eutrophication. Institutional gaps are specific links in the marine ecosystem of the Baltic Sea that are not accounted for in the institutional arrangements of the CAP. The links in the marine ecosystem are based on the ecosystem principles once introduced by the UN

CBD (Ekstrom, Young, 2009: 4). The more gaps are identified the lower the institutional fit between the CAP and the marine ecosystem of the Baltic Sea.

Preliminary results confirm the second hypothesis and show that social features of the CAP related to marine eutrophication fit poorly with the marine ecosystem, which negatively affects eutrophication governance.

Summarizing, the three independent variables that affect marine eutrophication in the Baltic Sea are the synergy and disruption of the institutional interplay, and institutional misfit. The research design is depicted in Figure 2.

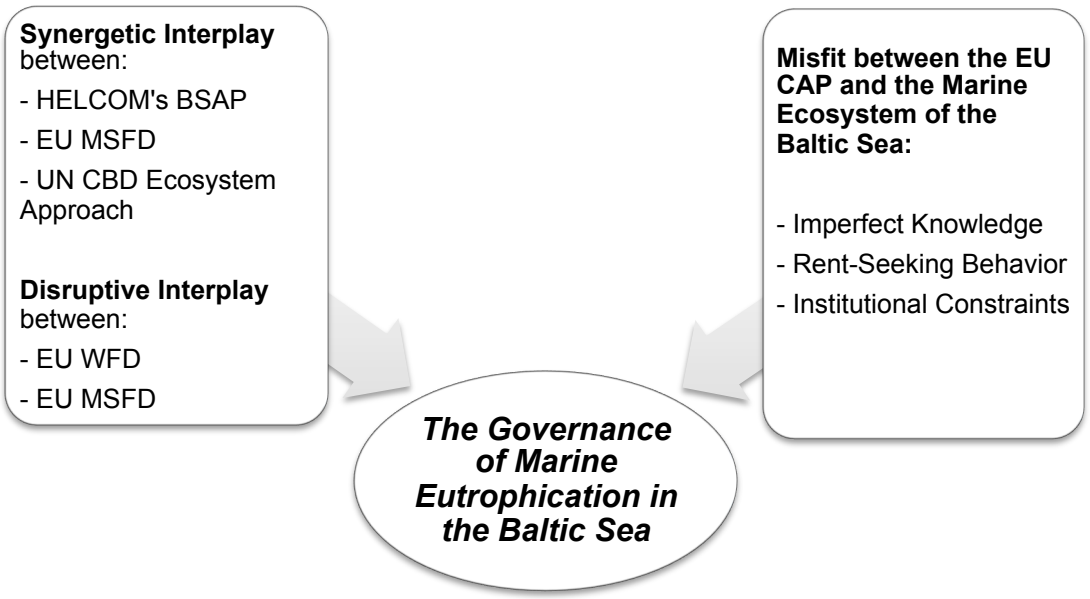


Fig. 2. Research Design. Compiled by the author

The variance between variables is described in terms of qualitative types of outcomes and contributes to theory development on the effectiveness of institutional interplay. The set of independent variables captures the essentials of the causality of the case

study. The analysis of the case studies starts with the chronological narrative that helps to understand the basic outlines of the cases (George and Bennet, 2005: 90).

3.2. Primary and Secondary Sources in the Case Study Analysis

A qualitative approach in the form of the case studies is used in this dissertation. The qualitative approach provides in-depth evaluations of the cases based on observations, interviews, and other qualitative information (George and Bennett, 2005: 91). Two methods have been applied: a qualitative content analysis of primary and secondary literature and the process-tracing method.

Documentary data was used in order to map the organizational structure of eutrophication governance in the Baltic Sea Region and to analyze the policy development related to the issue area. More specifically, the analysis focused on the institutional setup and on the policies and policy instruments related to the issue area. The analyzed central EU documents included directives, white and green papers, action plans and reports. The analyzed HELCOM documents included commission recommendations and communications related to eutrophication, among others also the Baltic Sea Action Plan. The majority of the documents have been reclaimed via the Internet. However, some of them were kindly offered by the officials working for the HELCOM secretariat. The direct contact with officials makes this study empirically more genuine and relevant.

A notable issue with secondary sources is the "biases of their authors, and a tendency to overestimate the rationality of the policy-making process while underestimating the complexity and the multitude of the interest that may be at play" (id. 92). In order to answer the research question, it is also vital to analyze the original

(primary) sources, such as archival materials and interviews along with theoretical literature and government documents.

The author has participated in several workshops and conferences (see Appendix 2) on marine pollution prevention organized by the HELCOM and the European Commission. This participation allowed her to get detailed insights into the work of the HELCOM and the EU and to understand their decision-making process.

To further complement the data obtained from the document analysis, a number of interviews (nineteen) were held at the HELCOM annual conference in Warnemünde, Germany in February 2013 and at the conference "a greener agriculture for the bluer Baltic Sea" in Helsinki in August 2013. The questions asked centered on how well the EU directives complement each other and the BSAP of the HELCOM and what impact their relationship has for addressing marine eutrophication. The author also asked about the role of the EU CAP in solving eutrophication problem.

The opinions of experts from the Baltic Sea Research Institute in Warnemünde, Germany about hypoxia were also taken into account when exploring the issue.

3.3. Interviews

In the course of collecting the data for the case studies, the author has conducted interviews with the representatives of the EC responsible for the Baltic Sea Region and representatives of the HELCOM.

The semi-structured interviews were based on a questionnaire with six questions (See Appendix 1). The pre-planned questions still allowed asking other questions in the process of the interview, if needed. These semi-structured interviews were conducted in

person. The answers to spontaneous questions were difficult to use in systematic comparison, but were still helpful for better general understanding of marine eutrophication in the Baltic Sea.

All nineteen interviewed persons explicitly asked not to reveal their names in the dissertation. Thus, a list of the interview partners is not provided, because they decided to remain anonymous.

The analysis of interview transcripts was based on a deductive approach. A deductive approach means that the categories of analysis are generated prior to data collection and analysis (Patton, 1980: 306). The method of coding speech into meaningful categories was applied in order to analyze the interview data. The responses were labeled into categories and coded. The method of focused coding was used to combine the coding categories and to find ideas that were repeated which connect these codes (Berkowitz, 1997 et al.). The author has picked four coding categories, related to marine eutrophication. Namely, the "successful interaction between HELCOM and the EU", "failed cooperation between HELCOM and the EU", the "CAP and eutrophication", and the "regional responsibility". These codes rest on the theory of institutional interplay and the approach of institutional misfit. After the coding categories were developed, a common pattern was found in relation to the question on how to effectively solve marine eutrophication. Both the representatives of the EC and the representatives of the HELCOM came up with similar answers to this question.

There was a difference between the answers from the representatives of the regional regime and the EC. In the opinion of the representatives of the HELCOM, marine eutrophication in the Baltic Sea is underrepresented in EU legislation because the Baltic Sea Region is not seen as an important strategic target for the littoral

countries. Moreover, the littoral countries where the capitals are remote from the Baltic Sea (Germany, Russia, Poland and Lithuania) are potentially less interested in marine eutrophication, than the countries whose capitals are situated in territorial proximity to the Baltic Sea. The EU representatives expressed a contrary opinion and stated that eutrophication in the Baltic Sea was not treated indifferently by the member states remote from the Baltic Sea.

The answers related to the responsibility of the EU CAP also were clearly different. The HELCOM representatives acknowledged that agricultural runoff causes marine eutrophication, while the EU representatives referred to the "general lack of knowledge about why the dead zones in the Baltic Sea are so severe".

The results of the interpreted interviews contribute to the better understanding of the case studies. The interviews were also helpful in order to get a general understanding of marine eutrophication and of the mechanisms of the inter-institutional coordination.

3.4. Implications for Theory Development Applying the Approach of Process-Tracing

The case study findings have implications for theory development on the effectiveness of institutional interplay. This section highlights the usefulness of the deviant cases for inductively identifying new variables or causal mechanisms. This dissertation is based on an inductive approach, which means that in the course of conducting the case studies, the relationship and causality between independent and dependent variables was guided by empirical reality.

The approach of process-tracing helps to get closer to the causal mechanisms behind the observed phenomena and provides an alternative to a controlled comparison (George and Bennett, 2005: 179). Applying process-tracing to the study of marine eutrophication allows one to compare and analyze cases that are not similar in every respect but one. The institutions involved in eutrophication governance of the Baltic Sea act in a region with similar bio-geo-physical and socioeconomic qualities.

"Process-tracing is a methodology well-suited in a world marked by multiple interaction effects, where it is difficult to explain outcomes in terms of two or three independent variables - precisely the world that more and more social scientists believe we confront" (Hall, 2000: 14). The process-tracing method helps to identify the causal mechanisms between independent variables and the outcome of the dependent variable.

Using process-tracing offers the possibility to structure the causal paths that lead to a given outcome. Precisely, process-tracing helps to explains what factors lead to deterioration of eutrophication in the Baltic Sea Region, despite well developed European and regional institutions. The process-tracing starts with a detailed description of the institutions involved. The next step of the process-tracing "turns the narrative into an analytical causal explanation" (George and Bennett, 2005: 208). That means the relationships between the described institutions are being analyzed and deliver the explanation to the research question. The causal explanation focuses firstly, on the institutional interplay between the HELCOM, the EU MSFD and the EU WFD. Secondly, it emphasizes the institutional misfit between the CAP and the Baltic marine ecosystem.

There are several techniques used in process-tracing. The choice of technique depends on the nature of the case studies. Process-tracing is easiest in cases where direct causality, or a direct chain of events in the research phenomena, can be found. However, the majority of research phenomena in political science are more complex. They require understanding of the "convergence of several conditions, independent variables, or causal chains" (id. 212). The most complex technique of process-tracing requires understanding interacting causal variables, that is, those that are not independent of each other. This study applies the most complex technique and traces the processes of decision-making and interplay of the institutions influencing eutrophication in the Baltic Sea.

The three case studies follow an inductive investigation of the effects of institutional interplay and misfit on eutrophication governance. The theory of institutional interplay identifies the effects as synergetic and disruptive, which is helpful in capturing the interactions and their implications on marine eutrophication.

This dissertation aims to contribute to the theory development of effectiveness of institutional interplay. In this context the independent variables have causal impact on the effectiveness of solving the eutrophication problem. Thus, the process-tracing method helps to assess whether each of the independent variables "in the imperfect matched cases can, or cannot be ruled out as having causal significance" (id.213).

4. Institutions influencing Marine Eutrophication in the Baltic Sea

Human actions disturb ecosystems located beyond the jurisdiction of individual member states (Young, 2002: 145). International environmental governance can be described as "the establishment, reaffirmation or change of institutions to resolve conflicts over environmental resources" (Adger et al., 2003; Bromley, 1989, 1991; Young, 1994; Paavola, 2007: 95). This chapter starts with describing the international agreements and the early European policies that have played a significant role in the prevention of international marine pollution. These pieces of legislation and policies are important for understanding the complexity of marine eutrophication.

Marine eutrophication in the Baltic Sea is still acute, despite the numerous institutional efforts to solve it. Thus, this chapter continues with an overview of the institutions currently affecting marine eutrophication in the Baltic Sea Region. Eutrophication governance in the Baltic Sea includes three institutions: the HELCOM, the EU WFD and the EU MSFD. The Helsinki Convention has established the Baltic Marine Environment Protection Commission, referred to as the HELCOM. The HELCOM is an intergovernmental organization that has developed and maintained a large network of governmental and non-governmental actors and institutions.

The UN CBD Ecosystem Approach has influenced both the HELCOM Baltic Sea Action Plan and the EU MSFD. The HELCOM and the MSFD have integrated the Ecosystem Approach respectively in a recommendation and legislation. Both the MSFD and the WFD were set up to reduce water pollution in the EU. However, the

WFD concentrates on river basins, estuaries and coastal waters, while MSFD was created to regulate marine pollution. The EU CAP is also an important institution for understanding the context of the problem. The impact of the agricultural sector on the marine environment is tremendous because nutrient leakage from agricultural run-off remains the main reason for increased eutrophication in the Baltic Sea.

4.1. International Marine Protection

The protection of the marine environment is a very complex issue in terms of distribution of responsibilities. The states have the capacity to exercise jurisdiction over their territorial waters. The international law considers territorial waters as the area that extends 6 to 12 nautical miles (11 to 22 km) from the shores of a state. Territorial waters are subject to the territorial jurisdiction of the national state.[9] According to the UN Law of the Sea,[10] the zone extending 200 nautical miles (370 km) beyond these territorial waters is known as an exclusive economic zone (EEZ). Within this zone coastal states have no territorial rights and assert limited jurisdiction over economic activities, such as fishing, the construction of artificial islands and installation of equipment for the generation of energy from waves. The area beyond these zones is considered the high seas and is open to use for all countries for the purposes of navigation, laying cables and pipelines, constructing artificial islands and other installations, fishing, and scientific research. The high seas zone is governed by international law. The high seas zones can be considered a common pool resource, meaning that the sea is common and "belongs" to everyone.

[9] See: UN Law of the Sea: www.un.org/depts/los/index.htm. Accessed: 21.01.2012
[10] See: The United Nations Convention on the Law of the Sea

There is no high seas zone in the Baltic Sea (Edler and Streufert, 2007: 100). Therefore, the littoral states are rather bound to cooperation on the European and regional levels rather than on the global level. However, the United Nations Convention on the Law of the Sea (UNCLOS) is the core international agreement that defines the rights and responsibilities of nations worldwide in ocean resource utilization and management. The UNCLOS was adopted in 1982 and establishes the rights of marine use and duties of the states related to marine pollution. The UNCLOS provides the framework for the further development of specific areas of the law of the sea and promotes international cooperation. The UNCLOS Article XII[11] obliges all countries to protect and conserve the marine environment. Therefore, all coastal states are legally bound by UNCLOS to cooperate in case of threats to the marine environment. The UNCLOS defines marine pollution as "the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities" (Art. 1, UNCLOS). The UNCLOS allows the signatory states to exploit the marine resources available to them. However, the right to exploit the marine environment for human needs indicates the responsibility of states to ensure that the activities within their own jurisdiction do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction.

The UNCLOS emphasizes the special role of the International Maritime Organization (IMO), which is responsible for the formulation of rules and standards

[11] See: UNCLOS, Article XII

related to pollution from vessels[12]. The IMO has described the Baltic Sea as a particularly vulnerable marine ecosystem. In 2005 the IMO granted the Baltic Sea the status of a Particularly Sensitive Sea Area (PSSA). A Particularly Sensitive Sea Area (PSSA) is an area that "needs special protection through action by IMO because of its significance for recognized ecological or socio-economic or scientific reasons and which may be vulnerable to damage by international maritime activities."[13] In order for any IMO regulation to be legally binding, it must first be ratified by a total number of member countries with gross tonnage equal to at least 50% of the world's gross tonnage.

In 1973 the IMO concluded the International Convention for the Prevention of Pollution from Ships (the MARPOL). The MARPOL is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes.[14] Each signatory nation is responsible for the implementation of the convention. A spate of tanker accidents in 1976-1977 was a reason for the adoption of the Convention that entered into force in 1983. The MARPOL has since been updated by amendments. The MARPOL is considered to be relatively effective agreement in reducing oil spills. However, it did not stop them and as a result other regulations have been put in place by different states.

The MARPOL sets more stringent pollution standards for certain "special areas" which are particularly vulnerable to pollution such as the Mediterranean, Baltic, Black, Red Seas and the Persian Gulf. In 2011 the IMO adopted the most recent amendments to MARPOL Annex IV, which introduced the Baltic Sea as a special area and added new discharge requirements for passenger ships. The

[12] See: UNCLOS, Article XXI
[13] See: IMO; Particularly Sensitive Sea Areas. Accessed 12.04.2014
[14] See: IMO; International Convention for the Prevention of Pollution from Ships (MARPOL). Accessed 12.04.2014

amendments will enter into force in January 2013. However, the new sewage emission control will be first applicable to ships visiting that area after January 2016 for newly constructed ships, and from January 2018 for existing ships.

The Annex IV on prevention of pollution by sewage from ships entered into force in September 2003. It contains requirements to control pollution of the sea by sewage. The discharge of sewage into the sea is generally prohibited unless the ship operates an approved sewage treatment plant. The convention also has an approved system of discharge distance. It allows a ship to discharge treated and disinfected sewage at a distance of more than three nautical miles from the nearest land, while not treated or disinfected sewage can be discharged at a distance of more than 12 nautical miles from the nearest land.[15] The MARPOL also designates the Baltic Sea as a Nitrogen Oxide Emission Control Area (NECA). Designation of the Baltic as a NECA is expected to cut nitrogen emissions from ships by 60 percent after 2016.[16]

Both the Annex IV and the NECA are expected to positively affect marine eutrophication in the Baltic Sea. However, in the mean time the issue area is co-governed by the European and regional institutions.

[15] See: MARPOL, Annex IV. Accessed 12.04.2014
[16] See: NOx controls for the Baltic on the horizon. Assessed 20.02.2014

4.1.1. The Role of the EU Member States and Russia in Eutrophication Governance of the Baltic Sea

The intensive use of fertilizers in the agricultural sector of European states creates a nutrient overload and contributes to eutrophication in local rivers. The nutrient loads come into estuaries and then into the marine water, which turns a local ecological disturbance into a large regional ecological issue. The problem of marine eutrophication cannot be solved without cooperation on the part of all states whose jurisdiction they pass through. Therefore, international institutions and transnational norms guide the states on how specific environmental tasks should be accomplished. "Treaties and regimes concerning the use of ecological protection of regional seas are embedded in larger bodies of law concerning such issues as national boundaries, the use of common resources and treaty making" (Krasner 1993, 139).

Scholars of international regimes argue that state sovereignty is embedded or nested within the larger framework of international institutions with which a state has a relationship. Although the eight littoral countries in the Baltic Sea Region are all members of the EU, they have their own national marine policies and national legislation regulating environmental issues. During the Cold War, the coastal states of Finland, Denmark, Sweden and Germany were considered the environmental leaders in terms of marine protection of the Baltic Sea. The socialist countries, Estonia, Latvia, Lithuania and Poland, were considered environmental "laggards" (Greene, 1998: 179). After the collapse of the Soviet Union and EU enlargement in 2004, the new states were required to transpose the EU environmental Acquis Communautaire into national legislation. The Acquis Communautaire represents the entire body of European legislation, comprising all the treaties, regulations, and directives adopted by the European Union. The former socialist countries thus strengthened their

national environmental legislations according to the requirements of the EU, bringing their environmental conditions closer to their Scandinavian neighbors and Germany. The national strategies on the Baltic Sea Protection partly reflect the goals expressed in the EU regulation and partly the goals expressed in the HELCOM BSAP.

The only non-EU state in the Baltic Sea Region is Russia. The coast of the Baltic Sea that belongs to Russia occupies only 2 percent of the total area of the Baltic water basin and the marine waters located in this area are extremely polluted. In 2009 the HELCOM confirmed that Russia ranked third in the release of nitrates and second in phosphate emissions of the nine littoral countries (HELCOM, 2009: 77). Russia is not a member of the EU and hence, it does not have to comply with EU legislation. Currently, due to the worsening relations between Russia and the EU, caused by the armed conflict in the Ukraine in 2014, it is difficult to make any prognosis of how the EU-Russia relationship will develop in the future. However, Russia has a long history of cooperation with the HELCOM as a regional environmental regime. Therefore, the HELCOM will probably remain a strong actor in the environmental governance of the Baltic Sea because it connects the European Union with the only non-EU country in the region.

The group of researchers that explores eutrophication governance in the Baltic Sea emphasizes the inconsistencies in Russian environmental protection efforts (Nina Tynkkenen, Paula Schönach, Mia Pihlajamäki, Dmitry Nechiporuk, AMBIO 2014: 107). During the 1990ies Russia experienced numerous political and economic difficulties partly caused by the collapse of the Soviet Union. A division of responsibilities between the federal and regional authorities also contributed to instability in the environmental administration of the Russian Federation. The strong concentration on economic development contributed to the further weakening of

Russian environmental policy. Another reason for Russia's weak environmental policy is the weakness of national environmental institutions. The national ministry responsible for environmental issues in the Russian government has been restructured five times (Nechiporuk, Nozhenko and Belokurova, 2011: 46). In 2000 it was completely eliminated, and then re-established in 2008 (id. 45). Socioeconomic difficulties, the geographic distance of the capital city from the Baltic Sea, along with low national public awareness of environmental issues in general, diminish the significance of marine pollution of the Baltic Sea as a political topic in Russia. Due to the main focus on international regimes, this study will pay no further attention to Russian environmental policy and its national approach to marine protection.

Despite its weak national environmental institutions and environmental policy, Russia signed the international HELCOMs Baltic Sea Action Plan (BSAP) in 2007. According to the BSAP each country has to develop and implement its own national programme in order to reduce marine pollution in the Baltic Sea Region. In 2010 during the Moscow meeting of Ministers of the Environment of HELCOM Member States, Russia proposed a "National Program for the Rehabilitation and Recovery of the Baltic Sea Ecosystem." The program proposes several goals for improvement of the marine ecosystem. However, it considers environmental degradation as a purely technocratic problem, which can be solved for example, by constructing wastewater treatment facilities (Nechiporuk, 2011: 47). Thus, Russia and the EU have clearly different approaches regarding the environmental policy in the Baltic Sea. The more holistic approach of the EU MSFD is based on the ecosystem approach and aims to treat specific marine areas individually in order to achieve the good environmental status in marine waters.

Despite the policy differences with the EU, Russia participates in the HELCOM programs. HELCOM has a long history of dialogue with Russia and Russia tends to show its support to the HELCOM. The HELCOM engages all nine littoral countries in the transnational environmental cooperation for more than 4 decades, which underlines the importance of the HELCOM for international eutrophication governance.

Eight out of the 9 coastal countries in the Baltic Sea Region are members of the European Union and hence, must comply with European legislation. Other member states and Russia also typically follow the recommendations of the Helsinki Commission.

Marine eutrophication in the Baltic Sea goes beyond the borders of the states and requires both the monitoring and the recommendations of the Helsinki Commission and the legislative power of the European Union. The complicated nature of eutrophication requires transnational institutional cooperation on concerns once considered as a matter for domestic authorities.

4.1.2. Early European Legislation affecting Eutrophication

Various pieces of European legislation have been introduced to address marine pollution in adjacent seas. However, despite the effort of the European community to protect the marine environment, in 1987 only 37 percent of European beaches complied with EEC standards for bathing waters (Haas, 1990: 12).

The detailed lists of the substances banned for emissions into rivers and seas in the Single European Act of 1987 introduced the protection of the environment as an independent task for the EU for the first time. Extending on this, the EU adopted the Sixth Community Environment Action Programme in 2002. The Environmental Action Programme required taking action in four priority areas within the timeframe of 2002 to 2012. The priority areas included climate change; nature and biodiversity; environment, health and quality of life; and actions on the sustainable use and management of natural resources and wastes (EC, 2002: 9).

In the 1980s the environmental marine condition of the North Sea has worsened. One of the reasons for such degradation was heavy algal bloom. The EU has addressed this problem, which led to the adoption of the Urban Waste Water Directive and the Nitrates Directive (Prat 1990: 103). The Urban Waste Water Directive and the Nitrates Directive have affected current EU legislation on combating eutrophication the most. The Nitrates Directive forms an integral part of the Water Framework Directive and is one of the key measures to achieve WFD objectives (EC, 2002:11). A short elaboration on these pieces of legislation is essential for understanding the institutional analysis, which follows in the following chapters.

The Council Directive 91/271/EEC or Urban Waste Water Treatment Directive (UWWD) came into force in May 1991. The UWWD concerns the "collection, treatment and discharge of urban waste water and the treatment and discharge of waste water from certain industrial sectors."[17] The main objective of the UWWD is "to protect the environment from the adverse effects of urban waste water discharges." The UWWD addresses the nutrient discharge caused by the municipal waste and food industries. The Directive defines sensitive areas as "coastal waters which are found to be eutrophic or which in the near future may become eutrophic if protective action is not taken."[18] Article 9 of the UWWD obliges Member States to coordinate their actions and to cooperate with other Member States if standards set for the area of jurisdiction of one member state are exceeded.

The Council Directive 91/676/EEC, known as the Nitrates Directive, came into force in December 1991. It concentrates on addressing water pollution caused by nitrates from agricultural sources and on the promotion of good farming practices. The definition of eutrophication provided by the Nitrates Directive explains the meaning of eutrophication as follows: "eutrophication means the enrichment of water by nitrogen compounds, causing an accelerated growth of algae and higher forms of plant life to produce an undesirable disturbance to the balance of organisms present in the water and to the quality of the water concerned."[19] Nitrogen is considered to be a vital nutrient that helps plants and crops to grow, however the high concentration of use as a fertilizer is harmful to nature and constitutes a major source of water pollution in Europe.[20] Farming still remains responsible for over 50 percent of the total nitrogen discharge into surface waters.

[17] See: UWWD. Accessed 12.02.2014
[18] See: UWWD
[19] See: UWWD, Article 2
[20] See: The EU Nitrate Directive

The Nitrate Directive requires states to identify water pollution or a possible risk of pollution first. In this process, different regional conditions in the EU are taken into account. Each member state is obliged to put in place a Nitrates Action Program. The member states are required to designate their territorial "vulnerable zones" that include waters at risk of pollution or all areas of land into which polluted water drains. Every four years member states are required to review and revise nitrate vulnerable zones on the basis of the results of water monitoring. The limitation of fertilizers remains one of the most challenging measures that need to be implemented in the EU.

The Nitrate Directive's main weaknesses explain why marine eutrophication is still not solved. Firstly, the Nitrates Directive gives the member states too much power in the implementation process. According to the EU Commission's report on the implementation of Council Directive 91/676/EEC, concerning the protection of waters against pollution caused by nitrates from agricultural sources, "control of action programmes is a responsibility of the member states. The use of cross-compliance with Common Agricultural Policy support is an important aspect in ensuring respect by farmers" (EC, 1991: 6). Secondly, the Nitrate Directive does not set an implementation deadline for reaching its goals. The European Parliament emphasized the "inherent unfairness of the regulation and the competitive disadvantages for farmers who comply with the regulation" (Schumacher, 2012:15). Thirdly, the Nitrate Directive mainly concentrates on the changes in manure handling and land management and neglects the reduction of fertilizers in general.

Early European legislation could not solve the problem of marine eutrophication, despite improved scientific understanding of marine ecosystems over the last few decades. Marine eutrophication in the Baltic Sea is still surrounded by

significant uncertainties related to the capacity of institutions to cope with the effects of eutrophication.

The efforts to prevent degradation of marine ecosystems have primarily focused on particular sectors, e.g., land-based pollutants or fisheries. The "sectoral" approach, however, was not effective in the long-term restoration of the marine ecosystems around the world. It has become obvious that ecosystem health can be best protected and restored by taking a holistic view of the links between ecosystem properties and effective institutional performance. The United Nations Environmental Programme (UNEP) has adopted a "holistic vision", stating that environmental problems can only be managed by adopting a new approach that considers the complex interrelationship between social, political and environmental factors at the international level.

4.2. The UN CBD Ecosystem Approach

In 1972 the United Nations Conference on the Human Environment (UNCHE) brought the topic of marine pollution to the international agenda for the first time. After the establishment of the United Nations Environmental Programme (UNEP) in 1973, its governing council defined the protection of the oceans as one of the highest priorities. Since then, the UNEP has sponsored 23 treaties directed to protect regional seas from pollution.

In 1988 the UNEP created the Ad Hoc Working Group of Experts on Biological Diversity, which works on preparing the international legal instruments for the conservation and sustainable use of ecosystems. These preparations eventually led to the Convention on Biological Diversity. In 1992 the UN Conference on

Environment and Development, also known as the Rio "Earth Summit" introduced the Convention on Biological Diversity that subsequently entered into force in December 1993. The main objectives of the Convention include the conservation of biological diversity, the sustainable use of the components of biological diversity and the fair sharing of the benefits arising out of the utilization of genetic resources.

The Ecosystem Approach of the UNEP represents the view that institutional cooperation embodies simultaneous efforts to deal with the interdisciplinary issues that caused certain environmental pollution. The Convention on Biological Diversity describes the Ecosystem Approach as "a strategy for integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way."[21]

There is no single correct way to apply the Ecosystem Approach to marine management. The underlying principles of the Ecosystem Approach flexibly address the issues in different social, economic, and environmental contexts. The approach does not preclude other management and conservation approaches, such as biosphere reserves, protected areas, and single-species conservation programmes. The Ecosystem Approach aims for "long-term environmental solutions that improve the use of an ecosystem without damaging it".[22] The Ecosystem Approach includes various thematic and cross cutting issues, among others the biological diversity of inland water ecosystems and marine and coastal biological diversity. The application of the Ecosystem Approach emphasizes suitable scientific methodologies and recognizes humans as an integral component of many ecosystems.

Article 2 of the Convention on Biological Diversity defines an "ecosystem as a dynamic complex of plant, animal and micro-organism communities and their non-

[21] See: UN CBD
[22] See: UN CBD

living environment interacting as a functional unit."[23] This definition includes all environmental scales, such as for example a grain of soil, a pond, a forest, a sea or the entire biosphere. In order to deal with the complex and dynamic nature of ecosystems in the absence of complete knowledge and understanding, adaptive management approaches have been introduced. Adaptive management includes the element of "learning-by-doing" because an ecosystem process is often accompanied by uncertainty and discontinuity. The implementation of the ecosystem approach depends on the local, national, regional or global conditions.

The ecosystem approach has developed the 12 principles that empower the implementation process of the approach.[24]

Principle 1: The objectives of management of land, water and living resources are a matter of societal choices.

Principle 2: Management should be decentralized to the lowest appropriate level.

Principle 3: Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.

Principle 4: Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. Any such ecosystem-management programme should reduce those market distortions that adversely affect biological diversity. They also should align incentives to promote biodiversity conservation and sustainable use and internalize costs and benefits in the given ecosystem to the extent feasible.

[23] See: UN CBD, Article 2
[24] See: UN CBD Ecosystem Approach Principles

Principle 5: Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach.

Principle 6: Ecosystems must be managed within the limits of their functioning.

Principle 7: The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.

Principle 8: Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term.

Principle 9: Management must recognize that change is inevitable.

Principle 10: The ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.

Principle 11: The ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.

Principle 12: The ecosystem approach should involve all relevant sectors of society and scientific disciplines.

Humans play a major role in ecosystem dynamics. Effective responses to environmental problems require learning about the social and environmental contexts of decisions and must also be well coordinated in order to avoid adopting incompatible policies. The international environmental regimes should be "future oriented and sensitive to environmental inter-linkages between issues" (Haas, 1990: 7).

The UN CBD Ecosystem Approach has affected both the regional and European management and legislation related to pollution prevention in the marine environment. During the joint meeting of the HELCOM and the OSPAR[25] in Bremen in 2003, both Commissions adopted the joint statement of their common vision of the Ecosystem Approach related to the management of human activities in the respective maritime areas for which each Commission is responsible. Under the Bremen Statement, the HELCOM Commission was committed to establish a full set of management measures consistent with the Ecosystem Approach by 2010. This commitment has resulted into the HELCOM BSAP.

The next section explains the working structure of the Helsinki Convention, governed by the Helsinki Commission. The HELCOM and its Baltic Sea Action Plan (BSAP) signifies one of the most important aspects of the protection of the marine environment and is also important for eutrophication governance in the Baltic Sea Region.

[25] See: OSPAR: Convention for the Protection of the Marine Environment of the North-East Atlantic

4.3. The Helsinki Convention and Helsinki Commission (HELCOM)

The Helsinki Convention established in 1974 has encouraged and coordinated environmental cooperation between the coastal states in the Baltic Sea Region. The Helsinki Convention is used as a model for other conventions promoting marine protection (VanDeveer, 2002: 37). Over the last four decades HELCOM has often been referred to as a success story among environmental international regimes. According to the report "Governing the blue-green Baltic Sea", conducted by the Finnish Institute of International Affairs (FIIA), this success can be partly explained by expanded networking rather than by environmental improvements in the Baltic Sea. The regime is best known for bringing together actors from all policy fields. The impact of HELCOM on the ecological state of the Baltic Sea is secondary compared to its networking success as an international institution (Tynkkynen, 2011: 21). That the Helsinki Convention is not legally binding contributes to the argumentation of why certain environmental problems are still not solved despite the well functioning environmental regime. HELCOM remains an important regional institution focusing on marine protection and eutrophication reduction. The following section offers an overview of the features and functions of the HELCOM.

The Convention on the Protection of the Marine Environment was formed in Helsinki in March 1974 and was unanimously approved by all the littoral states. For the first time ever, the environmental concerns and all sources of pollution affecting the Baltic Sea were made subject to a single convention. The Helsinki Convention has emphasized the importance of the international cooperation by stating the following: "awareness of the significance of intergovernmental cooperation in the protection of the marine environment of the Baltic Sea as an integral part of the peaceful

cooperation and mutual understanding between the nations of Europe" (Helsinki Convention, 1974; Räsänen and Laakkonen, 2008: 54). Once the Convention was drafted, the Helsinki Conference established the Baltic Marine Environmental Protection Commission, more commonly known as the Helsinki Commission (HELCOM). Before the HELCOM could start its work first all state signatories had to ratify the convention in their national parliaments. The convention finally entered into force in May 1980. In 1992 the political situation in the Baltic Sea Region changed and with it the membership of HELCOM. After the collapse of the Soviet Union, the three Baltic States, Lithuania, Latvia and Estonia, regained their independence and became members of the convention. The reunited Germany, Russia and the European Union also signed the revised convention. The 1992 convention is broader in scope and covers not just the Baltic Sea area, but also "the water of the sea itself and the sea-bed."[26] The 1992 Helsinki Convention entered into force in January 2000. In 2008 the Convention was amended with regard to developments in international environmental and maritime laws.

