FIIA REPORT 31

# Governing the blue-green Baltic Sea

*Societal challenges of marine eutrophication prevention*

Mia Pihlajamäki & Nina Tynkkynen (eds.)

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# Executive Summary

The PROBALT report identifies the challenges of Baltic Sea eutrophication governance and scrutinises past, ongoing and planned efforts to meet these challenges at the European Union and national levels, as well as within the Baltic Sea regional cooperation regime HELCOM. Considering that the Baltic Sea has been the focus of environmental management efforts for 40 years, it is surprising that in reality the ecological state of the Baltic Sea is not improving. This implies that protective efforts such as international and national policies and regulations, as well as their implementation, have not been effective enough.

The report focuses on eutrophication, which is currently regarded as the most serious ecological problem for the whole Baltic Sea. The management of Baltic Sea eutrophication faces challenges from complex ecological characteristics of the eutrophication problem, societal differences across the Baltic Sea region, and the multitude of actors involved in governance efforts.

Following on from these challenges, the awareness of the problem of eutrophication, as well as national and sub-national aspirations and the ability to address eutrophication in national policies and strengthen policy implementation, varies across the region. Traditionally, Sweden and Finland have been regarded as forerunners when it comes to combating eutrophication, whereas the Eastern parts of the region have been less active in their environmental efforts. Recently, however, differences in the activities of countries have narrowed, for instance due to EU enlargement and the respective environmental policy unification across the Baltic Sea region. Also, Russia has demonstrated increased interest in the environmental protection of the Baltic Sea.

Nevertheless, the lack of a legal Baltic Sea protection arrangement to cover all the coastal countries makes the situation intricate. On the basis of the case studies, we argue that in order to improve Baltic Sea eutrophication governance, four sets of measures need to be urgently undertaken at various governance levels ranging from international to local. These four sets of measures are:

## *1) A macro-regional, binding, cost-effective and fair agreement regarding the prevention of eutrophication*

It is evident that some sort of a transnational "primus motor" for protection is needed. At the moment, two main alternatives for such a motor seem to stand out: the EU and HELCOM. Following the EU enlargement of 2004, the role of the EU in eutrophication governance changed significantly, as most of the riparian countries are now legally bound to implement various EU directives that either directly or indirectly affect the state of the sea. This enforcement power gives the EU the potential to enhance eutrophication prevention significantly within the eight riparian countries. However, from a pan-European perspective, the Baltic Sea environment appears to be a rather marginal problem. As a result, many EU directives are too lax for the environmentally sensible Baltic Sea. Moreover, the exclusion of Russia and other relevant countries within the catchment area is considered the EU's biggest weakness as an international actor in the Baltic Sea region. With regards to the regional level arrangement – the HELCOM regime and the Baltic Sea Action Plan (BSAP) agreed upon within its framework – a number of problems also remain. Firstly, and in relation to international law, the BSAP and the underlying Helsinki Convention are not binding agreements: they can produce only recommendations. Accordingly, countries have the leeway to burnish their image by committing themselves to the BSAP ostensibly, and by taking only a few practical steps towards its implementation. As is shown by the case studies, the recommendations put forth by HELCOM do not necessarily materialise in national regulation. Secondly, in stemming merely from ecological principles, the BSAP leaves socio-economic and political questions related to the division of protective responsibilities unsolved; cost-effectiveness and net benefits are discussed implicitly, if at all. The large differences in the country-wise reduction targets lead to huge differences in abatement costs. When measured in monetary terms, improvement in water quality makes some countries better off or at least allows them to break-even, but Poland, Russia, Latvia and Lithuania face large negative net benefits. Is it any wonder, then, that commitment to abatement measures is difficult to achieve?

Consequently, in order to motivate the parties to implement the planned measures of protection, a legally binding agreement is needed. Moreover, the agreement needs to take into account the financial standing of the countries and take the socio-economic heterogeneity of the Baltic Sea countries into account. In other words, to create incentives for implementation, the allocation of responsibilities should be cost-effective and fair. Mechanisms such as nutrient trading (see below), for instance, are among the possible solutions needed to improve these aspects.

## *2) The spatial and temporal specification of policies/ measures*

Currently, the region-wide frameworks (introduced by HELCOM and the EU) lead to inefficient protection policies at the national level – namely the inaccurate allocation of responsibilities and, ultimately, the waste of funds targeted at protection. Therefore, we argue that, due to the multiplicity of spatial and temporal scales relating to the problem of eutrophication (i.e. the regionality of the problem), a governance framework that takes the whole system as a starting point does not work. Instead, the specification of policy instruments and forms of implementation is needed for agriculture in particular, the loads of which depend on the local features of individual field parcels. To a certain extent, administrative borders need to be neglected – not by enlarging the framework, but by adjusting them: protective policies should only be taken where the benefits are greatest. Spatial specification implies a bottom-up approach which focuses on specific situations and differentiating management practices alongside the strong involvement of relevant stakeholders. This approach better aligns the various EU and national policies, the recommendations put forth by HELCOM and the practical activities taking place at various levels.

Furthermore, temporal specification, i.e. the definition of intermediate steps needed to achieve final goals, would facilitate the implementation of policies and improve the effectiveness of Baltic Sea protection. Such temporal dimension is built into Nordic Environment Finance Corporation's (NEFCO) suggestion to develop a nutrient trading system in the Baltic Sea, for instance.

Starting nutrient trading between point sources would quickly bring reductions in nutrient loads – in contrast to the inevitably slow progress achievable in agriculture. Nutrient trading has two favourable features: the initial allocation of load permits also works as a means by which to redistribute net benefits more evenly, and the reduction in nutrient loads is achieved with the lowest possible costs.

### *3) The more effective and thorough integration of different policy sectors*

Various land-based activities undertaken across the catchment area either directly or indirectly affect the state of the sea. Therefore, the state of the Baltic Sea cannot be improved by exclusively focusing on marine/water protection, but protective activities should be closely linked to all societal activities in the catchment area. When the land-based activities affecting the problem of eutrophication are targeted, many policy sectors become intertwined with the environmental policy sector. The usage and nurturing of the Baltic Sea thus exceeds the administrative borders – not only in geographical terms but also in terms of policy sectors. This indicates that the protection of the Baltic Sea from eutrophication should be seriously taken into account in most administrative branches and in every policy sector, both at the national level and within the EU. Most importantly, the environmental effects of agricultural policy, which actually undermine the achievements of agri-environmental policy regarding water protection, call for exhaustive reform of the former. In addition, trade-offs and synergies between environmental policy and industrial, energy, transport and fisheries policies should be more systematically taken into consideration.

### *4) Increasing publicity, environmental awareness and deliberative democracy*

In order to achieve the good ecological status of the Baltic Sea by any given date, it is of crucial importance to strengthen environmental

awareness concerning Baltic Sea eutrophication – especially in Germany, Poland, the Baltic States and Russia. This could be done by increasing the publicity and media attention concerning the problem of eutrophication – as has been done in Sweden and Finland in recent years. Higher environmental awareness opens up possibilities for public pressure, everyday activism and greening of business culture – all of which are increasingly important environmental policy-making instruments. Increased awareness concerning various double benefits that may emerge from combating eutrophication could convince the public that the problem is worth acting upon. Positive effects could be expected, both in regard to other environmental objectives such as climate protection and biodiversity and in terms of socio-economic interests – which include improved drinking water quality, cost savings through the increase of fertiliser efficiency and improved conditions for the tourism and fisheries sectors.

Finally, the importance of deliberation concerning environmental issues in general and stakeholder participation in the definition of relevant environmental policies and activities in particular, cannot be exaggerated. In order to improve Baltic Sea protection, scientific knowledge and respective rationalities need to be complemented by the experience and knowledge of relevant stakeholders at all levels of governance.

# 1. Introduction

Mia Pihlajamäki and Nina Tynkkynen

The concern over the ecological state of the Baltic Sea reached broad publicity around the time of the United Nations Conference on the Human Environment, held in Stockholm in 1972. Two years later, regional cooperation on the protection of the Baltic Sea was institutionalised by signing the Convention on the Protection of the Marine Environment of the Baltic Sea area, i.e. the Helsinki Convention, governed by the Helsinki Commission (HELCOM). Since then, the Convention has shaped the development of Baltic Sea protection policies in the coastal countries. Considering that this cooperation is often referred to as a success story and model for other transnational environmental protection regimes[1], it is surprising that, in reality, the ecological state of the Baltic Sea is not improving. In particular, this applies to eutrophication – the accelerated enrichment of nutrients in the water – which is regarded as the Baltic Sea's most serious ecological problem at the moment[2]. Examined from close range, environmental governance[3] of the Baltic Sea thus appears to be a less successful arrangement: protective efforts put forth by regional environmental cooperation have not materialised in national policies, regulations and implementation effectively enough.

Baltic Sea eutrophication governance is shaped by three major challenges. The first challenge stems from the ecological characteristic of the problem; the particularities of the Baltic Sea in relation to hydrography and water circulation, for instance. The second challenge is rooted in the varying societal history and non-simultaneous socio-economic development of the Baltic Sea countries, while the third

[1] Joas et al., 2008; VanDeveer, 2004; Haas, 1990

[2] Kuosa et al., 2006

[3] The concept of environmental governance refers to a certain form of environmental management that includes not only governmental actors but a wide range of other actors. In transnational contexts, environmental governance often implies an alternative system of governing which is not based on administrative units or state borders, see e.g. Jasanoff and Martello, 2004; Joas, Jahn and Kern, 2008. We use the concept in a practical way throughout the report to indicate the multitude of levels of actors, with their intersecting interests and views, that are participating in Baltic Sea environmental management.

challenge is created by the nature of the sea as an international common property resource, on the one hand, and the multiple levels of actors involved, on the other. These challenges create asymmetries that bring about intricacies between sub-national and national interests and international aims, thus resulting in overlapping and ineffective, sometimes even contradictory, governance efforts.

There is an underlying belief that environmental policy-making is not merely about producing scientific knowledge regarding ecological processes and transforming this knowledge into effective policy measures on a rational basis. Instead, it is ultimately a social activity conditioned by aspects of politics, social interaction and conflicting rationalities and interests; which leads this report to scrutinise Baltic Sea eutrophication governance at three institutional levels: the level of the European Union, the regional (HELCOM) level, and at the level of the coastal countries.

The report aims to critically reflect on the aforementioned governance challenges and past, ongoing and planned efforts to meet these challenges in each institutional context. The main focus, however, is on the analysis of governance failures. By illustrating the existing situation in detail and analysing the factors conditioning successful protective efforts in each context, the ultimate aim of the report, consequently, is to find ways to improve Baltic Sea eutrophication governance. In addition, the report introduces nutrient trading as an instrument for the more effective protection of the Baltic Sea from eutrophication.

The report begins by introducing and analysing regional efforts (HELCOM) to prevent eutrophication of the Baltic Sea. It then proceeds to the analysis of the capacity of the European Union to address Baltic Sea eutrophication, after which the challenges of eutrophication governance in Russia, the Baltic States, Poland, Germany, Sweden and Finland are scrutinised. Finally, as a way of promoting the implementation of the BSAP, a nutrient trading scheme is introduced. The analyses have benefited from interviews with various actors and stakeholders relevant to eutrophication abatement on each level and in each country[4]. Before entering into the analyses,

[4] Interviewees include: Members of the Parliament, officials in the government, EU agencies and relevant ministries, members of local administrations, representatives of interest groups (e.g farmer's unions) and NGOs, and eutrophication experts in academia, research institutes, HELCOM and the EU.

a short introduction to the challenges created by the ecological and societal "anatomies" of the Baltic Sea eutrophication, and that of multilevel governance, is given.

## *The ecological anatomy of Baltic Sea eutrophication*

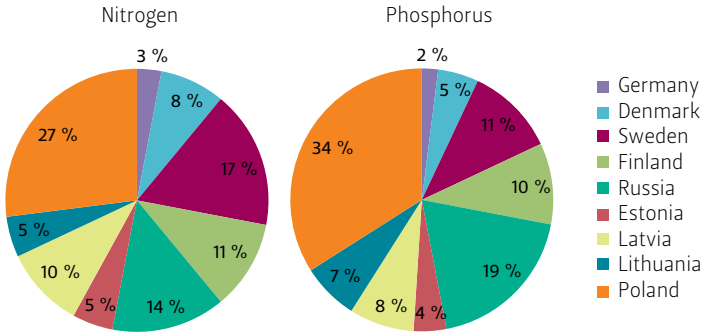
The Baltic Sea is a shallow inland sea and the second largest brackish water area in the world. In 2005, the International Maritime Organisation (IMO) recognised the vulnerability of the Baltic Sea by granting it the status of a Particularly Sensitive Sea Area (PSSA). Its unique characteristics, which include a large drainage basin, long renewal times, strong stratification, variable bottom topography, meteorological conditions, and heavy anthropogenic influence, make the living conditions for marine life challenging. These characteristics also make the Baltic Sea very sensitive to severe environmental problems in general, and eutrophication in particular.

Eutrophication is due to extensive anthropogenic nutrient, namely nitrogen and phosphorus, input from the large catchment area, which contains over 85 million people. The most important point-sources of the nutrients are municipal wastewater, industry and fish farming, while diffuse sources originate from agriculture, dispersed settlement and forestry. Various sources, for example emissions from transport, energy production and agriculture, also contribute to the atmospheric deposition of nitrogen. In addition, one (increasingly) significant source of phosphorus is internal load. Figures 1.1 and 1.2 below show that Poland and Russia are the biggest sources of waterborne phosphorus and nitrogen, while Germany and distant sources (i.e. outside the coastal countries) are responsible for 50 per cent of the airborne nitrogen deposition.

A reduction in nutrient input from many of the major point sources (e.g. urban wastewater) has been achieved during the last few decades, but municipal wastewater is still the main source of phosphorus and the second largest source of nitrogen[5]. Currently, and especially in the future, the most challenging task is to reduce nutrient input from diffuse sources (e.g. from agriculture), which

[5] HELCOM, 2009

are much more complicated to control than point sources – where technological solutions are easy to implement.




The coastal countries' share of the total waterborne nitrogen and phosphorus input into the Baltic Sea between 2001 and 2006.[6]

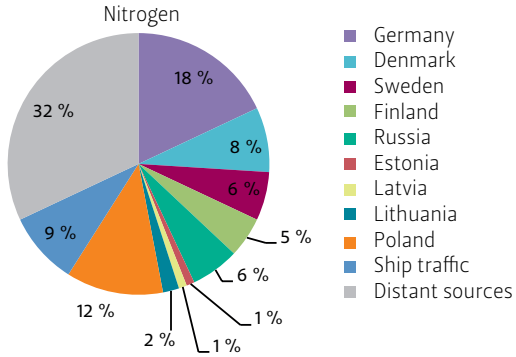



Figure 1.2. Different sources of atmospheric deposition of nitrogen[7]

Excessive amounts of nutrient input to the sea increase primary production, which leads to negative impacts such as toxic algal blooms and oxygen depletion. A lack of oxygen in the bottom waters releases phosphorus from the sediment to the water column,

[6] HELCOM, 2009

[7] HELCOM, 2009

thereby contributing to the total nutrient input (i.e. internal cycle). Hydrographical characteristics of the Baltic Sea restrict the vertical and horizontal mixing of water, thus exacerbating the problem. Moreover, as the water exchange between the Baltic and the North Sea is very limited, change, i.e. overcoming eutrophication, is possible only on a long-term scale[8].

The Baltic Sea was already considered one of the most polluted seas in the world by the beginning of the 1970s. Eutrophication as a phenomenon was not only restricted to local coastal waters; however it was only recognised as a large scale Baltic Sea problem later[9]. Eutrophication leads to significant social effects: it restricts recreational activities, hampers livelihoods such as fishery and tourism, and may also cause health problems. At present, most of the sea is affected by eutrophication, but the nature and severity of the problem vary between the different basins of the sea.

Due to (anti-clockwise) water circulation, nutrient loads are transferred across sub-regions to the Baltic Proper and the coastal waters of the other countries. Therefore, due to their location, major polluters (see Figure 1.1), i.e. Poland and Russia, are not greatly affected by their own nutrient loads in their territorial waters. In other words, major polluters benefit less from their own nutrient abatement measures and costs than countries that pollute less, such as Finland and Sweden.

Although eutrophication is now recognised as a real problem for the Baltic Sea, the debate over the phenomenon lacks a certain definitional, ideological and symbolic clarity characteristic for many other environmental problems, such as poisonous substances. According to the Flash Eurobarometer on water (2009)[10], 78 per cent of Finns and 65 per cent of Swedes consider eutrophication to be one of the main threats to the water environment in their country, while in most of the other coastal countries the level of concern is above the EU average of 30 per cent; in Lithuania and Poland it is 27 per cent and 10 per cent respectively[11]. Although widely studied, the problem

[8] For more information see, for example, HELCOM, 2009

[9] Elmgren, 2001

[10] Flash Eurobarometer, 2009

[11] *Finland (78%), Sweden (65%), Estonia (45%), Denmark (40%), Latvia (37%), Germany (32%), Lithuania (27%), Poland (10%), EU27( 30%)*

of eutrophication is largely invisible and comprehends diverse time-lags and uncertainties, making the indication of contexts, causes and processes of eutrophication challenging.

## *The societal anatomy of Baltic Sea eutrophication governance*

The Baltic Sea encompasses nine coastal countries (Germany, Poland, Lithuania, Latvia, Estonia, Russia, Finland, Sweden and Denmark), and its catchment area constitutes five more (Czech Republic, Slovak Republic, Ukraine, Belarus and Norway). During the 20th century, the Cold War separated the region into two competing ideological and politico-economic influence-spheres – the Soviet-influenced socialist Eastern countries and the Western democracies – for nearly five decades. As a result, huge differences in socio-economic, political and administrative systems, crystallised in societal activities such as cultures of public participation, for instance, have shaped the institutional and economic capacities of the Eastern and Western countries of the Baltic Sea. These differences have the potential to cause discussion and distrust, rather than unity of purpose[12]. The unsettled historical burden reflects the relationship between Russia and the formerly Soviet-ruled Baltic states in particular, and hinders the opportunities of new fruitful bilateral and multilateral communication when it comes to environmental issues, as in all fields of cooperation.

Consequently, the non-simultaneous societal development of the Baltic Sea countries has implications on what kind of societal effects environmental problems, such as eutrophication, have and how these problems are managed. On the one hand, the Western countries of the region – Sweden, Finland and Denmark (and Germany) in particular – are often referred to as "leaders" in environmental policy-making[13]. For these countries, environmental degradation has been among the top concerns since the early 1970s, which has been reflected in their national policies and regulations in relation to the management of

[12] cf. Joas, Jahn and Kern, 2008: 4

[13] e.g. Liefferink and Andersen, 1998

the Baltic Sea. On the basis of their own domestic regulations, they have promoted the adoption of stringent environmental policies at the international (and the EU) level, too. On the other hand, in the Eastern parts of the region severe socio-economic and political instabilities bypassed the environment for a long time, giving the issue only low priority and political weight.

Nutrient load, which during the 1990s and early 2000s decreased in Eastern countries due to economic transition and the respective decline in agriculture's share of total production[14], has turned to re-growth because of the recovery of agricultural activities resulting from the EU membership of the Baltic States and Poland, as well as agricultural reforms in Russia. Moreover, EU regulations allow the production to be more fertiliser-intensive than it used to be[15]. Thus, despite the new environmental regulation, which in recent years has rapidly been integrated into national policies in the new EU member countries, the revival of agricultural production in the Eastern part of the Baltic Sea is considered to be one of the greatest emerging threats to the Baltic Sea.

Each Baltic Sea country carries out its national environmental policies using nationally agreed foci that influence local and municipal level policies and the concrete implementation of protective measures. These policies vary across the region, although the fact that eight of the nine coastal countries are currently EU members indicates policy unification – especially in future.

In addition to politico-administrative traditions, differing emphases of national water protection policies and their implementation can in part be explained by different levels of public awareness regarding the problem of eutrophication. Despite differing emphases, the main focus of national water protection policies throughout the region has been on urban wastewater treatment and agriculture. It is also very likely that they will continue to be the focal policy issues in the future, as they have the most reduction potential (to date); besides, both sectors are directly affected by EU policies. Problems relating to the implementation policies and measures targeting nutrient loading from urban wastewater treatment and agriculture are discussed in detail in each chapter of this report.

[14] e.g. Löfgren et al., 1999; Goetz et al., 2001

[15] e.g. Expert, Finnish Environment Institute, September 2009

In addition to governmental actors shaping national policies and regulations, numerous interest groups, including the science community, the enterprise sector and non-governmental organisations (NGOs) such as environmental organisations and farmers' organisations, are voicing their interests regarding the use and nurture of the Baltic Sea in various arenas. Since the collapse of the Soviet Union in 1991, a multitude of voluntary multi-lateral partnerships, organisations and projects around the Baltic Sea, such as the Union of the Baltic Cities, have tried to promote effective environmental governance in the area. In recent years, totally new approaches have also evolved in the region. To a certain extent, their appearance reflects the frustration of some actors towards slow and inefficient governmental processes. For example, new private foundations (e.g. the John Nurminen Foundation, the Baltic Sea Action Group and Baltic Sea 2020) are engaging private donors in environmental protection work by suggesting new approaches, such as principles of public-private-partnership. In short, by introducing several new forums for sustainable decision-making, the region has become widely known as a pioneer of new modes of governance[16].

## *The challenge of multi-level eutrophication governance*

The sea as a common property resource implies that it can be freely utilised by each and everyone, while no-one has any binding obligation to protect and nurture it. There is no supranational legislation for the environmental protection of the Baltic Sea as a whole, which makes environmental governance of the Baltic Sea a tricky task and emphasises the need for various kinds of cooperative efforts.

Despite the lack of obligation to protect, the Baltic Sea has acted as an arena for environmental cooperation for decades. Interestingly, during the Cold War environmental cooperation was used to foster trust between countries that belonged to opposing military alliances, because environmental protection as such could not be deemed to involve questionable motives[17]. Over the years, the Baltic Sea region

[16] Joas, Jahn and Kern, 2008: 4–5

[17] Many authors, e.g. Darst, 2001; Räsänen and Laakkonen, 2008: 46.

has evolved into an area of multi-level governance, with numerous international, regional and bilateral efforts made to protect and improve the environmental quality of the sea and its coastal areas.

The countries around the Baltic Sea are contracting parties into several international agreements regulating the use of the sea; among those significant for the prevention of eutrophication are the global MARPOL 1973/78 International Convention for the Prevention of Pollution from Ships, and the abovementioned Helsinki Convention (1974/1992). Within the framework of HELCOM, the Baltic Sea Action Plan (BSAP), signed in 2007, is supposed to shape the future measures of Baltic Sea protection from, for example, eutrophication. Most significantly, a number of EU policies and directives, such as the Urban Waste Water Directive (UWWTD), the Water Framework Directive (WFD) and the Marine Strategy Directive (MSD), have implications on Baltic Sea eutrophication governance – especially since the enlargement of the EU in 2004.

The challenge of multilevel environmental governance of the Baltic Sea stems from the multitude of actors involved. Three main policy levels influencing the management of the sea are the European Union, the regional level (HELCOM) and the national level. Aside from these levels, i.e. governmental and intergovernmental actors, there are numerous non-governmental actors and interests groups contributing to Baltic Sea environmental management. Together with the ecological and societal "anatomies" of the problem of eutrophication, the multitude of actors implies that national and sub-national interests vary across the region. The fact that there is no legal Baltic Sea protection arrangement encompassing all the coastal countries, let alone the catchment area as a whole, makes the situation worse. Therefore, it is evident that some sort of "primus motor" for protection is desperately needed. At the moment, two main alternatives for such a motor stand out: the EU and HELCOM.

As for the EU, its enforcement power gives it the potential to enhance eutrophication prevention significantly in eight of the nine coastal countries. At the moment, however, its relevant policies are too lax, as they apply to the Union in general and not, more specifically, to the vulnerable Baltic Sea. In addition, the exclusion of Russia and other relevant countries within the catchment area, including Norway, Belarus and Ukraine, is problematic. Cooperation with these countries is a challenge the EU cannot afford to ignore.

The HELCOM regime, in turn, is based on the (voluntary) participation of all nine coastal countries. Recommendations put forth by the regime are derived from mutual agreements achieved by joint deliberation. These recommendations, however, are not legally binding, and as a result the role of HELCOM in the protection of the Baltic Sea has been questioned – particularly after the latest EU enlargement. While the HELCOM member countries hold the key, given they are the main source of funding needed to keep it functioning, the future of HELCOM remains unclear.

# 2. The future of HELCOM: adaptation or abolition?[1]

Nina Tynkkynen

Since 1974, the Helsinki Convention on the Protection of the Marine Environment of the Baltic Sea Area and its governing body the Baltic Marine Environmental Protection Commission, also known as the Helsinki Commission or HELCOM, have guided the efforts of all littoral countries in the protection of the marine environment of the Baltic Sea[2]. During its decades in existence, HELCOM has encouraged extensive cooperation between the coastal states as well as governmental and non-governmental actors, maintaining a large network of environmental policy advocacy[3]. This explains the image of HELCOM as a success story[4], regardless of the minor positive impact it has on the ecological state of the sea.

The future of HELCOM seems to depend on the success of the implementation of the Baltic Sea Action Plan, or BSAP, which was agreed by HELCOM member states in 2007. The BSAP aims to restore the good ecological status of the Baltic marine environment by 2021[5], although so far, most HELCOM states seem somewhat reluctant to realise the plan in full. There are a number of evident reasons for this reluctant stance, including the plan's high costs, an unbalanced allocation of responsibilities (see chapter 10, p. 113–115), and, perhaps most significantly, its partial overlap with the relevant EU regulations. In short, HELCOM now stands at a crossroads whereby the earlier status may prove difficult to preserve. Its role and status are challenged by the EU, particularly in the fields of agriculture and fisheries (see chapter 3); however, the EU does not cover the entire

[1] In addition to policy documents, reports and other literary material, this chapter has taken advantage of interviews made by the author and Mia Pihlajamäki with Finnish marine experts and civil servants in 2009–2011, and by Paula Schönach with Swedish experts and civil servants in January 2011.

[2] see Räsänen and Laakkonen, 2008; HELCOM, 1993a

[3] see VanDeveer, 2011: 41

[4] e.g. Haas, 1990

[5] HELCOM, 2007

catchment area, making it relatively toothless when it comes to regulating the Baltic Sea as a whole.

Consequently, the re-evaluation of the role, strategy and policies of HELCOM vis-à-vis other actors with regards to Baltic Sea environmental governance are needed. In this chapter, the current challenges facing HELCOM are explicated in more detail; some suggestions of how these challenges might be overcome are given, too. As in the overall report, the focus is on eutrophication prevention.

## *The structure of HELCOM*

HELCOM is an intergovernmental organisation of which the European Commission and all nine coastal states are members. The chairmanship of HELCOM (Sweden, 1 July 2010 – 30 June 2012) rotates between the member countries. The working structure of HELCOM, supported by a secretariat, consists of meetings of the Helsinki Commission, the Heads of Delegation and five main working groups. Minor meetings involving participants from various organisations around the region are regularly organised, and ministerial level meetings are occasionally held, too.

The annual meetings of HELCOM are attended by representatives of public and NGO organisations which have applied for observer status. Participants of national delegations, nominated by the member countries, work for the public sector or research and participate on the basis of their expertise[6]. HELCOM and its working groups operate on a "one country, one vote" principle, and decisions must be unanimous.

HELCOM's five main groups implement policies and strategies and propose issues for discussion at meetings. The groups include the monitoring and assessment group (MONAS) and the land-based pollution group (LAND). Other projects and ad hoc groups can also be established[7]. Some topics are addressed by special platforms: in order to to combat eutrophication, there is an agriculture and

[6] see VanDeveer, 2011: 41

[7] HELCOM, 2011b

environment forum that aims to enhance dialogue between the relevant agricultural and environmental authorities.

Since the early 1980s, HELCOM has adopted some 200 recommendations; over 100 are still part of ongoing implementation and assessment efforts. Recommendations are drafted in HELCOM working groups and then decided upon at HELCOM meetings. The majority are of a highly scientific and technocratic nature, and focus on specific industrial processes or on technical details such as permitting and licensing procedures, and monitoring and assessment practices[8]. As of 2007, the Baltic Sea Action Plan (BSAP) forms the cornerstone of HELCOM's activities (see below).

The elaboration of internationally harmonised assessments of the Baltic Sea[9] is central to HELCOM's work. The main objective is to provide policy-relevant information for various actors at national, regional and international levels and to raise general public awareness[10]. With regard to eutrophication, HELCOM has prepared four pollution load compilations that assess nutrient loads; the fifth is currently being prepared[11].

## *HELCOM and eutrophication prevention*

### First steps

While the first practical measures were taken to restrict the use of certain hazardous substances and to address the negative environmental impacts of shipping, eutrophication only gradually rose to prominence in HELCOM. The first two assessments of pollution (1980 and 1987) recognised eutrophication but considered it to be only partially caused by anthropogenic nutrient loads[12]. The third assessment (1989–1993) recorded the increase of nutrient concentrations in most parts of the sea and recognised the possible influence of nutrients in runoff from agriculture on eutrophication[13].

[8] VanDeveer, 2011: 41

[9] e.g. HELCOM, 1980; HELCOM, 2009

[10] HELCOM, 2009: 13

[11] Coming out later this autumn (2011)

[12] HELCOM, 1980; 1987

[13] HELCOM, 1996

As a result, various recommendations aimed at limiting nutrient pollution from municipal wastewater treatment plants, agriculture and industry were adopted in the late 1980s[14]. A few years later, recommendations concerning the reduction of air emissions from ships and nutrient discharges from fish farming and forestry were adopted.

A ministerial declaration in 1988 set a target of reducing nutrient discharges by 50 per cent "as soon as possible but not later than 1995"[15]. This ambitious declaration had many deficiencies but still spearheaded a fundamental shift, from a reactive approach to a proactive approach based on the precautionary principle[16].

Following the dissolution of the Soviet Union and developments in international environmental and maritime policies, a new Helsinki Convention was signed in 1992[17]. It was expanded to cover inland waters, the water of the sea itself, and the seabed. The revised convention was more explicit with regards to eutrophication, with the new Annex III specifically addressing the need for a reduction in nutrient loads originating from municipal wastewater and agriculture. In 1992, the Joint Comprehensive Environmental Action Program (JCP) listed over 130 "hot spots" within the Baltic Sea catchment area[18]; most of the hot spots concerned deficiencies in wastewater treatment. The JCP facilitated cooperation between coastal countries and international financial institutions (IFIs) within environmental projects in the newly independent states. As a result, a number of urban and industrial hot spots were deleted from the list during the 1990s[19].

### The BSAP

The Baltic Sea Action Plan was adopted at a ministerial meeting in Krakow, Poland, in November 2007[20]. It is based on the Ecosystem approach to the management of human activities that influence the

[14] HELCOM, 2009: 89

[15] HELCOM, 1988

[16] Roginko, 1998: 582

[17] HELCOM, 2008; the convention entered into force in 2000

[18] see Roginko 1998: 583

[19] Auer and Nilenders, 2001

[20] HELCOM, 2007

marine environment, which implies that the protection of the sea is no longer seen as an event-driven pollution reduction which should be taken sector-by-sector, but the starting point is a good ecological status within the ecosystem itself, regardless of administrative borders[21].

The ultimate aim of the BSAP is to achieve a "Baltic Sea in Good Environmental Status" by 2021. Having the "Baltic Sea unaffected by eutrophication" is a goal that is defined by five specific ecological objectives: concentrations of nutrients close to natural levels, clear water, a natural level of algal blooms, natural distribution and the occurrence of plants and animals, and natural oxygen levels. The plan sets quantitative nutrient input ceilings: phosphorous and nitrogen inputs to the Baltic Sea must be cut by about 42 per cent and 18 per cent respectively.

The BSAP sets provisional country-wise annual nutrient input reduction targets for both nitrogen and phosphorus (see table 2.1). The allocation takes into account measures that have already been taken by the countries. The main bulk of reductions are addressed to the Baltic Proper, while the Gulf of Bothnia is not in need of reductions because of its good ecological status.

[21] Backer et al., 2010

Table 2.1. Nutrient reduction requirements for nitrogen and phosphorus in the BSAP[22]

| | Phosphorus (tonnes) | Nitrogen (tonnes) |
|---|---|---|
| Denmark | 16 | 17,210 |
| Estonia | 220 | 900 |
| Finland | 150 | 1,200 |
| Germany | 240 | 5,620 |
| Latvia | 300 | 2,560 |
| Lithuania | 880 | 11,750 |
| Poland | 8,760 | 62,400 |
| Russia | 2,500 | 6,970 |
| Sweden | 290 | 20,780 |
| Transboundary Common pool (Non-HELCOM countries) | 1,660 | 3,780 |

The BSAP puts special emphasis on diffuse sources, such as runoff from agricultural lands. The revision of Annex III, which concerns land-based sources, requires countries to optimise nutrient use and minimise nutrient fluxes in agricultural practices; common criteria for developing a HELCOM list of agricultural hot spots have also been agreed on. The BSAP also includes recommendations on substituting phosphorus in detergents, increasing phosphorus removal in municipal wastewater treatment plants to 90 per cent, and introducing on-site wastewater treatment for single-family homes, small businesses and settlements of less than the equivalent of 300 persons.