The Helsinki Commission develops common environmental objectives and actions, provides information about the "state of and trends in the marine environment, the efficiency of measures to protect it and common initiatives and positions." [27] HELCOM also supervises and ensures the implementation of environmental standards in response to the specific needs of the Baltic Sea. In cases of major maritime incidents, HELCOM operates as a coordinating body providing a multilateral response. The HELCOM data and information strategy constitutes a common fully functional marine database that is used for regional, European and global level assessments. The main HELCOM action areas include agriculture,

[26] See: HELCOM Introduction. Accessed: 12.11.2013
[27] See: HELCOM 1992. Accessed: 12.11.2013

fisheries, industrial releases, marine protected areas, maritime spatial planning, monitoring and assessment, response to spills, shipping, species and habitats, and waste water.

The working structure of HELCOM consists of the Heads of Delegation and the six main working groups.[28] The HELCOM Monitoring and Assessment Group (MONAS) assesses potential threats to the marine environment, looks for possible measures and monitors the effectiveness of these measures. The Nature Protection and Biodiversity Group (HELCOM HABITAT) is responsible for collecting and processing information about the ecosystems and habitats in and around the Baltic Sea. GEAR is a group responsible for the implementation of the ecosystem approach. This Group takes actions for the implementation of the Baltic Sea Action Plan and the EU Marine Strategy Framework Directive (MSFD, 2008/56/EC). The LAND Group collects information on land-based pollution because most of the pollution in the Baltic Sea originates from land based sources. The Baltic Sea Region is driven by intense industrial and agricultural development. The MARITIME group concentrates on the prevention of pollution from ships including both deliberate operational discharges and accidental pollution. The RESPONSE group regulates the actions in case of maritime pollution incidents.

The HELCOM has also developed the Baltic Sea Joint Comprehensive Environmental Program (JCP) as a tool that helps to find out and to reduce pollution at the most polluted sites of the Baltic Sea; these sites are called Hot Spots. Currently there are about 160 registered Hot Spots in the Baltic Sea.[29]

[28] HELCOM Introduction. Assessed: 12.11.2013
[29] HELCOM Hot Spots. Accessed: 29.11.2013

4.3.1. The HELCOM Ministerial Meetings (2007-2013)

The Helsinki Commission occasionally holds ministerial level meetings. These meetings have a significant impact on regional actions in the Baltic Sea. During the HELCOM ministerial meetings, the Ministers of the Environment of the Baltic coastal countries and the EU Environment Commissioner make important decisions on the actions needed to improve the ecological state of the Baltic Sea and discuss the future strategic approach of HELCOM.

The HELCOM Baltic Sea Action Plan (BSAP) was agreed to by the HELCOM member states during the Ministerial Meeting in Krakow, Poland in 2007 (HELCOM, 2009: 89). The BSAP is the cornerstone of the latest HELCOM activities and is based on an ecosystem approach. All littoral countries have committed to implement the HELCOM BSAP and to achieve a good ecological and environmental status in the Baltic Sea by 2021.

An important commitment related to eutrophication was to reduce the nutrient load from waterborne and airborne inputs. The National Implementation Programs for eutrophication were adopted during the ministerial meeting in 2010 and contained a compilation of the information provided by the contracting states, "either in the form of filled-in National Implementation Programs (NIP's) or as subtracted from the national reporting to the BSAP Index of Actions."[30] During the Ministerial Meeting in 2010 HELCOM committed to contribute to the goal of achieving a good environmental status in the Baltic Sea by supporting the EU Marine Strategy Framework Directive.

[30] See: HELCOM Ministerial Declaration on the implementation of the HELCOM Baltic Sea Action Plan, 20 May 2010, Moscow. Accessed: 12.06.2013

The last ministerial meeting was held in Copenhagen, Denmark in 2013. The main task of the meeting was to assess the progress towards reaching the common goal of the Baltic Sea for a good environmental status by 2021. The Ministers and the Commissioner also reconfirmed the commitment to implement the Baltic Sea Action Plan (BSAP).

The Copenhagen ministerial meeting of 2013 created a Ministerial Declaration under which the provisional nutrient reduction scheme of the HELCOM BSAP was revised. The Contracting Parties agreed that in order to support the implementation of all commitments in the Ministerial Declaration, the Meeting agree on a new Monitoring and Assessment Strategy.

The Ministers and the EU Commissioner have repeatedly acknowledged the importance of sustainable agricultural production. Sustainable agriculture in the Baltic Sea Region has been called a key strategy in order to achieve a good environmental status and to reduce nutrient input into the Baltic Sea. The implementation of EU instruments, such as the EU Marine Strategy Framework Directive and the Water Framework Directive, is seen as a priority of the HELCOM and of high importance for reaching a good environmental status in the Baltic Sea.

The BSAP is currently the most ambitious challenge of the HELCOM, which will be elaborated on in detail in the empirical case studies. Although HELCOM has contributed to the elimination of marine pollution hot spots, eutrophication still remains unsolved. Cooperation with the European Union and the implementation and integration of the EU instruments regulating the environmental state of the Baltic Sea is a very important task for the HELCOM.

4.3.2. The HELCOM and Marine Eutrophication

Although the HELCOM has been active for already 40 years, marine eutrophication has become a concern for the group only in the last two decades. Initially, the main priorities of the HELCOM were issues such as the negative impact of shipping on the marine environment and the reduction of hazardous substances.

The HELCOM conducts monitoring of physical, chemical and biological state of the Baltic Sea since the late 1979ies. Monitoring helps to assess the changes in the marine environment (HELCOM, 2015: 5). The first assessment of marine pollution conducted by the HELCOM in 1980 found eutrophication.[31] However, the HELCOM only partially acknowledged the anthropogenic origin of marine eutrophication. The same situation was observed in the assessment in 1987. "The first two assessments of pollution (1980 and 1987) recognized eutrophication but considered it to be only partially caused by anthropogenic nutrient loads" (Tynkkynen, 2011: 21; HELCOM 1980; HELCOM 1987). During the annual ministerial declarations in 1988 the HELCOM set targets to reduce nutrient discharges by 50 percent until 1995. The third assessment was conducted from 1989 to 1993 and registered an increased concentration of nutrients in the marine water. At this point, the impact of agricultural run off on marine eutrophication was recognized by the HELCOM and resulted in certain recommendations regarding eutrophication. A revised Helsinki Convention signed in 1992 addressed marine eutrophication in a separate recommendation, HELCOM Recommendation 28E/4. This recommendation made amendments to Annex III "Criteria and Measures Concerning the Prevention of Pollution from land-based sources". In accordance with these amendments the prevention of pollution

[31] See: HELCOM 1980. Accessed: 12.11.2013

from agriculture and plant nutrients were added to the Convention.[32] HELCOM identified the agricultural sector as the main cause of the runoff of nitrogen and phosphorus into the Baltic Sea. As a preventive measure against eutrophication, HELCOM supported the EU Strategy for the Baltic Sea Region. The latest HELCOM assessment related to eutrophication was conducted in the period of time from 2007 to 2011. The assessment states that "despite measures taken to reduce external inputs of nitrogen and phosphorus to the sea, good status for eutrophication has not been reached yet. Nearly the entire sea area is still affected by eutrophication" (Laamanen, 2013:2).

Considering the size of the Baltic Sea, its special geographic location and the complexities of marine eutrophication, marine protection in the Baltic Sea Region mostly depends on European legislation and on regional trans-boundary institutional cooperation. The European Union created an extensive legislative framework to protect the water quality in the European Seas. Some of the legislation from the early 1990s directly affected eutrophication and contributed to decreased water pollution. The latest directives that affect eutrophication are the Water Framework Directive and the Marine Strategy Framework Directive.

4.4. The EU Water Framework Directive

Directive 2000/60/EC of the European Parliament and of the Council, known as the Water Framework Directive (WFD) was adopted in 2000. It offered a framework for the "community action in the field of water policy"[33]. The key objective of the WFD was to achieve a "Good Ecological Status" (GEcS) for all water

[32] See: HELCOM 1992, Annex III
[33] See: The Water Frame Directive. Accessed 23.01.2014

bodies by 2015. Normative definitions of "good ecological status" and "good chemical status" were set in Annex 5 of the WFD. Good ecological status was defined as "being lower than a theoretical reference point of pristine conditions, i.e. no anthropogenic influence"[34]. The Annex VIII of the Directive contains a list of main pollutants, among others nitrates and phosphates, which stem from point and diffuse sources "from urban, industrial, agricultural and other installations and activities" and whose impact on the environment should be continuously observed by the member states (Schumacher, 2012: 17; 2000/60/EC: 35). In order to classify the surface waters as waters with "good status", both the "ecological water status" and the "chemical water status" have to be classified as "good"[35].

The WFD initially had three main environmental objectives[36]. The first objective was to achieve a good surface water status by October 2015. The surface waters were defined as inland, transitional and coastal waters. Among other obligations, the WFD aimed to "contribute to the protection of territorial and marine waters"[37]. Marine waters under the WFD were defined as the narrow strip of up to one nautical mile from the coast[38]. The second environmental objective of the WFD was to achieve good groundwater status by the same time. Finally, the third objective was to achieve compliance with any standards and objectives established in European Community Law for protected areas. The environmental objectives were defined in Article 4.

The WFD requires member states to identify territorial river basins, designate them as separate river basin districts and set an authority for each district. This authority is responsible for meeting the environmental objectives of the WFD. In

[34] See: The Water Framework Directive, Annex 5. Accessed: 12.02.2014
[35] See: The Water Frame Directive, Article 2(18)
[36] See: The Water Frame Directive, Article 4(1)
[37] See: The Water Framework Directive, Article 1
[38] One nautical mile is equal to 1,852 km

order to implement the WFD the member states are obliged to develop comprehensive River Basin Management Action Plans (RBMPs).

The Water Framework Directive addresses marine eutrophication only within coastal waters. The main weakness related to the solution of eutrophication is that it is described as a common issue for all European countries, while the ecosystem of the Baltic Sea is unique and requires regional issue-related solutions.

Another major weakness of the WFD is that it allows for extension of the implementation deadline. The WFD leaves large decision responsibility to the member states, which stalls implementation. Article 4 of the WFD allows an extension of the deadline beyond 2015. The implementation might be extended until 2027 in certain cases of "technical feasibility", meaning that if the proposed measures are considered too expensive, or "natural conditions" are too difficult to change, the implementation can be extended.

The WFD is dominated by conflicts of interest with other industries, including agriculture; environmental goals are not the highest priority of this directive. The WFD states that environmental objectives constitute "the core of the Water Framework Directive".[39] However, the assessment of the WFD in 2012 has indicated that the objective of the "good ecological status" will not be achieved by 2015 (EC, 2012: 6). The WFD gives the member states freedom to define the details of their own assessment system, which complicates the process of implementation.

[39] See: The Water Framework Directive: Objectives. Assessed 24.10.2014

4.5. The EU Marine Strategy Framework Directive

The EU Marine Strategy Framework Directive, 2008/56/EC (MSFD) was adopted in 2008. The MSFD is the environmental pillar of the EU Integrated Maritime Policy. The MSFD is the first EU legislation that exclusively focuses on the protection of the marine environment.

One of the most important aspirations of the MSFD is to achieve good environmental status (GEnS) of the EU marine waters by 2020. The Marine Strategy Framework Directive defines Good Environmental Status (GEnS) as "the environmental status of marine waters that provides ecologically diverse and dynamic oceans and seas which are clean, healthy and productive".[40] Good Environmental Status means that the marine resources are conducted sustainably and are preserved for future generations.

In accordance to the GEnS, the marine ecosystems should be resilient to human-induced environmental change, marine biodiversity should be protected and human activities should not cause pollution and noise, incompatible with the marine environment. The Annex I of the MSFD offers eleven qualitative descriptors of the functioning GEnS[41].

1. Biodiversity is maintained.
2. Non-indigenous species do not adversely alter the ecosystem.
3. The populations of commercial fish species are healthy.
4. Elements of food webs ensure long-term abundance and reproduction.
5. Eutrophication is minimized.

[40] See: The MSFD, Good Environmental Status. Accessed: 01.02.2014
[41] See: "Seas For Life", European Union Publications, 2011: 13

6. Sea floor integrity ensures the functioning of the ecosystem.

7. Permanent alteration of hydrographical conditions does not adversely affect the ecosystem.

8. Concentrations of contaminants have no effects.

9. Contaminants in seafood are within safe levels.

10. Marine litter does not cause harm.

11. Introduction of energy (including underwater noise) does not adversely affect the ecosystem.

Each member state has to determine individual strategies in order to maintain or achieve good environmental status in the marine environment. Cooperation with other countries, including those in the EU and non-EU states, plays an important role in achieving the GEnS. The process for developing the strategies is similar to the development of the river basin management plans under the Water Framework Directive. The EU Commission's criteria on good environmental status (GEnS) of marine waters are based on the water quality assessment indicators. These indicators are developed in accordance with the eleven descriptors of good environmental status listed above.

On the national level, European countries need to develop their own marine strategies that meet the requirements of the MSFD. The MSFD applies a coordinated, coherent approach within each marine region. The marine strategies of each member state must include an assessment of the state of the marine environment, and a definition of a "good environmental status" at the regional level. These strategies aim to protect and restore European marine ecosystems[42]. Member states must firstly

[42] See: Marine Strategy Framework Directive, Legal Content. Accessed: 23.04.2014

assess the ecological status of their waters based on physical and chemical features, types of habitat, animal and plant populations. Furthermore, the main impacts and pressures that result from human activities and affect the characteristics of these waters also must be analyzed. These pressures include contamination by toxic products, eutrophication, smothering or sealing of habitats by construction work, introduction of non-indigenous species, physical damage caused by ship anchors etc. The last point of the assessment is the economic and social analysis of the use of the marine waters.

According to the MSFD, clear environmental targets and monitoring programmes have to be developed individually by every member state in four steps. The first step is the assessment of the environmental status of the national marine waters, including the detailed analysis of the socio-economic factors of human activities on the marine environment. The second step is the individual determination of good environmental status for every marine region. Consequently, according to the regional environmental status, the environmental targets and indicators should be determined as the next step. The last step includes the establishment of monitoring programmes. The programmes are to be developed by 2015. In order for the marine strategies to be up-to-date, they will be reviewed every 6 years. The MSFD implementation is a gradual process in which each step builds upon the previous one.

The other important aim of the MSFD is to promote the sustainable use of marine resources and to protect and conserve marine ecosystems. In order to achieve this aim, the MSFD is determined to use the UN CBD Ecosystem Approach.

The MSFD deals with marine eutrophication in Descriptor 5. The directive states that eutrophication of marine waters is caused by excessive use of nitrogen and phosphorous. Most pollution comes from land-based activities, such as application of

agricultural fertilizers, animal farming, the poor discharge of untreated wastewater and airborne pollution. Agriculture remains the predominant source of nitrogen discharged into the marine environment. However, the integration of environmental considerations into the EU CAP remains problematic. Thus, the understanding of the main principles of the EU Common Agricultural Policy is essential for the analytical part of this dissertation.

4.6. The EU Common Agricultural Policy

After World War II agricultural policy in Europe mostly concentrated on stimulating production increases (Schumacher, 2012: 39). The first attempt to draw attention to environmental concerns in agriculture occurred in the 1970s. In the 1970s the European regulations began to introduce the idea of more environmentally friendly farming procedures (Schumacher, 2012: 9). However, this process did not result into policy change. The state of the European Agricultural Policy in the 1970s can be described as an "institutional inertia" (id. 9).

The second phase of the agricultural reforms started in the 1990s. The aim of the second phase can be characterized as an attempt to explain to the farmers the benefits of ecological farming and to provide them with environmentally friendly incentives. The EU started various programs that obliged farmers to leave a certain part of their farmland out of production and to compensate their losses with subsidies. However, these efforts have resulted in a reduction of agricultural overproduction rather than in environmentally friendly products. The remaining farmland was used even more intensely because farmers tried to compensate the loss of land. The agricultural sector occupied about fifty percent of the land area in Europe. The CAP is

one of the oldest EU policies, however, the harmful impact of the CAP on the environment was first noticed rather late. The Mac Sharry reform in 1992 initiated "environmentally friendly activities" for the first time (Scrieciu, 2011: 76). The introduction of environmentally more friendly programs offered farmers some financial support for either producing environmentally friendly products or for using farmland for agro tourism instead of growing crops. Both the EU and the national states have funded these programs. In order to receive the environment payments, farmers needed to restrict the share of land and limit the animal stock. However, because the financial subsidies for agricultural production tended to be more attractive than the financial support for good environmental practices, the Mac Sharry reform was not successful in terms of environmental protection[43]. The second phase of the reform of the Common Agricultural Policy (CAP) tried to integrate environmental concerns, but it did not create any legally binding legislation to support these concerns.

The third phase began in 2000 and aimed to set the environmental objectives and to develop the new policy tools in order to fulfill these objectives. The Agenda 2000 introduced cross-compliance and modulation as a new policy tool. Cross-compliance means that direct financial support is only paid to the farmer if they apply the regulations on environmental protection, food safety and animal welfare (Schumacher, 2012: 10). Modulation involves direct payments for measures that promote rural development. The Agenda 2000 also introduced rural development as the second pillar of the CAP. The first pillar remains the traditional market organization policy. In 2005 the EC established the European Agricultural Fund for Rural Development (EAFRD) that aims to introduce more effective water pollution

[43] See: The History of the CAP. Accessed 25.05.2013

control policies on the one side, and offers financial compensations to the farmers for changing their farming practices to more environmentally friendly, on the other side.

The CAP is supported by the EU subsidy system, which funds agricultural programs. The expansion of the agricultural sector encourages intensive use of fertilizers, which worsens marine eutrophication. Livestock population also represents one of the acute agricultural pressures on the environment because of manure production. Such an imbalance creates a surplus of nutrients, which lands in water in turn causing eutrophication. The more detailed analysis of environmentally important CAP reforms will be offered in the following cases studies.

4.7. Institutional Interplay in Eutrophication Governance: Linkages

The international rules that govern and coordinate the activities of the institutions addressing eutrophication in the Baltic Sea Region include functional and political linkages. As already stated in the theoretical chapter, the analysis of the functional and political linkages helps to explore the resulting types of institutional interplay. Functional linkages represent the intentionality of institutional interplay, while political linkages emerge during the negotiation process.

The institutions addressing marine eutrophication in this dissertation are different in their scope and objectives. The WFD and MSFD are legally binding European directives. European water quality is regulated by the WFD and the MSFD. The CAP, a European policy, is directed at EU member states. The HELCOM is not a legally binding environmental regime; it is directed at the littoral states of the Baltic Sea, including the only non-EU member Russia. However, these four different institutions are interdependent in the biogeophysical sense, which makes them

functionally linked because they all belong to the European territorial scope. The CAP, the WFD and the MSFD have a pan-European impact, while the HELCOM has a regional European character.

As was described above, the Ecosystem Approach is a strategy that promotes conservation and sustainable use of resources, and should be applied in order to reach the objectives of the CBD. The application of the Ecosystem Approach is not legally binding. However, the contracting parties of the convention are requested to develop "practical expressions of the approach for national policies and legislation and for appropriate implementation activities, with adaptation to local, national, and, as appropriate, regional conditions, in particular in the context of activities developed within the thematic areas of the Convention".[44]

The Ecosystem Approach has influenced the policy-making process of the HELCOM and the interactions between the HELCOM the MSFD. These interactions represent political linkages because they are negotiated and impact both the policy-making process and the legislation on marine protection in the European marine environment. The Ecosystem Approach also raised the state of knowledge and awareness about marine eutrophication.

The relationship between the HELCOM and the MSFD is characterized by HELCOM providing the arena of choice for the negotiation of the MSFD. Marine eutrophication and its management strategy are explained in the HELCOM's BSAP, which is based on the Ecosystem Approach. The HELCOM, as a long existing institution, has gained influence among the member states of the littoral countries by providing expert knowledge about the fragile ecosystem of the Baltic Sea, and by helping to frame marine eutrophication as a serious regional environmental issue.

[44] See: CBD COP Ecosystem approach 5 Decision V/6. Retired sections: Paragraphs 4-5. Accessed 24.11.2014

By the time when the EU MSFD was adopted in 2008, the HELCOM had become a solid partner in its implementation. Both the HELCOM's BSAP and the MSFD represent the part of the broader ongoing international cooperation related to the holistic management of the marine ecosystem, which is based on the UN CBD Ecosystem Approach.

Both the MSFD and the WFD influence the water quality in Europe. The WFD addresses the groundwater, river basins and coastal waters management, while the MSFD aims to protect the marine waters. The WFD and the MSFD are driven by the similar priorities to prevent pollution, but by different objectives and scope. Political linkages between the MSFD and the WFD indicate the deliberate relationship among them. The MSFD was formed as a response to growing marine pollution. Trying to integrate the WFD assessment of the water pollution of the coastal areas into the MSFD is an attempt to distribute interests and power. Such distribution could lead to the strengthening of political linkages, but the conflict of interests between the two institutions seems to prevail. The principles of both directives are adopted with the similar motivation to protect the river basins, estuaries, coastal waters and marine environment from pollution. However, their assessment methods in the coastal areas differ and result in conflict of interests. Interactions between the WFD and the MSFD take place within a single policy field. There is a theoretical hypothesis that interplay between institutions from different policy fields more often results in disruption than interplay between institutions from the same policy fields (Gehring and Oberthür, 2006: 310). In the case with these two directives this hypothesis seems not to be entirely supported by the evidence.

The MSFD applies the Ecosystem Approach to its full capacity and defines all ecosystem components for each of the eleven descriptors. The WFD does not apply

the UN CBD Ecosystem Approach in such an extent as the MSFD does. The WFD merely assesses the physico-chemical parameters of water. The ecosystem attributes applied by the WFD provide certain information about the status of the ecosystem. However, the marine ecosystem is more than the sum of physical, chemical and biological elements.

In the case of the relationship between the CAP and the Ecosystem Approach, the CAP was established long before the initiation of the Ecosystem Approach. The negative consequences of the absent interaction between the CAP and the Ecosystem Approach are evident in the analysis of misfit between the CAP and the ecosystem of the Baltic Sea. Obviously, the heterogeneity of the interests of the CAP and the marine environment offers a basis for conflict. In the EU, agricultural decision-making has very strong lobbies that plead for the increase of the agricultural production, and thus, contradict the measure developed to reduce marine eutrophication.

The following chapter introduces the case studies of institutional interplay and misfit in eutrophication governance of the Baltic Sea.

5. Case Studies

Marine Ecosystem and Eutrophication in the Baltic Sea

The Baltic Sea covers a surface area of 415 000 km2 and has a maximum depth of 459 meter. The average depth of the Baltic Sea is 52 meters, although it has numerous areas that are less than 25 meters deep. Therefore, the Baltic Sea is considered shallow. The freshwater input into the semi-enclosed sea originates from rivers, land runoff and precipitation (HELCOM, 2014: 11). The water exchange with the North Sea is weak and the water renewal cycle takes 25-40 years (Furman et al., 2004 and HELCOM, 2010). The Baltic Sea Region has a population of approximately 85 million people. The entire marine area in the Baltic Sea belongs to territorial waters. A well-developed agricultural sector in the littoral countries leads to high nutrient loads, which along with the limited water exchange contributes to the sensitivity of the Baltic Sea to eutrophication. "The Baltic Sea drainage area is highly populated, and human activities such as agriculture, municipal sewage, industries and atmospheric deposition, have resulted in excessive nitrogen and phosphorus loads" (BalticStern, 2013: 13). However, "agriculture is the main source of the reactive nitrogen pollution in the seas, inland surface waters, and in groundwater" (SRU, 2015: 19).

The European Commission Joint Research Centre (JRC) has created eutrophication guidance, which also serves as a support for the eutrophication descriptor of the MSFD. The JRC defines marine eutrophication as "a process driven by enrichment of water by nutrients, especially by nitrogen and phosphorus, leading to increased growth, primary production and biomass of algae; changes in the balance of organisms; and water quality degradation. The consequences of eutrophication are

undesirable, they appreciably degrade ecosystem health and/or the sustainable provision of goods and services" (Ferreira et al., 2010: 1).

Because of the low salinity of the Baltic Sea and of its comparatively young geological age, the biological diversity of marine species is not particularly high. Currently, the majority of known species in the Baltic Sea belongs to the planktonic community (HELCOM, 2010b: 4). An increase in the amount of nutrients in coastal areas leads to increased phytoplankton biomass in the marine waters. The excessive plankton serves as an indicator of eutrophication in inshore and offshore waters.

The marine environment, and especially coastal hard-bottom systems, such as rocky intertidal, temperate reef and coral reef macro- and microalgae generally show substantial positive response to nitrogen (N) and phosphorus (P) with the strongest responses for phytoplankton production (Elser et al., 2007: 2). The marine-biological research clearly shows that enrichment by either N or P increases autotroph production. However, the simultaneous increase in both nutrients leads to dramatically higher levels of phytoplankton production, which causes algal bloom and hence, marine eutrophication (id. 8). The change in the phytoplankton community and death of some components of the benthic community counts to the effects of eutrophication on the marine ecosystem in the Baltic Sea.

The seasonal spring bloom caused by the increased temperatures and sunshine usually results into naturally increased phytoplankton biomass (Cugier et al., 2005: 34). Eutrophication is linked to the capacity of the marine environment to curb growing algae in the surface waters (EC, 2010d: 6). The potential for eutrophication is higher if nutrients are introduced into the surface layers of the semi-enclosed water bodies. Eutrophication in the Baltic Sea impacts almost the entire marine area. The deep marine areas of the central Baltic Sea are affected by severe hypoxia. Thus, the

benthic communities and fish are affected by oxygen depletion, which in turn causes suffocation and death of certain species.

It is commonly known, that the seasonal increase of phytoplankton in summer prevents atmospheric oxygen from being brought to the deep-water layers (Ferreira et al. 2011: 128). However, in the last decades, marine eutrophication has become a lasting anthropogenic issue. The terrestrial waterborne loadings of the two main nutrients N and P increased dramatically in the last century causing permanent marine eutrophication in the Baltic Sea throughout the year.

The alterations in nutrient balance have adversely impacted marine flora in the Baltic Sea, namely in some marine areas the harmful growth of toxic algae has increased. In the Baltic Sea, the increased magnitude of the toxic cyanobacterial bloom is directly related to the increased nutrient levels during the last decades (Ferreira et al., 2011: 129). The harmful algal bloom in the marine environment spread because of three main factors: due to toxic algae, potentially toxic algae and high-biomass blooms (Zampoukas et al., 2010:8). The high nutrient inputs support the increased phytoplankton production leading to an extension of anoxic bottoms in the open marine environment. The algal bloom grows best in the surface offshore waters because it provides the enriched environment in contrast to the turbid estuarine and coastal waters.

The habitat loss in the Baltic Sea due to hypoxia is far greater than would be estimated by calculations based on species recruitment or survival tolerances (Diaz et al., 2012: 19). Species vary in their oxygen requirements, and sensitive predators lose access to prey. The diminishing Baltic Sea cod stock illustrates the dramatic impacts of marine eutrophication on the fragile ecosystem of the Baltic Sea. The cod plays an important role in the Baltic Sea ecosystem. As a top predator, it maintains a healthy

sea by balancing the food chain.[45] Researchers emphasize the relationship between a diminishing cod stock and increased algae blooms.[46] Eutrophication has contributed to increased oxygen consumption at larger depths. The Baltic cod needs the depth of approximately 200 meter in order for their eggs to survive. Thus, the potential for cod to breed is endangered. The decreased number of cod in the Baltic Sea in the last two decades has caused measurable ecosystem changes. Cod's main pray consists of herring, sprat and capelin. Because of the decline in the population of cod, the sprat stock grows dramatically, which in turn cuts the level of zooplankton, as the main source of food for the sprat. In turn, the decrease of zooplankton causes the increase of phytoplankton. High levels of phytoplankton lead to algal bloom and to the marine dead zones. "If the state of the ecosystem further deteriorates and oxygen concentrations further decrease, only bacteria and fungi can survive, and the bottom area thus turns into a so-called "dead zone", void of higher organisms (Baltic Stern, 2013; Conley et al, 2002: 5315).

Another important sign of marine ecosystem deterioration in the Baltic Sea is a change in dissolved inorganic phosphate (DIP). The changes in DIP are attributed to the release of phosphorus during hypoxic conditions with it "returning to the sediments" (Diaz et al., 2012:20). Because the hypoxia in the Baltic Sea is a permanent condition, the limited availability of oxygen in sediments causes the production of the greenhouse gas, N2O.

According to HELCOM's holistic assessment for the period from 2003 to 2007, the Baltic Sea ecosystem is already damaged to a dangerous degree. The HELCOM has assessed the condition at seventeen offshore areas and at the 172 coastal areas in order to determine the status of eutrophication. The result of this

[45] See: Save our Baltic Sea. About the Cod. Assessed 01.12.2013
[46] See: Save our Baltic Sea. Role of Cod. Summary. Assessed 01.12.2013

assessment shows that all offshore areas are affected by eutrophication. In most of the coastal waters, the nutrient concentrations and chlorophyll-a concentrations have increased tremendously. Only 11 out of 172 coastal areas "are found to be unaffected by eutrophication" (HELCOM, 2014a: 16).

HELCOM uses a combination of the results provided from the classifications made by the "HELCOM Eutrophication Assessment Tool" (HEAT). The HEAT is based on the commonly agreed core indicators, such as inorganic nitrogen, inorganic phosphorus, chlorophyll-a, water transparency and oxygen conditions (HELCOM, 2014a: 12). The HEAT calculates the integrated classification of eutrophication status. The 2011 HELCOM assessment confirms that the entire open sea is affected by eutrophication. Despite the measures taken to reduce the nutrient inputs into to the sea, good environmental status has not been achieved.

About 80 percent of diffuse sources of nutrient inputs originate from the agricultural sector (HELCOM 2004). Nutrient inputs that cause marine eutrophication are rated as the top pressure confronting the Baltic Sea. The freshwater pollution results in discharge into the marine environment and is the main cause of marine eutrophication.

5.1. Case Study One: Institutional Interplay between the Ecosystem Approach, the HELCOM, and the MSFD

Every ecosystem belongs to a network that also includes humans. Thus, in order to ensure the integrity of the ecosystems and to maintain their characteristic structure, productivity, and biological diversity, a long-term management strategy of human activities is required. The UN CBD defines the Ecosystem Approach as a "strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way".[47] In accordance with the Ecosystem Approach, the Baltic Sea is part of the world's oceans, thus "in assessing and conserving it, restoring it where practicable, and managing our activities, we must apply the principles that the international community has adopted for the world's oceans and seas" (HELCOM, 2003b: 1). The Ecosystem Approach has become the source of the European and regional recommendations and legislation that have affected eutrophication governance in the Baltic Sea Region.

The empirical part of the first case study begins with the analysis of interaction between the Ecosystem Approach and the HELCOM. The HELCOMs Baltic Sea Action Plan (BSAP), adopted by the coastal countries of the Baltic Sea and the European Community in 2007, is explicitly based on the UN CBD Ecosystem Approach. The HELCOM has applied the integrated principles of the Ecosystem Approach to the EU MSFD. The UN CBD Ecosystem Approach is the main element of the objectives of the MSFD (2008/56/EC). The MSFD interacts with the HELCOM and applies the Ecosystem Approach in order to ensure the conservation and sustainable use of marine biodiversity. The HELCOM's BSAP supports the MSFD in fulfilling their obligations and achieving good environmental status of marine waters.

[47] See: CBD Ecosystem Approach Background. Accessed 23.11.2013

Thus, the second interaction examines the interplay between the HELCOM and the MSFD.

5.1.1. Cognitive Interplay and Interaction through Commitment between the Ecosystem Approach and HELCOM

The Helsinki Commission started to integrate the UN CBD Ecosystem Approach into its agenda already in 2003. At this time institutional interplay between the Ecosystem Approach and the HELCOM took place for the first time. The source institution (UN CBD Ecosystem Approach) influenced the decision-making process of the target institution (HELCOM) resulting in the BSAP. The interplay between these two institutions is depicted in Figure 3.

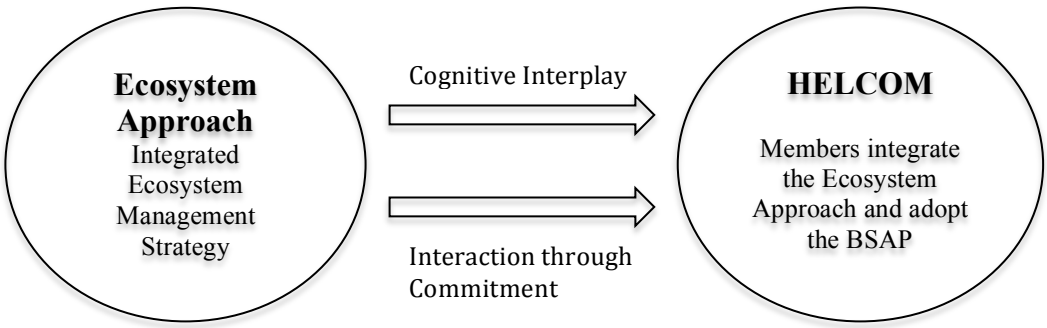


Fig. 3. Ecosystem Approach triggers Action by the HELCOM. Compiled by the author

Memberships of the HELCOM and the UN CBD overlap, whereby the UN CBD Ecosystem Approach is directed to the member countries of the UN, including the countries adjacent to the Baltic Sea. The membership of the UN CBD is global and includes 121 countries. The HELCOM is a regional environmental regime specifically

created for the Baltic Sea area. Analyzing the interplay between the two institutions, it is obvious that the Ecosystem Approach and HELCOM differ with respect to their membership. However, both institutions pursue the same objectives and the same means and are examples of nested institutions. The membership of the HELCOM forms part of the membership of the UN CBD.