Countries have recently been preparing their National Implementation Programmes (NIPs), with a wide variation in the contents and structures evident; the Polish version has 107 pages, while Latvia's has just 12[23]. Most NIPs set general tasks and describe taken or planned actions and policies without introducing many practical measures for their actual implementation and funding. The German NIP does not even exist as such, but is based on other relevant national strategies. The HELCOM Ministerial meeting will evaluate the effectiveness of the NIPs in 2013.

[22] HELCOM, 2007: 9

[23] Helcom, 2011a

Although the BSAP is widely considered to be a joint regional policy with common objectives and actions to be implemented at the regional or national level, the plan distinguishes measures that require implementation at the EU or international levels[24]. The implementation of the EU WFD is considered to be among the most significant regulative measures needed to realise the BSAP. To ensure the integration of environmental concerns within agricultural policy, the EU members committed themselves to a joint submission of the EU CAP's revision process. The BSAP also encourages further cooperation, in order to initiate measures in non-HELCOM countries in the catchment area.

The main sources of BSAP funding are national budgets and EU structural and cohesion funds. The Trust Fund, managed by Nordic Environment Finance Corporation (NEFCO) and the Nordic Investment Bank (NIB), was also founded. The regional trading of nutrient emission rights was studied during the drafting of the BSAP but in the end it was omitted, as the parties wanted more time to consider its practical implications[25].

## *Challenges of HELCOM*

### Non-binding character

The main deficiency of HELCOM is that the Helsinki Convention itself and the recommendations it produces are not legally binding; sanctions or penalty systems for non-commitment are not included. In practice, then, implementation is up to the member states; the relevance of recommendations has therefore, in the majority of HELCOM countries, come second to national and/or EU policies[26].

Furthermore, the BSAP suffers from a lack of strong commitment. NGOs have harshly criticised the BSAP for watering down the ambitious actions originally included in the proposals of the plan[27]. The plan is now restricted to recommendations and leaves decisions on specific measures to national implementation plans[28]. Due to the

[24] Backer et al., 2010: 644

[25] Backer et al., 2010: 646

[26] Lääne, 2001

[27] WWF 2007; WWF 2011a

[28] Backer et al., 2010: 647

reluctance of the various parties to accept strong commitments, country-wise reduction targets were adopted as "provisional" only[29]. The BSAP has also been criticised because it includes a relatively large number of paragraphs referring to activities to be carried out in fora other than HELCOM. Consequently, significant progress cannot yet be detected; the NIPs[30] are also generally regarded as "vague and without funding"[31].

### "(Natural) science imperialism"

HELCOM has been criticised for appearing to be a stronghold of natural science, with its only task being *"to monitor only for monitoring, not in order to manage any problems"*[32]. Assessments conducted for HELCOM have traditionally concentrated on simulation modelling[33]. The diversity of information assessed in order to produce the BSAP demonstrates a certain shift from the mere compilation of data towards an open assessment of environmental quality[34]. Yet, the pollution reduction targets were defined by the MARE NEST model on purely ecological terms and without taking socio-economic realities into account – i.e. who should pay for the reductions and on what basis. Moreover, the strong emphasis on diffuse loads undermines the reduction potential of urban wastewater treatment and reflects the fact that marine research conducted for the BSAP has weak links with agricultural, political and economic research[35].

Furthermore, some marine researchers have even criticised the simulation model used by the MARE NEST to define the BSAP's goals, as the model is too aggregative and has a number of other problems[36]. It is also somewhat questionable that one institute – the Baltic Nest Institute – carried out all the relevant calculations. These deficiencies, and the lack of socio-economic scope in particular, significantly reduce the feasibility of the plan. Secondly, the need for further

[29] Expert, HELCOM, April 2011

[30] HELCOM, 2011a

[31] ENGO expert, Sweden, January 2011; HELCOM expert, Finland, April 2011

[32] University scientist, Finland, October 2009

[33] Professor, MTT Agrifood Research Finland, November 2009

[34] VanDeveer, 2011: 50

[35] University scientist, Finland, November 2009

[36] University scientist, Finland, October 2009

research is strongly emphasised within HELCOM[37]. Rather than on endless scientific research, the emphasis should instead be placed on the experience-based knowledge of those whose livelihoods are under threat[38].

HELCOM has noticed the importance of stakeholder participation by regularly organising stakeholder conferences since 2006[39], and by facilitating dialogue in the form of the special forums such as the agri-environmental forum. However, the possibilities of individual constituency participation are limited, and the extent to which their views are included in HELCOM's work is not always clear[40]. To put it bluntly, it sometimes appears as if placing strong emphasis on research is merely an efficient way to keep the secretariat in meaningful work, as well as a way of avoiding discussions regarding difficult political issues.

### Heterogeneity

A 2003 HELCOM overview notes that a significant difference exists between the then EU member states and the former socialist countries as to the implementation of HELCOM's recommendations[41]. Explanations for the low implementation levels of wastewater treatment measures, as well as other forms of environmental management in the former Soviet bloc countries, emphasise various institutional, cultural and financial obstacles[42] (see chapters 5 & 6). The heterogeneity of socio-economic and political conditions in the coastal countries has also hampered HELCOM's work. For example, for economic or administrative reasons, some countries have not always been able to send their representatives to HELCOM meetings. In Russia's case, the outright lack of data and reliable monitoring of nutrient loads, for example, has caused fundamental problems. For instance, when preparing the BSAP this limitation complicated the definition of the nutrient reduction targets[43].

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[37] e.g. HELCOM, 2009: 106; HELCOM, 2010

[38] Haila, 2008: 209

[39] Backer et al., 2010: 643–645

[40] HELCOM expert, Finland, April 2011

[41] HELCOM, 2003

[42] e.g. Peterson and Bielke, 2001; Tynkkynen, 2008

[43] Expert, Finnish Environment Institute, September 2009

The countries have pledged continued commitment to HELCOM, with Russian actors in particular regarding HELCOM as an important tool for the environmental management of the Baltic Sea (see chapter 4). A large number of HELCOM hot spots, such as the wastewater treatment of St Petersburg, have been cured on the Russian side in cooperation with neighbouring countries and IFIs[44]. Recently, Russia has been among the most active HELCOM countries: for example, it has prepared a decent NIP and pledged significant funding towards it[45].

According to Ing-Marie Gren[46], the overall costs of implementing the BSAP are calculated at €3,975 million, which is over €1,000 million more than that of the cost-efficient solution. The costs are highest for Russia, Poland and Lithuania, and lowest for Finland and Estonia. If the costs are compared to the financial standing of the countries (GDP, etc.), it appears even clearer that the financial strain of the implementation falls on the transition countries. Accordingly, transition countries, and Poland in particular, have no incentives to implement the BSAP.

To increase the feasibility of the plan, it is crucial to consider how the heterogeneity of HELCOM countries could best be taken into account when allocating responsibilities. Fairness is a crucial question: on the one hand, the "forerunners" in HELCOM have already done a lot for the Baltic Sea; on the other, the current generation should not be made to pay for the non-action of previous generations. Open deliberation is thus needed to solve problems rooted in history and socio-economic differences around the region. Efforts made to find ways of making eutrophication management socio-economically acceptable and cost-efficient by accomplishing a system of nutrient trading (see chapter 10), for instance, are initial steps towards this goal.

### Overlaps with EU regulations

EU membership has brought about a number of legislative obligations for eight of the nine HELCOM countries. Understandably, countries prioritise the fulfilment of EU legislation over HELCOM

[44] see Tynkkynen, 2008

[45] HELCOM expert, Finland, April 2011

[46] Gren, 2008

recommendations and the BSAP[47]. In some cases, the EU directives are not as strict as HELCOM recommendations: for example, the EU UWWTD gives EU member states a reason not to comply with the stricter HELCOM recommendation concerning the treatment of urban wastewater[48]. Then again, synergy with the relevant EU policies has grown with the adoption of the EU MSFD, for which the BSAP was heralded as a pilot project, and the EU Strategy for the Baltic Sea Region – the environmental part of which leans heavily on the BSAP.

The major problem with the closer integration into the relevant EU policies is that Russia, the only HELCOM country not regulated by EU legislation, does not want to see HELCOM as "an extended arm of the EU"[49]. It is worth noting that Russia remains the least integrated of the region's states when it comes to regional cooperation efforts of various kinds[50]; at the same time, however, HELCOM is well-known and well appreciated among (northwest) Russian officials and policy-makers. The "Russia-card" thus considerably adds to the importance of HELCOM.

A fundamental question defining the future of HELCOM is whether it will be able to legitimise and specify its role vis-à-vis the relevant EU policies, and avoid a situation in which the EU commission starts direct discussions with Russia, omitting HELCOM in the process. In the long run, HELCOM countries are probably not ready to continue paying high HELCOM fees for having merely a "nice discussion forum"[51]. In this respect, and bearing in mind the clear discrepancies of EU policies such as the CAP vis-à-vis environmental aims, regulation stricter than that of the EU would be aspiring. In that case, a binding convention would have to be accomplished, and this has proven unrealistic so far.

[47] E.g. civil servant, Ministry of the Environment of Sweden, January 2011

[48] The EU requires 80 per cent phosphorus purification for large cities, while HELCOM requires 90 per cent.

[49] Civil servant, Ministry of the Environment of Sweden, January 2011

[50] Selin and VanDeveer, 2004

[51] Expert, Finnish Environment Institute, December 2009

## *The way forward: from science to action*

During HELCOM's existence thus far, national eutrophication policies around the sea have been developed and a number of HELCOM hot spots have been successfully eliminated from the list. Despite the difficulty of estimating the exact role of HELCOM in the progress, regional efforts have certainly had, at the very least, an indirect impact. Yet, HELCOM is now at a crossroads whereby it is in charge of challenges that are not easy to complete. Closer integration of HELCOM to the EU instruments regulating the environmental state of the Baltic Sea is well on the way; at the same time, some sort of a special role for HELCOM should be found. To make the division of tasks between HELCOM and the EU clearer, the former could carry the main responsibility for the EU "Baltic Sea environmental foreign policy", not only in relation to Russia but to the whole catchment area, i.e. Belarus, Ukraine and the Czech and Slovak Republics, which are also highly significant for the Baltic Sea.

In addition, it appears clear that HELCOM should now move from accumulating scientific data and drafting new recommendations, towards supporting the implementation of the proposed actions. This seems important, as the future of HELCOM depends heavily on the fate of the BSAP. To facilitate this move, HELCOM needs to capitalise on the region's various policy networks by, for example, launching closer cooperation initiatives with diverse actors that facilitate the implementation of practical environmental projects[52]. Naturally, such change does not take place without the political and financial support of HELCOM' members and the EU.

[52] see e.g. BSAG, 2011; John Nurminen Foundation, 2011

# 3. The capacity of the EU to address marine eutrophication[1]

Tom Schumacher

Outgrowths of the 2004 EU Eastern enlargement suggest that at the international level, the main responsibility for the fight against Baltic Sea eutrophication now lies within the EU, and not HELCOM[2]. The Baltic Sea has almost become an internal EU sea; among its littoral states, only Russia remains a non-EU country. The EU comprises states that are not situated in the Baltic Sea region but contribute to nutrient inputs through atmospheric deposition, including Great Britain, the Netherlands, Belgium, and others. Due to its strong political weight and economic power, the EU even has the potential to involve non-member states like Russia and Belarus in protection measures[3]. Moreover, the EU has strong institutional capacities to facilitate decision-making and to enforce the implementation of the regulation. It holds competence within most of the policy fields relevant for the protection of the Baltic Sea: water and air protection, traffic, transport, fisheries, maritime affairs and, most importantly, agriculture, which accounts for the major source of Baltic Sea eutrophication.

## *The EU's eutrophication policy*

### Water protection

Two of the hitherto most important EU regulations for combating eutrophication are the 1991 Urban Waste Water Directive (UWWTD)

[1] This chapter has benefited from 33 interviews with political decision-makers and experts from administrations, NGOs, interest groups and academia. The interviews were conducted in Brussels, Germany and Sweden between May 2009 and July 2011.

[2] Kern and Löffelsend, 2008: 117

[3] E.g. under the Northern Dimension Environmental Partnership, see chapter 4, page 49

and the Nitrates Directives (ND), which is intended to control nitrogen loading from agriculture. Both directives allow flexible implementation in order to take different regional conditions into account. Thus, they discern between areas sensitive and less sensitive to eutrophication and prescribe different standards in terms of sewage treatment and farming practices. These flexibility provisions do not yet sufficiently meet the environmental requirements of the Baltic Sea: even if both directives were implemented in the strictest possible way throughout the whole catchment area, the improvements necessary for the Baltic Sea's marine environment would still not be achieved[4].

Another important regulation is the Water Framework Directive (WFD), adopted in 2000, which basically sets the goal of reaching "good status" for European surface- and groundwater by 2015[5]. States are required to develop comprehensive River Basin Management Action Plans (RBMPs), to actively involve "all interested parties" and, where necessary, to engage in trans-border cooperation. The intention of the WFD is to "contribute to the protection of territorial and marine waters". However, in a direct binding sense the WFD applies only to the EU's "coastal waters", which are defined as the rather narrow strip of up to one nautical mile from the coast[6]. The WFD gives the states the right to extend the deadline for reaching the aforementioned good environmental status from 2015 to the year 2027; for example in cases of difficult "natural conditions" or if measures would be "disproportionately expensive". It is thus expected that, in 50 per cent of the cases, RBMPs will not lead to the achievement of "good status" by 2015.[7]

[4] A HELCOM (2006: 21) study revealed that even a full implementation of the ND would only result in a maximum reduction of 6% of nitrogen run-offs to the Baltic Sea. The HELCOM BSAP contains stricter standards for sewage treatment, e.g. a 90% phosphate removal instead of the 80% required by the EU UWWTD.

[5] "Good status" is among others defined by the absence of "accelerated growth of algae" and a situation where "nutrient concentrations do not exceed the levels established so as to ensure the functioning of the ecosystem". See European Union, 2000: 57.

[6] One nautical mile corresponds to 1,852 kilometres.

[7] Dworak et al., 2010: 3

### Marine protection

The EU has only recently started to acknowledge marine protection as an independent policy goal. The Marine Strategy Framework Directive (MSFD), adopted in 2008, is intended to serve as the "environmental pillar" of the new Integrated Maritime Policy[8]. Similar to the WFD, the MSFD aims to tackle marine pollution by providing a cross-sectoral framework to cover the main pollution sources, and urges the achievement of the good environmental status by 2020.

The responsibility for implementing the MSFD is largely handed over to the member states, by requiring them to develop national marine strategies. Thus, there is a risk of differently ambitious targets and uncoordinated measures within one and the same marine region[9]. Instead, the directive could have urged the member states to develop joint marine strategies with regards to each of Europe's marine regions. Another disadvantage of the MSFD lies in its reluctance to provide for the ambitious integration of sectoral Community policies – the Common Agricultural Policy (CAP) in particular – into marine protection. These weaknesses, together with a number of exemptions provided for in the directive, offer reasons to doubt whether the good environmental status will be reached by 2020.

### Air pollution control

Eutrophication concerns only became an independent driving force for the EU's air pollution control policy after the turn of the millennium. An important step here was the 2001 adoption of the National Emission Ceilings Directive (NECD), which prescribes national ceilings for nitrogen oxides and ammonia, to use but two examples, to be met by the year 2020. Furthermore, the 2005 Thematic Strategy on air pollution acknowledges the eutrophication problem. By stating that 55 per cent of all EU ecosystems suffer from eutrophication, the strategy calls for the strengthening of existing legislation on air quality and the integration of air pollution concerns into other Community policies, such as energy, transport, shipping, agriculture and structural policies.

[8] European Commission, 2006

[9] Salomon, 2009: 363; Menn, 2009: 95

Due to the priority which, for a long time, has been given to the fight against acidification within European air protection policies, achievements in emission reductions differ quite a lot with regards to each of the respective pollutants. While sulphur emissions have been sharply reduced within the EU between 1990 and 2010, and even nitrogen oxides emissions have decreased significantly, almost no reductions in ammonia emissions have been achieved during the last few decades.

Addressing eutrophication through air pollution control has also suffered from a clash with another of the EU's primary environmental objectives: addressing $CO_2$ emissions. This became obvious in the concept of the "motorways of the sea", which aims to take advantage of the considerably less $CO_2$ production involved in sea transport per ton-kilometre if compared to road transport. The fact that ships release about twice as much $NO_X$ than modern truck models was largely neglected in the concept[10]. A similar conflict of goals seems to be the reason for the repeated postponement of the revision of the NECD, which was originally scheduled for 2004. The failure to adequately develop the NECD as a tool for addressing atmospheric nutrient depositions has been explained by the need to offer some member states compensation in exchange for their approval of the EU's climate and energy package in 2007.[11]

### Agricultural policy

The hitherto most far reaching attempt to include environmental considerations into the CAP is related to the Luxembourg Declarations of 2003. The reform introduced Cross Compliance as a new policy tool: direct financial support is only paid to farmers who adhere to regulations on environmental protection. Moreover, the Luxembourg Declarations formerly introduced rural development policy, including agri-environmental programmes, as a second pillar of the CAP. The Strategic Guidelines for Rural Development point to the problem of water pollution due to agriculture and explicitly call for taking "soil protection, protection and conservation of the

[10] EEB, 2004

[11] Two officials, Swedish Ministry of the Environment, September 2010; Ågren, 2008: 2

marine environment"[12] into account. Thus, a basic framework has been created for the consideration of marine protection requirements within European agriculture. However, the extent to which agri-environmental programmes are actually imposed depends almost completely on the member states and the farmers. Some constraints may prevent the agri-environmental programmes from becoming an effective instrument for water protection policies. Firstly, their implementation depends on the ability of the member states to provide funding for co-financing; the old member states have to allocate 50 per cent of the total costs from their national budgets, and the new member states 25 per cent. The result is that not all financial resources which the EU has allocated for the purpose are in fact used, because member states are reluctant to pay their part.

A second potential weakness is related to the fact that member states have quite a lot of freedom of action when defining the measures they want to pursue as part of their rural development actions. These actions may comprise support for socio-economic projects, including the development of agro-tourism. Thus, national governments might choose to primarily support these objectives and allocate only the legally required minimum support to environmental measures. Moreover, not even the money directed to environmental projects necessarily addresses water protection measures – there is no legal obligation for that at all.[13] For instance, a member state can decide to prioritise other environmental goals such as the mitigation of hazardous effects from the use of pesticides; in that case, ultimately, agri-environmental programmes that could help to combat eutrophication are not established[14].

[12] European Union, 2006; this passage is remarkable, as it is the first time that the need to protect the marine environment is mentioned in the context of the EU's agricultural policy. See Guttenstein, 2007: 13

[13] EEA, 2006: 37

[14] Guttenstein, 2007: 13. This discrepancy of targets within the process of implementation can be seen in the respective National Rural Development Strategy Plans of the Baltic Sea coastal states. The Latvian and Estonian plans, for instance, provide agri-environmental measures designed to address water pollution control, whereas the Polish version does not mention particular measures for water protection but highlights the overall importance of addressing socio-economic challenges, see Guttenstein 2007: 28.

Finally, the Luxembourg Declarations have not removed the basic weaknesses of the CAP. These are insufficient environmental protection standards (e.g. in the ND) and the fact that the CAP generally encourages farmers to continuously increase agricultural production – for example by moving towards highly specialised and intensive large scale farming and by increasing the areas under cultivation. The EU's recent call to increase the cultivation of energy crops enhances this tendency.[15] Even in regions that are highly susceptible to eutrophication, like the Baltic Sea catchment area, farmers can hardly escape from these false CAP incentives, since this might lead to lower yields and, consequently, to a loss of competitiveness against those regions where agricultural production is not questioned to such an extent by environmental constraints.

## *Explaining the weaknesses of the EU's protection policies*

### The lack of awareness at the European level

The awareness of threats to the EU's marine environment seems to be biased in Brussels: more attention is usually given to the seas in the west and the south than to the Baltic Sea[16]. This may be due to the fact that most of the Baltic Sea states are relatively new EU members, and thus have had less time to influence views and discourses within the European bureaucracy. Moreover, the Baltic Sea states haven't so far sufficiently managed to occupy the European Commission's staff positions that are relevant to marine protection.

Paradoxically, the Baltic Sea seems to suffer from the prevailing positive environmental image of Northern Europe. It has given rise to a widespread, albeit erroneous, assumption that the Baltic Sea is one of the cleanest water bodies in Europe. What is more, the positive reputation of Northern European governance structures has underpinned the attitude that the Baltic Sea states should be well prepared to deal with their specific environmental problems on their own instead of needing the EU to initiate protective actions.

[15] Scheuer and Rouillard, 2009: 38

[16] Several interviewees in the European Commission referred to the development of the EU's Integrated Maritime Policy as an example of a political process, in which the interests of Atlantic member states dominated the agenda.

Distorted perceptions about the Baltic Sea also result from an insufficient representation of the sea's serious state at the NGO level in Brussels[17]. Certainly, the environmental NGO sector is well developed in most Baltic Sea states, as well as at the regional level. However, the functional link from here to the European level is not strong enough. Instead, activities (e.g. of the Coalition Clean Baltic) are targeted too much towards national or macro-regional (HELCOM) actors, instead of seeking the channels necessary to influence core European actors, such as the Commission.

By contrast, the NGOs based in Brussels orient their activities to pan-European concerns and mostly do not focus on marine eutrophication. The minor interest in this issue is obviously a consequence of the largely non-alarming and non-visible manner in which marine eutrophication in most European countries is experienced. Principally, European NGOs like Greenpeace or Seas at Risk would be expected to take over the role of advocating marine protection. However, they are rather reluctant to target marine eutrophication, as they cannot expect to benefit much from it in terms of media attention, membership or sponsorship.[18] It is obviously much easier for accidental ecological catastrophes like oil spills from tank ships or drilling platforms to make headlines than the scandalisation of oxygen depletion in deep water layers. The latter remains a rather abstract notion which is difficult for the media to illustrate; it is not easy to explain and responsibility can hardly be assigned directly.

### The regulation gap at the macro-regional level

Involving the EU in Baltic Sea protection implies the need to cope with certain tension. On the one hand, there is no way to address Baltic Sea eutrophication without giving the EU a decisive role to play, while on the other, only a minority of member states have a direct and profound interest in cleaning up the Baltic Sea. The hitherto applied strategy has been to overcome this tension by including a certain degree of flexibility in European regulations, thus enabling the

[17] This impression is based on interviews with various NGO representatives in Brussels, Germany and Sweden, as well as on the analysis of campaigns for marine protection and agricultural reform.

[18] Richards and Heard, 2005: 27

member states to go further on their own in regions that are highly susceptible to eutrophication. It has, however, turned out that the degree of flexibility which, for instance the UWWTD, the ND or the CAP provides, is not sufficient to improve the serious environmental state of the Baltic Sea.

Ways out of the dilemma were discussed during deliberation on the EU's MSFD. The European Parliament made a proposal, according to which the MSFD should provide a basis for the Commission to designate certain marine regions as pilot areas in which member states, supported by the EU, should move ahead with further protection efforts[19]. The Baltic Sea region was envisaged by the European Parliament to be a possible pilot area, for which the HELCOM BSAP should serve as the pilot programme.

However, the idea of adding a strong macro-regional dimension to the MSFD was rejected by several member states and by the Commission[20]. The German government expressed concerns that any kind of macro-regional differentiation within the EU could result in distorted conditions of competition, and thus undermine the single market principle. Germany also had strong reservations about giving marine conventions a binding role in the implementation of EU law, as that could create difficulties in finding a clear and legally correct formulation for the relationship between both institutional levels. Some Southern European states pointed to the fact that due to the great heterogeneity of the region – the majority of the Mediterranean countries are not EU members – a joint macro-regional approach would be much more difficult to apply to the Mediterranean Sea than to the North and the Baltic Seas. France, in turn, did not completely reject the idea of giving regional conventions a binding role within EU politics, but instead referred to particular cases where the European Court of Justice had decided on the basis of the Convention for the Protection of the Mediterranean Sea (Barcelona Convention)[21].

The debate about a possible macro-regional dimension of the MSFD reveals that more ambitious EU protection policies for the Baltic Sea are also prevented by conflicting views on institutional preferences and the general goals of the European integration

[19] European Parliament, 2006

[20] Council of the EU, 2006; European Commission, 2011b: 120

[21] UNEP, 2005; the original convention was adopted in 1976

process. Concerns about specific environmental requirements have to be kept in balance with the interest of keeping all European regions on the same track. In other words, the environment of the Baltic Sea suffers from the fact that needed institutional and legal instruments are not developed, as they would not provide useful tools for the management of other European seas.

## *The way forward*

### Increasing knowledge in Brussels

To engage the EU effectively in the protection of the Baltic Sea, it is essential to raise awareness in Brussels about the particular sensitivity of the sea – for example by arranging seminars and other informative events for decision-makers. Furthermore, in order to enable a continuous flow of knowledge regarding the Baltic Sea, it should be ensured that experts from the Baltic Sea states, for example. staff from environmental administrations, take over some positions within the Commission that are related to marine protection which are currently occupied chiefly by staff of Southern and Central European origin.

Environmental organisations are supposed to point out urgent environmental challenges; therefore, it is disadvantageous that the serious state of the Baltic Sea is not being adequately addressed by the NGO sector at the European level. It is crucial to eliminate the division line that currently exists between environmental networks acting in the Baltic Sea regional context and those engaging in pan-European policy-making in Brussels.

### Avoiding policy segmentation

Obviously, marine eutrophication is an issue that is unlikely to become a significant driving force within European policy-making as such. Therefore, it is important to connect the issue to other, more prominent environmental topics and to emphasise potential double benefits and added value. For example, increasing fertiliser efficiency should not be regarded merely as a measure to combat eutrophication, but should also be allocated to the "more popular" context of combating climate change. Also, economic advantages, for example in terms of lower expenses for fertiliser application and drinking water treatment, could be emphasised. Double benefits from

combating eutrophication emerge, for instance, in the tourism and fisheries sectors[22].

Explication of interrelations with other policy areas may also help to address the strong policy fragmentation, which so far has hampered the integration of environmental considerations into the CAP. Agricultural decision-making had, for many decades, taken place within a rather isolated policy network formed by the Agricultural Council and experts from the DG Agri and the farming lobby. To overcome this exceptional position, it is important to make optimal use of those points of access to agricultural decision-making that the system nonetheless provides for non-agricultural actors. These points are found within the EU's supranational bodies, such as the Commission, the Parliament, and the European Court of Justice, which have often pushed for environmental progress in order to improve public reputation and to increase their institutional legitimacy[23]. In this regard, it is important to note that the Parliament, which previously had been involved only on the basis of the consultation procedure, has through the Lisbon Treaty acquired the right of co-decision in agricultural affairs. Given the general high profile of the Parliament as an advocate for environmental protection, this may open up new opportunities to shift discussions on agricultural reforms away from closed circles and to make them the topic of public debates. At the same time, it is essential to guarantee that the environmental profile of the European Parliament does not suffer from its enhanced legal position, as farmers' interest groups will probably strengthen their efforts to influence the parliamentarians.[24]

### Developing the EU's Strategy for the Baltic Sea Region

A new dimension of European policy-making was opened up in 2009 by the adoption of the EU's Strategy for the Baltic Sea Region, which is the first in a series of envisaged strategies for various European macro-regions. The Baltic Sea Strategy has the chance to address exactly those structural weaknesses of the EU's political system that have so far prevented effective protection policies regarding the sea's marine environment.

[22] Österblom et al., 2010

[23] Bongardt, 2007: 66

[24] Knill and Liefferink, 2007: 99

Of major importance is the strategy's inherent potential to facilitate cross-sectoral policy coordination.[25] This has already been evident during the preparation phase, which involved extensive cooperation across 19 different Directorates-General – an experience that was unprecedented in the working procedures of the European Commission[26]. Nevertheless, the Baltic Sea Strategy cannot be regarded as adequate compensation for the failure to establish a Baltic Sea pilot area under the MSFD. It neither includes the adaptation of EU law towards the environmental requirements of the Baltic Sea, nor allocates additional financial resources to support the adoption of urgently needed measures – for example the increase of purification levels in wastewater treatment plants or the radical redesign of the CAP throughout the Baltic Sea region.

In the long run, however, the Strategy may initiate certain beneficial developments within the target region. As a side effect, the region may be provided with better opportunities to influence decision-making processes within the EU's central institutions.[27] The Baltic Sea region thus serves as a testing ground for the development of policies and management strategies which, if successful, can ultimately inspire the development of new EU legislation[28]. Moreover, the cooperation experience may lead to an increasingly similar perception of common regional challenges among the concerned EU member states. This may encourage them to take concerted actions and push jointly for Baltic Sea protection at the European level, thereby increasing their bargaining power[29].

[25] Joenniemi, 2009: 5

[26] Official, Permanent Representation of Sweden to the European Union, December 2009

[27] Schymik, 2011: 10

[28] European Commission, 2011a: 8

[29] A positive example of this mechanism can be seen in the Commission's proposal for a stricter legislation on phosphates in detergents, which was made in 2010 as a reaction to joint pressure from those member states that participate in the Baltic Sea and Danube Strategies. See European Commission, 2010: 5.

# 4. Russia – a special actor in Baltic Sea environmental governance[1]

Dmitry Nechiporuk, Maria Nozhenko and Elena Belokurova

The coastal strip of the Baltic Sea in Russia is very small; with a catchment area of about 420,000 km$^2$, it occupies only 2 per cent of the total area of the water basin. Nevertheless, Russia exerts significant influence on the environmental state of the Baltic Sea. The water basin located in this area is significantly polluted, and the level of eutrophication is very high; both of which are factors primarily associated with a high amount of pollutants in wastewater. According to HELCOM statistics from 2009, Russia ranked third in the release of nitrates and second in phosphate emissions of the nine littoral countries[2]. In terms of potential environmental risks, the bodies of water around the cities of St. Petersburg, Petrozavodsk and Pskov are known to contain the maximum concentration of heavy metals and phenols. According to RusNIP report, The Leningrad Oblast, an area adjacent to St. Petersburg, that holds the second position after St. Petersburg among the coastal regions of Russia, can dispose annually 303 tonnes of phosphorous and 1409 tonnes of nitrogen into the Baltic Sea without measures taken to reconstruct the wastewater treatment plants.[3]

Finally, the level of pollution in the waterways of the Kaliningrad Oblast also significantly exceeds the requirements: the concentration of phenol and oil in the Pionersky and Baltiysky port areas is 5–10 times higher than normal. Although the Kaliningrad Oblast doesn't contribute greatly towards Baltic Sea eutrophication, its waters are considered among the most polluted in the region[4].

[1] The chapter is based on about 20 expert interviews made by the authors in St. Petersburg and Kaliningrad during 2009–2011. The interviewees represented regional and local administrations, politicians, experts, journalists, natural science organisations and environmental NGOs.

[2] HELCOM, 2009: 77

[3] RusNIP, 2010: 31

[4] Korotkova, 2008

While some point sources, such as wastewater treatment in the city of St Petersburg, have been kept under control during the last ten years, non-point sources, especially from agriculture, pose a growing threat in terms of Baltic Sea eutrophication. As a result of recent agricultural reforms in Russia, the amount of large-size commercially-oriented farms and production units, particularly in the Karelian Isthmus, is increasing at an alarming rate[5].

As for data regarding the degree of environmental awareness concerning the Baltic Sea in Russia, there are no sufficient sources. This, therefore, indicates that these problems are placed in a different context compared to the Nordic and Baltic countries. Moreover, environmental issues, let alone eutrophication as a specific and complex problem, are not really addressed in public policy as a discussion point that needs to attract the attention of public opinion and civil society. Moreover, 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. This, obviously, has implications on how the issue is dealt with in politics and administrations, as well as in the media.

## *International Cooperation and Abatement Policies in Russia*

Russia's participation in international environmental cooperation within the Baltic Sea region started with the signing of the Helsinki Convention by the Soviet Union in 1974. In 1998, Russia ratified the 1992 Convention (see chapter 2, p. 24). This convention was supplemented by The Baltic Sea Joint Comprehensive Environmental Action Program, which listed the main contamination "hot spots" of the Baltic Sea; among the 132 mentioned, 34 were directly related to the Russian water basin.

Russia's participation in solving the Baltic Sea's environmental problems at the national level was, in the 1990s, reduced to the modest funding of some small-scale reconstruction projects, which led to the elimination of only a few hot spots. This inactivity

[5] Official figures for the sectoral allocation of nutrient loads are not available for Russia and the data concerning diffuse sources is so far incomplete, see HELCOM, 2004: 59

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.

The first federal governance structure responsible for environmental issues appeared in Russia during Perestroika: the State Committee for Nature Protection was established in March 1988. Along with other political structures in Russia, the institutions responsible for environmental issues have also experienced a high degree of instability during the last 20 years; the national ministry responsible for environmental issues in the Russian government was restructured five times during the first 12 years of its existence. In 2000, it was completely eliminated, and only re-established in 2008.

In addition, Russia's role in international cooperation in general was rather passive during the 1990s – it merely received technical and financial support from more developed countries and international organisations. Therefore, it is understandable that the one and only successful Russian achievement with regards to Baltic Sea protection – the reconstruction of the South-West Wastewater Treatment Plant by the water company St. Petersburg Vodokanal, completed in 2005 – was possible purely due to the funding of Western European financial institutions[6].