These two institutions both operate in the same environmental policy field. Thus the interaction between the Ecosystem Approach and the HELCOM is described here as a form of vertical interplay between two institutions with similar objectives. Neither HELCOM nor the Ecosystem Approach have legally binding power, they both operate with soft-law instruments.

The HELCOM constitutes a major, albeit not legally-binding mechanism that ensures environmental protection of the Baltic marine environment. The HELCOM develops programs and measures to combat marine pollution from all sources. One of the obligations of the HELCOM, influenced by the UN CBD Ecosystem Approach, is to integrate strategies against the effects of human activities into its agenda. The HELCOM commits to establish measures necessary for the implementation of the Ecosystem Approach in the Baltic Sea Region although the measures are not legally binding.

The Ecosystem Approach is a crucial tool in achieving good marine environmental status. The Ecosystem Approach emphasizes and includes political, economic and social aspects into possible solutions of environmental problems. In order to integrate this holistic approach, HELCOM attempts to foster understanding and acceptance of the Ecosystem Approach by all stakeholders. For this purpose, it is important to first ensure the active participation of stakeholders within HELCOM. In order to achieve this task, the HELCOM aims to closely monitor the ecosystems of

the marine environment and to set objectives for environmental quality based on monitoring results. Such measures contribute to better assessments of the impact of human activities upon the marine ecosystem.

The learning (cognitive) process is supported by systematic investigation of the models existing in other institutions. HELCOM closely cooperates with regional and national authorities in developing the framework of measures necessary for implementing the Ecosystem Approach. In doing so, HELCOM considers the impacts of different types of human activities on the marine environment. After the development of the framework, HELCOM takes leading action on the protection of the ecosystems and biological diversity of the maritime area in the Baltic Sea Region. HELCOM also establishes a working group GEAR that coordinates this process. The HELCOM GEAR contributes to assessment of the marine environment, determination of good environmental status and setting of environmental targets. The Implementation Group declares that the implementation process needs to be built on the "close co-operation amongst all present and future HELCOM bodies and may possibly require the adjustment of the HELCOM working structure" (BSAP, 2009: 10).

The Ecosystem Approach also signifies some challenges for the HELCOM. For example, it requires integration of all ecosystem components and human activities into the decision-making process. For this purpose, new scientific knowledge about the marine ecosystem has to be integrated into HELCOM's objectives. Such science-based management requires new data and methodologies to assess the collective impacts of human activities on marine ecosystems. The twelve principles of the Ecosystem Approach profoundly affect the policy direction of the HELCOM, as a target institution, in terms of distribution of knowledge.

The interaction between the Ecosystem Approach and the HELCOM is analyzed at the output level of effectiveness. The adoption of the Ecosystem Approach and its twelve principles serves to HELCOM as a policy model. The effect of this interaction is clearly seen within the target institution and resulted in the establishment of the Baltic Sea Action Plan in 2007. The HELCOM learned from the Ecosystem Approach how to frame a management strategy for important environmental problems. Scientific knowledge supports the policy-making process in the realm of the marine environment. Moreover, the enhanced monitoring activities allow scientists to better examine the marine status and assess the effectiveness of actions and measures that have the potential to later contribute to more effective management strategies and policy recommendations. The cognitive vertical interplay between the Ecosystem Approach and the HELCOM's BSAP results in synergies. The institutionalization of learning fosters output level effectiveness marine eutrophication governance.

The cognitive interaction confirms the theoretical statement that learning from a policy model occurs more easily if it happens in the same policy field where the source institution remains totally unaffected by the interaction (Gehring and Oberthür, 2006: 333). Measures originating from the source institution (Ecosystem Approach) strengthen the effectiveness of the target institution (HELCOM). The HELCOM perceives the Ecosystem Approach as a useful precedent in developing a strategy for the protection of biodiversity of the marine environment.

Following its own commitments to integrate the Ecosystem Approach in the Baltic Sea Region, the HELCOM adopted the Baltic Sea Action Plan (BSAP) in 2007. The HELCOM BSAP is explicitly based on the Ecosystem Approach.[48] The BSAP

[48] See: HELCOM 2003b

has a set of ecological objectives that link marine ecosystem problems to regional socio-economic sectors, such as for example, agriculture. The BSAP uses the best available scientific knowledge about the marine ecosystem. The main objective of the BSAP is to achieve a „good environmental status" in the Baltic Sea by 2021. All coastal states and the EU have adopted the strategy for action in order to prevent the deterioration of the marine environment caused by human activities.

Interaction through commitments in the HELCOM, a target institution, resulted in the BSAP commitment. This increased the effectiveness of the HELCOM, which would not have occurred in the absence of the source institution. The establishment of the Ecosystem Approach led to the adoption of the BSAP by HELCOM. Commitments agreed to within the BSAP are based on the Ecosystem Approach and bind (non legally) the members of the HELCOM. The effect of the interaction through commitments between the Ecosystem Approach and the HELCOM support the effectiveness of the target institution, and represent a clear case of synergetic institutional interplay through commitments. The effectiveness of the source institution (UN CBD Ecosystem Approach) is not affected by interaction between nested institutions. Interaction between institutions constitutes a mechanism for policy diffusion within the same policy field and provides opportunities for forum shopping (Gehring and Oberthür, 2006: 340).

The BSAP is the first (non-legally binding) commitment of the HELCOM to incorporate the Ecosystem Approach into the protection of the marine environment of the Baltic Sea. The Ecosystem Approach used in the HELCOM action plan focuses on the marine ecosystem and treats the environmental status of the sea holistically. The previous, more traditional approaches have usually addressed the sources of pollution sector by sector, without linking the measures to the ecosystem status of the

Baltic Sea. The plan includes specific actions to solve marine eutrophication. Among other obligations, a "good environmental status" (GEnS) should reduce human-induced eutrophication by controlling nutrient loads.[49]

The BSAP has adopted the following main strategic goals to achieve by 2021:

1. Baltic Sea unaffected by eutrophication.

2. Baltic Sea undisturbed by hazardous substances.

3. Favorable status of Baltic Sea biodiversity.

4. Maritime activities in the Baltic Sea carried out in an environmentally friendly way.[50]

Marine eutrophication is seen by the BSAP as a major regional problem. In order to reach its own goal of a Baltic Sea free from eutrophication, the BSAP has agreed upon the following objectives: to reduce the concentration of nutrients to close to natural levels, to get marine waters clear, to achieve the natural level of algal blooms, to reach natural distribution and occurrence of plants and animals and to reach the natural levels of oxygen in the sea. In order to achieve these ecological objectives the BSAP has developed the indicators with target values. These indicators measure the ecological and environmental status of the Baltic marine environment. Clear water was chosen as the primary ecological objective with water transparency as a main indicator (BSAP, 2009: 76). By integrating eutrophication indicators, it is possible to get an overall picture of the status of eutrophication in the Baltic Sea. The indicators are being regularly updated by applying the new data, eutrophication

[49] See: HELCOM BSAP. Accessed: 23.18.2012
[50] See: HELCOM, BSAP. Accessed: 12.01.2014

reduction targets and assessment methodology.[51] The figures on eutrophication reduction for the HELCOM's BSAP are based on the best available scientific information in the region provided by the MARE NEST model. The MARE NEST model calculates nutrient load reductions and allocates them fairly between countries.[52] The BSAP has agreed that the reduction of nutrients has to be fairly distributed among all Baltic Countries (BSAP, 2009: 9).

In order to cut the nutrient load from waterborne inputs, HELCOM adopted the recommendations on more stringent requirements for phosphorus removal from the municipal wastewater treatment plants and introduced requirements for wastewater management for small- and medium-sized municipalities and for the improvement of on-site wastewater treatment of single-family homes, small businesses and small settlements.[53] The BSAP also acknowledges agriculture as the main source of nutrient inputs to the Baltic Sea (BSAP, 2009: 10). The BSAP states: "we furthermore consider that nutrient losses from urban as well as scattered settlements will be reduced to an acceptable level with full implementation of the above recommendations and that the agricultural sector is the land-based source where major reductions are needed".[54]

All the measures described in the previous section that are directed to enhance the ecologic state of the Baltic Sea and reduce marine eutrophication, are affected by the initial commitment of the HELCOM to integrate the UN CBD Ecosystem Approach into its regional recommendations. The next section analyzes institutional interplay between the HELCOM and the EU MSFD.

[51] See: HELCOM, 2007d. Accessed: 24.03.2014
[52] See: MARE Research Program
[53] See: HELCOM Recommendation 28E/5 and HELCOM Recommendation 28E/6, BSAP
[54] See: HELCOM, BSAP, Eutrophication

5.1.2. Cognitive Interplay between the HELCOM and the MSFD

The MSFD, as the European legally binding directive, is hierarchically higher than a regional, not legally binding environmental regime like HELCOM. Thus, the interaction between these two institutions is vertical. In this interaction, the HELCOM is a source institution. The cooperative aspects between the HELCOM and the Marine Strategy Framework Directive indicate cognitive interplay between these two institutions (Figure 4). The cognitive interplay affects the decision-making process of the MSFD, which is a target institution, and positively influences the output level effectiveness of both institutions.

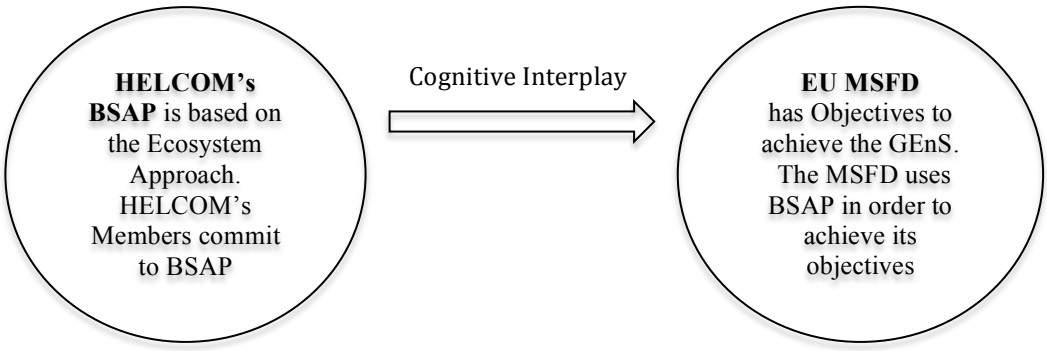


Fig. 4. HELCOM supports the Effectiveness of the EU MSFD. Compiled by the author

The MSFD aims to promote sustainable use of the seas and conserve marine ecosystems. The main objective of the MSFD is to reach or maintain good environmental status (GEnS) in the European seas by 2020. The MSFD acknowledges the importance of the Ecosystem Approach, as an integrated management of human activities at the regional scale. In order to implement the Ecosystem Approach within the MSFD, the decision-making process has to be coordinated in many areas, for

example, in data collection for ecosystem assessments and identification, monitoring and evaluation of the possible measures. The experience of HELCOM in integration of the Ecosystem Approach is used by the MSFD. The knowledge diffusion provided by HELCOM serves the MSFD as a platform to implement its objectives in line with the Ecosystem Approach.

The implementation of the MSFD requires for each marine region to coordinate its marine strategy with other marine regions, whereby each country in the region develops its own marine strategy. The environmental regime HELCOM provides excellent regional knowledge and coordination support concerning the marine ecosystem and the factors endangering it. HELCOM has gathered knowledge since its establishment in 1974, and along with its recent efforts, including the BSAP, provides a valuable framework for all the littoral countries to achieve a good environmental status for the Baltic Sea, which is the main aim of the EU Marine Strategy Framework Directive. The MSFD is supported by the HELCOM's working group specifically responsible for the implementation of the Ecosystem Approach (GEAR). Among others, this group coordinates activities related to the implementation of the MSFD in the Baltic Sea Region. Thus, HELCOM is the coordination platform for the regionally coherent implementation of the MSFD. The HELCOM brings the important regional problems to the agenda of the hierarchically higher EU level.

HELCOM has great expertise and experience with cooperation with the littoral countries in the Baltic Sea Region. In relation to marine eutrophication, HELCOM adopts an overarching scheme for combatting eutrophication in the Baltic Sea (HELCOM, 2013b: 27). Each coastal country commits to fulfill targets for

reducing nutrient pollution. Table 4 depicts the maximum allowable inputs of nitrogen and phosphorus into the Baltic Sea in 2013.

Tab. 4. Maximum Allowable Inputs of Nitrogen (N) and Phosphorus (P) into the Baltic Sea

Maximum Allowable Inputs (tons)		Reference Inputs 1997-2003 (tons)		Needed Reductions (tons)	
N	**P**	**N**	**P**	**N**	**P**
792,2	**21,7**	**910,3**	**36,9**	**118,1**	**15,2**

Based on the results of the HELCOM Copenhagen Ministerial Declaration, October 2013. Compiled by the author

HELCOM is also a coordinating body for regional target setting and implementation of nutrient input restrictions and majorly contributed to the assessments of the marine waters by the member states for the first cycle of implementation of the MSFD in 2012. The holistic marine water assessment of the HELCOM included information on the joint activities defining good environmental status, environmental targets and monitoring. The HELCOM assessment tools provide a good basis for gathering information.

The HELCOM and the MSFD overlap in applying the CBD Ecosystem Approach. In order to manage this overlap, the HELCOM's Ministerial Meeting in 2013 put on the agenda the aim to improve the coordination between the HELCOM and the MSFD. HELCOM is held responsible for coordination of the regionally coherent implementation of the MSFD in the region. The participants of the Ministerial Meeting have also agreed that agriculture remains a crucial sector, which stalls the success of reaching good environmental status of the Baltic Sea. HELCOM participates in and supports cooperative cross-sectoral discussion of the agricultural effects on the fragile ecosystem of the Baltic Sea. HELCOM and the EU work closely

together on developing coordinated measures to address pollution from agriculture. The interaction between the HELCOM and the MSFD provides member states with a common platform for achieving their legally binding obligations to the MSFD. HELCOM provides a great opportunity for the coordinated implementation of both the HELCOM BSAP and the GEnS of the MSFD. The EU Work Programme 2014-2020 for the Common Implementation Process of the MSFD emphasizes the key role of the HELCOM, and in particular of the BSAP, in the process of achieving the goals of the MSFD in the Baltic Sea Region.

HELCOM makes the best use of existing cooperation to promote the BSAP and the MSFD at the same time. This is a clear case of synergetic cognitive interplay, whereby the effectiveness of both institutions increases significantly. The HELCOM contributes to the successful regional distribution of knowledge about the marine ecosystem of the Baltic Sea both at the EU and at the regional level.

In the case of institutional interplay between the HELCOM and the MSFD, the source institution is smaller than the target. The MSFD and HELCOM overlap in respect to their memberships. They address the same problems and are nested in each other. The EU is a member of the HELCOM, while the HELCOM is not legally binding. As all of the littoral states of the Baltic Sea are EU members with the exception of Russia, their actions fall under EU legally binding legislation, e.g. the EU WFD and the EU MSFD. Typically, it is easier to reach agreement within a smaller (regional) than in a larger (Pan-European) institution "because a higher number of participants usually implies a greater heterogeneity of interests" (Snidal, 1994 et al.). The HELCOM has considerable homogeneity in terms of the economic and political conditions of its member states, with Russia as the only non-member of the EU.

Although eight of the members of HELCOM are also members of the EU, the members of HELCOM cannot impose their measures on the broader membership of the target institution (MSFD). If resistance against the measure is too strong, the diffusion process will stop and interaction will fail. Hence, the interaction related to Baltic Sea eutrophication is considered to be synergetic only in terms of regional interaction between the HELCOM and the MSFD. The effects of the interplay support the effectiveness of the target institution on the regional level and simultaneously the effectiveness of the source institution.

5.1.3. Synergy between the Ecosystem Approach, HELCOM and the MSFD

A multifaceted relationship between the Ecosystem Approach, HELCOM and the MSFD results in a causal chain. "Causal chains draw attention to the fact that interaction processes in more complex settings may acquire a momentum of their own, so that the actors and institutions involved are drawn into an autonomous process that they do not fully control any more" (id: 359).

These institutions are nested into each other, meaning that the Ecosystem Approach, the HELCOM, and the MSFD are linked functionally and operate in the same policy field. Moreover, the HELCOM and the MSFD operate in the same region. The coordinated objectives of these institutions constitute sustainable management of the ecosystem in question and protection of the marine environment, which indicates synergetic political linkages between them. The vertical interplay between HELCOM, the Ecosystem Approach, and the EU MSFD refers to the inter-institutional relationships when the operation of the target institutions has positively changed as a result of the synergetic interplay. In the first interaction, the interplay

forms a causal chain where institutional interplay between the UN CBD Ecosystem Approach and the HELCOM triggers a subsequent case of interaction between the HELCOM's BSAP and the EU MSFD. When interplay at the output level gives rise to output level interplay it starts a "sequential coevolution process" (Oberthür and Gehring, 2006: 359). The causal chain between these three institutions is pictured in Figure 5.

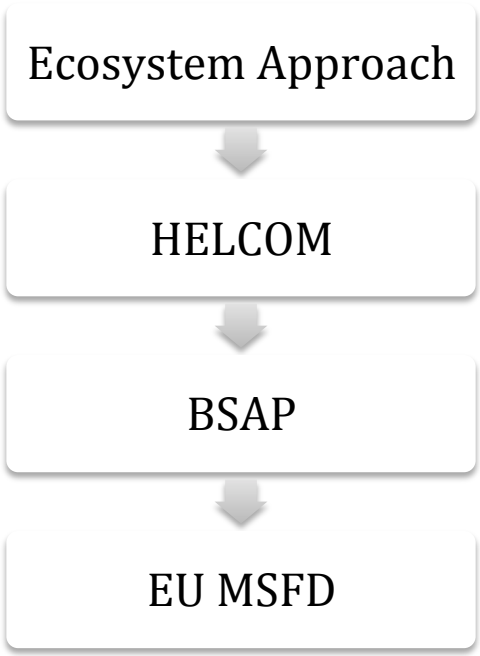


Fig. 5. Causal Chain between the Ecosystem Approach, HELCOM and the EU MSFD Based on Oberthür and Gehring, 2006: 359. Compiled by the author

The concept of the Ecosystem Approach is a crucial determinant for the better management of the marine environment. The principles of the Ecosystem Approach represent a functional management that perceives any ecosystem as a holistic entity. The Ecosystem Approach uses the state of the marine ecosystem as an indicator for taking measures that are directed at the specific problem, which in this case is marine

eutrophication. Moreover, the holistic Ecosystem Approach includes all the sectors, involved in the anthropogenic activities within the ecosystem, into the management structure. The ecosystem of the Baltic Sea benefits from the holistic management of the anthropogenic activities that take place within its geographical scale.

HELCOM represents a non-legally binding regional authority governing the environmental protection of the Baltic Sea. In the first case study the HELCOM was represented as both the target and the source institution in two disaggregated incidents of institutional interactions. The regional commission is in synergy with the Ecosystem Approach. The relationship between the Ecosystem Approach and the HELCOM follows the causal mechanism of the cognitive interaction and interaction through commitment. The original case of interaction between the Ecosystem Approach and the HELCOM has changed the decision-making process of the target institution (HELCOM), and led to the BSAP. The HELCOM's BSAP perceives the Ecosystem Approach as a central factor defining "the status of the sea as we want it to be in the future" (Pyhälä, 2012: 50). The Ecosystem Approach has also specifically supported the decision-making process of HELCOM to reduce eutrophication. The BSAP, as a result of institutional interplay between the Ecosystem Approach and the HELCOM, positively affects eutrophication governance in decision-making. The BSAP requires the coastal states to reduce nutrient discharge to a certain extent and addresses the pollution source from agriculture as a major threat to the marine environment that causes eutrophication.

The BSAP, as an instrument of the HELCOM, becomes a source institution in the case of the interplay between the BSAP and the EU MSFD. The role of HELCOM in forging links with the MSFD has been considerable, by for example, providing information on the marine ecosystem of the Baltic Sea, which is used by all the

parties of the MSFD in the littoral countries. The cognitive interaction between the MSFD and HELCOM results in synergies that are linked to their sharing of the common goal to achieve good environmental status in the Baltic Sea. The HELCOM is also the main driving force of the regional implementation of the EU Marine Strategy Framework Directive. The EU member states adjacent to the Baltic Sea follow the BSAP measures and use the HELCOM's recommendations in their national programs.

Both the BSAP and the MSFD have committed to reduce marine eutrophication. The relationship between the Ecosystem Approach, the BSAP and the MSFD fits into the typology of the nested institution. They constitute a set of problem-specific rules coherent with another broadly defined set of rules and principles (Young, 1999). The nested relationship between these institutions has very small possibility of conflict because the interactions between these institutions are mostly synergetic. This interaction is responded to by the coordination between the HELCOM and the MSFD, and the adoption of secondary measures within the convention, which is the BSAP. Hence, each of these two institutions has positively pushed the other during a crucial phase of the governance process (Gehring and Oberthür, 2006: 229).

However, better coordination between the MSFD and HELCOM is still required. The Ecosystem Approach addresses all activities and sectors and their influences on the ecosystem. Although the MSFD reflects the Ecosystem Approach in its objectives, it "does not provide a suitable framework for the horizontal integration of sector policies" (van Hoof et al., 2012:11). In relation to marine eutrophication, this statement emphasizes that the MSFD does not address the pollution from agriculture to the same extent as the BSAP does. The BSAP mentions agriculture as "the main

source of nutrient inputs to the Baltic Sea" (BSAP, 2007: 8). The MSFD sets a framework for the member states to reach good environmental status and to adopt national programmes of measures. However, the member states are not homogenous in their aspiration and knowledge on the protection of the marine environment, and especially on marine eutrophication. The vertical interaction between the Ecosystem Approach, the MSFD and HELCOM demonstrates that the interaction is a two way process composed of two or more separate cases.

Analyzing the interplay between the HELCOM and the MSFD, it becomes obvious that the HELCOM strengthens the "norms sustained by another institution and thus affects its normative impact" (Stokke 2001: 20). The process of institutional learning, although visible in the interplay between the Ecosystem Approach and the HELCOM, is especially effective in the interaction between the HELCOM and the MSFD, where the HELCOM's BSAP suggests solutions for marine eutrophication, which are willingly adopted by the MSFD. The coherence between the BSAP and the MSFD implies there is synergy in the interplay between these institutions. The MSFD, based on the Ecosystem Approach and supported by the BSAP sets a strict timetable for achievement of GEnS by 2020. The objectives of the MSFD that are synergetic with the BSAP aim to mitigate human-induced eutrophication and to "prevent the loss in biodiversity, ecosystem degradation, harmful algae blooms and oxygen deficiency in bottom waters" (MSFD, 2013: 74). According to the objectives of the MSFD, the member states monitor the nutrients levels and their direct, and indirect effects on the marine ecosystem. The direct effects include the concentration of chlorophyll, abundance of phytoplankton, and water transparency. The indirect effects represent the concentration of oxygen due to the nutrient enrichment. The synergy in this case contributes to improvements in the effectiveness of cooperation,

which in turn results in a better decision-making process, and later implementation. Thus, it results in a more effective solution of the issue in question. As mentioned before, the Ecosystem Approach pays close attention to the ecological, social and economic objectives of the contracting parties.

The mutual political advantages for both institutions are obvious. The participation of BSAP in the implementations process of the MSFD enables HELCOM to bring important regional problems to the hierarchically higher EU level. The MSFD has initially emphasized the importance of cooperation at the regional maritime levels, and it uses HELCOM as an instrument to reach this goal. The directive encourages and obliges the member states to cooperate. In the sense of political effectiveness, the synergetic interplay between the Ecosystem Approach and the HELCOM has clearly contributed to output level effectiveness in the solution of marine eutrophication in the Baltic Sea Region. Politically, the interplay between the BSAP and the MSFD is effective, because it enhanced cooperation and established new measures at the decision-making level.

The integration of the Ecosystem Approach into the HELCOM's BSAP, and later on in the MSFD, places special emphasis on the marine regions of the EU and makes regional marine policy-making a priority at the output level. The increased need for regional cooperation emphasizes the role of the HELCOM as an important actor that coordinates the policy-making process and the implementation of the European directives related to water pollution. However, the leading role of the regional regime is diminished in that HELCOM is not legally binding. As a legally binding legislation, the MSFD has introduced the notion of the marine region for the first time in marine law (van Hoof et al., 2012: 7). The process of regionalization of the MSFD is nested into HELCOM because of HELCOMs historical role as a

cooperative arena at the regional level. Specific geographic, economic and political knowledge of the large maritime region of the Baltic Sea is vital to the governance of marine pollution. Every marine ecosystem is unique and needs special treatment in order to eliminate serious environmental issues, such as for example eutrophication in the Baltic Sea.

However, at the same time, the MSFD only defines the pan-European objectives at the supranational level in order for the member states to implement them later. The regional implementation is then forwarded to the HELCOM. The member states adopt their own strategies first and the regional marine cooperation comes second after the national interests. Thus, the regional cooperation suffers because of the non-legally binding nature of the HELCOM, which operates on the soft law and cannot oblige the member states to comply.

In order to reduce nutrient inputs into the Baltic Sea, eutrophication in the river basins and in the coastal waters needs to be reduced. These areas lie within the responsibility of the WFD. Currently, the MSFD is the only European legislation that provides legally binding solutions to environmental problems in the shared marine waters. The MSFD is based on the regional seas approach and the regional seas convention HELCOM is an important tool for implementing the MSFD. The scope of Good Environmental Status under MSFD is broader, covering a greater range of biodiversity components and pressures than the Ecological Status of the WFD. Although the marine areas have different and unique characteristics, it is necessary to have coherent approaches and consistent principles in setting the GEnS criteria and targets. The following section represents the second case study and addresses the interplay between the MSFD and the WFD related to marine eutrophication.

5.2. Case Study Two: Institutional Interplay between the WFD and the MSFD

The WFD and the MSFD are the European directives that aim to maintain or, when possible, to restore European water conditions. Whereas the WFD aims to achieve "Good Ecological Status" (GEcS) and operates in the European inland surface waters, transitional waters, coastal waters and groundwater, the MSFD aims to achieve "Good Environmental Status" (GEnS) in the European marine environment. The following chapter describes institutional interplay between these two directives.

The dimension in which the MSFD and the WFD interact is horizontal, because they both operate on the same EU level of governance. The interaction between the WFD and the MSFD is also categorized by their similar memberships, meaning that both EC directives are created for the member states of the European Union. The WFD is identified as the source institution, because it signifies the rules and decisions that influence the MSFD. The MSFD represents the target institution and is the object of the influence of the source institution.

The effects of the interplay between these two directives are assessed in terms of their compatibility with the policy direction of the target institution, related to marine eutrophication in the Baltic Sea. The policy direction can either be a collectively directed change of the objective or the maintenance of a desired status quo against some collectively undesired change (Gehring, 1994: 433-449). The effects of such interplay ultimately result from the source institution's decisions. Institutional interplay between the MSFD and the WFD includes cognitive interaction and interaction through commitment.

Cognitive interaction reflects a learning process and the transfer of information and knowledge from the source to the target institution. The specific, real world example of cognitive interplay, when one institution would perform as a role model for another institution is "the model function that the compliance procedure of the Montreal Protocol has performed in the elaboration of the compliance system of the Kyoto Protocol" (Oberthür, 2006: 56). The Montreal Protocol on Substances that Deplete the Ozone Layer entered into force in 1989 and phased out ozone depleting substances, such as chlorofluorocarbons. The Kyoto protocol was adopted in 1997 and it covered "all GHGs not controlled by the Montreal Protocol " (id. 54). There was the transfer of knowledge and information from the source institution (Montreal Protocol) to the target institution (Kyoto Protocol).

Interaction through commitment is based on the commitment of some members of the target institution to the obligations of the source institution and on ensuring the change of their preferences (Gehring and Oberthür, 2006 46). The interaction through commitment takes place between the Kyoto Protocol and the IMO. The Kyoto Protocol, as a source institution, increased the pressure on IMO, as a target institution, to address GHG emissions from international transport. Therewith, the Kyoto Protocol made IMOs parties, and in particular industrialized countries, commit "to take action on GHG emissions from international transport" (id. 62). Therewith, this interaction between two institutions where one institution causes the change in preferences of another institution represents interaction through commitment.

In line with the literature on the effectiveness of international regimes, the second case study examines the effect of the interplay on the governance of marine eutrophication.

The EU WFD is assessed by many experts as a directive that "changed water management in all member states of the European Union fundamentally, putting aquatic ecology at the base of management decisions" (Hering et al, 2010: 4007-4019). The WFD has gone beyond the control of chemical water pollutants and has acknowledged the integrity of the water ecosystem by "using a range of biological communities rather than the more limited aspects of chemical quality" (Moss, 2007: 382).

However, in general, "the underlying concept of the WFD and, in particular, the way it has been implemented in practice has received major criticism, from politicians, water managers and scientists" (Hering et al, 2010: 4009, Moss, 2007, 2008; Dufour and Piegay, 2009). According to the interviews conducted for this dissertation, the implementation of the WFD has become a major challenge. The interviewed persons see the difficulties in implementation in complexity of the assessments methods used for determining the water quality in the pan-European surface, coastal and ground waters.

The ecological status of water used in the WFD is determined by the biological and chemical qualities of water. The definitions of water quality, according to the WFD, vary from "high" to "good", "moderate", "poor", and "bad" status. The WFD proclaims that the "high" water quality can be achieved when the biological, chemical and morphological conditions of water are linked to "no or very low human pressure". [55] The "high" water quality is also called "the reference condition", which means the best achievable status. "High" water quality status differs for every specific river, lake or coastal European waters. The deviation from the "reference condition" determines the further status, e.g. slight deviation from the reference condition means

[55] See: The EU Commission, Environment, 2015. Accessed: 03.12.2014

"good" status, while moderate deviation refers to "moderate" status and so on. In order to assess ecological water status, the WFD splits water ecosystems into several of its biological, hydromorphological, chemical and physio-chemical quality elements, such as "composition and abundance of aquatic flora" or "composition, abundance and age structure of fish fauna", "quantity and dynamics of water flow", "transparency", "salinity", "acidification status" and more.[56] The WFD aims to compare the structure of these single elements and then, by analyzing their condition, to determine the overall condition of the water body's ecosystems. The chemical features of water are incorporated into WFD as elements used in the classification of a water body's ecological status. The WFD obliges the member states that have similar ecological status of their water bodies to intercalibrate their assessments.

According to the WFD, intercalibration enables the comprehensive understanding of "good ecological status" that then should result into the same motivation for protection and restoration of surface waters. All Member States have their own methods of water assessment, whereby "the WFD defines which biological elements must be taken into account when assessing ecological status".[57] The objective of intercalibration is not to "harmonize assessment systems, but only the results of these assessment systems" (the WFD). The process of intercalibration aims for the ecological integrity of aquatic ecosystems. Several coastal types are defined for intercalibration by the WFD. The common intercalibration types were based on the regionally differing physical status of water, such as exposure and tidal regime, and on defining the chemical status, for example, the salinity and fresh water discharge regimes (Borja, Elliott, Carstensen, Heiskanen, van de Bund, 2010: 10). Some of the persons interviewed for this dissertation, working as marine scientists in

[56] See: The WFD, Annex V Section 1.1. Accessed: 01.03.2014
[57] See: The WFD Objectives. Accessed: 01.03.2014

Germany, named the process of intercalibration as "unrealistic" because every region has different environmental issues affecting the aquatic system. The issues vary from acidification to eutrophication and they cannot be "harmonized".

The WFD leaves the decision related to determination of the GEcS to the member states. Such a bottom-up approach is one of the main challenges of the WFD because every country uses its own assessment method. Subsequently, because of the differences in the assessment methods, the "intercallibration process of the results prolongs the assessment of water quality in European rivers and surface waters and leads to a more expensive and confusing sets of methods" (Borja, Elliott, Carstensen, Heiskanen, van de Bund, 2010: 17).

Contrary to the WFD, the MSFD is a holistic functional approach. One of the interviewed persons who works for the European Commission, called the Marine Strategy Framework Directive (MSFD) a "revolutionary piece of legislation". Indeed, it is the first European directive that aims "to protect, preserve, prevent deterioration or, where practical, restore Europe's oceans and seas where they have been adversely affected and to prevent and reduce inputs in the marine environment".[58] The MSFD is the first directive that is entirely based on the UN CBD Ecosystem Approach. "Directive 2008/56/EC, which is the environmental pillar of the Integrated Maritime Policy, requires the application of the ecosystem approach to the management of human activities, covering all sectors having an impact on the marine environment".[59] As stated in the previous chapter, the Ecosystem Approach concentrates on the sustainable management of the marine environment and handles any ecosystem as a holistic entity. The MSFD considers the human component as an important part of the ecosystem. That means that the MSFD aims to achieve a state where marine

[58] See: The MSFD, Art. 1 (a) and (b). Accessed: 14.04.2014
[59] See: MSFD, Official Journal of the European Union, 2010/477/EU: L232/15

ecosystems are not destroyed; human activities in the oceans and seas will be maintained and managed sustainably. "Good environmental status requires that all relevant human activities are carried out in coherence with the requirement of protecting and preserving the marine environment and the concept of sustainable use of marine goods and services by present and future generations referred to in Article 1 of Directive 2008/56/EC."[60]

The MSFD has an objective to achieve "Good Environmental Status", and to restore the ecological integrity and quality of marine waters. The notion of Good Environmental Status includes factors such as the structure and functioning of the marine ecosystem, along with the natural, geographic, climatic factors, and chemical conditions of marine waters. The MSFD proposes only two classifications to determine the GEnS, namely if these classifications "meet" or "do not meet" the 11 qualitative indicators of the GEnS. If the result does not meet the indicators, then some action to meet the classification must be taken.