During the 2000s, Russia began to participate in HELCOM work more actively. In 2007, Russia, along with other HELCOM member states, signed the Baltic Sea Action Plan (BSAP), in which each country was obliged to develop and implement its own national implementation programme. Later, during the Moscow meeting of Ministers of the Environment of HELCOM Member States in May 2010, Russia proposed its "National Program for the Rehabilitation and Recovery of the Baltic Sea Ecosystem"[7]. To provide appropriate federal funding, the development of a special targeted federal programme[8] was also announced.

[6] For a more detailed description of the example, see below.

[7] HELCOM, 2011a

[8] *Ekologia i Biznes*, 2010

The main aspects of the programmes are the reconstruction of treatment facilities, Krasny Bor landfill, the contstruction of a port depot in Kaliningrad and the disposal of untreated agricultural wastewater in the Leningrad Oblast. The ultimate goal of the programme is the treatment of 100 per cent of wastewater by 2020. According to the Minister of Natural Resources and Ecology, the total amount of allocated funding from 2011 to 2020 is 145 billion rubles (ca. €3.4 billion), which includes approximately 78 billion rubles (ca. €1.8 billion) from federal funds, about 55 billion rubles (ca. €1.3 billion) from the funds of the subjects of Federation, and roughly 12 billion rubles (ca. €0.3 billion) from extra-budgetary resources[9]. The federal programme is still under preparation by the Russian government, and its implementation is planned to begin in 2012.

The new drive in the activity of the Russian national authorities to participate in international environmental efforts is explained not by the rise in awareness as such, but by the new attitude towards international cooperation. During the 2000s, when energy prices were high, Russia's economic conditions improved and the country made active attempts to revive the high geopolitical status which it had lost during and after the collapse of the Soviet Union. As a result, Russia strengthened its role within various international organisations, including HELCOM, with the aspiration of getting rid of its role as a recipient and becoming an equal partner in its relationships with other countries – especially the EU. More to the point, Russia has tried to prevent the domination of the EU in environmental issues concerning the Baltic Sea. The threat of such EU domination appeared after the last EU enlargement in 2004, when all the littoral Baltic Sea countries, except Russia, became EU member states. Under these circumstances, HELCOM is the only plausible framework for Russia's participation in international cooperation on the Baltic Sea environment – a framework Russia wishes to advance. A further situational factor explaining Russia's recent active engagement in HELCOM activities is its 2010 HELCOM presidency.

Even if practical activities at the national level have remained rather limited, at the regional level – the level of the subjects of Federation – some relevant changes have taken place. As an outcome of the reform of the Russian Federation's federal structure in 2004, the

[9] *Rossiiskaya Gazeta*, 2010

competencies of state environmental control were transferred from the federal to the regional level. Consequently, Russian regions were obliged to establish their own administrative structures within their own resources. Due to financial difficulties, it took several years to create such units in some regions; for example, in the Kaliningrad Oblast the Service for Environmental Control and Supervision only started to operate in 2009.

Despite the decentralisation of environmental administrations, the authorities of certain subjects of Federation consider the commitment to HELCOM to be a specific responsibility of the federal centre. They have such an opinion because the federal structures sign and ratify international documents that regulate Russia's responsibility to protect the Baltic Sea. As a result, the regional authorities do not managerially and financially commit themselves to addressing the Baltic Sea environmental problems in a serious enough manner.

To understand eutrophication governance in Russia, the specifics of three Baltic Sea coastal regions – the city of St. Petersburg and the Leningrad and Kaliningrad Oblasts – are now examined in more detail.

**Regional Specifics: St. Petersburg**

Of the three Russian coastal regions, St. Petersburg has achieved the most tangible results in addressing eutrophication and reducing the number of HELCOM hot spots. The main achievement here is the reconstruction of the South-West Wastewater Treatment Plant, which is run by the St. Petersburg Vodokanal. As a result, some parts of one of the hot spots were eliminated by the summer of 2009.

Reconstruction was carried out using both federal and city funds, as well as the assistance of the EU and neighboring countries. This foreign financial assistance looks very impressive in comparison to the funding from the Russian authorities; for example, during 1991–2001, Finland invested a sum of €33 million in about 50 St. Petersburg Vodokanal projects[10]. In comparison, during 2002–2003, only ca. €4 million from the federal budget was spent on the implementation of commitments promised by Russia during the 1992 HELCOM Convention. The Russian government also approved the federal targeted "Ecology and Natural Resources of Russia (2002–2010)" programme, which provided funding in order to improve the

[10] Ministry of the Environment of Finland, 2003

environmental situation of the Russian part of the Baltic Sea. The total budget for this programme was 27,937 million rubles (ca. €659 million), of which only 135 million rubles (ca. €3.2 million), or 0.48 per cent, came from the federal budget's overall funds.

During 2002–2008, the reconstruction of the South-West Wastewater Treatment Plant was carried out in international cooperation with the EU and EU countries, and the project became the most important in the framework of the newly established EU-Russian Northern Dimension Environmental Partnership (NDEP). The total costs were originally estimated at €128 million, of which €108 million was to be provided by various EU ministries and funds[11]: the Ministry of Environment of Finland provided €10 million; the Swedish Agency for International Development Assistance €11 million; the Danish Environmental Protection Agency €5.8 million; the EU, under the framework of the TACIS programme (Technical Assistance to the Commonwealth of Independent States), €20 million; the Nordic Investment Bank provided a loan of €45 million; EBRD a loan of €42 million; and the Swedish and Finnish funds provided €5 million each. In total, the funding was about €181 million.

The St. Petersburg Vodokanal, together with the city government and EU investors, is now launching a new "Reconstruction and Modernization of Small Wastewater Treatment Facilities of St. Petersburg" project, which is planned to be completed in 2012. Its implementation would reduce phosphorus emissions by approximately 40,000 tonnes per year; plus, the Vodokanal is planning to treat 95 per cent of wastewater[12].

All experts agree with the positive assessment of St. Petersburg's activities, and those of the St. Petersburg Vodokanal in particular. Furthermore, many experts acknowledge the personal factor of the Vodokanal authorities as a very important in the successful modernisation of treatment facilities. However, despite its best efforts, the issue of unauthorised discharge of pollutants into the Neva remains unsolved: there is still no system for the tracking and recording of illegal pollution here[13].

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[11] Karta Sobsvennosti Sankt-Peterburga, 2002

[12] *Vodamagazine*, 2010

[13] See: Leakage of 76 tonnes of diesel fuel in Kolpino on 31May 2006; water poisoning of the river Slavyanka on 3–4 June, 2010; the discharge of oil into the Neva River from the underwater collector on 3 March, 2011, *Ekoportal.su*, 4 March 2011

### Regional Specifics: The Leningrad Oblast

The condition of the wastewater treatment plants in the Leningrad Oblast is still not satisfactory, and they do not solve the hot spots problem, which applies to all three major sources of pollution: the Syasky Pulp-and-Paper Plant, the Volkhov Aluminium Smelter and animal farming waste. The reconstruction of smaller dispersed wastewater treatment facilities in the Leningrad Oblast requires a special approach; however, neither the management nor the employees of the facilities possess the appropriate funding, knowledge or skills to carry out such work. They are also unable to prepare satisfactory business plans and renovation projects in order to apply for funding from EU financial institutions. Another problem is the lack of cooperation between the Leningrad Oblast and the city of St. Petersburg, even though their treatment facilities and environmental conditions are very closely related[14].

However, since the mid-2000s the Leningrad Oblast authorities have implemented some regional programmes aimed at reducing the anthropogenic impact on water conditions. The creation of the Ingermanland Nature Reserve, with a total area of 17,900 hectares, began in 2010. The establishment of the reserve will help Russia to fulfill at least some of its international obligations to HELCOM; in 2011, HELCOM included Ingermanland in the Baltic Sea buffer zone, and according to the plan the reserve will include more than 10 per cent of the Gulf of Finland's water area[15]. Finally, according to the National Program for the Rehabilitation and Recovery of the Baltic Sea Ecosystem, 200 treatment facilities in the Leningrad region are to be modernised[16].

### Regional Specifics: The Kaliningrad Oblast

Despite the fall in industrial and agricultural production after the collapse of the Soviet Union, the environmental situation in the Kaliningrad Oblast is still unfavourable. There is still a problem with wastewater treatment facilities in Kaliningrad to this very day: the

[14] NGO representative, Leningrad Oblast, January 2011

[15] *Delovoi Peterburg*, 1 April 2010

[16] *Rossiiskaya Gazeta*, 21 May 2010

local Pregol river has become the main flow of untreated wastewater, which then flows into the Baltic Sea[17].

There have been attempts to solve this problem since the mid-1990s. The city and the regional authorities, together with the local water utility "Vodokanal" and the assistance of several foreign and international partners, started to develop a municipal water and wastewater treatment facilities reconstruction project; but despite the fact that all the necessary documentation was prepared and the reconstruction deadlines set by early 1999, the project was never realised.

Only in recent years, following Russia's adoption of the Baltic Sea Action Plan (BSAP), have some concrete results been achieved in Kaliningrad. The first important action was the inclusion of the development of sanitation and solid waste utilisation facilities in the Kaliningrad Oblast into the 2009–2014 federal targeted programme; the funding is supposed to come from the federal and regional budgets, as well as from foreign investment. However, up until August 2011 the implementation of this programme had been continuing at a very slow pace. Kaliningrad has still not used the federal funds allocated for the reconstruction of water treatment facilities; and it is presently about one year behind the planned schedule. According to the Kaliningrad Oblast governor Nikolay Tsukanov, the problem is the inability of municipalities to utilise the allocated funds.

In the other regional targeted programme for the Kaliningrad Oblast, "The Environmental Rehabilitation of the Kaliningrad Oblast in 2008–2012", the ways of dealing with anthropogenic eutrophication are articulated more clearly. But, the regional authorities do not take full responsibility for fixing the problem; and this means that the funds for the elimination of environmental hot spots in the region will have to come from either foreign resources through cross-border cooperation projects or the federal budget[18].

## *Challenges of eutrophication policy*

In the period from 1992 to 2011, only 15 of the 34 "hot spots" listed by HELCOM were eliminated; 14 of them were removed as a result of

[17] Schetnaya Palata RF, 2008

[18] Representatives of the Kaliningrad regional authorities, September 2009

the reconstruction of treatment facilities in St. Petersburg, and the last one ceased to exist in the Kaliningrad Oblast due to a complete halt in pulp-and-paper production as a result of bankruptcy[19]. Thus far, Russia has not made any substantial progress in reducing the eutrophication problems within its territory.

Despite the involvement of Russia in HELCOM activities from the very beginning, its own input to the Baltic Sea protection activities has not been consistent. During the 1990s, the country underwent socio-economic difficulties and political instabilities, and there was a great deal of turbulence within its environmental administrations. Furthermore, in the 2000s other priorities have undermined environmental activities related to the Baltic Sea; as a consequence, the improvement of wastewater treatment facilities in the St. Petersburg Vodokanal has been the only real contribution to the elimination of anthropogenic sources of eutrophication. In the remaining two coastal regions of Russia (the Kaliningrad and Leningrad Oblasts), no substantial progress has been achieved.

Such a complex situation, on the one hand, is caused by such infrastructure problems as the lack of modern water treatment facilities, as well as industrial enterprises. On the other hand, it can be explained by Russia's exceptional geopolitical status as the only non-EU Baltic Sea country, as well as by the constant reorganisation of the federal government structures responsible for environmental issues, which continue to break the continuity of environmental policies.

Despite their willingness to fulfill Russia's commitment to the environmental protection of the Baltic Sea, the Russian authorities have not been able to overcome certain systemic deficiencies that adversely affect the efficiency and quality of commitment implementation. The first reason for this is that the regional structures responsible for environmental policies in coastal areas are weak. These structures consider commitments to HELCOM to be primarily the responsibility of the federal government, not the level of subjects of Federation. Second, there is a lack of coordination among the various levels of administration involved in the protection of the Baltic Sea; examples of which can be found in the reconstruction of treatment facilities in the various regions. Moreover, both the federal and regional

[19] HELCOM, 2011c

levels are missing an effective environmental monitoring system. A third factor is that there is no sufficient knowledge or technology needed to reconstruct the wastewater treatment facilities in the Kaliningrad and, particularly, Leningrad Oblasts. Last but not least, civil society and NGOs in general are weak and the overall level of public awareness about the state of the Baltic Sea is low, which implies that there is a gap between the state authorities, the mass media, the scientific community, civil society institutions and public opinion.

The last point mentioned above is connected to the fact that despite the clear improvement of the economic situation in Russia – in comparison to the 1990s – in the 2000s the environmental civic initiatives have received no support from the state or the business community. In addition, the geopolitical ambitions of Russian leaders have led to a significant reduction in foreign foundations and organisations' activities in the country. As a result, the yet underdeveloped civil society institutions have become even weaker, meaning public influence on policy-making in all fields, including the environment, is still very low. At the same time, there are some local NGOs, like Ecodefense in Kaliningrad and Friends of the Baltic and Greenpeace in the St. Petersburg and Leningrad Oblast, who tend to engage in dialogue with the government and try to make sure that Russia takes the HELCOM recommendations into account. Drawing public education campaigns from time to time, the NGOs have no direct aim of involving people in the process of putting pressure on the government. The problem of the anthropogenic eutrophication of the Baltic Sea is understood by them to be an educational tool, which they use in the hope that their efforts will make people develop a more responsible attitude towards the environment.

## *The Way Forward*

It is very difficult to make any prognosis about future policies in Russia, including whether Russia really will fulfill its obligations and commitments to HELCOM. Environmental and foreign policy will most evidently change as a result of the parliamentary and presidential elections taking place in December 2011 and March 2012, respectively, and even though it is very probable that the current

party in power will stay, some changes will be carried out both in regard to the persons in government and policy character. However, due to the very probable return of Vladimir Putin to the presidential post, it is improbable that the problems of government efficiency, civil society development and public awareness will be solved. If he continues to strengthen his vertical of power, environmental problems will stay unsolved because the vertical of power cannot be efficient in policy sectors rooted in localities such as environmental policy.

# 5. The Baltic States – at a crossroads of different environmental development paths[1]

Maria Jokela

Together, Estonia, Latvia and Lithuania are responsible for approximately 20 per cent of nitrogen and phosphorous loads to the Baltic Sea. The average annual proportion of total input into the sea is 10 per cent nitrogen and 8 per cent phosphorus from Latvia, while the respective figures are 5 and 7 for Lithuania, and 5 and 4 for Estonia[2]. In particular, the closed and shallow eastern part of the Estonian coast line, the Latvian Gulf of Riga and the rather closed Curonian Lagoon in Lithuania suffer from eutrophication. Agriculture is considered the major source of nutrient input to freshwater systems and marine waters in the Baltic States, despite its modest 5 per cent share of the sectoral GDP composition[3].

The Baltic States have a twofold relationship with nature and the Baltic Sea. On the one hand, pure nature appears in folklore and songs, and a rather romantic illusion of pristine habitats still dominates. On the other hand, more pressing societal problems and economic ambitions easily bypass any environmental concerns, giving only low priority and political weight to the latter. The intensity of marine orientation varies throughout the Baltic States and is somewhat more diluted in Lithuania than in the other two countries – both of which have longer coastlines[4].

The Baltic States give an interesting insight into changing societies where new European environmental standards have been rapidly accepted and integrated into national policy and legislation[5]. At

[1] The analysis presented in this chapter is based on 22 semi-structured expert interviews conducted by the author in Estonia, Latvia and Lithuania during spring 2010. The interviewees represented state level environmental and agricultural administrations, politicians, natural science institutions and environmental NGOs.

[2] HELCOM, 2009: 77; official information on the sectoral allocation of nutrients for the countries was not available at the time of publication.

[3] Stålnacke, 1996

[4] Several Lithuanian interviewees, May 2010

[5] Kontio and Kuitto, 2008: 83–84

present, the EU directives are given priority over national legislation; the special value of the EU directives is that they give environmental issues real political weight[6]. Following the essential EU and HELCOM environmental recommendations, several environmental strategies and action plans have been launched in the Baltic States. As a consequence, the Baltic States are now at a crossroads of different environmental development paths. They have an opportunity to become forerunners in sustainability while at the same time there is a relative risk of leaving green development plans and innovation at the rhetorical level. A road map of "how to get things right" would benefit the Baltic States, future EU candidates and the EU itself when it comes to meeting the challenge of sustainable development.[7]

This chapter firstly provides an overview of the development of environmental policies, especially eutrophication policies, in the Baltic States. Secondly, the main challenges of eutrophication prevention are explicated. Even though the Baltic States differ in their environmental conditions and protection ambitions, this study focuses mainly on their similarities.