The MSFD has developed common methods for all member states for monitoring and assessment of the European seas. Moreover, the ecosystem-based approach of the MSFD assesses the ecosystem elements of every European regional sea individually. "Member States are subject to the obligation of regional cooperation laid down in Articles 5 and 6 of Directive 2008/56/EC, and in particular to the requirement to ensure that the different elements of the marine strategies are coherent and coordinated across the marine region or sub-region concerned" (the MSFD, Official Journal of the European Union, 2010/477/EU: 17).

Some researchers define the MSFD as a "top-down" approach, meaning that this directive has a more central course of coordination with the European

[60] See: MSFD, Commission Decision of 1 September 2010 on Criteria and Methodological Standards on Good Environmental Status of Marine Waters

Commission (Borja, Elliott, Carstensen, Heiskanen, van de Bund, 2010: 17). The MSFD requests member states to cooperate and agree on joint assessments for the shared marine areas. The MSFD also requires member states to establish coordinated monitoring programmes in order to assess the environmental status of their marine waters. These programmes are based on the environmental targets required under Article 10. "Member States shall, in respect of each marine region or sub-region, establish a comprehensive set of environmental targets and associated indicators for their marine waters so as to guide progress towards achieving good environmental status in the marine environment, taking into account the indicative lists of pressures and impacts set out in Table 2 of Annex III, and of characteristics set out in Annex IV" (the MSFD, Official Journal of the European Union, 2010/477/EU: 28).

Comparing the WFD with the MSFD, the WFD takes "high" water quality status as a reference condition. However, "it is difficult to find coastal areas that are almost pristine state (or minimally impacted), as the major pressures like nutrient loading and eutrophication result in large scale impacts and changes in the coastal ecosystems" (Heiskanen et al. 2012: 4). The WFD refers to good ecological status in terms of the quality of the "aquatic ecosystem." The WFD assesses individual ecosystem elements, and neglects the uniqueness of single seas. The MSFD does not have "reference conditions". The MSFD describes good environmental status of marine waters as "ecologically diverse, clean, healthy and productive". An institutional objective of the MSFD indicates the direction of collectively desired change in combating marine pollution.

The main objectives of the WFD and the MSFD differ in terms of their assessment of the ecological and environmental status, which determines the objective of the two directives. Differences in the objectives between the two directives occur

due to their differing issue areas, rather than due to a difference in general beliefs and perspectives. Both the WFD and the MSFD have gained from mutual cooperation, however it is obvious that they also try to maximize their own interests. Institutional overlap between the WFD and the MSFD in the coastal areas can lead to conflicts between the two institutions. The following section analyses the most important areas of institutional overlaps between the WFD and the MSFD that lead to disruptive interplay.

5.2.1. Institutional Overlaps between the MSFD and the WFD

The Marine Strategy Framework Directive mentions coastal waters as an "integral part of the marine environment" (The MSFD, 2008/12/EU: 20). Therefore, coastal waters, as a part of the marine environment should also be covered by the MSFD. However, coastal waters are already addressed through the WFD, which causes spatial overlap between the two directives. The WFD covers one nautical mile from the marine coast. The MSFD covers the marine waters from the coastline to the exclusive economic zones, which extends to 200 nautical miles from the coastline. If the coastal waters are polluted, the possibility that the pollution will be carried out into marine waters is very high because marine ecosystems are interconnected. Thus, the marine ecosystem has to be treated as a whole.

The interaction of the MSFD and the WFD related to marine eutrophication include political decisions and norms, as well as the state of knowledge about marine eutrophication. The MSFD concentrates on the marine waters and defines marine eutrophication in a detailed fashion (the MSFD, Descriptor 5). "The MSFD eutrophication quality descriptor refers to the adverse effects of eutrophication as

including losses in biodiversity, ecosystem degradation, harmful algae blooms and oxygen deficiency in bottom waters (Ferreira et al: 2011: 119). Although the WFD mentions eutrophication as one of the issues for coastal areas, it does not address eutrophication as a major threat for the coastal areas. The list of the main pollutants of the WFD only mentions nitrates and phosphates as substances "which contribute to eutrophication" (the WFD, Annex VIII).

Importantly, the MSFD applies its comprehensive analysis to the coastal areas of marine waters, only in circumstances where it adds new elements to the WFD. Otherwise it relies on "the knowledge provided by the WFD" (The MSFD, 2008/12/EU: 20). The main problems of the coastal ecosystems are nutrient loading, eutrophication and habitat loss. Marine eutrophication starts with nutrient loading in shallow coastal waters, which eventually flows into the open marine waters. The nutrient problem in the marine waters falling under the jurisdiction of the MSFD is not properly linked with the nutrient problems in the coastal area falling under the jurisdiction of the WFD. Among other requirements, the MSFD aims to achieve the GEnS at the sub-regional levels. The WFD assesses the ecological status of each coastal water body individually, however, eutrophication is not addressed clearly enough under this directive. The measures taken under WFD are not sufficient for fighting eutrophication in the coastal areas of the Baltic Sea. The reference made in the WFD in respect to eutrophication and concentrations of contaminants in the coastal waters is not clearly formulated. In the original text of the WFD the formulation about the protection of the marine waters reads as follows: "The ultimate aim of this Directive is to achieve the elimination of priority hazardous substances and contribute to achieving concentrations in the marine environment near

background values for naturally occurring substances".[61] Moreover, the WFD does not explicitly concentrate on eutrophication as a significant issue area. The WFD merely mentions eutrophication in the Annex VIII in the "clearly agricultural context of nitrates and phosphates" (Andersen et al, 2006). The MSFD, in contrast, considers eutrophication as a functional problem that requires a holistic solution. As mentioned above, eutrophication is highlighted as one of the eleven marine waters' quality descriptors.

Thus, the overlap in the coastal waters results in ineffectiveness in eutrophication governance. The MSFD targets and indicators use relevant WFD assessment tools for eutrophication in coastal zones but do not apply GEnS parameters of the MSFD there. For effectiveness in solving eutrophication, the MSFD targets have to be applied to coastal waters to the same extent as to wider marine waters. "Good Environmental Status has to be set for areas within the EEZ, based on eutrophication parameters" (Ferreira et al: 2011: 128).

The author comes to the conclusion that a more comprehensive ecological water assessment of the MSFD should be applied to both coastal and offshore marine waters. Eutrophication in the Baltic Sea is a common problem for the entire marine ecosystem, including coastal and offshore areas. Therefore, coastal and offshore areas should not be separated and treated differently by applying different legislation.

Summarizing, the overlap in the coastal areas is very important and geographically extensive. The MSFD descriptor for eutrophication in coastal water bodies is largely affected by measures taken under the WFD. Yet, coastal waters represent a continuum of marine waters and cannot be assessed using different criteria. The level of nitrogen causing eutrophication in the coastal waters

[61] See: The WFD (27), Accessed 13.02.2014

consequently causes eutrophication in marine waters.

Another important difference between the two directives constitutes the implementation limit to achieve the objectives each agreement has set. The MSDF aims to achieve GEnS in the marine waters by 2020, while the WFD aimed to achieve GEcS for the river basins and coastal areas by 2015, and as this is an aim which will not be achieved, implementation will be prolonged to 2021, or at the latest to 2027. Such a difference in the timeframe causes misunderstanding in the implementation process of both directives, but in particular in the implementation of the MSFD. The WFD allows states "to extend the target year to 2027, which produces an implementation delay that hampers the protection of the Baltic Sea"(Schumacher, 2011: 35). The author of this dissertation argues that if the implementation of the WFD can be prolonged to 2027, then it means that the GEcS of the coastal waters may remain questionable till 2027. If the state of the marine coastal waters is not good enough, then the state of the marine offshore waters cannot be qualified with the GEnS by 2020, as aimed by the MSFD. A marine ecosystem should be seen as one holistic entity, meaning that the quality of the offshore waters cannot reach GEnS if the coastal waters are polluted.

According to theory, in order for institutional interplay to occur, two institutions must prove significant differences in "at least one of three key factors, namely their objectives, their memberships, or their means of governance" (Gehring and Oberthür, 2006: 313). The WFD and the MSFD have the same memberships and means, namely both directives operate under the law of the EU, aim to protect water from pollution and have the same European states as members. However, the two directives spatially overlap, have different methods of water quality assessment and have different timeframes for implementation. Table 5 below depicts the major areas

of overlap between the two directives. This observation led the author to argue that these overlaps lead to institutional conflict that in turn, results in disruptive interplay, thereby decreasing the effectiveness of both institutions. Recognition of the sea as a complex coupled social ecological system requiring an ecosystem approach to management is a vital step for coordination of overlaps between the two directives. Serious disruption of policy and legislation related to marine coastal areas has to be overcome in order for both the WFD and MSFD to be effective in terms of governing marine eutrophication.

Tab. 5. Overlaps between the MSFD and the WFD

Overlap	WFD	MSFD	Area of Conflict
Spatial	Estuaries, coastal waters (1 nautical mile)	Marine Waters, EEZ (to 200 nautical miles)	Coastal area
Main Objectives	To achieve the Good Ecological Status (GEcS)	To achieve good environmental status (GEnS)	Different Meaning and Different Assessment Tools
Implementation	2015 (or 2021; at latest 2027) Bottom-Up Approach	2015 Top-Down Approach	Different Approach in Implementation
Reference to the Ecosystem	Separate Integration of Each Element of Ecosystem	Ecosystem-Based Approach	Deconstruction versus Holistic Approach

Compiled by the author

5.2.2. Cognitive Interplay and Interaction through Commitment

The effects of the institutional interaction between the MSFD and the WFD are felt within the decision-making process of the MSFD because the MSFD relies on the legislation of the MFD in the coastal area. “The estuarine and coastal types are not

distinct categories that can be easily identified by a set of factors, but rather a continuum. Therefore, the borderline between two separate types has often been difficult to define. We also question whether estuaries and other transitional waters should be excluded from the MSFD if they have a large marine influence, e.g. tidal systems or where salinity incursion occurs as these by definition are part of marine systems" (Borja et al, 2010: 2180).

All the members of the MSFD (target institution) use an assessment of the water quality of the WFD (source institution) as a policy model explicitly in the coastal waters. As previously mentioned, cognitive interaction is a form of learning across the boundaries of institutions. The cognitive interaction between the MSFD and the WFD is based on the transfer of information. "As the objectives of the directives are parallel and they also may spatially overlap in the coastal waters, experience from the implementation of the WFD will be necessary to facilitate the implementation of the MSFD" (Borja et al, 2010: 2183).

Members of the MSFD voluntarily change their perceptions in response to information about the state of the coastal waters, provided by the WFD. According to the theory of institutional interplay, cognitive interaction depends on the voluntary acceptance of target institutions of the information provided by the source institution. Thus, cognitive interaction consists in acceptance of the marine environmental status of the marine environment in the coastal waters, addressed by the WFD by members of the MSFD. The MSFD express its voluntarily acceptance of the WFD assessment of the coastal waters in its legal text: "coastal waters, including their seabed and subsoil, are an integral part of the marine environment, and as such should also be covered by this Directive, in so far as particular aspects of the environmental status of the marine environment are not already addressed through Directive 2000/60/EC of

the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy or other Community legislation, so as to ensure complementarity while avoiding unnecessary overlaps" (MSFD, 2008: 12).

The MSFD recognizes the overlaps with the WFD in the coastal waters. It only applies the water assessment of the GEnS in the coastal area if they are not already covered by WFD. Because these directives are legally binding, the member states are obliged to accept the assessment of the coastal waters provided by the WFD. However, eutrophication in the coastal waters is only partly covered by the WFD and thus, cannot lead to a successful solution of the problem. The measures taken under the WFD in the coastal waters of the Baltic Sea are not sufficient to achieve the requirements of the MSFD GEnS in relation to eutrophication in the Baltic Sea.

The WFD does not exert pressure on the MSFD to adopt its output, and does not require a change in the Descriptor 5 of the MSFD, determining the GEnS related to the marine eutrophication. However, the coastal waters are part of the marine waters and thus, cannot be assessed differently from them. The WFD does not work as a positive model for the MSFD in the questions related to the water assessment and eutrophication in the coastal area. The process of information and knowledge exchange is an important indicator that cognitive interaction takes place in the first place. Although some knowledge exchange takes place between these two directives in relation to marine eutrophication in the coastal waters, it has a rather limiting effect on the effectiveness of eutrophication governance. "Although there exist two directives overlapping in European marine waters which gives the potential for some confusion in the quality status assessment, there is the opportunity for simplifying the

governance system and moving from the deconstructing structural approach of the WFD to a holistic functional and integrative assessment of the MSFD (Borja et al, 2010: 2186). Cognitive interplay is thus proven to be disruptive.

Interaction through commitment between the WFD and the MSFD is seen by the author in the commitment of all members of the target institution (the MSFD) to the obligations of the source institution (the WFD). Because the WFD and the MSFD have different objectives while regulating the overlapping issue of the marine coastal area, the probability of the interdependence and institutional conflict is very high. The author argues that the effectiveness of the MSFD (target institution) is undermined because the WFD intrudes in the jurisdiction of the MSFD in the coastal area. As stated above, the same group of member states addresses the same issue (protection of the coastal waters) within two institutions with different objectives and creates the conflicting obligations concerning the same subject. In this case the difference in objectives also constitutes the diverse way of achieving good environmental status of the MSFD and the good ecological status of the WFD. Such difference in objectives causes disruption in institutional interaction. Thus, the interaction through commitment between the MSFD and WFD restrains the effectiveness of both institutions involved. The MSFD and the WFD share a common interest in separation of jurisdictions in the coastal area in order to avoid regulatory competition, because neither institution benefits from such overlap. The conflicting preferences of the two institutions hamper the finding of solutions for dealing with marine eutrophication. Under these circumstances, synergy related to marine eutrophication between the MSFD and the WFD is absent. The measures originating from the source institution (WFD) undermine the effectiveness of the measures originating from the target institution (MSFD) in the coastal area. The author argues that it cannot be entirely

excluded that member states learn wrong lessons, which hamper rather then enhance institutional effectiveness. Although intentional disruption occurs rarely between institutions addressing the same policy field, the interactions between the MSFD and the WFD do not reinforce the target institution's pursuit of its objective.

5.2.3. Disruption between the WFD and the MSFD

Marine eutrophication both in coastal and in offshore areas can be classified as a large-scale indirect impact on a marine ecosystem, which is not easily spatially quantifiable (Borja and Tunberg, 2010: 10). The MSFD and the WFD are created to reduce pollution in the European waters, whereby their rules are influenced by interaction through commitment. Both directives try to encourage the practical integration of the rules of the WFD within the rule framework of the MSFD related to coastal waters.

In relation to eutrophication the WFD assesses the ecological status of the coastal waters based on the state of the aquatic systems, which assesses the ecological quality of certain elements, such as, for example, algae and benthic communities. The WFD assesses the quality of the "aquatic system" and does not specify marine eutrophication as a separate unit for measurement. Member states have the individual regulations for each drainage area and intercalibrate water quality assessments. Intercalibration is supposed to ensure the even and consistent quality assessment methods of the WFD. However, coastal countries have varying perceptions of what is good ecological status and also varying financial opportunities and experiences for conducting assessments. Thus, the author assumes that the absence of equal requirements, applicable to all coastal states, causes confusion. As a result, the

assessments are uneven, which makes the intercalibration a very long and expensive process. Intercalibration is one of the main reasons for extension of the implementation of the WFD from 2015 to 2021, and possibly to 2027.

The MSFD, on the other side assesses eutrophication status in marine waters, where more precise measurements are available. The MSFD does not require intercalibration of the water quality assessments; instead, it asks for the common implementation of its eleven descriptors at the regional level (Rice et al., 2010: 77). The criteria for the assessment of marine ecosystems applied by the MSFD use more information and include more indicators than the WFD and thus, have more impact on the solution of the problem of eutrophication. The MSFD concentrates on the entire ecosystem and its status, and assesses it as one unity. The MSFD monitors both direct and indirect effects of eutrophication on the marine environment. The direct effects of eutrophication constitute the immediate biological response to the nutrient enrichment, which shows an increased production of chlorophyll a and/or macroalgal abundance. The indirect effects are "low dissolved oxygen, losses of submerged aquatic vegetation, and occurrences of toxic blooms" (Ferreira et al., 2010: 3). The MSFD asks for consistency in the quality of indicators among member states, which indicates a basis for increased inter-state and regional cooperation. There are differences between inland and marine ecosystems assessments. Marine ecosystems cannot be split into coastal and offshore areas because they are holistic units, and have to be treated as such.

Different strategic plans developed by member states in order to implement these directives, differ also in setting measures. These measures will be applied to the coastal waters, which are governed by both directives. The MSFD descriptor related to eutrophication in the coastal waters is delivered through the measures taken under

the WFD. Both directives expect from the member states the monitoring and evaluation of the respective ecosystems. Although the management strategy of the MSFD is more holistic and ecosystem approach-based, the indicators of the WFD are applied in the coastal areas. Because the majority of anthropogenic pressures that cause eutrophication arise in coastal areas, the WFD's indicators that measure eutrophication in coastal waters have to be coordinated with the MSFD in order to avoid conflict and overlap.

The far-reaching spatial overlap between the WFD and the MSFD in the coastal waters of the Baltic Sea results in disruption of institutional interplay. The overlap arises from the same memberships and jurisdictions, while the objectives of the both directives in relation to marine eutrophication in the Baltic Sea diverge. In relation to eutrophication, the spatial overlap results into confusion because eutrophic spots that are situated one nautical mile away from the baseline cannot be properly assessed applying the indicators of the WFD. However, the offshore waters, which are assessed applying the MSFD indicators, suffer from nutrients from the coastal waters that have settled in the offshore waters. The WFD is not sufficient for properly solving marine eutrophication in coastal waters, while MSFD in its attempt to avoid fragmentation and institutional conflict, relies on the assessment of the WFD in the coastal waters.

The evidence supports the hypothesis, suggesting that marine eutrophication is not solved because of the disruptive institutional interplay in eutrophication governance. The output level of the MSFD related to marine eutrophication is definitely more efficient than that of the WFD. However, it does not mean that the implementation of the MSFD will not be challenging. This is a research subject for future studies on the effectiveness of implementation.

In the case of the horizontal interplay between the two European directives, the target institution MSFD does not change its framework and fails to overcome the consequences of the institutional overlap with the WFD. This disruptive interplay negatively affects the issue area, because it stalls the effectiveness of governance of both directives. Institutional interplay between the WFD and the MSFD originates from the functional linkages, because both institutions are nested into each other and operate at the same pan-European level. The measures of the WFD related to eutrophication in coastal areas follow a decentralized approach. In order to effectively solve the regional issue of marine eutrophication, there is a need for a more stringent commitment to the MSFD by member states. However, in respect to eutrophication, the MSFD takes into account the measures of the WFD related to coastal waters. The spatial overlap in the coastal area can be overcome if member states cooperate more and create possibly identical assessment systems for use in coastal waters. Better coordination between the two directives is required to enhance institutional interplay.

Marine eutrophication is not properly coordinated at the European level. The specific context of marine eutrophication also lacks legally binding legislation. The amendment of ecosystem-based regional marine legislation is a vital step needed to alleviate marine eutrophication. In order to better manage the issue, there is also the need for institutional fit between the CAP, the HELCOM, the MSFD and the WFD. Meanwhile, only minimal relations between the WFD and the CAP are evident. The MSFD is at odds with the CAP's objective to increase agricultural production. The next section analyses the effect of the misfit between the CAP and the marine ecosystem on eutrophication governance.

5.2.4. Linkages between the WFD, the MSFD and the CAP

One of the key challenges in implementation of the WFD and the MSFD is "the persistently excessive levels of reactive nitrogen emissions from the agricultural sector" (SRU, 2015, Special Report "Nitrogen: Strategies for Resolving an Urgent Environmental Problem": 1). The excessive use of fertilizers and pesticides puts serious pressure on the environment in general, and European waters in particular. Animal husbandry, manure handling and storage, along with an excessive use of artificial fertilizers cause eutrophication and soil impoverishment. Cultivated areas have increased in the last five decades. The phenomenon of regional marine eutrophication has been explained as "the result of decades of excessive nutrients loads" (BalticStern, 2013:11).

For achieving the objectives of the WFD and the MSFD in the Baltic Sea Region, the agricultural sector operating in the coastal environment needs to take specific additional measures to prevent nutrient leakage. Agriculture in the littoral countries in the Baltic Sea Region uses fertilizers that contain nutrients, mostly phosphorus and nitrogen. Nutrients from the fields leak into the river basins and end up in the estuaries, then coastal waters and finally, leak into marine waters. One of the main causes of biodiversity loss in the Baltic Sea is the emission of reactive nitrogen. "Even very low input levels of nitrogen can have a deleterious effect on certain species and ecosystems" (SRU, 2015: 2).

Numerous scientific and policy studies have proved the direct relationship between nutrient leakage into the coastal and marine waters and marine eutrophication. The majority of water discharge originates in the areas adjacent to agricultural land. **"**After the application of fertilizers and manure on the fields, they are being washed into surface waters. The nutrients resorb into groundwater and soils

and remain there, which activates sediments from the past applications of fertilizers and manure" (Hart et al., 2004: 956). The amount of N in the soil also increases during the rainy seasons. Thus, the agricultural sector has a prolonged negative impact on the environment. "The nutrient loadings from the groundwater leak into the rivers and are transported to downstream standing waters and then to the coastal waters, which has a direct impact on the quality and ecological status of rivers, estuaries and coastal systems" (Beman et al., 2005: 211).

The diffuse pollution process includes the emissions of nutrients, pesticide pollution, water extraction and drainage. However, the diffuse nutrient loadings are particularly difficult to mitigate because nutrient transfer is not easy to control.[62] The control of the nutrient export in catchments depends on the type of farming system, soil type, and site hydrology and thus, not only on how much input could be reduced. The unpredictable nature of nutrient leakage from agriculture complicates the implementation of effective mitigation actions (Grizzetti et al., 2012: 769). Nitrogen and phosphorus have different effects on the ecosystem. Thus, the reduction strategies of the N and P differ. However, the high levels of both N and P result in increased concentration of algae and the eutrophic state of water (Smith, 2006: 380).

Nitrogen is essential for the growth of sea plants, and in small quantities is an important part of the ocean ecosystem. Naturally, nitrogen is released into seawater when dead plants decompose. The surplus of nitrogen caused by agricultural leakage, however, results in eutrophication. In order to cut nitrogen, the construction of wetlands, better manure management and general fertilizer reduction is recommended. However, the CAP subsidizes drainage, which destroys wetlands. Wetlands have naturally high nutrient retention capacity, thus in their absence more

[62] See: EU Fresh Water Quality. Assessed 12.09.2014

nutrients leak into the sea and worsens marine eutrophication. The separation of crop and animal production also results in an increased load of nitrogen from agriculture to the Baltic Sea. The use of artificial fertilizers, increased animal production with high inputs of purchased fodder and ineffectively utilized manure contribute to the over-fertilization from animals. The nitrates report of 2010 shows that water quality for groundwater in observed stations remained the same in 66 percent of cases, in 34 percent nitrate pollution increased, while in 15 percent nitrate concentrations were above the quality threshold of 50 mg per liter (EC, 2010b: 118). Within groundwater bodies, shallow levels showed higher nitrate concentrations than deeper levels.

According to Annex 2a of the impact assessment of the EC in 2011 among the 22 Member States, only the UK and the three Baltic States had a negative phosphorous balance (EC, 2011a: 18). The others had a phosphorous surplus, which leads to leaching of the phosphorus into surface water and groundwater with subsequent runoff into marine waters. Reducing phosphorous inputs would not only decrease problems of eutrophication, but also reduce cadmium inputs from mineral phosphate fertilizers. Ninety percent of phosphorus that leaks into the Baltic Sea originates from agriculture or, more precisely, from factory farming (Hermann et al., 2011: 58). Thus, animal husbandry is a key emitter of excessive phosphorus applications to soils with subsequent loss to aquatic systems. Farmers should apply fertilizer and manure, in accordance with the soil analysis and expected uptake by plants (Ulrich et al., 2011: 32). The calculation of P uptake by plants is a common practice and involves knowledge of actual or expected yield. It is important, however, to start reduction of fertilizers as soon as possible because the visible results can only be achieved in several years or decades after the initial reduction. For phosphorus reduction, “the best strategy is to apply the use of phosphate-free detergent”

(Granstedt et al., 2008: 2). There is also an interaction between nitrogen and phosphorus reduction practices. A phosphorus control results in decreased nitrogen production (Wulff et al. 2007:249).

An unsustainable use of fertilizers helps to grow more crops, however, it is harmful for the marine environment and causes marine eutrophication. Extreme algal bloom in marine waters is responsible for hypoxia and for the "dead zones" in the Baltic Sea that in turn endanger the entire ecosystem of the marine environment. The environmental concern is finally being mentioned by scientists and politicians in relation to the agricultural policy, however, there is a long way to proper coordination of EU environmental policies with the CAP. Even if current agricultural reforms integrate and implement environmental measures properly, the Baltic Sea will need a long period of time to regenerate and will never reach its pristine condition again (Smith and Schindler, 2009: 202).

The following chapter analyses the problem of fit between the marine ecosystem of the Baltic Sea and the EU CAP.

5.3. Case Study Three: Marine Ecosystem of the Baltic Sea and the EU Common Agricultural Policy - the Problem of Fit

The concept of fit deals with the compatibility between ecosystems and institutional arrangements "created to manage human activities affecting these systems" (Young, 2002: 70). A concept of institutional fit always contains two key components, namely the ecosystem and the institution or set of institutions (Ebbin, 2002 et al, cited in Ekstrom and Young, 2009: 2). The relationship between the socially constructed institution Common Agricultural Policy (CAP) and the ecological component of eutrophication in the marine environment of the Baltic Sea is a case of misfit.

Institutional fit evaluates the institutional arrangements and their relationship to the problem in question (Young and Underdal 1997; Young 2002). This dissertation measures the misfit by analyzing three categories: imperfect knowledge, rent-seeking behavior and institutional constraints. The following section explains the phenomenon of misfit applying these three categories to the relationship between the CAP and the Baltic Sea ecosystem in line with the theory chapter. It serves the purpose to better understand the misfit that, according to the hypothesis of this research, is a factor that contributes to the ineffectiveness of eutrophication governance.

The CAP includes different stakeholders, such as farmers and landowners from EU member states, institutions representing agricultural workers, and finally the EC and the EU Parliament. Agriculture in the twentieth century has an increasing impact on the ecosystems due to "intensification, concentration and specialization of production in some areas and marginalization and abandonment in others, leading to significant biodiversity losses across the farmed landscape" (Polakova et al., 2011: 2).

Article two of the UN Convention on Biological Diversity (CBD) defines an ecosystem as ”a dynamic complex of plant, animal and micro-organism communities and their non-living environment, interacting as a functional unit".[63] This definition of the ecosystem relates to any functioning unit at any scale, where the scale of analysis and action is determined by the problem being addressed. The change in biodiversity associated with agriculture represents the modification of the natural state of any ecosystem that occurs due to “grazing, one-off or occasional agricultural improvements and routine intensification or modernization of management, such as cultivations, the use of fertilizers, irrigation and pesticides etc” (Polakova et al, 2011: 2).

The effect of the CAP on the marine ecosystem of the Baltic Sea is particularly severe. In 2011 the EC presented a set of legal proposals designed to make the CAP more effective regarding sustainable agriculture. These proposals were accompanied by an impact assessment that evaluates alternative scenarios for the evolution of the CAP. The impact assessment states: “the main drivers affecting the environmental sustainability of agriculture relate to intensification of production in some areas, with abandonment and under management of land in others” (EC, 2011a: 3). The EC acknowledges the pressures of modern farming on the environment. According to the EC, the CAP should respond to the environmental challenges “by better integrating its objectives with other EU policies and adjusting its measures accordingly” (id.). The European Union’s Standing Committee on Agricultural Research (SCAR) plays a major role in the coordination of agricultural research. Agricultural research includes advisory services, education, training and innovation[64]. The concept of the Agricultural Knowledge and Innovation Systems (AKIS)

[63] See: UN CBD. Accessed on 11.11.2014
[64] See: European Commission, 2013: EU agriculture - Statistical and economic information – 2012. Accessed 23.04.2014

emphasizes the process of knowledge generation about agricultural impact. AKIS as a theoretical concept is based on observations and promotes the exchange of knowledge and services. It also provides farmers with relevant knowledge and networks around innovations in agriculture. "AKIS is a set of agricultural organizations and/or persons, and the links and interactions between them, engaged in generation, transformation, transmission, storage, retrieval, integration, diffusion and utilization of knowledge and information, with the purpose of working synergistically to support decision making, problem solving and innovation in agriculture" (Röling and Engel, 1991:13). However, there is no unified AKIS management and funding. The EU member states develop their own advisory services and objectives. This process is not coordinated and therefore, unstructured. Sweden is the only member state that mentions the knowledge transfer related to eutrophication, in its national public policy. One of the areas within the AKIS program of Sweden mentions the goal of "zero eutrophication" in the Baltic Sea. This goal aims to increase the national knowledge about the issue area and give the farmers tools to reduce nitrogen and phosphorus losses in a cost effective manner.[65] It includes one large national project "Focus on Nutrients", where the goal is to reduce the leaching of nutrients. The alarming revelation is, that Sweden is the only country of the EU-27 that voices the goal to reduce eutrophication in its national AKIS.

The findings of the 2009 Flash Eurobarometer on Water suggest that eutrophication is perceived differently among the littoral countries (EC, 2009: 5). For example, Sweden and Finland see marine eutrophication as a severe environmental problem, while Germany, Poland and the Baltic States do not pay particular attention to marine eutrophication and hence, are not interested in solving it in the same manner

[65] See: EU SCAR, 2012: 115

as Scandinavian countries. The interviews conducted for this dissertation also confirm this statement. Such discrepancy in perception can be explained partly with differing geographic, geopolitical, and historic-cultural factors. In Russia, Germany and Poland the geographic distance from the capital cities to the Baltic Sea makes the environmental problems of the Baltic coastline politically not very relevant (Tynkkynen et al, 2014: 111). Consequently, the author suggests that the public knowledge about marine eutrophication in the Baltic Sea in these countries is insufficient. A poor knowledge translates into weak public interest and stalls the solution of the issue on the political level as well. In order to improve public interest in the problems of the CAP, numerous environmental NGOs have participated in debates on CAP reform. Among the most important NGOs affecting CAP reform are BirdLife International, European Environmental Bureau, European Forum on Nature Conservation and Pastoralism, International Federation of Organic Agriculture Movements-EU Group, and World Wide Fund for Nature. In 2009 these NGOs made a proposal for a "new" CAP. This proposal stated that the CAP was "built mainly on historic and obsolete mechanisms. Support is still directed towards those who produced more under the 'old' CAP, rather than those who deliver the most environmental benefits and contribute to maintaining a sustainable resource base which is necessary for ensuring long-term food security" (IEEP, 2009: 5). The proposal aimed to ensure a coherent European policy for agriculture. Although at that time the CAP did not change its conservative direction, the involvement of the NGOs in the CAP decision-making process has increased public awareness of the CAP's environmental deficits. The "Environmental NGOs can be seen to have been successful in lobbying for their cause. However, they are not satisfied with the contents of the EC greening proposal" (Klavert and Keijzer, 2012: 16). In general, the

Baltic Sea Region has a good reputation in terms of environmental policy implementation, even though it is not always a well-deserved reputation. Schumacher states that: "the good environmental reputation of the northern European countries leads to the false impression of a good environmental status of the Baltic Sea" (Schumacher, 2011: 79).

Weak environmental awareness is closely connected with the rent-seeking behavior of the CAP. The stakeholders related to agriculture are the important players in the potential integration of cost-efficient measures for decreasing nutrient leakage. The lack of knowledge, combined with the low funding for the reduction of eutrophication contribute to the institutional misfit between the CAP and marine ecosystem.

The agricultural and environmental policies contradict each other and are not properly integrated (Kern, 2001: 23). The impact of agriculture on the marine environment was not well understood until recently. Rising environmental awareness among stakeholders is vital for the elimination of marine eutrophication. There is no specific European anti-eutrophication policy that obliges farmers to apply more environmentally friendly practices. Part of the problem arises from the power of the interest groups comprised of European farmers that are more concerned with promoting their agendas than with protection of the ecosystem of the Baltic Sea. In the 1990s the EU began the regulative approach to agriculture and introduced certain legislations that regulated the use of fertilizers and sewage, such as the Groundwater Directive (80/68/EEC) and the Sewage Sludge Directive (86/278/EEC). These Directives regulated the use of sewage sludge as a fertilizer. The Groundwater Directive includes a statement that "the protection of groundwater may in some areas require a change in farming or forestry practices, which could entail a loss of income

(Schumacher, 2012:20; 2006/118/EC: 19).” The farmers saw these legal measures as limiting to agricultural development and as a threat to their profits. In order to protect farmers the CAP suggested financial compensation. To provide those compensations the EC has established European Agricultural Fund for Rural Development (EAFRD).

After EU enlargement in 2004, agricultural production increased even more and eutrophication became worse. Strong farming lobbies aim to avoid the loss of competitiveness at all costs. They don’t support strict environmental policies and act in their own interests. Increased production of agricultural goods causes misfit with the ecosystem of the Baltic Sea and disruption with regional and European policies focused on water protection. Agriculture has a privileged position within EU politics. The rent-seeking behavior of the CAP does not involve deliberate manipulation. However, the rent-seeking behavior of the CAP matches the description of the “organized thinking, which is based on conflicts between pursuing of individual gains and promotion of social welfare” (Young, 2002: 72).

The member states follow agricultural interests and along with the EU have established powerful lobbies in the agricultural sector. Certain ministerial, parliamentary and other official committees also tend to act as agricultural lobby organizations on behalf of the agricultural sector (Feindt 2007: 382, cited by Schumacher, 2012: 41). The strong cohesion of farmer-based interest groups contributes to the strength of the agricultural lobby and influences the inertia-driven decisions of the CAP. The CAP is extremely well subsidized and supported both by the EC and by national governments. The possible explanation for the “continuing high EC expenditure for agriculture suggests that elite farming organizations have gained a competitive advantage over other interest groups” (Lenschow, 1995: 6). The agricultural interest groups influence both national and European policy processes,

"benefitting from organizational strength and privileged access to policy makers" (Lenschow, 1995:6; Avery, 1977; Keeler, 1995; Tracy, 1989). The main organization that represents European farmers is the Committee of Professional Agricultural Organizations (COPA). It was created in 1958. Shortly after, in 1959 the national agricultural cooperative organizations created the General Committee for Agricultural Cooperation in the European Union (COGECA).[66] COPA is considered one of the most powerful lobby groups in Brussels. Currently it represents farmers' lobbies from the EU's 28 member states, while COGECA, represents agricultural cooperatives in the same countries. "The fact that this lobby group has been around almost as long as the EU itself shows just how important Europe's farmers believe the EU is for their livelihoods. Even after successive reforms, the Union's controversial Common Agricultural Policy still accounts for almost a third of total EU spending every year".[67] "On the European level, COPA has represented the interests of the farming population more than other sectoral interest groups, and certainly more than consumer and environmental groups" (Lenschow, 1995: 6; Avery, 1977; Nugent, 1989). Since COPA is the oldest agricultural lobby in the EU, it has developed close relations to the European Commission and the Council. The COPA has also established access to many EC institutions and has convinced them that protection of the farmers' interests is very important. According to some experts "the CAP has compartmentalized institutional structure, and close links between institutions and farming interests" (Greer and Hind, 2012: 332). Historically, it can be explained by "the notion of agricultural exceptionalism, which asserts that farming merits distinctive, preferential policies because it is unlike any other economic sector" (id. 332 and Skogstad, 1998: 466). Agricultural policy in Europe is conducted within the "insulated bureaucratic

[66] See: COGECA, History
[67] See: E!Sharp, a bimonthly English-language magazine covers EU affairs and transatlantic relations by providing analysis and commentary. Based in Brussels

structure", meaning that the Agriculture Council, DG Agri, and the Special Committee on Agriculture (SCA) work very closely together (id.332). "The state-assisted paradigm predicated on agricultural exceptionalism remains strong" (id.332). The EC declared that the "first and foremost role of European agriculture is to supply food" (EC, 2009a: 1). Farmers have very positive images as representatives of "stability and rootedness" among the population of the entire EU (Lenschow, 1995: 7, cited Keeler, 1995). Therefore, the success of the agricultural lobby is partly based on public perception. "The fundamental justification for agricultural policy remains that market mechanisms alone cannot provide for the manifold roles and services to be provided by European agriculture" (Greer and Hind, 2012: 333). The interviews conducted for this dissertation have confirmed that actors, representing agricultural lobbies are convinced that their actions serve the common good. The strength of the agricultural lobby is depicted by the following example. In 2011 the EC has addressed food security, competitiveness of agriculture, globalization, environmental challenges, territorial balance, diversity and simplicity of the CAP as the main challenges and key aims for the reforms (EC, 2011c: 4). However, at the same time, in November 2011 the Agricultural and Rural Convention (ARC) issued a press release related to the EP hearing on the CAP and described it as a "kind of general assembly of COPA-COGECA, as 32 out of 35 speakers were either affiliated or attached to the organization" (Klavert and Keijzer, 2012: 5).[68] It illustrates how COPA-COGECA has affected the decision-making process of the EC related to the CAP reforms. The COPA-COGECA is considered the most influential lobby group in the EC.

The CAP constitutes the biggest expense in the EU with half of the total

[68] See: ARC , 2011

European budget spent on the CAP. The rent-seeking behavior of the CAP is very difficult and time-consuming to change. Although the CAP has evolved since the early 1990s, environmental concerns in general, and marine protection in particular have only played a marginal role in CAP reforms. "The organizational inertia and the institutionally powerful and unchallenged position of policy makers and groups with a vested interests in the CAP, prevented its reform" (Lenschow, 1995: 7).

Ecological considerations rarely play a significant role in determining jurisdictional boundaries (Young, 2002: 70). Institutional constraints related to marine eutrophication constitute a strong need for a supranational, legally binding agreement for the littoral countries with a main goal to prevent nutrient leakage into the marine environment. However, in the absence of such a legally binding agreement, the synergetic institutional interplay between the existing institutions can strengthen the cooperative environmental measures to clean the Baltic from marine eutrophication.

The complex institution of the CAP is a stressor created by humans that causes marine eutrophication. It is obvious, that in order to reduce marine pollution related to agriculture, it is vital for the CAP to integrate environmental concerns and to reduce general pressures from agriculture on the environment. Thus, the following section analyzes the reforms of the CAP and its attempts to include environmental concerns into its agenda.

5.3.1. The CAP and Environmental Protection

For the first time the harmful environmental effects of the CAP were acknowledged in the early 1980ies. Until then, people have perceived industrial policy in the urban regions as polluting and environmentally harmful sector. The

agriculture, on the other side, was associated with nature and the environment-friendly actions. However, "by the 1990s, the issue of ecological destruction became problematic even within the agricultural sector, as it was polluting its own production bases, water and soil" (Lenschow, 1995: 3; Heeremann, 1992). Agricultural overproduction has resulted in problems with the storage of excessive agricultural products, such as milk, cereals and meat. The EC reacted to the overproduction by exporting the excessive products "at below world prices, known as dumping" (Friends of the Earth Europe, 2005). In the 1980ies the EU began to reform the CAP in order to deal with dumping. The early CAP reforms are briefly described in the Chapter 4.5.

It is known that the CAP encourages the increase in both area under cultivation, and intensity of production. As a result "environmental impacts of agricultural policy actually undermine the achievements of agri-environmental policy regarding water protection" (Tynkkenen et al, 2014: 112; Lankoski and Ollikainen, 2011).

The first environmentally important reform was signed in 1999 and is called Agenda 2000. The Agenda 2000 has proposed more than 15 measures for improvement of the CAP. "The Agenda 2000 package for agriculture has been supplemented by a Regulation on rural development, a second pillar of the common agricultural policy, which will secure the future of the Community's rural areas" (EC, Agenda 2000). One set of measures, among other adopted measures, is important for this reform, namely the agro-environment schemes. Agro-environment schemes are designed to encourage farmers to protect and support the environment on their farmland. The farmers are paid in return for implementation of the agro-environmental commitments that involve the application of the "Polluter Pays Principle", represented in the Rio Declaration on Environment and Development,

Article 130. The agri-environmental payments were "first introduced into EU agricultural policy during the late 1980s as an option to be applied by Member States. In 1992 the CAP has re-introduced the agri-environmental payments as complementary measure to its reform. Agri-environmental measures were designed to reduce environmental risks associated with agricultural activities and to encourage farmers to adopt practices beneficial to the environment. Since 1992, the application of agri-environment programmes has been compulsory for the framework of rural development plans of the Member States, but optional for implementation by farmers. Thus, in the nineties the agri-environmental measures remained only measures on paper and were not implemented.

In 2003, further reforms introduced the single farm payments. The most important step of the 2003 reform was to decouple direct payments to farmers from their production. A Single Payment Scheme (SPS) was initiated in the form of direct subsidy payments to landowners. Meaning that farmers are paid a set amount per hectare of agricultural land maintained in cultivatable condition. "Farmers may use this land for any agricultural activity except permanent crops. Any entitlement which has not been used in a period of a maximum of 5 years, apart from force majeure and exceptional circumstances shall be allocated to a national reserve" (EC, 1992). Farmers receiving the SFP were allowed to produce any commodity on their land except fruit, vegetables and table potatoes. They are also obliged to keep their land in "good environmental condition" (Kantelhardt et al., 2013: 311). The EU member states have applied the SPS differently from country to country. For example, the new members that joined the EU in 2004 had a choice to introduce their schemes from 2005 to 2013. On the other side the UK was the first country that introduced the SPS already in 2005. In order to get SPS farmers had to "cross comply", meaning to apply

a more environmentally friendly way of farming, to reduce pesticides and fertilizers (EC, 2005b: 2). The cross-compliance has become a compulsory measure for all direct payments in 2003, when the Mid Term Review (MTR) of the CAP was released.

It was expected that cross-compliance would strengthen the environmental standards in agriculture because non-compliance with EU environmental legislation could result into significant penalties. However, the payments were unevenly distributed among farms, which decreased the importance of payments. The important areas, such as "vegetables, vines and fruit, and to some extent poultry and pig farming" were potentially omitted from the penalties (EC, 2005b: 3). The 2003 CAP reform has encouraged EU countries to adopt comprehensive rural development policies, but environmental issues were not in focus.

In 2005, a higher share of the CAP budget for rural development along with the new agro-environment measures were approved. As mentioned above, agri-environment measures were introduced for all EU member states as an accompanying measure to the CAP reform in 1992. Member States "were required to introduce agri-environment measures throughout their territory" (EC, 2005c: 4). However, the implementation of the agri-environmental measures was not legally binding and remained optional for farmers to apply. Agri-environment measures provided payments in return for implementing environmental commitments and for loss of income due to reduced production, which the commitments entail. Agri- environment payments were co-financed by the EU and the Member States. Agri-environmental measures may include "reducing fertilizer or pesticide inputs, planting winter cover to reduce nitrate, the leaving of winter stubbles in intensive arable areas to provide food

for birds, mowing grass rather than grazing it, maintaining hedgerows" (EC, 2005c: 3).

In 2005 experts agreed that agri-environment measures must go beyond usual Good Farming Practice (GFP). Good Farming Practice means compliance with mandatory legal requirements referred to the minimal level of environmental care. The agri-environmental measures according to simplification applied in 2005 should include environmental commitments that go beyond GFP. This means that farmers will not be paid only because they conform to the environmental legislation in place, but for environmental commitments beyond statutory requirements defined in the regional GFP. To receive agri-environmental payments, the EU member states had to prepare rural development plans approved by the European Commission. In 2005 the funding of agri-environmental measures was shared between the EU and the member states or regions. Some CAP experts questioned the reasonability of such shared responsibility. "Most of the rural development measures are of a rather local nature regarding their effects and the problems they address, and it is difficult to see why the responsibility for design and funding of these measures should be at EU level" (Grethe, 2006: 13).

The change in funding of agri-environmental measures came in 2007. Starting from 2007, rural development policies should be governed by the new instrument, known as European Agricultural Fund for Rural Development (EAFRD). In addition, regional rural development plans had to be synched with the national strategy plans, which would make them more suitable for certain regional environmental problems. In 2008 decoupled payments became a priority for all European countries. However, the public debate on how to improve cross-compliance remained important. The CAP's future development remained uncertain. It was a subject of continuous reform.

The EU agri-environmental payments offered financial support for water protection projects. However, in reality due to their inflexibility and non-binding nature they were not applied properly. The agri-environmental measures of the CAP offered only temporary relief, because "agri- environmental measures only have an effect in the period in which the farmer participates, but no longer" (SRU, 2015: 14). Regarding the EU agri-environmental payments the German Advisory Council on the Environment (SRU) states: "the SRU has considerable doubts whether voluntary measures alone are sufficient and sees a need to include additional restrictions on use" (id.14). Certainly, some subsidy-payments to farmers motivate them to commit to environmentally friendly measures. Such subsidies aim to reduce the risk of pollution related to agriculture. However, the CAP introduces the payments that support the surplus of agricultural production and thus, lead to expanded environmental degradation.

Water protection, and especially marine water protection has a rather transboundary character. Prevention of marine eutrophication has to be coordinated by the EU. In the case of water protection, European responsibility has to dominate over national interests, which involves funding responsibility. Within the first pillar of the CAP, some direct payments to farmers are linked to water protection. In 2011 the Nitrates and Groundwater Directives were included in the Statutory Management Requirements to be respected under cross-compliance of agri-environmental payments. The second pillar of the CAP also offered certain financial "compensations for farmers facing area-specific disadvantages due to requirements introduced by the Water Framework Directive" (EC, 2011c: 53). Despite these measures, agricultural practices have not improved. High levels of nutrients are transferred to surface, coastal and marine waters. In 2011 the European Commission acknowledged that:

"excessive nutrient concentrations in water bodies, however, cause adverse effects by promoting eutrophication, with an associated loss of plant and animal species" (EC, 2011c: 59). It also acknowledged that the implementation of the WFD is negatively affected by agriculture: "agricultural sector generates a significant pressure on both surface waters and ground waters in terms of quality and quantity".[69] European Environmental Agency states that the sewage and industrial wastes that affect European river systems have improved significantly within the past decades, which has increased the water quality. The agricultural sector, on the other hand, has not made any progress.[70]

Despite the reforms undertaken till 2011, the EU Summit in 2012 comes to the conclusion that "…intensive farming is continuing to have adverse impacts on nature, especially biodiversity" (SRU, 2013: 20). It might partly result from the EC decision to cut the budget for the funding of the CAP second pillar by "nearly a quarter" for the funding period 2007-2013 (SRU, 2008: 458). The CAP second pillar contains funds for rural development, so as the support for "biodiversity maintenance and climate protection" (SRU, 2013: 20). According to the German Advisory Council "if cuts are necessary, the direct payments should be reduced. In view of the ongoing problems, the funds for environmental protection must on no account be reduced, but should in fact be increased" (SRU, 2013: 20; SRU, 2009).

In 2013 the EAFRD also creates additional measures for climate protection and a separate measure for organic farming. These measures constituted the common rules on financial instruments for the farmers, supported by the EAFRD, along with the specific monitoring structure. It is expected that these new measures would

[69] See: EC 2010b. Accessed. 23.10.2014
[70] See: EEA, 2012. Accessed 12.10.2014

contribute to a more flexible approach to integration of environmental measures into the CAP. For example, the CAP reform post-2013 strived for additional annual mandatory greening payments. The notion of the greening payments was introduced in 2011 during the second debate in the Council on the CAP post-2013 reform. It refers to the "proposed greening of direct payments proposal, such as the share of national envelopes and splitting up agricultural land to form ecologically focused areas" (Klavert and Keijzer, 2012: 17). The eligibility for such payments should be the agricultural practices that are beneficial to the environment. Agricultural greening was one of the priorities of the CAP reform post-2013. The introduction of the Ecological Focus Areas (EFA) on both arable and permanent cropland is an innovation of the post-2013 reform. The proposed greening requirements were supposed to provide the most efficient use of sources of funding to deliver environmental priorities. Prior to the CAP reforms of 2013, the improvements within the CAP were mostly directed to the benefits of the growth of the agricultural production without regard to consequences of the agriculture for the environment. Agricultural overproduction not only caused marine eutrophication, it also endangered the sustainable development of the entire region. Moreover, the economic value of agricultural production was considered to be more important than the environmentally sustainable future of the Baltic Sea.

In its 2014-2020 reforms agenda, the CAP aims to connect the two pillars that constitute its essence. The first pillar of the CAP is to support the incomes of the farmers in the form of direct payments. The second pillar constitutes the support provided for the development of rural areas. The CAP recognized the external challenges that are dependent on the change of agricultural policy. Along with the issues of global food security and price volatility, environmental issues are now at

least discussed in the CAP agenda. Environmental issues include resource efficiency, soil and water quality and threats to habitats and biodiversity. The long-term goals of the CAP constitute three objectives: viable food production; sustainable management of natural resources and climate action; and balanced territorial development. To achieve these long-term goals, the existing CAP instruments have to be changed. Without well-developed instruments these goals are unattainable.

In sum, after more than three decades of reforms, the CAP started to bring environmental concerns onto its own reform agenda. However, there are lots of uncertainties about this reform and about what constitutes the environmentally sustainable CAP. The agricultural impact on the environment is tremendous. Although the current CAP reforms have great ambitions to protect the environment, these measures are only being debated and it is not clear whether they will ever become legally binding.

The negative effect of agriculture is especially evident in the fragile environment of the Baltic Sea. The HELCOM assessments indicate that agriculture is the main reason why good environmental status of the marine ecosystem has not been achieved.[71] Research from the Stockholm Resilience Center emphasizes that issues, such as biodiversity loss and eutrophication in the Baltic Sea are "more acute than the climate change" and deserve the special attention of regional and European governance (CCB, 2011: 2).

[71] See: HELCOM, 2010: Baltic Sea environment proceedings no. 122

5.3.2. Analysis of the Misfit between the Baltic Ecosystem and the CAP

The CAP, as a policy must be redesigned in such a way that would benefit the farmers and prevent eutrophication at the same time. The approach of misfit is applied in this dissertation in order to prove that the CAP contributes to the severe deterioration of the ecosystem of the Baltic Sea and is one of the main reasons of marine eutrophication.

The misfit between the social (CAP) and the ecological (Baltic Sea) systems constitutes one of the most crucial factors influencing the effectiveness of eutrophication governance in the Baltic Sea Region. The misfit is caused by the lack of knowledge about the harm of agriculture to the marine environment and by the rent-seeking behavior of the actors involved in the CAP. The consequence of the misfit between the CAP and the ecosystem results in the overuse and pollution of the marine environment of the Baltic Sea.

Fertilizers are the primary source of nutrient run off into marine waters. Nitrogen and phosphorous from fertilizers and manure negatively impact fresh and coastal waters which makes the agricultural sector responsible for eutrophication problems. Diffuse pollution from agriculture is the major cause of the overall poor water quality in Europe.[72] The understanding of the impact of the agricultural sector on the marine environment is not sufficiently articulated at the decision-making level and not adequately integrated into agricultural policy. Stakeholders and the general public lack awareness of marine eutrophication and don't see the issue as a relevant environmental problem. The discussion during the interviews the author had with the four representatives of the EU agricultural sector at the conference "Greener

[72] See: EEA, 2010

Agriculture for the bluer Baltic Sea" in 2013 resulted into the statement of these representatives, that the Baltic Sea has naturally high levels of algal bloom, which is not necessarily related to agricultural run-off. The awareness and knowledge about marine eutrophication within the CAP are rather low.

The knowledge about the ecosystem properties and about the sets of actors whose behavior gives rise to environmental problems are crucial in designing arrangements to solve or to ameliorate marine eutrophication. The marine ecosystem of the Baltic Sea is complex and the understanding of it within the CAP is not well expressed. There is a need for more flexible integration of eutrophication related policies specifically directed at the Baltic Sea Region. For example, the CAP has to be aware of regional specialties considering the unique characteristics of the ecosystem of the Baltic Sea. Thus, the CAP reforms have to carry the regional character, adapted to "the physical, socio-economic and institutional characteristics of the ecosystem in question" (Young, 2002: 78). The CAP is directed at the EU-28, whereby the member states belong to the different European regions. Marine eutrophication is especially acute for the Baltic Sea Region, and thus, is less interesting for non-adjacent countries.

The efforts of the regional environmental regime HELCOM to inform the involved actors about the seriousness of environmental degradation could not change agricultural pollution. When it comes to attempts of institutional reforms in the CAP, environmental issues never come to the top of the agenda. For example, agri-environment payments are considered to be a crucial environmental protection measure for the CAP. However, the use of these payments is voluntary for farmers, and thus, farmers mostly choose to pursue conventional agriculture rather than the more expensive and effortful "green" agriculture.

Strong agricultural lobbies, and their rent-seeking behavior, are an important negative factor that affects eutrophication governance. Rent seeking is a "phenomenon limited to human uses of natural resources or environmental services" (Young, 2002: 80). The linkages between the rent-seeking behavior and imperfect knowledge emphasize scientific uncertainty that results in the negative effect of agriculture on the marine environment. The agricultural interest groups are more concerned with promoting their own agenda, than with protection of the ecosystem of the Baltic Sea. The agricultural lobbies have no genuine interest in integrating the policy instruments that would help manage the problem of eutrophication. The aim of the agricultural lobbies is to maximize their welfare by producing more agricultural production. The agricultural lobbies follow their own immediate interests to increase the production of agricultural goods. Moreover, the CAP has an exclusive status within the EU, which also strengthens the position of agricultural lobbies. The Treaty of Rome has pointed out the necessity of establishing the "fair standard of living for the agricultural community and the stabilization of markets" already in 1957 (Greer and Hind, 2012: 334). Since then the agricultural sector has gained more influence. The example of such influence is the fact that the CAP currently disposes of 40 % of total EU budget (Cantore, Kennan, Page, 2011: 3).

The CAP is a great case study that illustrates the significance of path dependence of the performance of the existing management system. Comprehensive institutional change takes a long time. The legislative processes of the reforms are usually highly resistant to change, even if the "existing arrangements are not well suited to dealing with current problems and are serious threats to sustainability" (Young, 2002: 78). The gap between the importance of the welfare of the agricultural

sector and the wellbeing of the public good that constitutes the Baltic Sea ecosystem is the main source of the institutional misfit.

In the case of the CAP, the ability of rent-seekers to slow or block progress is especially severe when it comes to solving large scale and unusually complex environmental problems, such as marine eutrophication. The attempts of the CAP to implement environment-friendly reforms have not been very successful, which shows that the CAP is resilient to change despite the need for reforms in economic, social and environmental realms. For the CAP reforms to be effective, it is vital to match policy objectives to specific policy instruments (Lenschow, 1995: 18). As described above, the EC and the Member States have recently made some progress in integrating environmental concerns into the CAP reforms. However, whether these measures will be legally binding and properly implemented, remains a question. The more holistic, ecosystem-based approach of sustainable agriculture, along with the development of the CAP reforms on the regional level could improve the fit between the CAP and the ecosystem of the Baltic Sea, and thus, eutrophication. However, in regard to the current reforms of the CAP some scientists point out: "the risk is that the reforms ultimately mask a continuation of the status quo or even worse, undermine the past 20 years of gradual integration of environmental concerns within the CAP" (Allen and Hart, 2013: 19).

The author argues that horizontal integration of sectoral policies into CAP has to take into account the marine pollution caused by agriculture. The EU Nitrates Directive (91/676/EEC) is EU legislation with legally binding protection of waters against nitrate pollution from agriculture. However, the obligations under this directive mainly relate to the management of fertilizers' impact, and less to the reduction of fertilizers overall. For example the Nitrate Directive regulates the buffer

strips along watercourses, fertilization plans, manure storage and limitation of land application, such as amount of nitrogen from livestock manure. Although the Nitrates Directive introduces some measures designed to reduce and prevent water pollution caused by nitrates from agriculture, these measures are insufficient to combat marine eutrophication in the Baltic Sea. The Nitrate Directive merely obliges the member states to identify polluted waters or waters at risk and to designate the zones that drain in these waters, which is not enough to prevent pollution. Measures required under the Nitrates Directive must be included in the measures established under the Water Framework Directive and the Marine Strategy Framework Directive. The first pillar of the CAP that includes direct payments to farmers obliges the farmers to comply with the Nitrates and Groundwater Directives. The second pillar offers compensation for farmers facing specific disadvantages due to requirements of the Water Framework Directive. The need to coordinate activities across agencies and sectors, in this case between the CAP, HELCOM, MSFD, and the WFD is obvious. Problems of vertical and horizontal interplay between the institutions in the Baltic Sea Region seem to be a serious barrier for solving marine eutrophication. Stakeholder participation, funding and strong rent-seeking behavior of the agricultural actors have to be addressed through cooperation and coordinated action between the involved institutions.

In case of eutrophication, there is a need to establish the institutional links or coordination mechanisms with the environmental regime and with the EU environmental instruments. The governance and management of the agricultural sector related to marine eutrophication results in inefficiencies. As the analysis of the WFD and the MSFD has shown, these two directives are shaped by overlaps and interdependencies. Overlaps of policies and the lack of policy integration are the

outcomes of political conflicts. The CAP is not in synergy with the HELCOM, WFD and MSFD. Moreover, the environmental impacts of the agricultural policy weaken the efforts of the MSFD and HELCOM to curb marine eutrophication. The effectiveness of the socially constructed institutions in their capacity to solve environmental issues are complicated enough even in the institutions designed for that task. The CAP's objectives are contradictory to those of the environmental regime. Thus, the extent to which CAP as an institution will be effective in solving the environmentally important issue of marine eutrophication depends on the fit between the ecosystem in question, institutions governing this ecosystem, and the willingness of the actors behind the CAP for environmentally friendly reforms. "Overall, the presumption is that the closer the fit between ecosystems and institutional systems, the better the relevant institutions will perform, at least in terms of sustainability" (Young 2002: 20).

The analysis of the case study on misfit supports the initial hypothesis to be right. The institutional misfit between the CAP and marine ecosystem causes ineffectiveness in solving the problem of marine eutrophication in the Baltic Sea. The ineffectiveness of the CAP in solving the problem of misfit with the Baltic ecosystem is an explanatory factor of the second hypothesis. The second hypothesis has suggested that the misfit between the EU CAP and marine ecosystem causes ineffectiveness in solving the problem of marine eutrophication in the Baltic Sea.

6. Effectiveness of Eutrophication Governance in the Baltic Sea Region

The impact of institutional interplay on eutrophication governance in the Baltic Sea Region has been researched through comparative cases of institutional interplay at the regional and European levels. The case studies each have found disaggregated institutional interplay. The next step in the analysis of the institutional interactions is to investigate how the decision-making process resulting from institutional interplay affects the effectiveness of eutrophication governance in the Baltic Sea Region.

The causal effects of synergy, disruption, and the effects of institutional misfit are analyzed based on the theoretical approach evaluated in chapter three. The following chapter connects the completed empirical case studies with the theoretical approach of institutional interplay and regime effectiveness. The analysis of the mechanisms that lead to success or failure in governing marine eutrophication through creation of institutional arrangements will deliver the answers to the research question.

Traditionally, environmental governance has to perform four tasks in order to be successful (Stokke, 2011: 149). Firstly, it requires scientific knowledge about the severity of the issue area and the possible solutions. Secondly, it sets the terms for or defines behavioral norms, in addition to soft law instruments or binding legislation. The third and the fourth tasks of governance are directed at the processes of implementation and rule enforcement. Therefore, they are beyond the scope of this dissertation. Norm building within governance addresses the commitments that the parties have to fulfill. For example, "a vague or non-binding norm fails to direct

behavior unequivocally and may indicate disagreement among those who created it, which may in turn be taken to justify non-adherence" (Frank, 1990, cited by Stokke, 2011: 148). Norm building tends to be effective "if the institution is better equipped than others to raise the applicability, coverage, or substantive strength of normative commitments" (Stokke, 2011: 149).

As known from the theory of institutional regime effectiveness, an international institution is considered to be effective if it contributes to the solution of the problem that gave rise to its creation. "A regime can be considered effective to the extent that it successfully performs a certain set of functions or solves the problems that motivated its establishment" (Underdal, 2002: 4). While the output of regime effectiveness is related to the understanding of the relationship between actors and institutions, the output of institutional interplay is explicitly directed at the interactions between institutions. The analysis of institutional output in the context of institutional interplay goes beyond the traditional regime research, where institutional output was seen as a part of regime formation.

Regime effectiveness differs in terms of its legal, economic, normative and political dimensions (Young and Levy, 1999: 4). A political approach defines effectiveness as institutional arrangements that "cause changes in the policies and performance of institution in ways that contribute to positive management of the targeted problem" (Young and Levy, 1999: 5). However, politically effective regimes might be ineffective in terms of compliance. For example, HELCOM was established to solve the problem of marine pollutions in the Baltic Sea. HELCOM was effective in creating some action towards achieving its objectives to protect the Baltic Sea. Politically effective HELCOM, however, produces a relatively low level of compliance, and hence, is legally less effective.

The insights from regime theory combined with the study of effectiveness of institutional interplay show the importance of the political and legal approaches in evaluation of the phenomenon of institutional interplay within the frame of this dissertation. To analyze the effects of institutional interplay at the output level methodologically is very challenging. The longer the causal chain between the HELCOM, the WFD and the MSFD, the more complicated is the analysis. The legal and political aspects of institutional interplay help to understand the effects of causal chains on the eutrophication governance in the Baltic Sea Region between the HELCOM and the MSFD on the one side, and the WFD and the MSFD on the other.

6.1. Political and Legal Effectiveness of Eutrophication Governance

Political and legal approaches are often nested in each other. However, both legal and political approaches have their limits. A political approach emphasizes political decision-making and "treats regimes as directed at particular international problems" (id. 5). A political approach mostly offers ad hoc decisions, which are not always covered by the law, thus are not necessarily legally effective. Hence, member states or other parties involved in institutional interplay may not cooperate willingly, or follow the recommendations because they are not obliged to do so. The legal approach has "the restrictive definition of conflict" (Harro van Asselt, 2011: 78), meaning that sometimes a legal definition is too narrow to cover divergences and inconsistencies between treaties. Because of the complexity of modern environmental issues, "the legal approach to environmental issues has to be more holistic" (Bohman, 2012: 22). The opportunities of coordination between the political and legal

approaches within eutrophication governance in the Baltic Sea Region are analyzed in the next sections.

The most significant institutions addressing and governing the transnational issue of eutrophication in the Baltic Sea Region are the HELCOM's BSAP, the EU MSFD, and the EU WFD. The political and legal effects these institutions have on each other have implications on governance effectiveness.

The legal power of the EU MSFD both empowers and restricts the decision-making processes of HELCOM. Empowerment occurs because both the HELCOM's BSAP and the MSFD are based on the Ecosystem Approach. Hence they represent the same ideas and values, which plays an important role in enhancing synergies. Thus, the binding nature of the European directive legally empowers the decision-making process of the HELCOM. At the same time, the positive structural developments in European maritime protection, which are embodied in the MSFD, partly results from the strong political decisions of HELCOM. Over the years, the HELCOM has collected the best available knowledge concerning the problem of marine eutrophication. Along with the scientific data related to eutrophication, it promotes problem awareness and offers possible options for its solution. Regime effectiveness research indicates that knowledge building influences problem solving potential (Mitchell et al., 2006: 314, cited by Stokke, 2011: 147). However, restrictive side effects happen because even though recommendations of HELCOM are progressive and built on the foundation of forty years of experience, the HELCOM depends on the legal power of the European directive. The secretariat of the HELCOM cannot implement its own recommendations with the same power as legal European instruments (directives) can be implemented by the member states.

Most of the political decisions on marine eutrophication are made within the HELCOM. The nature of marine eutrophication, however, requires complex interactions and coordination with other institutions. The MSFD represent the legal instrument regulating the issue area. The nutrient run off mostly originates from inland sources, which are regulated by the WFD. Therefore, coordination between the HELCOM, the MSFD and the WFD is also required. Overlaps and the lack of coordination between two European directives, causes institutional fragmentation. Fragmentation in turn negatively affects the effectiveness of eutrophication governance, and thus, contributes to the deterioration of marine quality. The empirical part leads to the conclusion that fragmentation within eutrophication governance causes disruption in institutional cooperation. Fragmentation arises from the creation of multiple institutions with similar or conflated regulatory mandates, which gives rise to the "risk of duplication, divergence, and even conflict between environmental standards and obligations" (Scott, 2010:14). At the international level fragmentation occurs when institutions follow their agendas and interests "by establishing new institutions rather than expanding existing ones" (Oberthür and Gehring, 2011: 34). Some scholars of institutional interplay advocate that fragmentation "reflects the high political salience of environmental issues and their particular problem structure" (Oberthür and Gehring, 2004: 369). In their opinion, fragmentation represents strength rather than weakness in governance because it draws more attention to the existing problems, which might result in their better solution. However, scholars that concentrate on the legal aspects of governance argue: "multiplicity of institutional arrangements, and consequently the overlapping of regimes, could also pose a threat to the coherence of international environmental governance" (Harro van Asselt, 2011: 60). For example, in its attempt to react to regional environmental issues, the EU has

established a macro regional approach to support European legislation on marine protection. The EU Strategy for the Baltic Sea Region (EUSBSR) has partly integrated the HELCOM's BSAP in its principles, which speaks for its good intentions. A macro-regional strategy was initially created to tackle cross-sectoral policy coordination (Joenniemi 2009: 5). However, it clearly lacks the cross-sectoral approach in terms of eutrophication. Moreover, it does not bring any new insights to the existing eutrophication governance. The main weakness of the EUSBSR is its non-binding nature and that no additional funding for environmental issues is planned. The strategy aims to coordinate the existing agreements rather than "directly imply the adaptation of European environmental law to the special protection requirements that result from the sea's particularly sensitive ecosystem" (Schumacher, 2011: 84). The EUSBSR does not have the required regional knowledge and experience. Moreover, the cooperation with Russia still remains problematic, as Russia does not commit to European strategies and regulations. Thus, the EUSBSR highlights the same issues that already are dealt with by the existing eutrophication governance, which only causes additional policy fragmentation and brings confusion into governance.

The perspectives of political and legal effectiveness have been applied to the empirical case studies. Without any doubt, every institution involved in the governance of eutrophication in the Baltic Sea Region has its individual decision-making process. However, the joint decisions resulting of interplay between involved institutions are a rare phenomenon. The case studies have revealed the joined decision-making process between the HELCOM and the MSFD. The interaction between the WFD and the MSFD reveals the decision-making processes that are rather independent from each other. One of the factors that lead to politically

unproductive governance is, the not well-coordinated decision-making process between the MSFD and the WFD.

The synergy between the BSAP and MSFD indicates high level of cooperation. This link between the HELCOM and the EU MSFD is a promising tool to achieve the implementation of HELCOM's policy recommendations. However, each country decides individually which policy instruments to apply in order to achieve the targets of the HELCOM's BSAP. Moreover, non-compliance is not punished by sanctions. The HELCOM, as a political arena for environmental ministers of all nine littoral countries could potentially impact the national agendas related to marine eutrophication, during the ministerial meetings. However, the non-binding nature of the HELCOM hinders governance, and has negative implications for marine eutrophication. The analysis from the perspective of the legal approach also reveals the need for a legally binding regional law "from which no derogation is possible" (Harro van Asselt, 2011: 68). In the opinion of the author, the non-binding nature of the trans-national environmental regime HELCOM, and institutional fragmentation stall the effective solution of eutrophication.