## *National eutrophication policies*

### From Soviet times to independence

Under the Soviet regime, inadequate wastewater treatment and waste management, a high level of industrial pollution caused by outdated technologies and the overuse of fertilisers caused severe environmental damage in the Baltic States. At the same time, environmental problems were not prioritised, information on environmental conditions was kept secret and there was no tradition of public participation.[8]

In the final years of the regime, environmental concerns merged suddenly, and worked as a catalyst for wider societal change[9]. After the dissolution of the Soviet Union, several international cooperation projects were launched between Western countries and the Baltic

[6] Many Estonian (June 2010), Latvian (April 2010) and Lithuanian (May 2010) interviewees

[7] Kramer, 2005: 292

[8] Kontio and Kuitto, 2008: 84–85

[9] Member, environmental NGO, Latvia, April 2010

States in order to transfer knowledge and support the Baltic States with environmental investments. As a consequence, the evolution of environmental management systems in the Baltic States followed the model of Western European countries, and especially the Nordics.[10] The majority of national and foreign environmental investments were directed towards the renovation of outdated wastewater treatment plants and other water infrastructure[11]. As a result, the most drastic problem of point source pollution, that of wastewater treatment in big cities, is now relatively well under control.

The decentralisation of power from ministries to regional and municipal level bodies formed an important part of the restructuration of state environmental administration in the Baltic States. Municipalities became the focal actors in the implementation of various environmental services like wastewater and water management.[12] Unfortunately, the vertical shift of power did not automatically increase municipalities' economical recourses, human capacity or the level of expertise; currently, small municipalities in particular face serious problems and completely new responsibilities[13].

**Towards EU membership and beyond**

The EU has undoubtedly served as the main catalyst of environmental development in the Baltic States. The EU accession process and membership set out strict time limits, in order to harmonise legislation and environmental administration to EU standards. The change can be defined using one word: hurry. The accession process to the European Union puts newly established environmental administration and legal systems under huge pressure in terms of human, technical, financial and institutional capacities[14].

The protection and restoration of Estonian surface waters, including the Baltic Sea, are regulated by the *Estonian Environmental Strategy 2030* and its implementation document, the *National Environmental Action Plan of Estonia 2007–2013*, which are harmonised with the relevant EU directives. The first HELCOM BSAP *National*

[10] Kontio and Kuitto, 2008: 86, 102

[11] Several Estonian (June 2010), Latvian (April 2010) and Lithuanian (May 2010) interviewees

[12] Kontio and Kuitto ,2008: 86

[13] E.g. University scientist, Latvia, April 2010; University scientist, Estonia, June 2010

[14] Kramer , 2005: 290–292

*Implementation Program (2008–2011)* is in effect and the next period plan under development.[15]

The Latvian water protection priorities are defined in the policy planning documents *Latvian Sustainable Development Strategy, National Environmental Policy Plan for 2004–2008, National Programme on Biological Diversity* (1999) and the *Environmental Monitoring Programme* (2006)[16]. The most recent policy document, *Environmental Policy Strategy 2009–2015,* meets the relevant EU directives and HELCOM recommendations, including the BSAP plan[17]. The *Law on Water Management,* implemented in 2002, is the main regulatory tool of water protection.

In Lithuania, water protection consists of four main documents: *National Strategy on Protection of the Baltic Sea Marine Environment 2010–2015, Action Plan 2010–2015 for the Strategy for the Baltic Marine Environment Protection, Water quality improvement programme of the Curonian Lagoon 2006–2015,* and four *national River Basin Management Plans.* Apart from the national initiative to improve the water quality of the Curonian Lagoon, these documents stem from EU and HELCOM obligations. Lithuania has also launched a national farming programme and several new regulations relating to, among others, manure management, in order to reduce agricultural load.[18]

In addition, the WFD River Basin Management Plans are important practical tools for reducing nutrient load into the Baltic Sea[19]. In all three countries, the WFD has been transposed to existing legislation. In Estonia, the implementation of WFD principles has led to the decentralisation of local municipalities' planning powers, whereas in Lithuania and Latvia the main responsibility for implementation lies at the national level. [20] In all cases, the functionality of information chains between national, regional and local level actors, which are crucial for implementation, is one of the core questions.

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[15] HELCOM, 2009: 97–98

[16] HELCOM 2009: 99–100

[17] Latvian Ministry of the Environment, 2010

[18] Water management expert, Environmental Agency, Lithuania, May 2010

[19] Civil servant, Ministry of Environment, Estonia, June 2010; Water management expert, Environmental Agency, Lithuania, May 2010

[20] Nilsson and Veidemane, 2007: 97–103; Lindblom, 2007; Nilsson, 2007: 105–111

Overall, the Baltic States have integrated the EU directives into their respective national legislations rather well and quickly[21]. Yet, the capacity to implement the new laws remains to be seen. Furthermore, the EU decisions and regulations have also been criticised in the Baltic States for being too extensive and ignoring regional and country-specific characteristics. In addition, small countries have limited power to influence EU decision-making and to come up with initiatives. In this respect, HELCOM, as a low-bureaucratic, Baltic Sea oriented organisation, is highly appreciated by the Baltic States[22].

With regards to HELCOM, some of the recommendations appear to be unrealistic for the Baltic States. The BSAP plan was criticised for ignoring the historical and socio-economic differences between the Baltic Sea countries; as one Lithuanian interviewee states, countries like Finland or Sweden have strong economies and long traditions of high environmental standards, whereas Lithuania does not have the resources to implement environmental standards overnight[23]. However, the Baltic States also differ substantially in their ambitions to implement HELCOM recommendations. In Latvia, the criticism towards HELCOM recommendations seems to be somewhat louder, and the approach towards implementation more minimalistic than in Lithuania. In Estonia, environmental legislation corresponds not only with EU requirements but, in many cases, with the more strict HELCOM recommendations, which they also seem to be very proud of[24].

## *Critical evaluation of the protection policies in the Baltic States*

### The administrative challenge

After independence, newly established state administrations suffered from a lack of experience, expertise and technical devices[25]. To overcome these shortages, several aid projects and programmes were

[21] Kontio and Kuitto, 2008: 108–109

[22] Several interviewees in Estonia (June 2010), Latvia (April 2010) and Lithuania (May 2010)

[23] Water management expert, Environmental Agency, Lithuania, May 2010

[24] Several interviewees in Estonia, June 2010

[25] Interview with Panu Kontio, Finland, March 2010

carried out by other countries and the EU, but still, 20 years after independence, a constant lack of educated and experienced people hinders administrative functions at every level. The same problem also hampers the capacity of research institutions to launch new research projects or to provide expertise for the administration's needs[26]. This issue is further exacerbated by the lack of financial resources.

The human resource challenge is partly due the small size of the countries, but also to the lack of civil servant experience. The EU application process and EU membership have increased the size of the state administration, allowing people with very little working experience to enter the administration. In addition, the administration suffers from the increased workload.[27] Tight deadlines leave new laws, strategies and plans without proper implementation strategies and sufficient time for public hearings, discussion and research. Additional challenges relate to the lack of sufficient vertical and horizontal information channels, and to the mental difficulty of distributing vertical and horizontal power[28].

**Research challenge**

With regards to science–policy interface, communication with the national environmental administration in particular seems rather non-hierarchical and low-bureaucratic – expert circles are small and actors know each other. Communication with researchers is crucial, as the speed of decision-making is pressing and the successful implementation of new regulation requires the extensive understanding of local conditions.[29]

At the same time, science–policy communication is criticised for being chaotic, inconsistent and based too much on personal contacts. Besides, science–policy cooperation with other branches of the administration does not work as smoothly as with the

[26] Civil servant, Ministry of Environment, Estonia, June 2010; University scientist, Estonia, June 2010

[27] Water management expert, Environmental Agency, Lithuania, May 2010; civil servant, Ministry of Environment, Estonia, June 2010

[28] Kramer, 2005: 297–300

[29] Water management expert, Environmental Agency, Lithuania, May 2010

environmental administration.[30] The main deficiency of science–policy communication is connected to the capability of scientists to express their research results in an understandable way, on the one hand, and officials' competence to use and implement research results, on the other[31]. Studies are often ordered to be carried out quickly, which obviously affects the quality of research results[32]. Latvian scientists in particular accused local decision-makers of ignoring the value of long-term research and monitoring.

Several interviewed scientists in the Baltic States demanded further research into the problem of eutrophication and the effective ways of reducing it before expensive protection programmes are launched[33]. In particular, this applies to the understanding of sources of eutrophication and the ratio of point source to non-point source loading. For example, the impact of the relatively large but poorly monitored Latvian forestry sector is an unknown factor[34].

### Awareness and attitudes

Eutrophication is not perceived to be a top priority environmental problem in the Baltic States, and the general understanding of the causes and effects of eutrophication is limited[35] – thus reflecting the level of general environmental awareness in the three countries.

Since gaining independence, a strong course towards capitalism and a free market economy has brought about expectations of well-being, better incomes and a higher standard of living for citizens. As a consequence, people expect to have the right to achieve a standard of living equal to that of their counterparts in Western countries – even to the detriment of environmental well-being.[36] General desires of the population, in turn, direct politics towards short-term perspectives.

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[30] Several interviewed scientists in Estonia, Latvia and Lithuania, May 2010

[31] University scientist, Lithuania, May 2010; University scientist, Estonia, June 2010

[32] Civil servant, Ministry of Economic Affairs and Communications, Estonia, June 2010

[33] Iital et al., 2010: 179

[34] University scientist, Latvia, April 2010; civil servant, Ministry of Environment, Latvia, April 2010

[35] Civil servant, Ministry of Economic Affairs and Communications, Estonia, June 2010

[36] Sectoral research scientist, Latvia, April 2010

The development of green politics drags behind many countries in the region. In Latvia, green politics has been harshly accused of being artificial, cumulating into the coalition of Greens and Farmers;in Lithuania, it has been claimed that the strong agricultural tradition directs national and environmental politics in a more continental direction[37]; while in Estonia, the relevance of environmental issues has been somewhat better recognised, but the serious environmental talk has also still been strongly connected to the activity of environmental NGOs and the Green Party, meaning it is marked as "greens promoting their platform"[38].

**Diffuse vs. point source loading**

So far, many of the major point source polluters have also been brought under control in the Baltic States[39]. In turn, the required improvements in small villages and scattered settlements are much more difficult and costly to realise. Water prices, for instance, have already gone up due to the construction and renovation of water infrastructure, causing financial difficulties for both poor municipalities and the local people. In addition, considering the low impact of nutrient load from small settlements to the state of the waters, future investments are hard to justify to the localities.

The greatest practical challenge relates to diffuse loading, i.e. sources from agriculture and forestry. In the case of Latvia, forestry has, in recent years, become an even more attractive and profitable line of business than agriculture[40]; but at the same time, the lack of modern monitoring systems hinders to estimate the share of the nutrient leakage from forestry. With regards to agriculture, this sector of the Baltic States collapsed in the early 1990s, resulting for example in a six-fold reduction in the use of fertilisers in Estonia, and therefore a significant downward trend in nitrogen concentration.[41] At present, the trend is towards large-size farms, and agricultural production is expected to increase – especially in Lithuania.

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[37] Member, environmental NGO, Latvia, April 2010; University scientist, Lithuania, May 2010

[38] Politician, marine scientist, Estonia, June 2010

[39] In terms of phosphorus load, also the point sources carry reduction potential in the Baltic States.

[40] Civil servant, Ministry of Environment, Latvia, April 2010

[41] Iital et al., 2010: 178

Regarding the environmental impact, the nutrient load of small farms does not play a role in eutrophication[42]. Big, modern farms that contribute to the problem are, in turn, economically profitable, which often implies higher capability and the motivation to adjust to new environmental regulations. Big farms operate like factories by carefully calculating efficiencies, nutrient balances and usage of fertilisers. This can be seen in monitoring results that indicate better nutrient balances in the fields of big farms[43]. As the current EU farming subsidy system supports the intensification and specialisation of farming, bigger farms also have the advantage of applying for external funding, in form of environmental schemes.

Present subsidy policies, together with legislative requirements and law enforcement, seem to be the key questions for controlling the nutrient load from agriculture. The ineffective regulations fail to promote cost-effective methods of reducing nutrient load from agriculture[44]. Authorities understand the need for strict legislation, but at the same time legislative obligations without economical incentives are seen as a death knell to local agriculture[45]. To alleviate the related discrepancies, further improvements in environmental advisory services and inspection systems are called for. Moreover, environmental authorities stress the need to improve the inspectorate system itself and the existing inspection methods concerning, for example, the measurement of manure content in fields[46].

### Cross-border cooperation

The Baltic States share drainage areas with other countries, which makes it difficult to estimate the magnitude and impact of pollution entering local water bodies. In part, the problem lies in the bureaucratic difficulty of getting data from the Russian or Belarusian side; in part, the data is inexistent. The lack of knowledge regarding transboundary pollution has evoked criticism of the national reduction targets set out in the BSAP plan; Latvia has warned that

[42] University scientist, Estonia, June 2010

[43] University scientist, Latvia, April 2010

[44] Two university scientists, Estonia, June 2010

[45] Civil servant, Ministry of Environment, Estonia, June 2010

[46] Water management expert, Environmental Agency, Lithuania, May 2010; civil servant, Ministry of Environment, Estonia, June 2010

the unsolved question of transboundary pollution may diminish its' national efforts to implement the plan[47].

At the moment, existing bilateral treaties are adhered to only in part, and countries have failed to ratify multilateral agreements on, for example, the management of international river basins. The problems within the negotiations are partly connected to the EU membership of the Baltic Countries, which has introduced a new negotiating party: the European Commission[48]. HELCOM is seen as a less complicated, overarching and Baltic Sea –oriented venue of cooperation.

## *The way forward*

*"Yesterday I was in a meeting with OECD people and state office. (...) And actually, I noticed or I understood that actually (...) we are like in the first phase where we have renovated all our infrastructure, taking off old infrastructure or renovating this old one, where needed putting new one in the place and so on and so forth. So now begins the second phase, and actually that is a task to the government what that should be. We are talking about here green growth, eco-innovations and so on and so forth. So, I would say that as small country we are, we are very movable, we are not a big ship that is hard to move. And of course we have a very good benefit in front of all the Europe or even around the Baltic, we are quite a green country. So we have many things actually to be proud of and actually to seek if the eco-politics, what kind of eco-services we can provide. That is actually, we are always talking about the environment and it should be protected. Yes, but we are living here, so actually we could see how we can make use of different kind of, sustainable use of different eco-services. So probably this is the next step what Estonia should think about."*[49]

The citation of an Estonian civil servant summarises past and present progress, as well as the future environmental prospects of the Baltic States. The will to harmonise legislation and administration in

[47] HELCOM, 2009: 100; civil servant, Ministry of Environment, Latvia, April 2010

[48] Water management expert, Environmental Agency, Lithuania, May 2010; civil servant, Ministry of Environment, Latvia, April 2010

[49] Civil servant, Ministry of Environment, Estonia, June 2010

accordance with the EU has been so extensive that, in many ways, the development has taken place without a deeper analysis of the course of events. Requirements and initiatives have come from the outside, leaving the Baltic States with merely the role of executor.

Little by little, the young countries have learned to operate in international arenas. As was pointed out by the Estonian civil servant, the country is now moving towards the second phase of development, in which the focus of environmental policy will be on local initiatives and green growth. This requires true political commitment, and the government, as well as other decision-making bodies, to play an active role. First and foremost, cooperation and communication between different actors should be intensified, both horizontally and vertically, in order to supplement human resources – the lack of which burdens state administration in all three Baltic States. This requires mental change, delegation of work and new cooperation structures and forums.

Higher education is among the key tools needed to meet the administrative challenge, along with better financial resources, power distribution and improved cooperation structures. General strengthening of grass-root environmental awareness and possibilities of public participation are also needed, in order to generate the political pressure necessary to increase the status of green values and politics in general, and the Baltic Sea in particular. Here, the involvement of NGOs and science are of crucial importance. In practical terms, further research regarding the allocation of nutrient load, cost-effective ways of combating the problem and proper economic incentives connected to the reform of the subsidy system are called for.

Due to the current economic crisis, other social and economic problems have bypassed environmental issues among the public and in decision-making, but, on the other hand, these difficulties have also forced actors to prioritise and reconsider the importance of activities, and to focus on the truly important issues[50]. Thus, the economic crisis does contain a seed of new environmental thinking in terms of innovations and the development of environmentally friendly technologies. Yet, this kind of development takes time and will happen only with the support and pressure of active citizens.