Another factor of ineffective eutrophication governance is the institutional misfit between the Baltic marine ecosystem and the CAP. Because marine eutrophication has anthropogenic causes, mostly resulting from agriculture, the interrelationship between eutrophication governance and the agricultural sector has to be legally and politically coordinated. The opportunity to enhance institutional coordination and cooperation between the CAP and eutrophication governance faces significant barriers. The conflict of interests between these institutions is obvious. With the exception of organic farming, which is not practiced by the majority of European farmers, traditional farms aim to increase agricultural production, which

requires an increase in arable land, and applying more fertilizers. Obviously, the marine nutrient input is mostly caused by agricultural inland sources. The success of eutrophication governance depends on reduction of nutrient discharge from agriculture.

The following sections analyze the consequences of interplay and misfit in relation to how they affect the effectiveness of eutrophication governance in the Baltic Sea.

6.2. Weakness of Synergetic Interplay

Synergetic interplay explains the positive impact of one institution on the effectiveness of another institution. The synergy between the Ecosystem Approach, HELCOM and the MSFD indicates the effectiveness of eutrophication governance. The synergetic interplay opens new possibilities for decreasing marine eutrophication. However, testing the hypothesis that states that disruptive institutional interplay results in ineffectiveness in eutrophication governance, a new assumption was developed: even synergetic institutional interplay does not necessarily result in legally effective governance solutions of an issue if this governance is fragmented and lacks legal commitment. Research on institutional interactions indicates: “decentralized interplay management dominates in global environmental governance” (Oberthür, Stokke, 2011: 313). The empirical analysis shows that the HELCOM’s BSAP, as a common synergetic measure of the MSFD and HELCOM to reduce marine eutrophication in the Baltic Sea, offers a rather decentralized solution with too much freedom of decision for member states. Since the BSAP is not legally binding, it is important to create legally binding legislation that can bridge the regional experience

of the HELCOM, which includes cooperative approaches with Russia, and the legal power of the EU.

In relation to marine eutrophication, the EU directives cover eight of the nine littoral countries, excluding Russia as the only non-EU country. Hence, the norm-building capacity of the EU lacks the participation of Russia, as an important party for solving the problem of marine eutrophication. Therefore, the EU directives cannot protect the marine environment of the Baltic Sea to the extent that it obliges all littoral countries, including Russia to comply. The actions for coordinated decisions require constant and intensive relations between institutions. In order to maximize the synergies of institutional interplay, it is vital to coordinate the political and legal approaches of eutrophication governance. The HELCOM is capable of improving the coverage of relevant international norms, however, it is poorly equipped to raise their applicability or substantive strength.

The HELCOM operates on the basis of soft law, which leaves much space to interpret its recommendations. The coastal states voluntarily use HELCOM's recommendations in the assessment of their coastal areas. The states are flexible to apply HELCOM's regulations to their own advantage because these regulations are not legally binding. At the same time, HELCOM has addressed environmental issues in the Baltic Sea Region for more than four decades and has provided ecological, scientific and technical knowledge in the field of marine protection. Numerous reports and recommendations, published by HELCOM, along with workshops and conferences, organized by HELCOM, indicate its deep knowledge about Baltic marine ecosystem.

Russia is an important actor that cannot be ignored in the context of eutrophication governance. Due to complicated socioeconomic problems, the recently

tense political situation between Russia and the EU due to the conflict in the Ukraine, and generally low environmental awareness, Russia pays very little attention to environmental issues.

In the 1990s Russia's participation in the environmental protection of the Baltic Sea was limited to some small-scale reconstruction projects in coastal areas. "This inactivity was explained by the general weakness of the country's national environmental policy. Due to the economic crisis, priority was given to other tasks at the expense of environmental issues, and the government was pre-occupied by the alignment of the new political system and market economy" (Nechiporuk, Nozhenko and Belokurova, 2011: 45). The specific issue of marine eutrophication in the Baltic Sea has even less political weight than general environmental concerns. This can be partly explained by Russia's limited presence in the Baltic Sea Region. Russian environmental scientists point out: "the Baltic Sea is geographically distant from Moscow, as well as from most of the other Russian regions, which makes its pollution a local issue" (id. 45). However, despite the limited territorial presence, Russia is responsible for a major share of the water pollution in sea. The statistics of HELCOM state that Russia is one of the three largest polluters in the entire region (Nechiporuk et al, 2011: 43).

Russia accepts HELCOM as a regional front-runner in environmental protection and is ready to cooperate with it. This is partly because Russia aims to hinder the leading role of the EU, which after enlargement in 2004 constitutes a strategic threat to Russian borders. "Russia, the only HELCOM country not regulated by EU legislation, does not want to see HELCOM as an extended arm of the EU" (Tynkkynen, 2011: 31). Partly, it is also because Russia does not have to legally commit to HELCOM's recommendations. Therefore, while mostly agreeing with

HELCOM at the decision-making level, it does not follow through with compliance. Russian regional authorities do not commit themselves to addressing the Baltic Sea environmental problems seriously because they depend on the federal government and expect it to address environmental problems. The federal government, as stated above, sees eutrophication as a local issue. The environmental protection of the Baltic Sea is characterized by low public awareness about the state of the Baltic Sea and by the disinterest on the part of politicians to environmental problems in general. Russian environmental scientists point out the difficulties "to make any prognosis about future policies in Russia, including whether Russia really will fulfill its obligations and commitments to HELCOM" (Nechiporuk, Nozhenko and Belokurova, 2011: 53). It is highly possible that even if the HELCOM would become legally binding, Russia would not ratify it, and hence, would not be obliged to implement its obligations.

Historically, during the establishment of the HELCOM in 1974, environmental concerns were the least reason for the former Soviet Union to participate in the Helsinki Convention. The Soviets signed the HELCOM only because they wanted to force western countries to acknowledge the German Democratic Republic (GDR) (Räsänen and Laakkonen, 2008: 44). The world was split by the Cold War and the countries neighboring the Baltic Sea were divided by the Iron Curtain. At the time the Soviet Union, Poland and the GDR were members of the Warsaw Pact, while the Federal Republic of Germany (FRG) and Denmark were members of the North Atlantic Treaty Organization (NATO). Sweden and Finland were considered politically neutral. Under these complicated political circumstances it was very difficult to achieve any mutual agreement in general and an environmental agreement in particular. The FRG could not sign any agreements with the GDR because in the early seventies neither officially recognized the other as a sovereign

state. Sweden and Denmark had recognized the FRG, but not the GDR, while Finland had recognized neither the FRG nor the GDR (ib.: 2008: 47). Finland's neutrality to the Eastern Block was the crucial factor that led to the establishment of the HELCOM in Finland and not in another country. Analyzing the historical research on HELCOM's establishment, it is obvious that at the time the Soviet Union had decided to use environmental concerns to pressure western countries to recognize the GDR.

These historical facts suggest that Russia can also in the future try to manipulate environmental regulations in order to exert influence on the European Union. This assumption looks especially realistic in light of the last occurrences between Russia and the Ukraine, where the European Union participates in the sanctions against Russia.

Currently the HELCOM remains the main regional forum that includes Russia in discussions about pollution reduction in the Baltic Sea. Russia wants to stay present in the HELCOM's activities in order "to prevent the domination of the EU in environmental issues concerning the Baltic Sea" (id.47). Thus, the recommendations of the HELCOM, despite not being legally binding in nature, remain politically relevant for the entire region due to the complicated relationship between the EU and Russia. This factor also indicates the dependency of the MSFD on cooperation with the HELCOM, in order for the EU to have some politically important environmental influence in the Baltic Sea Region. The EU affects Russia through the HELCOM's recommendations.

The HELCOM's recommendations have regional influence because HELCOM remains accepted by all nine coastal countries. However, the major weakness of the HELCOM's BSAP is that its implementation cannot be enforced and controlled by any supranational authority. That HELCOM is not legally binding

hinders its capability to oblige contracting states to commit to its recommendations, which diminishes the effectiveness of eutrophication governance.

The complexity of marine eutrophication along with a multifaceted institutional setting remains a challenging factor in solving the problem effectively. The first case study shows that synergetic interplay does not necessarily immediately increase the effectiveness of governance of the issue area in question. The legally binding regulations related to the regional issue of marine eutrophication are the European directives. However, these directives exclude Russia. Thus, better coordination between the political and legal approaches of interplay between the institutions involved into eutrophication governance would highly increase their effectiveness.

6.3. Causes of Disruption and Consequences of Institutional Misfit

In the course of this dissertation, eutrophication governance has been shown to be fragmented. In some cases even synergetic institutional interplay results in ineffective solutions to eutrophication. There are too many regulations, and none are committal in regard to reduction of marine eutrophication in the Baltic Sea. Eutrophication governance is loose, which hinders its effectiveness.

The main issue revealed in the course of analysis of the first and the second case studies is that all three institutions involved in eutrophication governance have different requirements on eutrophication management and also offer different discharge targets. There is no clear regulatory leader in Baltic Sea governance that would take legally binding responsibility for the effective solution of eutrophication in the Baltic Sea Region.

The findings of the second case study suggests that the elimination of the spatial overlap between the two directives might turn the interplay, specifically related to marine eutrophication in the Baltic Sea, into synergy. Because both directives are legally binding, the marine coastal area should be entirely under the legislation of the MSFD. It would reduce confusion among member states about which directive should be prioritized. The spatial overlap between the two directives not only hinders effectiveness of eutrophication governance, it also indicates the lack of institutional environmental leadership related to marine protection in the Baltic Sea Region.

The first hypothesis that has been tested states that marine eutrophication is not solved because of the disruptive institutional interplay in eutrophication governance. The analysis identified the positive correlation between disruptive interplay and ineffectiveness in the issue area. However, an important observation made in the course of the research has revealed that even though synergetic interplay contributes to political effectiveness in decision-making processes, legally it exposes certain issues because of the lack of binding power of the regional environmental regime. Nevertheless, the findings related to the correlation between disruption and an effective solution to eutrophication suggest that eliminating spatial overlap between the WFD and the MSFD might offer a foundation for the improvement of the decision-making process in eutrophication governance and consequently to improvements in addressing the problem. The EU MSFD and the WFD put responsibility for development of programs for reaching the GEnS and the GEC on member states. Although, the MSFD has a more holistic approach, the spatial overlap with the WFD stalls the output level effectiveness of both institutions.

The agricultural sector is the main cause of nutrient run-off into the coastal waters of the Baltic Sea. The modern institutional arrangements involve cross-sectoral interactions, which affect ecosystems in a very complex way. The CAP is not in synergy with other policies, especially with the Integrated Maritime Policy (IMP) and the EU environmental and water policies. The CAP also does not emphasize water protection explicitly as a specific environmental goal. The latest CAP reform, although more environmentally oriented, has not included marine protection from excessive nutrient inflows in its agenda. The increase of agricultural production and the profit-oriented tradition of the CAP do not correspond with the principles of the BSAP and the MSFD. Cooperation between the WFD and the CAP is taking place, however it remains very challenging.

Coordination of policies would most likely reduce the misfit between the CAP and the marine ecosystem of the Baltic Sea. The EU has created certain projects that aim to link the frameworks of agricultural and water policies.[73] One of the examples of such cooperation was the project CAPANDWFD, founded in 2006. The project promoted collaboration in the field of rural development and river basin management.[74]The second case study has shown, that the prolonged implementation of the WFD, which currently has been delayed until 2021 and further to 2027, indicates that the process of coordination is still ongoing. The WFD regulates inland water pollution, which is mostly caused by the agricultural sector. The implementation of the WFD is prolonged because the member states did not achieve the GEcS for river basin and coastal areas by 2015.

The environmental impact of agricultural policy on the ecosystem of the Baltic Sea weakens eutrophication governance immensely. The CAP aims to provide

[73] See: The CAPANDWFD project, Accessed 13.01.2015
[74] See: CAPANDWFD Report Summary. Accessed 13.01.2015

affordable food for European member states and promote farming. The EU CAP established agri-environmental programs that intend to reduce nutrient run-off. However, these programs are too flexible, which causes commitment issues. Moreover, farmers' participation in the national agri-environmental programs is voluntary. Hence, they are free to decide whether to apply measures directed at eutrophication or not. In the worst case, they might decide not to apply any measures and cannot be punished for that, because the agri-environmental programs are not legally binding. The important point revealed in the third case study is that the EU CAP sends a controversial message about nutrient reduction encouraging farmers to increase the intensity of production while also giving them the right to voluntarily choose whether to participate in the agri-environmental programs. The lack of a regional legally binding approach to the agri-environmental measures intensifies the problem of misfit between the CAP and the marine ecosystem of the Baltic Sea. A European Report of the EU Court of Auditors, conducted in May 2014 suggests: "attempts to promote freshwater ecosystem conservation in European agricultural policy have so far proved largely unsuccessful"[75].

The CAP does not fit with the existing water governance institutions, and it does not fit with the ecosystem of the Baltic Sea. The misfit between the CAP and the ecological system of the Baltic Sea is a precondition for the ineffective governance of marine eutrophication in the Baltic Sea Region. Reforming the CAP and making it more environmentally friendly is a major instrument in order to successfully mitigate marine eutrophication.

The interviewed representatives of the HELCOM have mentioned the importance of the regional approach in European policies in order to decrease marine

[75] See: ECA Report, 2014. Accessed: 29.06.2014

eutrophication. The CAP is a pan-European policy, which does not take into consideration the regional specialties of the marine ecosystem of the Baltic Sea. Moreover, the CAP in general does not make environmental concerns a priority. The agricultural practices under the European CAP are the main reason for nutrient discharge and the main cause of marine eutrophication. A possible solution could be the regionalization of the CAP, where the environmentally sensitive areas would be treated in accordance with the specialties of the issue in question. It is understandable that marine eutrophication is not as acute in other marine regions as it is in the Baltic Sea Region. Therefore, regional coordination becomes even more important. Additionally, the economic approach individually tailored for the Baltic Sea Region would develop the best possible cost and benefit analysis of eutrophication reduction, specifically suitable for the Baltic Sea Region. The regional studies developed by the BalticStern international research network commissioned by the Swedish Agency for Marine and Water Management estimate damages to the Baltic marine ecosystem (BalticStern, 2013: 44). The results indicate that the majority of the population of all nine littoral countries would be willing to pay for improved environmental conditions of the Baltic Sea. Suggested measures to solve eutrophication problems involve, among others, reduction of the agricultural nutrient load, namely nitrogen and phosphorus. This aim can be achieved by decreasing the application of inorganic fertilizers, and by reducing the livestock, which reduces application of manure. However, reduction of the livestock is an expensive measure, which is not willingly approved by farmers. The less costly way to reduce nitrogen is to improve wetlands, cash crops and wastewater treatment plants. Phosphorus can be reduced by banning it in detergents and by creating "phosphorus ponds" (id. 64). In addition to such phosphorus ponds, organic and non-organic fertilizers also have to be reduced. The

findings show that there is an urgent need for a legally binding macro regional agreement, specifically directed at Baltic marine eutrophication. The HELCOM has all the aspects needed for the content of such an agreement, except that it is not legally binding.

Results presented in this section show possible reasons for why marine eutrophication is still not solved. Integrating the misfit between the CAP and the Baltic ecosystem into the analysis of institutional interplay expands the understanding of how different policy fields, with contradictive objectives and goals, affect the problem. The analytical framework of fit between the ecosystem and any institution is based on the notion of social-ecological systems, and constitutes the interplay between the institutional arrangements and the ecosystem in question. (Young, 2002: 66). The misfit between the CAP and Baltic marine ecosystem cannot be analyzed applying the variables of synergy and disruption because the theory of institutional interplay can only be applied to the EU legal instruments, such as the EU directives, or to international regimes. Thus, the interactions between the CAP and eutrophication governance might be seen as a competitive cluster, where marine pollution in general, and marine eutrophication in particular are addressed in concurrent ways.

The lack of coherence between policies contributes to the negative effects of disruptive institutional interplay. The analysis of the effectiveness of eutrophication governance has captured the explanatory factors of the variables of synergy, disruption and misfit. Bringing attention to political and legal aspects of institutional interplay within eutrophication governance and beyond contributes to better understanding of the governance of the issue area in question. Marine eutrophication in the Baltic Sea Region represents a serious governmental challenge for the coastal

states and belongs to the overlapping area of governance of three institutions. This study concentrates on output level effectiveness and identifies the immediate effects of institutional interaction. Institutional interactions related to marine eutrophication are without doubt much more complex than the set of institutions suggested for the analysis in this research. However, institutional interplay that affects eutrophication governance at the level of the states, or at the level of the secretariats of international institutions, or at the level of nongovernmental organizations, was not focused on. The more complex analytical settings of institutional interplay at the different levels of governance are beyond the research question of this dissertation, and offer subjects for further research.

7. Conclusions

The Baltic Sea is an environmentally very sensitive maritime region; marine eutrophication is seen as a common problem for all of the littoral countries. Marine eutrophication in the region is mostly caused by agricultural discharge. The natural ecological conditions also add to the spreading of eutrophication because water exchange in the Baltic Sea is very slow and nutrient discharge remains in marine waters for a long time. Eutrophication in the Baltic Sea has political, social, economic, and especially ecological implications. Although the Baltic Sea Region is a highly institutionalized area, eutrophication governance is still a work in progress. The governing institutions that operate in the Baltic Sea Region have different histories of institutional development and different structures. Eutrophication governance consists of the regional environmental regime HELCOM and two European directives: the MSFD and the WFD. The goal to protect European waters from pollution is obvious in all three governance institutions. However, the effectiveness of governance is rather weak and coordinated cooperation still does not function well.

Although this study mostly concentrates on the phenomenon of institutional interplay within eutrophication governance, it is obvious that marine eutrophication is influenced by land-based agricultural activities. Therefore, special attention was drawn to the EU CAP and its effects on the marine ecosystem.

The concluding chapter highlights the study's findings and discusses directions for further research. The research question of this dissertation asks how institutional interplay between the MSFD, HELCOM and the WFD, and institutional

misfit between the CAP and the marine ecosystem of the Baltic Sea affect eutrophication governance?

In order to answer the research question this study looked at the policy outputs, which resulted from the cases of institutional interplay within eutrophication governance. The theory of international regimes that underlines the theoretical approach of this dissertation, suggests that governance is effective when it solves the problem for which it was created. This theoretical framework does not provide a universal solution to deal with the effects of institutional interplay, mostly because the main purpose of this dissertation is to explain how inter-institutional relationships affect the effectiveness of governance at the output level. Therefore, in addition to the theory of international regimes, the theories of institutional interplay and misfit have been included in the analysis.

The first step in the analysis was to identify the synergies and disruptions, along with the institutional misfit. The second step examined how the causal mechanisms of synergies, disruptions and misfit affected the dependent variable: the output level effectiveness of eutrophication governance (within the involved institutions). The independent variables of synergy and disruption are adopted from the theory of regime interplay. They explain the causal links that affect governance effectiveness.

The misfit between the CAP and the marine ecosystem cannot be analyzed using the theory of institutional interplay because the EU policies include numerous instruments, policy approaches and processes. Thus, they don't offer functional equivalents to international regimes. As described in the theory chapter, only the EU legal instruments such as directives and regulations can be seen as an equivalent to the international regimes. Analysis of the relationship between the CAP and

eutrophication governance would require the disaggregation of agricultural policy into many different components, which would stretch the frame of this dissertation. The misfit between the CAP and the marine ecosystem constitutes the intervening variable, which has a tremendous effect on eutrophication governance.

The methodology of process-tracing has captured the main causal mechanisms important for answering the research question. It also has been helpful in order to avoid the limitations of a controlled comparison. The case studies were not similar in every aspect, but one. Such similarity of the case studies is the main requirement of controlled comparison. Process-tracing has enabled highlighting the variable of misfit, that otherwise would have been left out of the initial comparison of cases. The process-tracing method helps to assess whether each of the independent and intervening variables "in the imperfect matched cases can, or cannot be ruled out as having causal significance" (Oberthür and Gehring, 2006: 213).

This dissertation aims to contribute to theory development of institutional interplay effectiveness. Overall, the researchers of institutional interplay traditionally concentrate on disruptive interplay because it is widely assumed that resolving disruption will inevitably positively change the status quo of the interplay. However, in the opinion of the author of this study, synergies are not less attractive objects for research because synergetic causal mechanisms imply successful coordination and cooperation. Moreover, the findings of this dissertation also show, that even synergetic interplay has its weaknesses and does not immediately result in positive solutions to marine eutrophication. Therefore, factors that cause synergies promote learning and foster better understanding of how to solve the issue in question.

The current study has investigated the output level, or the decision-making process of eutrophication governance, leaving the implementation level for future

research. Future research may include the case studies analyzing the interplay affecting eutrophication governance at the outcome and impact levels. It also may concentrate at the differing social and political institutional structures, for example NGOs, secretariats of international institutions and different European, and international policies.

7.1. Findings and Discussion

The interplay between the UN CBD Ecosystem Approach, the HELCOM, and the MSFD has resulted in various synergies; these institutions have mutually influenced each other's development and decision-making processes, and have strengthened overall governance effectiveness. The interplay between the EU MSFD and the EU WFD has resulted in disruption due to the spatial overlap between these two directives. The disruptive interplay along with misfit between the European CAP and the marine ecosystem of the Baltic Sea weakens eutrophication governance and hinders the finding of solutions for marine eutrophication.

The regional commission HELCOM is based on the Ecosystem Approach. The Ecosystem Approach has tremendously affected the regulatory framework of HELCOM related to eutrophication in the Baltic Sea Region. The synergetic interplay between the UN CBD Ecosystem Approach and the HELCOM has resulted in the Baltic Sea Action Plan and has affected the subsequent synergetic interplay between the HELCOM and the MSFD.

Not only institutional interplay between the HELCOM and the MSFD has resulted in important synergies - these two institutions have mutually supported each

other and jointly addressed the specific issue of marine eutrophication. Thus, both institutions contribute to the effectiveness of eutrophication governance.

However, one of the findings highlights the main weakness of the HELCOM, its non-legally binding nature. This factor slows down the effectiveness of the synergetic interplay. HELCOM has had difficulties to convince the littoral European member states that its recommendations have to be implemented because member states prefer to stick with legally binding European directives. However, Russia, as a non-EU member does accept the recommendations of the HELCOM and cooperates with it. The unpredictable reaction of Russia to the current and future European environmental legislation strengthens the position of HELCOM as a regional environmental institution. Relatively stable relationship between HELCOM and Russia makes the environmental regime politically more relevant in the region because HELCOM offers a cooperative linkage that connects Russia and the EU. Considering that HELCOM has the best expertise about the ecological condition of the Baltic Sea, the most effective step in combating eutrophication would be for the HELCOM to gain the legal power it currently lacks. The legally binding regulations would probably offer less political flexibility. At the same time, assuming that states comply better when agreements are legally binding than when they are just voluntary, legally binding HELCOM regulations would provide more compliance control in combating eutrophication.

The interplay between the WFD and the MSFD results in spatial overlap. The interplay proves to be disruptive and hinders the effectiveness of eutrophication governance. Nevertheless, studying interplay between these European directives may help better understand the coordination process and management of the EU institutions.

In respect to eutrophication, the WFD focuses on the inland and costal waters, while the MSFD concentrates on the marine waters. The MSFD assesses the essential features and characteristics of the marine waters, along with the analysis of the current environmental status, possible reasons causing pollution, and measures for water quality improvement. The strategy used by the WFD to measure the nutrient input is less holistic. The WFD assesses the status of water using limited biological, hydro-morphological, physical and chemical factors. The intercalibration of the water quality assessments methods between different member states, used by the WFD, is a costly and long process. The WFD is less Ecosystem Approach based than the MSFD. The Ecosystem Approach requires a strong understanding of "an ecosystem structure and function, as well as the dynamics of ecosystem services and their driving forces in the integrated social-ecological system" (Hammer, 2015: 86). The Ecosystem Approach represents a holistic view of an ecosystem and considers the entire ecosystem as an object of analysis. The WFD has applied the Ecosystem Approach to a lesser degree than has the MSFD. The assessment techniques of water ecosystem used by the WFD still need improvement. Therefore, the interplay between the Ecosystem Approach and the WFD could not be captured and was not analyzed in this dissertation.

The WFD and the MSFD cluster around marine eutrophication and address settings of parallel interaction. These two institutions separately address parts of the eutrophication problem in overlapping coastal areas. None of these two directives has the lead responsibility in combating marine eutrophication. However, as stated above, the more holistic and ecosystem oriented approach of the MSFD to the protection of the marine environment, suggests a better management approach to marine eutrophication. In the case the MSFD were to become the leading institution

responsible for marine coastal areas, both the MSFD and the WFD would operate more effectively.

The set of interactions that affect eutrophication governance is complex and requires strong institutional structures that would be capable to coordinate the interplay with the EU CAP. The analysis of misfit proves that the agricultural sector is not in sync with eutrophication governance. The CAP demonstrates weak coordination with the WFD and MSFD. Moreover, the slow and limited reform of the CAP in terms of its environmental impacts negatively affects the effectiveness of eutrophication governance. The findings related to the institutional misfit confirm that the "regionalization" of the EU CAP would help to create solutions specifically tailored for marine eutrophication in the Baltic Sea Region. The HELCOM could provide crucial regional knowledge needed for combating this environmental issue; however, the HELCOM'S BSAP, as the main instrument of the HELCOM cannot legally enforce implementation of its targets. The BSAP has the most extensive suggestions regarding the reduction of nutrients, compared with the MSFD, and especially with the WFD. However, it seems easier for the member states to follow the binding European directives rather than the legally non-binding BSAP.

In summary, none of the institutions involved in eutrophication governance in the Baltic Sea Region possesses clear leadership, either legally or politically. In the future, if the HELCOM remains legally non-binding, the power of the European Union in the region might keep growing through the implementation of directives. However, if the WFD and the MSFD do not resolve their spatial overlap in the coastal waters, marine eutrophication cannot be governed effectively, which will cause deterioration of existing marine ecological conditions.

The catastrophic state of the Baltic Sea ecosystem can be seen as a "tragedy of the commons". The concept of the "tragedy of the commons" was initially introduced by Garrett Hardin. Hardin's concept describes situations where all actors know what harm is done to the "commons" and where they understand the payoffs attached to the outcomes. Hardin argues: "individual decisions cumulate to a tragic overuse and the potential destruction of an open-access commons" (Hardin, 1968: 162). Hardin's main point is that there is no technical solution to the problems of the tragedy of the commons. A technical solution may be defined as one that requires a technical change, demanding little or nothing in the way of change in human values (Hardin, 1968: 1245). According to Hardin, society must change its ideas of morality and values, and agree that some actions are not allowed. Violations of agreements lead to coercion. One of the possible solutions, according to Hardin is "mutual coercion mutually agreed upon" (id.1245). This statement means that people as representatives of the society concur, based on mutual agreement, that certain actions are prohibited. The violation of such an agreement causes certain punishment, or coercion. Following this line of argument, eutrophication governance has to regulate the amount of marine pollutants. If parties do not comply, penalties should follow. One of the interviewed marine scientists in Germany suggested this approach of Hardin as the only possible solution to curb marine eutrophication.

Eutrophication governance has yet to develop common legislation to regulate marine pollution. However, "to get the institutions right is a difficult, time consuming, conflict invoking process" (Ostrom, 1990: 14). This dissertation shows that international institutional interplay at the output level can initiate cooperative synergetic processes that have a positive impact on marine eutrophication. The concluding thought highlights the statement that institutional interplay does matter for

international governance effectiveness. Disruptive interactions reduce the effectiveness of governance, while synergies enhance output level effectiveness, even though they might not cause the immediate resolution of the issue in question. Obviously, this study has demonstrated certain limitations. The concentration of this study on the output level of governance is embedded in the theoretical framework. Generally, the importance of the output level of institutional interplay in studies of effectiveness of governance is still under-theorized in the literature on international relations. Understanding the effects of the decision-making process and policy outputs of institutional interplay helps to better understand the consequential institutional outcomes, and thus, to improve the governance of the policy in question, and in this case, marine eutrophication. In order to solve marine eutrophication effectively, future research should also be dedicated to the analysis of possible behavioral changes at the outcome level and finally, to the assessment of the implementation level.

Summary in English

The Baltic Sea is considered to be "one of the most polluted seas in the world" (BalticStern, 2013: 24). Environmental issues in the Baltic Sea Region are co-governed by different institutions at the global, regional and European levels. Numerous networks and NGOs also support the existing environmental governance. However, the Baltic Sea still faces unresolved environmental issues. Anthropogenic marine eutrophication has increasingly become a major problem for the Baltic Sea Region.[76] Excessive nutrients promote excessive growth of algae and deplete marine waters of available oxygen. Lack of oxygen, in turn causes the death of living organisms, and thus, destroys existing marine ecosystems. As a result of marine eutrophication, seven largest marine dead zones are located in the Baltic Sea.

Within the scope of this study, the author observes eutrophication governance in the Baltic Sea Region as consisting of a group of three relevant institutions: the Helsinki Convention, governed by the Helsinki Commission (HELCOM), the Marine Strategy Framework Directive (MSFD), and the Water Framework Directive (WFD). The research question of this dissertation asks the following: how does the institutional interplay between the MSFD, HELCOM and the WFD, and institutional misfit between the Common Agricultural Policy (CAP) of the EU and the marine ecosystem of the Baltic Sea affect eutrophication governance?

HELCOM, as a regional environmental regime, has addressed environmental issues in the Baltic Sea Region for more than four decades. It provides ecological, scientific and technical expertise in the field of marine protection. Most of the political decisions on marine eutrophication are made within the HELCOM. The

[76] See: WWF, 2015. Accessed: 16.11.2015

HELCOM's Baltic Sea Action Plan (BSAP), adopted in 2007, is the main instrument of HELCOM in fighting environmental pollutions. The BSAP is not legally binding. The MSFD is a European directive regulating the marine environment. Both the BSAP and the MSFD are based on the UN CBD Ecosystem Approach. The Ecosystem Approach is a strategy for integrated management of land, water and living resources. The WFD regulates pollution that originates from inland sources and are discharged into rivers, estuaries and coastal areas.

The relationship between these institutions is explained using the theory of institutional interplay. Analysis of institutional interplay between HELCOM, the MSFD and the WFD has revealed synergies and disruptions that affected the effectiveness of eutrophication governance. The main cause of eutrophication is agricultural discharge, mainly nitrogen and phosphorus. The success of eutrophication governance also depends on reduction of nutrient discharge from agriculture. The conflict of interests between the CAP and eutrophication governance is analyzed from the theoretical perspective of governance and policy misfit between the CAP and the marine ecosystem of the Baltic Sea.

This dissertation mainly focuses on the following aspects:

1. The interplay between the HELCOM's BSAP and the MSFD
2. The interplay between the WFD and the MSFD
3. The influence of the EU CAP on marine eutrophication

The synergy between the HELCOM and the EU MSFD indicates a high level of cooperation and strengthens eutrophication governance. However, the first weakness of this synergetic interplay is the non-legally binding nature of the HELCOM's BSAP, which stalls its effectiveness. The second weakness is that

Russia, even despite its small territorial presence in the Baltic Sea Region, is considered to be the one of the major polluters of the sea (Nechiporuk et al, 2011: 43). However, Russia does not belong to the EU and is not subject to European Union legislation. Currently Russia has a rather tense relationship with the EU, but is ready to cooperate with the regional environmental regime of HELCOM. Thus, HELCOM, even though it is not legally binding, remains the main institution in the region, responsible for environmental cooperation between Russia and the EU. Such cooperation is important for solving marine eutrophication.

Both the WFD and the MSFD aim to enhance European water quality. However, the interplay between the MSFD and the WFD is disruptive, which happens rather due to the spatial and implementation overlaps, than due to a difference in general beliefs and perspectives. The MSFD descriptor for eutrophication in coastal water bodies is largely affected by measures taken under the WFD. However, the MSFD is considered by the author of this study as more suited to solve eutrophication in the coastal areas that the WFD. The level of nitrogen causing eutrophication in the coastal waters consequently causes eutrophication in marine waters. Coastal waters represent a continuum of marine waters and cannot be assessed using different criteria. Coastal and offshore areas should not be separated and treated differently by applying different legislation. Another factor that causes disruption is the overlap in the timeframe of implementation of both directives. The WFD allows nation states to extend its implementation till 2027, while the MSFD should be implemented in 2020. If the implementation of the WFD can be prolonged to 2027, then it means that the quality of the coastal waters may remain questionable till 2027. If the state of the marine coastal waters is not good enough, then the state of the marine offshore waters cannot be qualified as good by 2020. A marine ecosystem is one holistic entity,

meaning that the quality of the offshore waters cannot reach good environmental status if the coastal waters remain polluted. The spatial and implementation overlaps in the coastal areas weaken decisions of the MSFD.

The need to enhance institutional coordination and cooperation between the CAP and eutrophication governance is also discussed in the findings of this study. Recent agricultural reforms have been rather limited and have rather negatively affected environmental protection. It remains to be seen whether current reforms can integrate environmentally friendly elements against the opposition of agricultural lobbies. Overall, one of the main revelations of this dissertation is that despite high institutional density in the region, Baltic Sea eutrophication governance does not have a clear regulatory leader that would take legally binding responsibility for the effective solution of marine eutrophication. There is an urgent need for a legally binding "macro-regional" agreement that would explicitly focus on solutions to the problem of marine eutrophication.

This study demonstrates that understanding the mechanisms of institutional interplay is important for the improvement of the decision-making processes of governance.

Summary in German (Zusammenfassung)

Die Ostsee gilt als eines der schmutzigsten Meere der Welt (BalticStern, 2013:24). Insbesondere die anthropogene Eutrophierung ist zu einem bedeutenden Umweltproblem geworden [77]. Der Eintrag hoher Nährstoffmengen führt zu übermäßigem Algenwachstum und nachfolgendem Sauerstoffmangel, was ein Absterben lebender Organismen zu Folge hat und letzten Endes das gesamte marine Ökosystem der Ostsee bedroht.

Die Umweltprobleme der Ostseeregion werden von verschiedenen Institutionen auf globaler, europäischer und regionaler Ebene gemanagt. Zahlreiche Netzwerke und Nichtregierungsorganisationen (NGOs) unterstützen die aktuelle Umweltpolitik. Auch wenn in den letzten Jahren vielerlei Maßnahmen ergriffen wurden die Nährstoffzufuhr einzudämmen, hat sich das Problem der Eutrophierung kontinuierlich verschärft. Durch fehlenden Sauerstoff existiert in großen Gebieten der Ostsee kein Leben.

Die Helsinki-Kommission (HELCOM) beschäftigt sich als regionale Institution seit vier Jahrzehnten mit den Umweltfragen der Ostseeregion. Sie bietet ökologische, wissenschaftliche und technische Expertise auf dem Gebiet des Meeresschutzes. Politische Entscheidungen hinsichtlich der Eutrophierung werden größtenteils von der HELCOM getroffen.

Zur Eindämmung der Ostsee-Eutrophierung spielen die folgenden Regularien eine zentrale Rolle: das Helsinki Abkommen bzw. der Baltic Sea Action Plan (BSAP), verabschiedet von der Helsinki-Kommission (HELCOM), die Meeresstrategie-Rahmenrichtlinie (MSRL) und die Wasserrahmenrichtlinie (WRRL).

[77] Vergleich: WWF, 2015. Accessed: 16.11.2015

Die Meeresstrategie-Rahmenrichtlinie der EU regelt den Schutz und die Erhaltung der Meeresumwelt, die Wasserrahmenrichtlinie die Eindämmung von Verschmutzungen, die vom Festland in Flüsse, Flussmündungen und Küstengebiete eingetragen werden. Sowohl der BSAP als auch die MSRL basieren auf dem Ecosystem-Approach der Konvention über die biologische Vielfalt (United Nations Convention on Biological Diversity, CBD). Der sogenannte ökosystemare Ansatz (Ecosystem Approach) ist eine Strategie des integrierten Managements von Land, Wasser und lebenden Ressourcen.

Das Zusammenspiel zwischen HELCOM-Abkommen, Meeresstrategie- und Wasserrahmenrichtlinie ist von komplexer Natur. Vor diesem Hintergrund wurde dieses Zusammenspiel mittels des theoretischen Ansatzes des „institutional interplay" untersucht. Nach diesem Ansatz werden Wechselwirkungen zwischen zwei oder mehreren Institutionen untersucht, wobei positive Auswirkungen als Synergien, negative als Disruptionen bezeichnet werden. Die Europäische Agrarpolitik und die oben erwähnten Regularien zur Bekämpfung der Ostsee-Eutrophierung verfolgen gegenläufige Ziele. Dieser Aspekt wurde nach dem sogenannten „Misfit-Ansatz" analysiert.

Im Rahmen dieser Arbeit wurden im Wesentlichen folgende Aspekte beleuchtet:

1. das Zusammenspiel zwischen HELCOM Abkommen bzw. BSAP und MSRL
2. das Zusammenspiel der Europäischen Direktiven MSRL und WRRL und
3. die Auswirkungen der Europäischen Agrarpolitik auf die marine Eutrophierung.

Der Aktionsplan der HELCOM (BSAP) und die MSRL sind weitestgehend kongruent zueinander. Die Empfehlungen des BSAP sind jedoch speziell auf die

Verbesserung der Wasserqualität der Ostsee zugeschnitten und enthalten daher sehr konkrete Empfehlungen die Eutrophierung vor Ort einzudämmen. Problematisch ist allerdings, dass der BSAP – im Gegensatz zur MSRL - keinen rechtsverbindlichen Charakter besitzt und daher bis dato nur in begrenztem Umfang umgesetzt wurde. Russland trägt, trotz seiner geringen territorialen Präsenz in der Ostseeregion, wesentlich zur Verschmutzung der Ostsee bei (Nechiporuk, 2011: 43). Als non-EU Staat muss es den Rechtsvorschriften der EU nicht folgen, ist aber bereit mit der HELCOM zu kooperieren. Die HELCOM ist somit für die Lösung umweltpolitischer Fragestellungen, welche die Ostsee betreffen, von großer Bedeutung.

Sowohl die Meeresstrategie- als auch die Wasserrahmenrichtlinie verfolgen das Ziel die Qualität der Gewässer in der EU zu verbessern. Allerdings sind die Richtlinien weder in thematischer (nicht eindeutig abgegrenzte Begrifflichkeiten und Zuständigkeitsbereiche) noch in zeitlicher Sicht streng kongruent zueinander. Das Zusammenspiel ist somit als disruptiv zu werten.

Da Küstengebiete primär in den Zuständigkeitsbereich der WRRL fallen, wird die Bewertung der Wasserqualität von Küstengebieten von dieser Direktive vorgenommen, während die Wasserqualität küstenferner Gebiete durch die wesentlich strengeren Regeln der MSRL definiert wird. Diese Ungleichbewertung von Meeresgewässern mindert die Effizienz der MSRL, die speziell auf die erfolgreiche Bekämpfung der Eutrophierung von Meeresgewässern zugeschnitten ist. Marine Ökosysteme sollten obligat ganzheitlich betrachtet werden.

Ein weiteres Hindernis stellt die unterschiedliche Implementierungsfrist der beiden Richtlinien dar. Die MSRL ist bis 2020, die WRRL bis spätestens 2027 umzusetzen. Es stellt sich daher die Frage, wie der Zustand der Meere effektiv verbessert werden kann, wenn nicht zeitgleich die Qualität küstennaher

Wassergebiete verbessert wird.

Der Agrarbereich steht bei der Bekämpfung der Eutrophierung besonders im Fokus da die Eutrophierung hauptsächlich durch die Überdüngung der Landwirtschaft verursacht wird. Die Verbesserung der Wasserqualität hängt somit im Wesentlichen von der Reduzierung des Nährstoffeintrages aus der Landwirtschaft ab. Umweltfreundlichere Agrarreformen sind zwingend erforderlich, da selbst jüngst verabschiedete Reformen nicht zu einer signifikanten Verbesserung der Eutrophierungs-Problematik geführt haben. Es bleibt abzuwarten, ob solche Reformen gegen den Widerstand von Lobbyisten der Agrarpolitik durchgesetzt werden können.

Die durchgeführten Analysen zeigen, dass eine zielgerichtete Zusammenarbeit der involvierten Organisationen von herausragender Bedeutung ist und ein rechtsverbindliches makroregionales Abkommen dringend erforderlich ist. Ein solches Abkommen sollte speziell auf die Eutrophierung der Ostsee zugeschnitten sein und konkrete Maßnahmen beinhalten, diese effektiv zu bekämpfen.

References

Aakkula, Jyrki, Mikko Kuussaari, Katri Rankinen and Petri Ekholm (2011), Evaluation of Agri-environmental Policies Follow-up Study on the Impacts of Agri-environmental Measures in Finland, Finnish Environmental Institute, pp. 1-16

Abbot, Kenneth W.; Duncan Snidal (2000), Hard and Soft Law in International Governance, International Organization 2000 54 (3), pp. 421-456

Allen, Ben and Hart, Kaley (2013), Meeting the EU's Environmental Challenges through the CAP – How do the Reforms Measure Up? In: Aspects of Applied Biology 2013 (118), Environmental Management on Farmland

Andonova, Liliana (2004), Transnational Politics of the Environment: The European Union and Environmental Policy in Central Eastern Europe, MIT Press, Cambridge MA

Andersen, Jesper H. and Conley, Daniel J. (2009), Eutrophication in Coastal Ecosystems: Towards better understanding and management strategies. Springer Netherlands

Asselt, Harro van (2011), Legal and Political Approaches in Interplay Management: Dealing with the Fragmentation of Global Climate Governance. In: Managing Institutional Complexity: Regime Interplay and Global Environmental Change, Sebastian Oberthür and Olav Schram Stokke, Eds. Cambridge, MA, MIT Press, pp. 59–85

Axelrod, Robert (1984), The Evolution of Cooperation. New York: Basic Books

Axelrod, Robert and Robert O. Keohane (1986), Achieving Cooperation under Anarchy: Strategies and Institutions. In: Oye, K. A. (Ed.) Cooperation under Anarchy. Oxford: Princeton University Press

Axelrod, Robert, David Downie and Norman Vig, Eds. (2005), The Global Environment: Institutions, Law, and Policy, CQ Press, Washington DC

Backer, Hermanni (2008), Indicators and Scientific Knowledge in Regional Baltic Sea Environmental Policy, ICES Journal of Marine Science, 2008 65(8), pp. 1398–1401

Backer, Hermanni et al. (2010), HELCOM Baltic Sea Action Plan – A Regional Programme of Measures for the Marine Environment Based on the Ecosystem Approach. Marine Pollution Bulletin, 2010 60 (5), pp. 642-649

Bainbridge, John M., Tavis Potts, Tim G. O'Higgins (2011), Rapid Policy Network Mapping: A New Method For Understanding Governance Structures For Implementation Of Marine Environmental Policy, 2011 6(10)

Barnett, Jon and W. Neil Adger (2003), Climate Dangers and Atoll Countries, in Climatic Change 61, Kluwer Academic Publishers, Netherlands, 2003, pp. 321-337

Beman, Michael J. (2005), Agricultural Runoff Fuels Large Phytoplankton Blooms In Vulnerable Areas Of The Ocean, in Nature 2005 (434), pp. 211-214

Bengtsson, Rikard (2009), EU Strategy for the Baltic Sea Region: Good Intentions Meet Complex Challenges. Swedish Institute for European Policy Studies, 2009 (9)

Berkowitz, Susan (1997), Analyzing qualitative data. In Frechtling, Sharp, and Westat Eds. User-friendly Handbook for Mixed Method Evaluations (Chapter 4). National Science Foundation, Directorate of Education and Human Resources

Bode, Sven; Jürgen Isensee; Karsten Krause; Axel Michaelowa (2002), Climate Policy: Analysis of Ecological, Technical and Economic Implications for International Maritime Transport, International Journal of Maritime Economics 2002 4 (2), pp. 164-184

Bohman, Brita (2012), Legal Regulation, Resilience and the Complexity of the Eutrophication in the Baltic Sea Region, in Annuals of Marine Sociology (Roczniki Socjologii Morskiej), 2012 (11), pp. 18-33

Borja, Angel; Mike Elliott; Jacob Carstensen; Anna- Stiina Heiskanen and Wouter van de Bund (2010), Marine Management – Towards an Integrated Implementation of thehe European Marine Strategy Framework and the Water Framework Directives. Marine Pollution Bulletin, 2010 (60), pp. 2175-2186

Borja, Angel and Tunberg (2010), Assessing Benthic Health in Stressed Subtropical Estuaries, Eastern Florida, USA using AMBI and M-AMBI, in Ecological Indicators

Borja, Angel et al (2013), Good Environmental Status of Marine Ecosystems: What is it and How Do We Know When We Have Attained It? Mar. Pollut. Bull. 76, pp. 16–27

Börzel, Tanja (2001), Nations and Regions in Europe, Cambridge: Cambridge University Press

Bromley, Daniel W (1998), Property Regimes in Economic Development: Lessons & Policy Agriculture & the Environment: Perspectives on Sustainable Rural Development, Ernst Lutz, Ed. Washington, DC: World Bank

Brooks, L. Anathea and Stacy D. VanDeveer (1997), Saving The Sea, A Maryland Sea Grant Book, College Park, Maryland

Conca, Ken (1994), Rethinking The Ecology-Sovereignty Debate. Millennium, Journal Of International Studies, 1994 23(3), pp. 701–711

Díaz, Robert; Nancy N. Rabalais and Denise L. Breitburg (2012), Agriculture's Impact on Aquaculture: Hypoxia and Eutrophication in Marine Waters, OECD Publishing

Eckerberg, Katarina and Joas, Marko (2004), Multi-level Environmental Governance: a Concept Under Stress? Local Environment, 2004 9(5), pp. 405–412

Edler, Jannette and Streufert, Ulrike (2007), The Baltic Seas Environmental Protection Law and ICZM, (November 1994), pp. 99–109

Ekstrom, Julia A. and Oran R. Young (2009), Evaluating Functional Fit between a Set of Institutions and an Ecosystem, Ecology and Society 2009 14 (2), p. 16

Cugier, Pier, Billen, Guillaud, Garnier, Ménesguen (2005), Modelling the eutrophication of the Seine Bight (France) under historical, present and future riverine nutrient loading in Journal of Hydrology, Special Issue on Nutrient Mobility Within River Basins, Journal of Hydrology 2005 (304), pp. 381-396

Evera, Stephen, Van (1997), Guide to Methods for Students of Political Science, Cornell University

Exadaktylos, Theofanis and Claudio M. Radaelli (2009), Research Design in European Studies: The Case of Europeanization, JCMS: Journal of Common Market Studies, 2009 47(3), pp. 507–530

Fallgatter, Michael, Gruenhagen, Marc and Koch, Lambert T. (2010), On The Cognitive Basis Of Initiating Intra- and Inter-organisational Cooperation, International Journal of Networking and Virtual Organisations, 2010 7(1)

Farmer, Andrew M. (1999), The Proposed EU Water Framework Directive with Particular Reference to the Coastal Zone, Marine Environmental Management, 1999, 6 (1), pp. 41-48

Farmer, Andrew M. (2001), The EC Water Frame Directive: An Introduction, Water Law 2001 12 (1), pp. 40-46

Feindt, Peter (2008), Agrarpolitik in Hubert Heinelt and Michèle Knodt Eds., Politikfelder im EU-Mehrebenensystem, Instrumente und Strategien europäischen Regierens, Baden-Baden, pp. 191-212

Ferreiraa, Joao, Jesper H. Andersenb, Angel Borja, Suzanne B. Brickerd, Jordi Campe, Margarida Cardoso da Silva, Esther Garcése, Anna-Stiina Heiskaneng, Christoph Humborgh, Lydia Ignatiadesi, Christiane Lancelotj, Alain Menesguenk, Paul Tettl, Nicolas Hoepffnerm and Ulrich Claussenn (2011), Overview of Eutrophication Indicators to Assess Environmental Status within the European Marine Strategy Framework Directive, in Estuarine, Coastal and Shelf Science, June 2011, 93 (2), pp. 117-131

Fitzmaurice, Malgosia (1992), International Legal Problems of the Environmental Protection of the Baltic Sea, Martinus Nijhoff/Graham and Trotman, Dordrecht, The

Netherlands

Fonselius, Stig (1969), Jorge Valderrama (2002), One Hundred Years of Hydrographic Measurements in the Baltic Sea, in Journal of Sea Research, 2003 (49), pp. 229-241

Franck, Thomas M. (1990), The Power of Legitimacy among Nations. New York: Oxford University Press

Furman Eeva (2004), Baltic Sea Environment & Ecology, Eds. Furman, Välipakka, Salemaa and Munsterhjelm, (in Russian). Project by University of Helsinki, Maj and Tor Nessling Foundation, Ministry of Environment, Finnish Environment Institute and Southeast Regional Environment Centre, printed by Digitone Oy

Gehring, Thomas (1994), Dynamic International Regimes: Institutions for International Environmental Governance, Frankfurt: Peter Lang

Gehring, Thomas (2004), Methodological Issues in the Study of Broader Consequence, In Arild Underdal and Oral Young, Eds. Regime Consequences: Methodological Challenges and Research Strategies. Dordrecht: Kluwer, pp. 219-246

Gehring, Thomas and Sebastian Oberthür (2006), Comparative Empirical Analysis and Ideal Types of Institutional Interaction. In: Oberthür, S. and T. Gehring. (Eds.) Institutional Interaction in Global Environmental Governance: Synergy and Conflict among International and EU Policies, Cambridge: MIT Press, pp. 307-72

Gehring, Thomas and Sebastian Oberthür (2008), Interplay: Exploring Institutional Interaction. In Institutional and Environmental Chang: Principal Findings, Applications, and Research Frontiers, Eds. Oran R. Young, Leslie A. King and Heike Schröder, Cambridge Massachusetts, MIT Press

George, Alexander L.; Andrew Bennett (2005), Case Studies and Theory Development in the Social Sciences, Cambridge, Massachusetts, MIT Press

Gilek, Michael and Kristine Kern Eds. (2015), Governing Europe's Marine Environment: Europeanization of Regional Seas or Regionalization of EU Policies? Ashgate

Glaas, Erik and Juhola, Sirkku (2013), New Levels of Climate Adaptation Policy: Analyzing the Institutional Interplay in the Baltic Sea Region. Sustainability, 2013 5(1), pp. 256–275

Glebe, Thilo W. (2006), The Environmental Impact of European Farming: How Legitimate Are Agri-Environmental Payments? In Review of Agricultural Economics 2006 29 (1), pp. 87-102

Goulder, Lawrence H. and Parry, Ian W. H. (2008), Instrument Choice in Environmental Policy, Review of Environmental Economics and Policy, 2008 2(2), pp. 152–174

Grizzetti, Bruna (2012), Mapping Ecosystem Services for Policy Support and Decision Making in the European Union, Eds. Joachim Maes, Benis Egoh, Louise Willemen, Camino Liquete, Petteri Vihervaara, Jan Philipp Schägner, Bruna Grizzetti, Evangelia G. Drakou, Alessandra La Notte, Grazia Zulian, Faycal Bouraoui, Maria Luisa Paracchini, Leon Braat, Giovanni Bidoglio. In Ecosystem Services, 2012 1 (1), pp. 31‑39

Granstedt, Artur, Thomas Schneider, Pentti Seuri and Olof Thomsson (2008), Ecological Recycling Agriculture to Reduce Nutrient Pollution to the Baltic Sea, in Biological Agriculture and Horticulture, Academic Publishers, Printed in Great Britain, 2008 (26), pp. 279–307

Greer, Alan and Thomas Hind (2012), Inter-Institutional Decision-Making: The Case of the Common Agricultural Policy, in Policy and Society, 2012 (31), pp. 331–341

Guzman, Andrew T. and Timothy Meyer (2010), International Soft Law, The Journal of Legal Analysis, 2 (1)

Haahti, Britt-Marie and Hedenström, Eva (2010), Case-Study Report : Eutrophication, Project Environmental Risk Governance of the Baltic Sea

Haas, Peter M. (1989), Do Regimes Matter? Epistemic Communities and Mediterranean Pollution Control, International Organization 1989 43(3), pp. 377-403

Haas, Peter M. (1990), Saving the Mediterranean: The Politics of International Environmental Cooperation. New York: Columbia University Press

Haas, Peter M. (1992), Banning Chlorofluorocarbons: Epistemic Community Efforts to Protect Stratospheric Ozone, International Organization 1992 46(1), pp. 187-224

Haas, Peter M. (1993), Saving the Mediterranean: The Politics of International Environmental Cooperation. Columbia University Press, New York, NY

Haas, Peter M., Robert O. Keohane and Marc A. Levy, Eds. (1993), Institutions for the Earth: Sources of Effective International Environmental Protection. Haas, Peter (1993), Protecting the Baltic and North Seas. Cambridge Massachusetts: MIT Press

Hardin, Garrett (1968), The Tragedy of the Commons, in Science, 1968 (162), pp. 1243-1248

Hart, Barry T., Mark Burgman, Michael Grace, Carmel Pollino, Colette Thomas and J. Angus Webb (2006), Risk-Based Approaches to Managing Contaminants in Catchments, in Human and Ecological Risk Assessment, 2006 (12), pp. 66–73

Hasenclever, Andreas; Peter Mayer; Volker Rittberger (1997), Theories of International Regimes, Cambridge: Cambridge University Press

Hassler, Björn (1992), Protecting the Baltic Sea : The Helsinki Convention and National Interests, in Yearbook of International Cooperation on Environment and Development 2003 (04), pp. 33-42

Holling, C. S. (1995), Barriers And Bridges To The Renewal Of Ecosystems And Institutions, Columbia University Press, New York

Homeyer, Ingmar Von and Knoblauch, Doris (2008), Environmental Policy Integration and Multi-Level Governance - A State-of-the-Art Report, Ecologic Institute for Environmental Policy, Berlin

Hooghe, Liesbet and Gary Marks (2001), Types of Multi-Level Governance, European Integration online Papers (EIop), 2001(5)

Hooghe, Liesbet and Gary Marks (2001), Multi-Level Governance and European Integration, Boulder: Rowman & Littlefield

Hoof, Luc Van, Judith Van Leeuwen and Van Tatenhove (2012), All at Sea: Regionalization and Integration of Marine Policy in Europe, in Maritime Studies 2012 (11)

Huppert, Walter (2013), Viewpoint-Rent-Seeking in Agricultural Water Management: An Intentionally Neglected Core Dimension? Water Alternatives 2013 6 (2), pp. 265-275

Jahn, Detlef and Nikolaus Werz (2002), Der Ostseeraum: Eine Zukunftsregion mit ungleichen Voraussetzungen. Politische Systeme und Beziehungen im Ostseeraum, Olzog, München

Jänicke, Martin and Helmut Weidner Eds. (1997), National Environmental Policies: A Comparative Study of Capacity-Building, Julius Springer Berlin

Jasanoff, Sheila and Marybeth Long Martello (2004), Earthly Politics, Local and Global in Environmental Governance, Cambridge, MA: The MIT Press

Joas, Marko, Detlef Jahn and Kristine Kern Eds. (2008), Governing a Common Sea. Environmental Policies in the Baltic Sea Region, Earthscan, London, Sterling VA

Joenniemi, Pertti (2009), The EU Strategy for the Baltic Sea Region: A Catalyst for What? In DIIS Brief, Copenhagen

Jordan, Andrew (2005), Environmental Policy in the European Union: Actors, Institutions and Process, 2nd Edition Earthscan, London

Kapaciauskaite, Ieva (2011), Environmental Governance In The Baltic Sea Region And The Role Of Non-Governmental Actors, Procedia - Social and Behavioral Sciences 2011 (14), pp. 90–100

Karlsson, Michael (2004), Transnational Relations in the Baltic Sea Region Transnational Relations in the Baltic Sea Region, Södertörns Academic Studies 21

Karlson, Karin, Rutger Rosenberg and Erik Bonsdorff (2002), Temporal And Spatial Large-Scale Effects Of Eutrophication And Oxygen Deficiency On Benthic Fauna In Scandinavian And Baltic Waters – A Review. Oceanography and Marine Biology: an Annual Review 2002 (40), pp. 427-489

Keisuke, Iida (1993), Analytic Uncertainty and International Cooperation: Theory and Application to International Economic Policy Coordination, International Studies Quarterly 1993 37 (4), pp. 431- 457

Keating, Michael, and Liesbet Hooghe (1996), By-Passing the Nation-State? Regions and the EU Policy Process, in European Union: Power and Policy Making, Jeremy J. Richardson Ed., London: Routledge, pp. 216-29

Kennan, George F. (1970), To Prevent a World Wasteland, in Foreign Affairs, April 1970, Published by the Council on Foreign Relations

Kern, Kristine (2000), Die Diffusion von Politikinnovationen. Umweltpolitische Innovationen im Mehrebenensystem der USA, Opladen: Leske und Budrich

Kern Kristine and Tina Löffelsend (2004), Sustainable Development in the Baltic Sea Region: Governance Beyond the Nation State, Local Environment, 2004 9 (5), pp. 451-467

Kern, Kristine and Tina Löffelsend (2008), in Joas, Marko, Detlef Jahn and Kristine Kern Eds. Governing a Common Sea. Environmental Policies in the Baltic Sea Region, Earthscan, London, Sterling VA

Kern, Kristine and Harriet Bulkeley (2008), Cities, Europeanization and Multi-Level Governance: Governing Climate Change through Transnational Municipal Networks, Journal of Common Market Studies

Kern, Kristine (2011), Governance For Sustainable Development In The Baltic Sea Region. Journal of Baltic Studies, 2011 (42), pp. 21–35

Keohane, Robert O. (1984), After Hegemony: Cooperation and Discord in the World Political Economy. Princeton: Princeton University Press

Keohane, Robert O. (1989), Neoliberal Institutionalism: A Perspective on World Politics", in Robert O. Keohane (ed), International Institutions and State Power: Essays in International Relations Theory. Boulder: Westview, pp. 1-20

Keohane, Robert O. and Elinor Ostrom (1995), Local Commons and Global Interdependence: Heterogeneity and Cooperation in Two Domains. London: Sage Publications

King, Gary; Robert O. Keohane and Sidney Verba (1994), Designing Social Inquiry: Scientific Inference in Qualitative Research. Princeton, NJ: Princeton University Press

Klavert, Henrike and Niels Keijzer (2012), A review of Stakeholders' Views on CAP Reform. What They Say and What They have achieved. Overseas Development

Knill, Christoph and Duncan Liefferink (2007), Environmental Politics in the European Union: Policy-making, Implementation and Patterns of Multi-level Governance, Manchester University Press

Kohler-Koch, Beate (1998), Interaktive Politik in Europa: Regionen im Netzwerk der Integration, Opladen: Leske + Budrich

Kohler-Koch, Beate (2004), Network Governance within an Enlarged European Union, Eds. Verdun and Croci, Institutional Challenges to the EU in the Wake of Eastern Enlargement, Manchester: Manchester University Press, pp. 35–53

Krasner, Stephen D. (1982). Structural Causes and Regime Consequences: Regimes as Intervening Variables, International Organization 1982 36(2), pp. 185-205

Krasner, Stephen D. (1983), International Regimes. Ithaca: Cornell University Press

Laamanen, Maria (2013), Eutrophication Status of The Baltic Sea, 2007-2011), In a Concise Thematic Assessment, HELCOM, Baltic Sea Environment Proceedings No. 143, 0357-2994. Maria Laamanen Eds., Minna Phyälä, Vivi Fleming-Lehtinen, Elzbieta Lysiak-Pastuszak, Marine Carstens, Wera Leujak, Günther Nausch, Ciaran Murray, Jesper Andersen

Laakkonen, Simo and Sari Laurila (2001), Changing Environments or Shifting Paradigms? Strategic Decision Making toward Water Protection in Helsinki 1850–2000, in Science and Governance of the Baltic Sea, Ambio, 2007 (2-3), pp. 212-219

Lankoski, Jussi and Markku Ollikainen (2011), Counterfactual Approach for Assessing Agri-Environmental Policy: Theory with an Application to Finnish Water Protection Policy, University of Helsinki, Department of Economics and Management in Discussion Papers No. 56. Helsinki: University of Helsinki

Leeuwen, Judith Van and Kristine Kern (2013), The External Dimension of European Union Marine Governance: Institutional Interplay between the EU and the International Maritime Organization, in Global Environmental Politics 2013 (13). The Massachusetts Institute of Technology

Lenschow, Andrea (1995), Policy and Institutional Change in the European Community: Environmental Integration in the CAP. Paper prepared for delivery at the 1995 European Community Studies Association Conference in Charleston, SC, May pp. 11-14

Lenschow, Andrea, ed. (2002), Environmental Policy Integration: Greening Sectoral Policies in Europe, London: Earthscan

Lenschow, Andrea (2005), Environmental Policy: Contending Dynamics of Policy Change, in Wallace and Pollack Eds. Policy-Making in the European Union, 5th Edition, Oxford University Press, Oxford, pp. 305-327

Levy, Margaret (1993), European acid rain: the power of tote-board diplomacy. In Institutions for the Earth, ed. PM Haas, RO Keohane, MA Levy, Cambridge, MA: MIT Press

Levy, Marc A.; Oran R. Young, Michael Zürn (1995), The Study of International Regimes, in European Journal of International Relations 1995 1 (3), pp. 267-330

Levi, Margaret (2004), An Analytic Narrative Approach to Puzzles and Problems. In: Shapiro, I., R. Smith and T. Masoud. (Eds.) Problems and Methods in the Study of Politics, New York: Cambridge University Press

March, James G. and Johan P. Olsen (1989), Rediscovering Institutions: The Organizational Basis of Politics. New York: the Free Press

Marks, Gary; Liesbet Hooghe and Kermit Blank (1996), European Integration since the 1980s: State- Centric versus Multi-Level Governance, in Journal of Common Market Studies 1996 34 (4), pp. 341-78

Miles, Edward L.; Arild Underdal; Steinar Andresen, Jorgen Wetestad, Jorg Birger Skaerseth and Elaine M. Carlin (2002), Environmental Regime Effectiveness, Confronting Theory with Evidence, The MIT Press, Massachusetts, London, England

Mitchell, Ronald B. (1994), Intentional Oil Pollution at Sea: Environmental Policy and Treaty Compliance, Cambridge: MIT Press

Mitchell, Ronald B., William C. Clark, and David W. Cash (2006), Information and Influence. In Global Environmental Assessments: Information and Influence, Eds., Ronald B. Mitchel, William C. Clark, David W. Cash and Nancy M. Dickson, pp. 307-338, Cambridge, Massachusetts, MIT Press

Moravcsik, Andrew (1998), The Choice for Europe: Social Purpose and State Power from Messina to Maastricht, Ithaca, NY: Cornell University Press

Nechiporuk, Dmitry, Maria Nozhenko and Elena Belokurova (2001), Russia - a Special Actor In Baltic Sea Environmental Governance, In: Pihlajamäki and Tynkkynen, Eds. Governing The Blue-Green Baltic Sea. Helsinki: Finnish Institute of International Affairs, 2011, pp. 44–54

Oberthür, Sebastian (2001), Linkages between the Montreal and Kyoto Protocols: Enhancing Synergies between Protecting the Ozone Layer and the Global Climate, International Environmental Agreements: Politics, Law and Economics 2001 1(3), pp. 357-377

Oberthür, Sebastian and Thomas Gehring (2006), Conceptual Foundations of Institutional Interaction. In: Oberthür, S. and T. Gehring. (Eds.) Institutional Interaction in Global Environmental Governance, MIT Press

Oberthür Sebastian and Olaf Schram Stokke, Eds (2011), Managing Institutional Complexity. Regime Interplay and Global Environmental Change. Cambridge, MA: MIT Press

Ollikainen, Markku and Juha Honkatukia (2001), Towards Efficient Pollution Control in the Baltic Sea: An Anatomy of Current Failure with Suggestions for Change, Ambio 2001 30 (4–5), pp. 245–253

Olson, Mancur (1965), The Logic of Collective Action, Harvard University Press, Cambridge

O'Neill, Kate (2009), The Environment and International Relations, Cambridge University Press

Ostrom, Elinor (1990), Governing the Commons: The Evolution of Institutions for Collective Action. New York: Cambridge University Press

Ostrom, Elinor (1998), The Institutional Analysis and Development Approach. In: Designing Institutions for Environmental Resource Management. Cheltenham: Edward Elgar, pp. 68-89

Ostrom, Elinor (1999), Coping With Tragedies Of The Commons. Annual Review of Political Science, pp. 493–535

Paavola, Inga-Liisa, Ari Ekroos, Hannes Veinla and Kaarel Relve (2012), Environmental Regulation of Aquaculture in the Baltic Sea Region. A Broad Overview of the Legal Framework, Reports of Aquabest Project 2012 (3)

Paavola, Joni (2007), Institutions and Environmental Governance: A Reconceptualization, ECOL ECON 2007 (63), pp. 93-103

Paavola, Joni (2011), Climate Change: the Ultimate "Tragedy of the Commons", Sustainability Research Institute Paper 2011 (24)

Pahl-Wostl, Claudia (2009), A Conceptual Framework For Analyzing Adaptive Capacity And Multi-Level Learning Processes in Resource Governance Regimes, Global Environmental Change, 2009 19(3), pp. 354–365

Patton, Michael Quinn (1980), Qualitative Evaluation Methods, Beverly Hills, CA, Sage

Pihlajamäki, Mia and Tynkkynen, Nina Eds. (2011), Governing the blue-green Baltic Sea, Societal Challenge of Marine Eutrophication Prevention, FIIA Report 31, Helsinki: Finnish Institute of International Affairs; Tampereen Yliopistopaino Oy-Juvenes Print, Tampere, 2011, pp. 78–88

Pontecorvo, Concetta M. (1999), Interdependence between Global Environmental Regimes: The Kyoto Protocol on Climate Change and Forest Protection, Zeitschrift für ausländisches öffentliches Recht und Völkerrecht 1999 59 (3), pp. 709- 749

Prat, J. - L. (1990), The Role and Activities of the European Communities in the Protection and the Preservation of the Marine Environment of the North Sea. In: The North Sea: Perspectives on regional environmental co-operation, Eds. David Freestone and Ton Ijlstra. London: Graham & Trotman, pp. 101–110

Pyhälä, Minna (2012), HELCOM Baltic Sea Action Plan: an Ecosystem Approach to the Management of Human Activities, Chapter 2 in M. Reckermann et al. Eds., Climate Impacts on the Baltic Sea: From Science to Policy. Springer Earth System Sciences, Springer-Verlag Berlin Heidelberg

Rabalais, Nancy N. (2004), Eutrophication, in: The Global Coastal Ocean Multi-scale Interdisciplinary Processes, Eds. Robinson, McCarthy, Rothschild. Harvard University Press, 2004 (13), pp. 819–865

Rabalais, Nancy N. and Denis Gilbert. (2008), Distribution and Consequences of Hypoxia, Chapter 11 in Urban, Sundby, Malanotte-Rizzoli and Milello Eds., Watersheds, Bay, and Bounded Seas: The Science and Management of Semi-Enclosed Marine Systems. Island Press, Washington, D.C. pp. 209-225

Rabalais, Nancy N.; R. Eugene Turner; Dubravko Justic and Robert J. Díaz (2009), Global Change and Eutrophication of Coastal Waters, in ICES Journal of Marine

Science 009 (66), pp. 1528–1537

Räsänen, Tuomas and Simio Laakkonen (2008), Institutionalization of an International Environmental Policy Regime: The Helsinki Convention, Finland and the Cold War, in Joas, Marko, Detlef Jahn and Kristine Kern Eds. Governing a Common Sea. Environmental Policies in the Baltic Sea Region, Earthscan, London, Sterling VA

Räsänen, Tuomas and Simio Laakkonen (2007), Cold War and the Environment: The Role of Finland in International Environmental Politics in the Baltic Sea Region, Ambio, 2007 36 (2-3), pp. 229-236

Raustiala, Kal and David G. Victor (1998), The Implementation and Effectiveness of International Environmental Agreements, ed. DG Victor, K Raustiala, EB Skolnikoff, Cambridge, MA: MIT Press

Rice, Jake, Christos Arvanitidis, Angel Borja, Chris Frid, Jan Hiddink, Jochen Krause, Pascal Lorance, Stefan Aki Ragnarsson, Mattias Sköld, Benedetta Trabucco, Lisette Enserink, Alf Norkko (2012), Indicators for Sea-floor Integrity under the European Marine Strategy Framework Directive. In Ecological Indicators, 2012 (12), pp. 174–184

Roginko, Alexei (1998), Domestic implementation of the Baltic Sea pollution commitments in Russia and the Baltic States, in Victor, David G.; Raustiala, Kal and Eugene B. Skolnikoff, Eds. The Implementation and Effectiveness of International Environmental Commitments. Theory and Practice, Cambridge, MA: The MIT Press, pp. 575–638

Salomon, Markus (2006), The European Commission Proposal for a Marine Strategy: Lacking Substance, In Marine Pollution Bulletin 2006 (52), pp. 1328-1329

Schreurs, Miranda A. and Elizabeth Economy, Eds. (1997) The Internationalization of Environmental Protection, Cambridge: Cambridge University Press

Schreurs, Miranda A. (1999), Environmental Clean-Up Challenges in European Seas, in Protecting Regional Seas: Developing Capacity and Fostering Environmental Cooperation in Europe, Eds. Stacy D. VanDeveer and Geoffrey D. Dabelko

Schreurs, Miranda A. (2004), Environmental Protection in an Expanding European Community: Lessons from Past Accessions, in Stacy VanDeveer and Joann Carmin, Eds. EU Enlargement and the Environment: Institutional Change and Environmental Policy in Central and Eastern Europe. A special edition of Environmental Politics, Spring 2004 (13) 1, pp. 27-51

Schumacher, Tom (2012), Evaluation of the European Union's policies and legislation related to Baltic Sea eutrophication; Kiel University Institute of Social Sciences Research Group on International Political Sociology

Schumacher, Tom (2012a), Great Potential but Little Impact: The European Union's Protection Policies for the Baltic Sea, in Baltic Journal of Political Science. 2012, (1), pp. 48–64

Schymik, Carsten (2011), Blueprint for a Macro-Region. EU Strategies for the Baltic Sea and Danube Regions, Berlin: SWP Research Paper

Scott, Karen N. (2011), International Environmental Governance: Managing Fragmentation Through Institutional Connection, Melbourne Journal of International Law, 2011(12), pp. 1-40

Selin, Henrik and Stacy D. VanDeveer (2003), Mapping Institutional Linkages in European Air Pollution Politics, Global Environmental Politics 2003 3 (3), pp. 14-46

Skaerseth; Elaine M. Carlin (2002), Environmental Regime Effectiveness: Confronting Theory with Evidence, Cambridge, MA, MIT Press

Smith, Richard A., Richard B. Alexander and M. Gordon Wolman (1987), Water-Quality Trends in the Nation's Rivers, in Science 1987 (23), pp. 1607-1615

Smith, Val H. (2006), Responses of Estuarine and Coastal Marine Phytoplankton to Nitrogen and Phosphorus Enrichment, in Limnology and Oceanography, 2006 (51), pp. 377–384

Smith, Val H. and David W. Schindler (2009), Eutrophication Science: Where Do We Go from Here? In Elsevier Ltd.