[50] Civil servant, Ministry of Environment, Estonia, June 2010

# 6. Poland – looking for a higher environmental awareness[1]

Barbara Dmochowska
Anna Szaniawska

Unfortunately, for decades environmental problems were unknown to stakeholders and policy-makers in Poland, and the Baltic Sea was just an abstract concept. However, Poland is now regarded as the largest exporter of nitrogen and phosphorus to the Baltic Sea, meaning the objective reasoning of such a situation is thus required. The problem needs, for instance, discussion about the historical aspects of the issue – for example to what extent the long-lasting accumulation of phosphorus in deep sea areas influences its long-term release from bottom sediments. Another aspect is the agricultural area: 50 per cent of the total agricultural area of the Baltic Sea's catchment area is located in Polish territory. Moreover, a substantial part of the Baltic Sea catchment area is within Polish borders[2] and more than 40 per cent of the population living in the Baltic Sea basin are Poles[3].

The membership of Poland in the European Union forces the country to take certain pro-ecological actions; after the 1989 system transformation, water quality has become one of the main national environmental goals, for example. Poland has recently worked on political and instrumental levels to minimise discharges of nutrients, with the aim of combating the eutrophication of the Baltic Sea. The Helsinki Convention, with its HELCOM Recommendations, the BSAP (see chapter 2) and European directives regulating nutrient enrichment and water quality issues, has worked as a driver for the relevant actions taken in Poland. In fact, the EU directives and enormous financial resources originating from the EU have contributed to a giant cultural step in the environmental field in

[1] This article is based on relevant literature and 32 interviews with Polish experts from universities, sectoral institutes, environmental agencies, NGOs, local, regional and central level public administrators, and farmers, carried out between October 2009 and February 2011.

[2] The territory of Poland is 312,685 km$^2$, and 99.7% of it is in the catchment area of the Baltic Sea, see Polish Ministry of the Environment, 2010: 3–13

[3] HELCOM, 1993b: ch. 3

Poland, thereby, though very slowly, also raising social awareness. Poland has made investments and worked out its own legal solutions and environmental policies related to wastewater management, protected areas, monitoring and evaluation.

In the last ten years, a significant reduction in the runoff of nutrients from Polish territory to the Baltic Sea has been observed. When comparing the period 2005–2007 to the years 1995–1997, the reduction of outflow of nitrogen and phosphorus equated to approximately 35 per cent[4]; and when calculated per capita or per 1ha, the numbers of the runoff of nutrients look better than those of most Baltic Sea countries. Still, further reduction of nitrogen and phosphorus compounds would imply a huge reduction in aggregate loads to the Baltic Proper. Having no political character, as well as being insufficiently communicated to the public, the problem of the eutrophication of the Baltic Sea is underestimated in Poland[5].

This chapter gives an overview of the Polish national eutrophication policy and analyses the main challenges of eutrophication prevention in Poland. It also discusses some possible ways to meet these challenges.

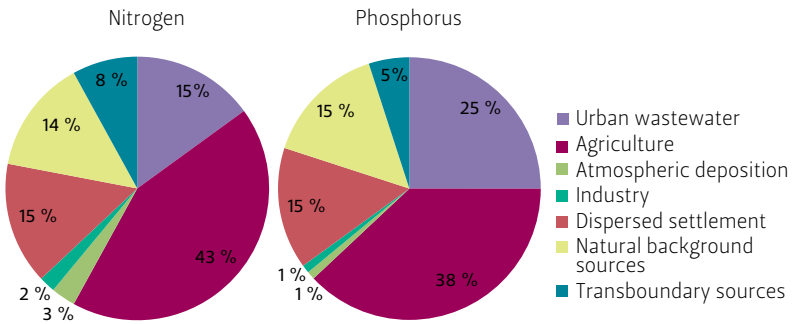


Figure 6.1. Different sources of total Polish nitrogen and phosphorus loads to the Baltic Sea in 2006.

[4] Ministerial expert, March 2010

[5] Many experts, 2009–2011

## *National eutrophication policy*

### Regulations and regulators

Poland, as a contracting party to the Helsinki Convention, which was ratified by Poland in 1999, is supposed to implement HELCOM recommendations referring to the Baltic Sea and land areas located within its catchment area. Most of the recommendations are compliant with commitments resulting from EU membership, international agreements and other commitments in which the country participates[6].

The implementation of the EU WFD (see chapter 3, p. 34), plus related documents, is the most significant activity regarding the improvement of the water environment quality. To implement the provisions of the ND, Poland has established a list of areas that are at particular risk where the Code of Good Agricultural Practice is applied. Coordination and supervisory actions related to this field are undertaken mainly by the Ministry of Agriculture and Rural Development and the National Water Management Authority. Provisions of the UWWTD are implemented on the basis of the National Programme of Urban Wastewater Treatment in conjunction with the Ministries of Infrastructure, Economy, Agriculture and Rural Development, and the National Water Management Authority. The Inspectorate for Environmental Protection takes care of the efficiency control of the undertaken solutions, and local governments of the implementation of the investment tasks set out in the programme.

To reduce the deposition of atmospheric pollution, the actions implemented *inter alia* under the Convention on Long-range Transboundary Air Pollution (1979)[7] are significant. These actions were strengthened by the implementation of the Ceilings Directive, Large Combustion Plants Directive, and Directive 94/63/EC on the control of volatile organic compound (VOC) emissions. Actions in

[6] The main international documents regulating Polish legislation in this respect are: The Helsinki Convention (see chapter 2 of this report), The UNECE Convention on Long-Range Transboundary Air Pollution, The International Convention for the Prevention of Pollution from Ships, the relevant EU directives (e.g. UWWTD, ND, WFD, MSFD, the National Emission Ceilings Directive, the Directive on Integrated Pollution Prevention and Control, and regulations on detergents that use phosphates (see chapter 3, p. 34).

[7] see UNECE, 2011

this respect result from cooperation between the Ministries of the Environment and Economy in particular[8].

In 2001, Poland achieved significant progress in the approximation of national legislation with EU environmental law, as several major acts were approved and published in the Polish Official Journal, including the Act of Water Law, Law on Environmental Protection, and the Act on Collective Water Supply and Collective Waste Water Treatment. The new Act of Water Law introduced water resource management , which includes the division of the country into basin areas and water regions in order to create a stable water management system in Poland. According to the Act of Water Law, the chief organ of national administration competent in water management is the Minister of the Environment. The tasks of water management are carried out by the National Water Management Authority and Regional Water Management Authorities, which is a government administration that coordinates the implementation of the WFD[9].

With regards to the implementation of the HELCOM BSAP, the initial National Implementation Programme was prepared by the Department for Environmental Monitoring and Information of the Chief Environmental Protection Inspectorate and presented at the Ministerial Conference in Moscow in 2010. Three main tasks set out in the BSAP to combat eutrophication – that is, nutrient reduction from diffuse sources, from other "hot spots" such as wastewater treatment plans and from atmospheric origin, are carried out mainly through implementation of the National Programme for Municipal Waste Water Treatment[10], management programmes in the river basin areas, the National Water and Environmental Programme, and action programmes aimed at reducing nitrogen runoff from agricultural sources in vulnerable areas[11]. In general, the BSAP is considered to be controversial in Poland. Some consider it unfair and disagree with the huge and required reduction of nitrogen and phosphorus load from Poland and others neglect the very form of the project, which puts no strict obligations on the participating countries[12].

[8] Polish Ministry of the Environment, 2010: 14–17

[9] National Council for Water Management of Poland, 2011

[10] Ministry of the Environment, National Authority of Water Management, 2010: 4

[11] Representative of the Environmental Department, Voivodship Office, May 2010

[12] Many experts, 2010

**Recovering from the past decade – positive results**

In the 1970s and 1980s, both the rapid national industrialisation without environmental protection assumptions and the increase in population numbers in urban districts led to a dramatic deterioration in the condition of inland water, and ultimately of the Baltic Sea marine waters. To paint a picture of the situation in 1988, for example, 420 cities in Poland had no wastewater treatment plants, and those that did had only mechanical type ones[13].

Structural changes and new competencies have drastically changed the situation. For example, in 1990–2005 about 3,000 wastewater treatment plants were constructed. Also, the process of equipping rural areas with water supply systems that has been carried out in the last few years is very intensive and effective[14]. It is worth noting that putting sewage and water management in order is the responsibility of the municipalities, whereas the central government must take charge of the establishment of legal, organisational and financial instruments[15].

In addition, to limit phosphorus discharges from households Poland has a binding law limiting the content of phosphorus in washing powders accepted for marketing in the country to six per cent[16]. On the basis of consultations with polyphosphate producers and an analysis of the washing powder market, the provisions of HELCOM will be implemented, from 2015 onwards, by the introduction of strict restrictions in the application of polyphosphates as fillers in washing powders made for consumers use. So far, there are no plans to introduce a legal ban applying to phosphates in cleaning detergents for dishwashing on the consumer market[17].

In addition to the establishment of protected areas within the Nature 2000 network, including practically the entire Polish coast and the area of the Słupsk Shoal, Poland had already, even before the WFD, entered into management agreements with its neighbours

[13] Council of Ministers Republic of Poland, 2008: 36

[14] Ministry of the Environment, 2010: 14

[15] Experts from local level administration, 2010

[16] According to the Ordinance of the Minister of Industry and Trade on 30 November 1994, regarding requirements to be met by products due to health and environment protection needs.

[17] Ministry of the Environment, 2010: 28

with respect to international river basin districts. A good example here is the International Commission for Oder River protection against pollution, based on the Agreement on Oder River between the Governments of Poland, Czech Republic, Germany and the European Community. Yet, there is a need for further international agreements restricting the flow of nutrients through Polish territory to the Baltic Sea from Ukraine, Belarus, Czech Republic and Slovakia.

### Reducing the negative effects of agriculture

A lot of effort is currently put into the reduction of the negative environmental impact of agriculture, which has grown in recent years due to transformation, reforms and EU financial support. There are ca. 1.8 million farms covering over 190,000 km$^2$ of the territory of Poland – 61 per cent of the country. Despite the decline in the use of fertilisers in absolute figures[18], the areas where agriculture plays a major role are responsible for almost 60 per cent of nitrogen and 50 per cent of phosphorus loads to water. These sources of pollution are very difficult to control[19].

Polish agriculture, in general, comprises mixed production agriculture, implying the moderate consumption of fertilisers and a relatively low cast of animals per 100 ha. However, huge failures in agriculture in recent decades, for example, the environmentally harmful storage of manure, excessive use of fertilisers in former state-owned farms, the lack of treatment plants and the high consumption of water, have contributed to natural environment degradation[20]. So far, the reduction of the agricultural impact on eutrophication has been reached through educating farmers, increasing their ecological awareness, the implementation of environmental standards and investing in environmentally friendly infrastructure. Thus far, these measures have been focused on the implementation of the ND[21].

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[18] The use of mineral phosphatic fertilisers in 2007/2008 (P205) equaled 462.3 thousand tonnes, which was over 38% lower than in 1989/1990. The use of mineral nitrogenous fertilisers in 2007/2008 (N) equaled 1141.3 thousand tonnes, which was 11.3% lower than in 1989/1990, see Ministry of the Environment, 2010: 3–13.

[19] Ministerial expert, May 2010.

[20] Sectoral institute researcher, December 2009

[21] Ministry of Agriculture and Rural Development, 2004:76–86

In 2008, Poland designated, for the first time, 21 areas exposed to pollution by nitrates from agricultural sources; these areas cover ca. two per cent of the country [22]. Another project that has been carried out is the introduction of the Code of Good Agricultural Practice, which puts certain standards on, for example, the use of fertilisers and other environmental protection measures[23]. Principles of the code apply to farmers who participate in the Rural Development Plan, and this regulation lays down a detailed method of the application of fertilisers and how training with regards to their use is conducted[24].

Since 2009, the minimum requirements of the Cross Compliance method came into force[25]. The payment amount can be reduced by up to 100 per cent for not fulfilling the cross-compliance requirements. The authority responsible for checking if the Cross Compliance requirements are met by farmers – that is, if the standards of Good Agricultural Condition and environmental requirements, plant health and food safety are fulfilled – is the Agency for Restructuring and Modernization of Agriculture. Information on the Cross Compliance mechanism, as well as any other information directed to farmers, can be obtained from the websites of the Ministry of Agriculture and Rural Development, the Agency for Restructuring and Modernization of Agriculture and the Centre of Agricultural Advisory Service, as well as directly from the district and regional offices of theses institutions.

In addition, a number of national environmental programmes under the Rural Development Programme are run to combat eutrophication. The National Agri-environmental Programme consists of seven projects, which include a total of 40 different actions[26]. It is addressed to all agricultural producers eager to improve the quality of the environment and the conservation of natural values. The National Agri-environmental Programme provides additional payments to farmers carrying out its various packages, which include organic farming, soil and water protection, and buffer zones. Some packages may be implemented throughout the whole country, but most of them only in so-called priority zones.

[22] Alterra, 2007:15

[23] Ministry of Agriculture and Rural Development, 2003:5

[24] Agriculture advisory administration representative, February 2011

[25] Ministerstwo Rolnictwa i Rozwoju Wsi, 2011

[26] Agencja Restrukturyzacji i Modernizacji Rolnictwa, 2010

The aims of the Sustainable Agriculture package are the balancing of manure management, compliance with appropriate plants and the reduction of the consequences of stocking density on farms. The Organic Farming package aims to spread organic farming methods in agricultural production, and in accordance with the principles laid down in regulations on organic farming. The Water and Soil Protection package is aimed at increasing the share of land covered with vegetation during autumn and winter periods. The idea of the Creation of Buffer Zones package lies in the establishment of buffer belts between areas of intensive agriculture and surface waters, in order to reduce the negative impacts of agriculture and the protection of sensitive habitats, to name but a few.

The future growth of agricultural production in Poland is probable, taking under consideration, for example, concentrated swine farms, which impose a threat to the environment[27]. Moreover, so far economic problems have been the main reason for the moderate consumption of fertilisers, especially among small and medium farmers. Once Polish farmers receive the full support payments from the EU, fertiliser consumption may increase[28].

### Limiting factors

Despite the amount of legal solutions, programmes, activities, financial mechanisms, and training and investment solutions, there are still factors limiting the actions designed to prevent eutrophication. As has already been noted, the large area of surface runoff creates the greatest challenge and, due to the economic situation and fragmentation of farms to many owners, the problem is difficult to monitor and control. There are also financial limits to improving infrastructure on farms and in drainage systems; indeed, interviewees point to EU funds as the main source of infrastructure changes. Further funding is needed for water treatment system development, especially in rural areas, and for the modernisation of agriculture. The rehabilitation of water reservoirs also encounters problems of a financial nature, because necessary treatment facilities are extremely expensive.

[27] Sectoral institute, researcher, December 2009.

[28] Farmers, expert–researcher, 2010–2011

A further challenge is the low transparency of regulations, together with a large number of them that are accompanied by a central decision-making procedure. The complicated system of regulations and procedures for the accession to environmental projects is very often a barrier for farmers, requiring a lot of knowledge and time. Moreover, supervision and control processes need improvement. Furthermore, legal regulations are often underdeveloped; for example, the buffer zones are introduced to reduce nutrient runoff, but as the same regulations apply to different types of soils, different locations, etc., controversies and a lack of enthusiasm towards this kind of solution in general arise. Therefore, more precise and further developed regulations are needed[29].

There are numerous institutions at the national, regional and local levels whose actions include counteracting eutrophication: ministerial branches, voivodship branches, marshal offices, offices of municipalities, cities and counties, inspectorates of environmental protection, agencies related to agriculture, directorates of environmental protection, national park bodies, local action groups, advisory centres, marine institutes, and other sectoral institutes and university departments.[30] Thanks to the development of the three-level administration, main point pollution sources are known and well monitored by environmental authorities. Despite divided responsibilities, the most influential actors are representatives of central authorities. Policies designed to prevent eutrophication depend on central decisions, mainly in terms of standards and the transposition of EU legislation into national laws, and are only scantly dependent on local decisions – for example in areas particularly vulnerable, or local development plans[31]. Although the administrative structure is decentralised, decisions are generally taken at the central level and implemented at the local level. Local authorities and farmers become participants in the process only after they have acted in accordance with a central decision.[32] With regards to the scientific institutions, the participation of Polish academic bodies in the implementation of projects in this area is negligible. The results

[29] Farmers, 2010–2011

[30] Many experts, 2010

[31] Public administration representatives, 2010

[32] Most experts and farmers, 2009–2011

of scientific research work and projects are not presented on a large scale to the state administration bodies[33].

Last, but by no means least, the habits and legal awareness of the Polish people, including policy-makers, is in need of a change. For instance, farmers' awareness about the impact of their activities on the environment is usually low, and damage to the environment is sometimes made unintentionally. Special education seems to be important for young farmers who are eager to make changes and willing to participate in environmental programmes.