Snyder Bennear, Lori, Rober N. Stavins (2007), Second-Best Theory and the Use of Multiple Policy Instruments, Environmental and Ressource Economics, 2007 37 (1), pp. 111-129

Stern, Paul C. (2011), Design Principles For Global Commons: Natural Resources And Emerging Technologies, International Journal of the Commons

Stokke, Olav Schram (2000). Managing Straddling Stocks: The Interplay of Global and Regional Regimes, Ocean & Coastal Management 2000 43 (2-3), pp. 205-234

Stokke, Olav Schram (2001), Managing Fisheries in the Barents Sea Loophole: Interplay with the UN Fish Stocks Agreement. Ocean Development and International Law 2001 32 (3), pp. 241-62

Stokke, Olav Schram (2001), The Interplay of International Regimes: Putting Effectiveness Theory to Work. FNI Report. 2001 (14), Lysaker, Norway: The Fridtjof Nansen Institute

Tynkkynen, Nina (2011), The Future of HELCOM: Adaptation or Abolition, in Mia Pihlajamäki and Nina Tynkkynen, Eds., Governing the Blue-Green Baltic Sea: Societal Challenges of Marine Eutrophication Prevention, Helsinki, FIIA Report 31, pp. 33-43

Tynkkynen, Nina (2013), The Challenge Of Environmental Governance In The Network Society: The case of the Baltic Sea. Environmental Policy and Governance, 2013 23 (6), pp. 395-406

Tynkkynen, Nina, Paula Schönach, Mia Pihlajamäki and Dmitry Nechiporuk (2014), The Governance of the Mitigation of the Baltic Sea Eutrophication: Expolring the Challenges of the Formal Governing System, Ambio, Feb 2014 43(1), pp. 105–114

Tullock, Gordon (1989), The Economics of Special Privilege and Rent-Seeking, Boston: Kluwer Academic Publishers

Underdal, Arild (1998), Explaining Compliance and Defection: Three Models. European Journal of International Relations 1998 4 (1), pp. 5-30

Underdal, Arild (2002), One Question: Two Answers. In International Regime Effectiveness, MIT Press, Cambridge, MA, pp. 3–45

Underdal, Arild and Oran Young, Eds. (2004), Regime Consequences: Methodological Challenges and Research Strategies. Dordrecht: Kluwer

VanDeveer, Stacy D. (1999), Capacity Building Efforts and International Environmental Cooperation in the Baltic and Mediterranean Regions. In VanDeveer and Dabelko, Eds. Protection Regional Seas: Developing Capacity and Fostering Cooperation in Europe, Woodrow Wilson International Centre for Scholars, Washington DC, pp. 8-32

VanDeveer, Stacy D. (2000), Protecting European Seas, Environment, 2000 42 (6), pp. 10-26

VanDeveer, Stacy D. (2002), Environmental Cooperation and Regional Peace: Baltic Politics Programs, and prospects, in Conca, Ken and Dabelko Geoffrey D., Eds., Environmental Peacemaking, John Hopkins University Press, Washington DC

VanDeveer, Stacy D. and Jörg Balsiger (2010), Regional Governance and Environmental Problems, from The International Studies Encyclopedia, Robert A. Denemark, Ed. Blackwell Publishing 2010 (9), pp. 6179-6200

VanDeveer, Stacy D. (2011), Networked Baltic Environmental Cooperation in Journal of Baltic Studies, pp. 42:37–55

Verdun, Amy (1999), Theories of European Integration. Political Science, 1999 26(2), pp. 155–156

Victor, D. G., K. Raustiala and E. B. Skolnikoff, Eds. (1998), The Implementation and Effectiveness of International Environmental Commitments: Theory and Practice. Cambridge, MA: MIT Press

Weber, Max (1976), Wirtschaft und Gesellschaft: Grungriss der verstehenden Soziologie, 5th Edition, Tübingen, Germany

Wulff Fredrik, Oleg P. Savchuk, Christoph Humborg (2007) Management Options and Effects on a Marine Ecosystem: Assessing the Future of the Baltic. In AMBIO: A Journal of the Human Environment, 2007 36 (2), pp. 243–249

Young Oran R. (1989), International Cooperation: Building Regimes for Natural Resources and the Environment, Cornell University Press

Young, Oran R. (1989), The Politics of International Regime Formation: Managing Natural Resources and the Environment. International Organization 1989 43(3), pp.349-75

Young, Oran R. (1991), Political Leadership and Regime Formation: On the Development of Institutions in International Society, International Organization 1991 45 (3), pp. 281-308

Young, Oran R. (1994), International Governance: Protecting the Environment in a Stateless Society. Ithaca: Cornell University Press

Young, Oran R. (1996), Institutional Linkages in International Society: Polar Perspectives: Global Governance 1996 2(1), pp. 1-24

Young, Oran R. (1997), Global Governance: Toward a Theory of Decentralized World Order. In: Young, O. R. (Ed.) Global Governance: Drawing Insights from the Environmental Experience. Cambridge: MIT Press, pp. 273-99

Young, Oran R. (1999), The Effectiveness of International Environmental Agreements, Cambridge, MA: MIT Press

Young, Oran R. (1999), The Effectiveness of International Environmental Regimes: Causal Connections and Behavioral Mechanisms, MIT Press, Cambridge, Massachusetts, and London

Young, Oran R.; Leslii A. King, Arun Aggarval; Arild Underdal; Peter H. Sand; Merrilyn Wasson (1999), Institutional Dimensions of Global Environmental Change (IDGEC), Science Plan. Bonn: International Human Dimensions Programme on Global Environmental Change

Young, Oran R. (2001), The Behavioral Effects of Environmental Regimes: Collective-Action Vs. Social-Practice Models. International Environmental Agreements: Politics, Law and Economics 2001 11, pp. 9-29

Young, Oran R. (2002), The Institutional Dimensions of Global Environmental Change: Fit, Interplay and Scale, Cambridge, Massachusetts: MIT Press

Young, Oran R. (2005), Why Is There No Unified Theory of Environmental Governance? In: Dauvergne, P. (Ed.) Handbook of Global Environmental Politics. Northhampton, MA: Edward Elgar**,** pp**.** 170-84

Zampoukas, Nikolaos and Henna Piha (2010), Review of Methodological Standards Related to the Marine Strategy Framework Directive Criteria on Good Environmental Status. In JRC Scientific and Technical Reports. Luxembourg: Office for Official publications of the European Communities

Zelli, Fariborz and Asselt, Harro Van. (2013), Introduction The Institutional Fragmentation of Global Environmental Governance: Causes, Consequences, and Responses, in Global Environmental Politics 2013 (8), pp. 1–13

Official Documents and Meeting Reports

Agricultural and Rural Convention (ARC)

Agricultural and Rural Convention (2011)
http://www.arc2020.eu/front/2011/11/closed-shop-ii-polish-style

BalticSTERN

Systems Tools and Ecological-economic evaluation – a Research Network
http://stockholmresilience.org/download/18.4531be2013cd58e844853b/BalticSTERN_The+Baltic+Sea++Our+Common+Treasure.+Economics+of+Saving+the+Sea_0314.pdf

BalticStern (2013), The Baltic Sea-Our Common Treasure. Economics of Saving the Sea, Baltic Stern Rapport 2013, 4
http://stockholmresilience.org/download/18.4531be2013cd58e844853b/BalticSTERN_The+Baltic+Sea+Our+Common+Treasure.+Economics+of+Saving+the+Sea_0314.pdf

The CAP and WFD Project

The CAPANDWFD Project
http://cordis.europa.eu/result/rcn/51971_en.htm.

Coalition Clean Baltic

Coalition Clean Baltic (2011), CCB Response to the Consultation for the Impact Assessment on the Common Agricultural Policy Towards 2020
http://ccb.se/documents/CCBviewsonCAPreformFINAL_25Jan2011_000.pdf

COGECA

COGECA, History
http://www.copa-cogeca.be/Main.aspx?page=CogecaHistory&lang=en

Convention on Biological Diversity

Convention on Biological Diversity
http://www.cbd.int/history/default.shtml

CBD Ecosystem Approach Background
http://www.cbd.int/ecosystem/background.shtml
The CBD Ecosystem Approach Descriptors
http://www.cbd.int/ecosystem/description.shtml

The UN CBD Ecosystem Approach Principles
http://www.cbd.int/ecosystem/principles.shtml

The UN CBD, Ecosystem Approach 5 Decision V/6. Retired sections: paragraphs 4-5
http://www.cbd.int/decision/cop/default.shtml?id=7148

E!Sharp
http://esharp.eu/jargon/copa-cogeca/

Ecosystem Management

Ecosystem Management
http://www.iucn.org/about/union/commissions/cem/cem_work/

European Commission

European Commission (1991), EU Commission's report on the implementation of Council Directive 91/676/EEC

European Commission (1997), Proposal for a Directive Establishing a Framework for Community Action in the Field of Water Policy, Doc. COM (1997), 49, Brussels, European Commission

European Commission
Agenda 2000
http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV:l60001

European Commission, Agri- Environmental Measures
http://ec.europa.eu/agriculture/envir/measures/index_en.htm

European Commission (2001), European Governance: A White Paper, EC, Brussels
European Commission (2002), Communication from the Commission to the Council and the European Parliament: Towards a strategy to protect and conserve the marine environment', COM (2002) 539 final

European Commission (2003), Proposal for a Council Regulation establishing common rules for direct support schemes under the common agricultural policy and support schemes for producers of certain crops
http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2003:0023:FIN:EN:PDF

European Commission (2005), Thematic Strategy on air pollution, Communication from the Commission to the Council and the European Parliament, COM (2005) 446 final

European Commission (2005a), Agro-environment Measures, Overview on General Principles, Types of Measures, and Application, European Commission, Directorate General for Agriculture and Rural Development, 2005
http://ec.europa.eu/agriculture/publi/reports/agrienv/rep_en.pdf

European Commission (2005b), Council Regulation, amending Regulation No 1257/1999 on support for rural development from the European Agricultural Guidance and Guarantee Fund (EAGGF) and repealing Regulation (EC) No 2826/200 ec.europa.eu/legalcontent/EN/TXT/PDF/?uri=CELEX:32003R1783&qid=1442421831683&from=EN

European Commission (2006), Towards A Future Maritime Policy For The Union: A European Vision For The Oceans And Seas, Green Paper, COM (2006) 275 final

Flash Eurobarometer on Water (2009), No 261
http://ec.europa.eu/public_opinion/flash/fl_261_en.pdf

European Commission (2009a)
"Why do we need a Common Agricultural Policy?"

European Commission (2010), Proposal for a Regulation Amending Regulation (EC) No 648/2004 As Regards The Use Of Phosphates And Other Phosphorous Compounds In Household Laundry Detergents, COM (2010) 597 final, available at http://www.djei.ie/employment/chemicalspolicy/eucommissionproposal.pdf

European Commission (2010a), Report by JRC and DG ENV (no 31210 – 2009/2010), the Memorandum of Understanding between the European Commission and ICES 2010
http://ec.europa.eu/environment/marine/pdf/6-Task-Group-6.pdf

European Commission (2010b), Report from the Commission to the Council and the European Parliament on "Implementation of the Nitrates Directive for the period 2004-2007;
http://ec.europa.eu/environment/water/blueprint/pdf/safeguard_fitness_freshwater.pdf

European Commission (2010c), Ecologic Assessment of Agriculture Measures included in the Draft River Basin Management Plans
http://ec.europa.eu/environment/water/quantity/pdf/summary050510.pdf

European Commission (2010d), JRC and DG ENV (no 31210 – 2009/2010), the Memorandum of Understanding between the European Commission and ICES 2010

European Commission (2011), Report on the Implementation of the EU Strategy for the Baltic Sea Region, COM (2011) 381 final, Brussels, 22 June, available at: http://ec.europa.eu/regional_policy/cooperate/baltic/ documents_en.cfm#2

European Commission (2011a), Commission Staff Working Paper "Impact Assessment Common Agricultural Policy towards 2020", 2011
http://www.ab.gov.tr/files/ardb/evt/1_avrupa_birligi/1_6_raporlar/1_3_diger/agriculture_and_fisheries/impact_assessment_cap_towards2020.pdf

European Commission (2011b), Executive Summary Of The Impact Assessment. Common Agricultural Policy towards 2020, 2011
http://ec.europa.eu/agriculture/policy-perspectives/impact-assessment/cap-towards-2020/report/summary_en.pdf

European Commission (2011c)
"Impact Assessment: Common Agricultural Policy towards 2020"
http://ec.europa.eu/agriculture/policy-perspectives/impact-assessment/cap-towards-2020/index_en.htm

European Commission (2012), Report from the Commission to the European Parliament and the Council on the Implementation of the Water Framework Directive (2000/60/EC) River Basin Management Plans (Text with EEA relevance), Brussels, 14.11.2012 COM (2012) 670 final
http://ec.europa.eu/environment/marine/good-environmental-status/index_en.htm

European Commission (2012a), EU SCAR, Agricultural Knowledge and Innovation Systems in Transition- a Reflection Paper, Brussel, 2012
http://ec.europa.eu/research/bioeconomy/pdf/ki3211999enc_002.pdf

European Commission (2013), Report from the Commission to the Council and the European Parliament
http://eurlex.europa.eu/legalcontent/EN/TXT/PDF/?uri=CELEX:52013DC0683&from=EN

European Commission (2013a), The History of the CAP
http://ec.europa.eu/agriculture/cap-history/index_en.htm

European Commission (2013b), European Commission, 2013: EU Agriculture - Statistical and Economic Information 2012
http://ec.europa.eu/agriculture/statistics/agricultural/2012/

European Agriculture Report
http://ec.europa.eu/research/agriculture/scar/pdf/scar_feg3_final_report

The EU Commission, Environment (2015)
http://ec.europa.eu/environment/water/water-framework/objectives/status_en.htm#_Assessment_of_water

European Court of Auditors (ECA)

ECA Report 2014
http://www.eca.europa.eu/Lists/ECADocuments/SR14_04/SR14_4_EN.pdf

The EU Directives

The EU Marine Strategy Framework Directive (MSFD), Good Environmental Status
http://ec.europa.eu/environment/marine/good-environmental-status/index_en.htm

The EU Marine Strategy Framework Directive (MSFD) Legal Content
http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0056

The EU Marine Strategy Framework Directive (MSFD), Descriptor 5: http://ec.europa.eu/environment/marine/good-environmental-status/descriptor-5/index_en.htm

Marine Strategy Framework Directive (MSFD), Common Implementation Strategy 11th meeting of the Marine Strategy Coordination Group (MSCG), 2013 http://www.ices.dk/news-and-events/Documents/Themes/MSFD/MSFD_monitoring_guidance_281013%20(2).pdf

The MSFD, Art. 1 (a) and (b) http://eurlex.europa.eu/legalcontent/EN/TXT/PDF/?uri=CELEX:32008L0056&from=EN

The EU Nitrate Directive http://ec.europa.eu/environment/water/waternitrates/index_en.html

The EU Urban Waste Water Treatment Directive (UWWD) http://ec.europa.eu/environment/water/water-urbanwaste/index_en.html

The EU Water Frame Directive (WFD), Objectives http://ec.europa.eu/environment/water/water-framework/index_en.html http://ec.europa.eu/environment/water/waterframework/objectives/implementation_en.htm

The WFD, Annex V http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ%3AL%3A2000%3A327%3A000

The WFD, Annex V, Section 1.1 http://eur-lex.europa.eu/resource.html?uri=cellar:5c835afb-2ec6-4577-bdf8-756d3d694eeb.0004.02/DOC_1&format=PDF

European Environment Agency

EEA (2006), Integration of Environment into EU Agriculture Policy – the IRENA Indicator-Based Assessment Report, European Environment Agency Report No 2, available at: http://www.eea.europa.eu/publications/eea_report_2006_2

EEA (2010), The European Environment State and Outlook 2010: Freshwater Quality". European Environment Agency, Copenhagen, 2010, http://www.eea.europa.eu/soer/europe/freshwater-quality

EEA (2012), Water Assessment http://www.eea.europa.eu/themes/water/water-assessments-2012

European Parliament

European Parliament (2006), Resolution on a Thematic Strategy on the Protection and Conservation of the Marine Environment, (2006/2174(INI)), http://www.europarl.europa.eu/sides/getDoc

European Parliament (2011), The CAP in the Multi-annual Financing Framework 2014-2020, Brussels: European Parliament, DG Internal Politics, Committee on Agriculture and Rural Development, 2011

http://www.europarl.europa.eu/RegData/etudes/STUD/2014/529067/IPOL_STU (2014)529067_EN.pdf

Environmental Protection Agency

Environmental Protection Agency (2000), Preparation for the Proposed EU Water Framework Directive, Dublin: Environmental Protection Agency

European Union Publications

European Union publications (2011), Seas for Life
http://bookshop.europa.eu

The German Advisory Council on the Environment (SRU)

SRU (2013), Reform of the Common Agricultural Policy: Opportunities for Reorientation
http://www.umweltrat.de/SharedDocs/Downloads/EN/05_Comments/2012_2016/2013_01_KzU_11_GAP.pdf?__blob=publicationFile

SRU (2015), Special Report, "Nitrogen: Strategies for Resolving an Urgent Environmental Problem"
http://www.umweltrat.de/SharedDocs/Downloads/EN/02_Special_Reports/2012_2016/2015_01_Nitrogen_Strategies_summary.html?nn=396872

HELCOM

HELCOM Core Indicators
http://helcom.fi/CoreIndicators/HELCOM-CoreIndicator Proportion_of_large_fish_in_the_community.pdf

HELCOM Introduction
http://helcom.fi/about-us

NOx controls for the Baltic on the horizon
http://www.helcom.fi/press_office/news_helcom/2012/en_GB/HELCOM33_outcome

HELCOM Hot Spots: http://helcom.fi/helcom-at-work/projects/base/components/hot-spots

HELCOM (1974), Convention for the Protection of the Marine Environment of the Baltic Sea Area, Helsinki, 22 March 1974, in force 3 May 1980
http://helcom.fi/Recommendations/Rec 19-16.pdf

HELCOM (1980), Assessment of the Effects of Pollution on the Natural Resources of the Baltic Sea. In: Baltic Sea Environment Proceedings No. 5A
http://www.helcom.fi/Recommendations/Rec%207-5.pdf

HELCOM (1987), First Periodic Assessment of the State of the Marine Environment of the Baltic Sea Area in 1980–1985. General Conclusions. In: Baltic Sea Environment Proceedings No. 17A
http://www.helcom.fi/Lists/Publications/BSEP78.pdf

HELCOM (1988), Declaration on the Protection of the Environment of the Baltic Sea. Ninth Meeting of the Baltic Marine Environment Protection Commission, Helsinki, 15 Feb 1988

HELCOM (1992), Convention for the Protection of the Marine Environment of the Baltic Sea Area. Adopted in Helsinki, Finland on 9 April 1992, in force 17 Jan 2000
http://helcom.fi/Recommendations/Rec 21-2.pdf

http://helcom.fi/Documents/About%20us/Convention%20and%20commitments/Helsinki%20Convention/1992_Convention_1108.pdf. This issue includes the amendments to its Annexes adopted by the Helsinki Commission in 2000, 2001, 2003 and 2007. These amendments are listed on page 43.

HELCOM (2002), Environment of the Baltic Sea area 1994–1998. Baltic Sea environmental proceedings no. 82B

HELCOM (2003), The Review Of More Specific Targets To Reach The Goal Set Up In The 1988/1998 Ministerial Declarations Regarding The Nutrients, Baltic Sea Environmental Proceedings No. 89 http://helcom.fi/Recommendations/Rec 23-2.pdf

HELCOM (2003a), The Baltic Sea Comprehensive Environmental Action Programme (JCP)- Ten Year of Implementation, Baltic Sea Environment Proceedings, 2003, no 88, Helsinki Commission, Helsinki

HELCOM (2003b), Statement of the Joint Ministerial Meeting of the HEELCOM and OSPAR (JMM), Bremen: June 25 - 26, 2003, p.1 http://helcom.fi/Documents/About%20us/Convention%20and%20commitments/Ministerial%20declarations/Bremen2003.pdf

HELCOM(2004), Plc-Air And Plc-Water Popular Report 2004 http://meeting.helcom.fi/c/document_library/get_file?folderId=70254&name=DLFE-27900.pdf

HELCOM (2006), Eutrophication in the Baltic Sea, Draft HELCOM Thematic Assessment in 2006, Helsinki, HELCOM http://helcom.navigo.fi/stc/files/BSAP/FINAL%20Eutrophication.pdf

HELCOM (2006a), Stakeholder Conference on the Baltic Sea Action Plan Helsinki, Finland, 7 March 2006 http://helcom.fi/baltic-sea-action-plan

HELCOM (2006b), Eutrophication in the Baltic Sea. Draft HELCOM Thematic Assessment in 2006, Helsinki, HELCOM. http://helcom.navigo.fi/ stc/files/BSAP/FINAL%20Eutrophication.pdf

HELCOM (2006c), Development of tools for assessment of eutrophication in the Baltic Sea. Baltic Sea environment proceedings no. 104

HELCOM (2007), BSAP http://helcom.fi/Documents/Baltic%20sea%20action%20plan/BSAP_Final.pdf

HELCOM (2007a) Baltic Sea Action Plan. HELCOM, Ministerial Meeting in Krakow, Poland, 15 Nov 2007

HELCOM (2007b) Climate change in the Baltic Sea area – HELCOM thematic assessment in 2007. Baltic Sea environmental proceedings no. 111

HELCOM (2007c), HELCOM Baltic Sea Action Plan, HELCOM Ministerial Meeting Krakow, Poland, 15 November 2007. http://www.helcom.fi/stc/files/BSAP/BSAP_Final.pdf

HELCOM (2007d), Eutrophication Indicators http://www.helcom.fi/baltic-sea-trends/eutrophication/indicators/

HELCOM (2008), Convention on the Protection of the Marine Environment of the Baltic Sea Area, 1992 (Helsinki Convention). http://www.helcom.fi/stc/files/Convention/Conv1108.pdf.

HELCOM (2009), Eutrophication in the Baltic Sea. An Integrated Thematic Assessment of the Effects of Nutrient Enrichment in the Baltic Sea region. Baltic Sea Environment Proceedings No. 115B

HELCOM (2009a), Biodiversity in the Baltic Sea – an integrated thematic assessment on biodiversity and nature conservation in the Baltic Sea. Baltic Sea environment proceedings no. 116B

HELCOM (2010), "Ecosystem Health of the Baltic Sea: HELCOM Initial Holistic Assessment", Baltic Sea Environment Proceedings No. 122

HELCOM (2010a), Hazardous Substances in the Baltic Sea – an Integrated Thematic Assessment of Hazardous Substances in the Baltic Sea. Baltic Sea Environment Proceedings No. 120B

HELCOM (2010b), Ecosystem Health of the Baltic Sea – HELCOM Initial Holistic Assessment. Baltic Sea Environment Proceedings no. 122

HELCOM (2010c), HELCOM Ministerial Declaration on the Implementation of the HELCOM Baltic Sea Action Plan. HELCOM Moscow Ministerial Meeting http://meeting.helcom.fi/web/helcom/1?p_p_id=110_INSTANCE_rBCs&p_p_action

HELCOM (2010d), Baltic Sea Action Plan (BSAP)
http://helcom.fi/baltic-sea-action-plan

HELCOM (2011), Working Groups of HELCOM
http://www. helcom.fi/groups/en_GB/groups/

HELCOM (2013), National Implementation Programmes (NIP) http://www.helcom.fi/BSAP/Implementation/en_GB/Implementation/

HELCOM (2013a), The 2013 HELCOM Ministerial Declaration,
http://helcom.fi/Documents/Ministerial2013/Ministerial%20declaration/2013%20Copenhagen%20Ministerial%20Declaration%20w%20cover.pdf

HELCOM (2013b), Master Blueprint, Category: Press release, 3.10.2013 19: 27 http://www.helcom.fi/news/Pages/Master-blueprint-ready-for-future-regional-actions-for-a-healthier-Baltic-Sea.aspx

HELCOM (2014), Baltic Sea Data and Map Service
http://maps.helcom.fi/website/mapservice/index.html

HELCOM (2014a), Baltic Sea Environment Proceedings No. 143: "Eutrophication status of the Baltic Sea 2007-2011". Concise Thematic assessment, 2014

HELCOM (2015), BALSAM Project 2013-2015: Possibilities for Synergies in Baltic Marine Environment. Monitoring and Recommendations to Improve Data Accessibility, Coherence and Compatibility to Enhance Capacity to Carry out Regional Assessments

http://helcom.fi/BALSAM%20publications/Baltic%20marine%20monitoring,%20data%20management%20and%20infrastructure.pdf

Institute for European Environmental Policy (IEEP)

IEEP (2005), Cross-compliance in the CAP, Conclusions of a Pan-European Project 2002-2005
http://www.ieep.eu/assets/248/conclusionsenglish.pdf

IEEP (2009), A proposal for a new EU Common Agricultural Policy
http://cap2020.ieep.eu/vision/NGO-CAP-proposal.pdf

IMO

IMO, Particularly Sensitive Sea Areas
http://www.imo.org/ourwork/environment/pollutionprevention/pssas/Pages/Default.asp

International Convention for the Prevention of Pollution from Ships (MARPOL)
http://www.imo.org/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx

MARPOL, Annex IV
http://www.imo.org/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Prevention-of-Pollution-from-Ships-(MARPOL).aspx

Institut für Biodiversität – Netzwerk e.V.

Ökosystemarer Ansatz
http://biodiv.de/biodiversitaet-infos/konvention-ueber-die-biologische-vielfalt.html

MARE

MARE Research Programm
http://www.mare.su.se

NASA

NASA, Earth Observatory
http://earthobservatory.nasa.gov/IOTD/view.php?id=44677

OECD

OECD (1993) Agricultural and Environmental Policy Integration: Recent Progress and New Directions. OECD, Paris.

OECD (1999), Environmental Indicators for Agriculture, Vol. 1, Concepts and Framework, OECD, Paris http://www.oecd.org/dataoecd/24/37/40680795.pdf

OECD (2011), Agricultural Policy Monitoring and Evaluation 2011, OECD Countries and Emerging Economies, OECD, Paris

PROBALT

The PROBALT Project number: 03F0498A

Swedish Ministry of Environment (2000), the Baltic –Our Common Sea, Environment Report No 3, April, Swedish Ministry of Environment, Stockholm

Project Save Our Baltic Sea

About the Cod http://www.saveourbalticsea.com/index.php/tv-a-film/for-cods-sake/about-the-cod

Role of Cod
http://www.saveourbalticsea.com/images/stories/files/161_Role_of_cod_summary

The United Nations

United Nations (1992), Agenda 21: The United Programme of Action from Rio, UN, New York

UNCLOS
www.un.org/depts/los/index.htm.

The United Nations Convention on the Law of the Sea (1982), UNCLOS, Article XII: www.un.org

UNEP

Baltic Sea http://www.unep.org/regionalseas/programmes/independent/baltic/default

Cities and Coastal Areas, http://www.unep.org/regionalseas/about/default.asp

WWF

WWF (2007), Baltic Sea Action Plan Short on Actions, available at http:// wwf.panda.org/who_we_are/wwf_offices/finland/news/?117500/Baltic-Sea- action-plan-short-on-actions

WWF (2011), Environmental NGO (Coalition Clean Baltic and World Wide Fund for Nature) Statement for HELCOM High-Level Meeting on the HELCOM Baltic Sea Action Plan, http://www.wwf.fi/wwf/www/uploads/pdf/ccb_wwf_joint_statement_ helcom_high_level_segment_9_march_2011.pdf

WWF Overfishing in the Baltic Sea
http://wwf.panda.org/what_we_do/where_we_work/baltic/threats/fishing/

WWF (2015), Threat of Eutrophication to the Baltic Ecoregion" http://wwf.panda.org/what_we_do/where_we_work/baltic/threats/eutrophication/

Appendix

Appendix 1 Interview Questionnaire

1. What do you think is the main cause of marine eutrophication in the Baltic Sea?

2. Is eutrophication in the Baltic Sea regional or rather European problem?

3. Does the problem of marine eutrophication have a weight on the European environmental agenda?

4. What is the role of HELCOM and the European Directives in the process of solving the eutrophication problem?

5. Why the CAP is not improving its guidelines related to the eutrophication problems?

6. How to effectively solve marine eutrophication?

Appendix 2 List of the Conferences and Workshops

Conferences

1. "A Greener Agriculture for a Bluer Baltic Sea", 27-28 August 2013 in Helsinki, Finland
2. 2. PartiSEApate Conference

   Baltic Maritime Spatial Planning Forum, 17-18 June 2014, Riga, Latvia

Briefings

1. Landwirtschaft und Fischerei" Europäische Bewegung Deutschland in Kooperation mit Bundesministerium für Ernährung, Landwirtschaft und Verbraucherschutz, 19 Dezember 2013, Berlin, Germany

Workshops

1. Workshop on "Baltic Sea region climate change and its implications", organized by the Helsinki Commission, held on 5-6 February 2013, Warnemünde, Germany
2. Workshop "EU Strategy for the Baltic Sea Region Information Day"

   27 March 2014 in Szczecin, Poland
3. "Soils and Seas in the Nexus", 20 April 2015, Berlin Germany

   Linking Sustainable Land Management and the Coastal and Marine Environments

A Scoping Workshop Jointly Organized by the Institute for Advanced Sustainability Studies (IASS) and the European Commission – Joint Research Centre (JRC) together with the H2020 INSPIRATION project