Generally, the information about the condition of the marine environment is poor, and the exchange of views between those who are responsible for eutrophication and the group interested in limiting its effects is limited, if it exists at all; furthermore, there is no public debate over the issue. True, there are some groups of ecologists and NGOs fighting for the protection of the Baltic Sea by running campaigns against traditional farming, etc., but the media rather ignores the issue. Therefore, only a limited number of people in Poland understand what is meant by eutrophication. The average inhabitant starts thinking about the problem of pollution only when the beach is not available for bathing in the summer due to excessive algae blooms[34]. Actions that increase public awareness should be developed in various areas, including the problem of steady growth in meat consumption, which, despite many being unaware of the issue, indirectly contributes to Baltic Sea eutrophication. There is also a lack of communication within the group of stakeholders interested in limiting the effects of eutrophication – namely policy-makers, scientists and environmental activists. Although the National Strategy for Environmental Education *Through education to sustainable development* was adopted in 1997 – the guidelines are implemented together with the UNESCO programme and were accepted in the 2005 *Decade of Education for Sustainable Development 2005–2014*[35] – the level of awareness is low. Poland also signed and ratified the Aarhus Convention on access to information and public participation in decision-making, but the elements of public participation in decision-making and access to information function only partly[36].

[33] Regional level public administration representative, May 2010.

[34] Many experts, 2009–2011

[35] Many experts, 2009–2011

[36] Many experts, 2009–2011

## *The way forward*

Numerous actions undertaken by Poland have so far resulted in a decrease in the total nitrogen load, but the situation still needs to be improved. Fertilisers form the biggest threat to the ecological state of water bodies, and there are a lot of solutions that counteract eutrophication – most importantly those related to the Code of Good Agricultural Practice, the designation of vulnerable areas, Cross-Compliance regulations, wastewater treatment and environmental programmes. To a large extent, those regulations are either EU regulations or EU legislation transposed into Polish law. Also, HELCOM activities, such as the BSAP, are very important, but EU sanctions are much more efficient than any declarations or non-binding recommendations and plans[37].

In the case of agriculture, further educational and consulting activities aimed at farmers, with respect to the application of the Good Agricultural Practice, are necessary. Under the implementation of the Rural Development Programme, the projects in the aforementioned packages should be continued. As for agri-environmental investments, financial support programmes for the construction and modernisation of inventory facilities for collection and storage of solid manure, manure boards and tanks for slurry need to be developed. Also, modern techniques of, for example, obtaining biogas on the basis of solid manure and other metabolic products should be developed, and a common system of determining doses of fertilisers depending on the type of soil and crops would be beneficial[38].

In the case of urban wastewater treatment, the on-time implementation of the Updated National Programme for Municipal Waste Water Treatment tasks is necessary. Measures carried out under the programme must ensure that by 31 December 2015 all aims, including planned investments, modernisations, etc., regarding collective sewage systems and wastewater treatment plants have been reached[39]. After the verification and determination of acceptable nutrients loads by HELCOM, it will be necessary to perform a quantitative balance of the effects of previous measures, with

[37] Public administration representative, May 2010

[38] Researchers and public administration representatives, 2010

[39] Ministerstwo Środowiska, 2010b: 10–22

respect to objectives to be achieved by 2021 and in the undertaking of additional measures. These quantitative values should be specified by each business sector that contributes to Baltic Sea eutrophication. It will also be necessary to estimate costs, both for performed and planned measures[40]. In addition, the effectiveness of the state environmental inspectors needs to be increased[41].

Finally, in order to strengthen the potential of Poland, with regards to the tackling of eutrophication, it is necessary that ministries and local government intensify their actions for public engagement in environment protection and raise environmental awareness through education, advertising campaigns, access to information and the promotion of environmental friendly approaches and measures.

[40] Many experts, 2010–2011

[41] NGO expert, June 2010

# 7. Germany – no priority for Baltic Sea protection[1]

Tom Schumacher

Of all the coastal states, Germany has the smallest share of the Baltic Sea catchment area, and the country is responsible for only three per cent of total nitrogen and two per cent of phosphorus water-based discharges to the Baltic Sea[2]. However, a different impression emerges if atmospheric depositions are included in the calculation: the German share of 19 per cent of airborne nitrogen inputs to the Baltic Sea is the highest of all the coastal states. Due to prevailing west winds, territories far beyond the catchment area, i.e. Lower Saxony and North Rhine Westphalia, also contribute to the atmospheric nitrogen deposition into the Baltic Sea. These areas are considerable nitrogen emission sources because of intensive agricultural land-use, high traffic density and a high number of large combustion plants[3]. As a consequence, Germany is the only state that, even in absolute figures, contributes more to nitrogen loads into the Baltic Sea via atmospheric deposition than through water-based discharges. If both pathways are taken together, the total German share amounts to nine per cent[4].

[1] This chapter is based on relevant literature and 26 interviews with political decision-makers and experts from administrations, NGOs, interest groups and academia. The interviews were conducted between May 2009 and July 2011.

[2] Due to the division of catchment areas, Germany contributes to the pollution of the North Sea and the Black Sea to a much higher degree than to the Baltic Sea. For example, German agriculture was responsible for the discharge of 21,000 tonnes of nitrogen to the Baltic Sea in 2000, while the corresponding figure for the Black Sea was more than three times higher (76,000 tonnes) and almost 14 times higher (293,000 tonnes) for the North Sea. Similar relations exist with regard to phosphorus discharges. See Federal Environmental Agency, 2003: 161

[3] Bartnicki and Valiyaveetil, 2008: 18

[4] Schumacher, 2009: 6 and VDR, 2010: 2

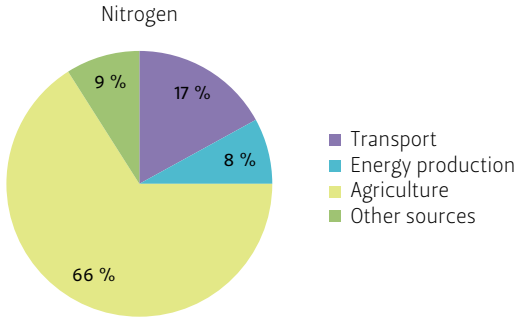


Figure 7.1. Different sources of total German nitrogen load to the Baltic Sea.

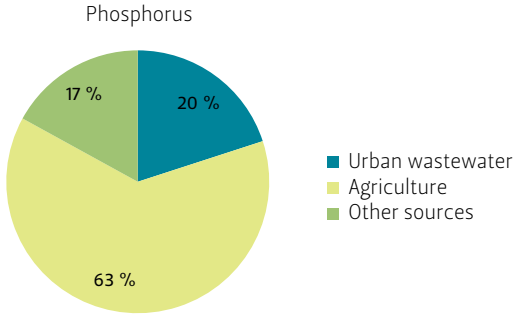


Figure 7.2. Different sources of total German phosphorus load to the Baltic Sea.

In Germany, concerns about the deteriorating environmental quality of the North Sea arose for the first time during the 1970s; it is worth noting that Baltic Sea pollution has never raised similar strong concerns. On the one hand, the problem has not emerged in such a serious way along the German Baltic Sea coast; on the other, the German environmental movement is traditionally more deeply rooted in the "old" West German federal states and thus oriented primarily towards North Sea issues.

In the field of marine protection policies, the German political system implies a division of competences between the federal and the federal state level – for instance, the responsibility for the implementation of the EU Water Framework Directive (WFD)[5]

[5] See chapter 3

lies exclusively with the federal states. In the case of the Baltic Sea, there are the two coastal states, Mecklenburg-Western Pomerania and Schleswig-Holstein, as well as Brandenburg and Saxony, which both partly belong to the catchment area. In contrast, competences with regards to air protection and the Exclusive Economic Zone are mainly located at the federal level.

## *National eutrophication policy*

An early and well-known German measure to combat eutrophication is the regulation on phosphates in detergents. It was introduced in 1981 by the Ordinance on Maximum Amounts of Phosphates in Washing and Cleansing Agents, and supplemented in 1985 by a corresponding self-commitment by the detergent industry. Both acts are, in practice, equal to a ban on phosphates in household detergents[6]. This "ban", however, does not comprise detergents which are used for professional purposes and automatic dishwashers.

It is a major success of Germany's eutrophication policy that the level of urban wastewater purification from nutrients is the highest in the whole Baltic Sea region: today ca. 97 per cent of phosphorus and 86 per cent of nitrogen is removed from all treated sewage water.[7] This clearly exceeds the requirements of the EU Urban Waste Water Treatment Directive (UWWTD)[8] and even the stricter stipulations of the HELCOM Baltic Sea Action Plan (BSAP)[9].

As a way of implementing the EU's Nitrates Directive (ND)[10] and addressing nitrogen load from agriculture, Germany adopted, in 1996, the Federal Fertilizer Ordinance. The ND leaves it to the member states to chose whether they prefer to designate their whole territory as a Nitrates Vulnerable Zone (NVZ), or only certain parts of it – Germany decided to designate its whole territory as an NVZ. The regulation implies the use of environmentally friendly fertilisation practices. A sharpened version of the Fertilizer Ordinance prescribes

[6] Köhler, 2006: 22

[7] See chapter 10, Table 10.2

[8] See chapter 3

[9] See chapter 2

[10] See chapter 3

that the average nitrogen surplus at farm level must not exceed 60 kg/ha a year, starting from the measurement 2009–2011 period. The need to drastically reduce agricultural nitrogen surpluses has also been backed by the German National Sustainability Strategy (2002) and the National Strategy for the Sustainable Use and Protection of the Seas (2008). Both strategies stress the goal of reducing nitrogen surpluses to 80 kg/ha by 2010.

Yet, neither the stricter objective, laid down in the Fertilizer Ordinance, nor the more moderate goals of the two strategies have been met by the stated deadline. Instead, the average nitrogen surplus from farmland at present amounts to approximately 100 kg/ha. Although there has been a tendency towards lower rates, progress is very slow, with an average annual reduction rate of just two per cent[11].

As for measures designed to address atmospheric emissions, the application of the Ordinance on Large Scale Firing Plants (1983) led to a more than 50 per cent reduction in $NO_X$ emissions originating from power generation and industrial combustion by 1990; in contrast, $NO_X$ emissions stemming from the traffic sector turned out to be harder to reduce. This is due to technical reasons related to the introduction of catalytic converters[12], the disproportionately high rise in the share of diesel vehicles in the total vehicle fleet[13] and to the overall increase in road traffic – in particular in the transport sector, which, to a considerable extent, has absorbed achievements stemming from the introduction of the aforementioned catalytic converters[14].

The efforts to address $NH_3$ emissions, which almost exclusively originate from the agricultural sector, have been the least successful. Here, the EU's Integrated Pollution and Control Directive of 1996 had an adverse impact on German legislation, as it induced an adjustment of German law from lower to higher thresholds for the requirement of measures to prevent pollution emanating from pig and poultry farms[15]. In its National Sustainability Strategy (2002), the Federal Government set the goal of reducing $NH_3$ emissions by 70 per cent –

[11] Federal Government, 2008: 62

[12] Federal Environmental Agency, 2009a: 69

[13] Federal Environmental Agency, 2009b: 17

[14] Eichler and Schulz, 1998: 614

[15] Eichler and Schulz, 1998: 612

compared to the 1990 level – by 2010. However, most of the originally planned measures suitable for addressing emissions from farming have not been implemented, and only a reduction of ca. 16 per cent has been achieved so far[16]. Germany is the only EU-member state in the Baltic Sea region that by 2010 had failed to meet the emission ceilings – set out in the EU's National Emission Ceilings Directive – for both nitrogen oxides and ammonia[17].

## *Explaining the weaknesses of Germany's protection policies*

### The lack of awareness

In spite of the generally high priority of environmental protection on the political agenda in Germany, the issue of Baltic Sea protection has never become an important topic within domestic debates on the environment[18]. This is rooted in the 1980s, when the environmental movement started to become a strong political force in Germany and the country was still divided. For the Federal Republic, the North Sea was of greater importance than the Baltic Sea, as its coast line was much longer and constituted a more popular tourist destination[19]. Furthermore, the specific and exclusive nature of the Wadden Sea[20] contributed to a widespread perception of the North Sea as the more vulnerable ecosystem, whose specific ecologic value was deemed worth preserving[21].

[16] Federal Environmental Agency, 2011:68; Federal Government, 2008: 65

[17] EEA, 2011

[18] A recent survey revealed that among the Baltic Sea states, people living in Germany are least concerned about the environmental state of the Baltic Sea. Moreover, only in Germany and Latvia were a majority of respondents not of the opinion that their own country's farmers should take action in order to address marine pollution. See Söderqvist, 2010: 9.

[19] For instance, the Greenpeace Germany office was founded in 1980 in Hamburg mainly under the impression of North Sea pollution. The chemical industry was seen as the main pollution source.

[20] The Wadden Sea was declared a National Park as early as 1985/1986.

[21] Official, Ministry of Agriculture, the Environment and Consumer Protection of Mecklenburg-Vorpommern, June 2011; it is striking that the chapter on "Sustainable protection for the marine environment" of the 2008 Maritime Action Plan Schleswig-Holstein solely refers to the need to protect the Wadden Sea; the problem of Baltic Sea eutrophication is not mentioned at all; see Ministry of Science..., 2008: 17.

In 1978, mountains of sea foam shocked people and eroded the picture of a perfect holiday paradise by the sea. Other alarming news followed, such as reports about an increased death rate among seals and fish. These experiences were predominantly related to the North Sea, and thus reinforced the opinion about its higher environmental vulnerability compared to the Baltic Sea[22]. Once the problem of sea foam during the 1990s disappeared, marine eutrophication was overshadowed within environmental debates by new challenges, including the danger of oil spills from tankers and drilling platforms, which once again were mostly perceived in a North Sea context.

**Distorted perceptions about the reasons for eutrophication**

Awareness about Baltic Sea eutrophication in Germany tends to be confined to the affected coastal regions – and even here the debate suffers from distorted perceptions about the reasons for eutrophication. A media analysis revealed that articles concerning marine eutrophication are written in rather euphemistic terms, and thus mostly avoid naming the real causes of the problem[23]. Reports about excess algae blooms in newspapers tend to suggest that these are "natural processes" caused by specific weather constellations. In most cases, nature (e.g. "the wind", "the lack of wind" or "the summer heat") is blamed for causing the blooms, rather than anthropogenic pollution. This reflects a lack of knowledge, on the one hand, and an open interest in preserving the image of a clean and healthy Baltic Sea environment, considered a prerequisite for the region's attractiveness as a tourist destination, on the other.

Politicians contribute to a distorted perception of the reasons for Baltic Sea pollution, too. While overemphasising Germany's relatively low level of water-based inputs, they neglect the far greater extent of nutrient inputs that reach the marine waters via air pollution. Thus, they contribute to the construction of a false

[22] Representatives, BUND Schleswig-Holstein, May 2011 and BUND Germany, June 2011 and two officials from the Ministry for Agriculture and Environment of Schleswig-Holstein, May 2011

[23] The analysis was conducted during the period 2005 to 2011 and focused on local newspapers, including Ostsee-Zeitung, Schweriner Volkszeitung, Holsteinischer Courier, Flensburger Tageblatt, Kieler Nachrichten, Eckernförder Zeitung, Elmshorner Nachrichten, Ostholsteiner Anzeiger.

image of an environmentally progressive Germany which "has done its homework" – even in the field of marine protection[24]. As a result, many political actors pass on the actual responsibility for Baltic Sea pollution, for example during debates in the state parliament of Schleswig-Holstein, to other coastal states – namely Denmark, Russia, Belarus, Lithuania, Latvia and Estonia[25]. Also, the chapter on the "German goals and reduction efforts" in the German Status Report on the Implementation of the HELCOM BSAP presents a distorted picture, as it concentrates on the rather small amount of water-based nutrient inputs from Germany, thus disguising the real extent of German nitrogen inputs to the Baltic Sea[26].

Political actors do not completely ignore the responsibility Germany has to address nutrient inputs from its territory to the Baltic Sea. Yet, the suggested measures are mainly motivated by the interest in demonstrating the politicians' capacity to act, and often not by the desire to combat eutrophication. A good example of this is the broad campaign against sewage from passenger ships, originally initiated by the WWF in 2007 and soon taken up by politicians from Schleswig-Holstein and the media[27]. On the one hand, it is easier for the public to imagine sewage discharges, especially from cruise ships, as a source of marine pollution than nutrient surpluses from agriculture[28]. On the other hand, the shipping sector's lobby has not been as capable of exerting pressure on politicians as the agricultural lobby.[29] Thus, although sewage from passenger ships has a marginal share of 0.01 per cent of total nitrogen inputs to the Baltic Sea,

[24] See CDU..., 2006; representative of the German Farmers' Association, July 2011

[25] See Schleswig-Holsteinischer Landtag, 2002: 5237; Schleswig-Holsteinischer Landtag, 2003: 6624; Schleswig-Holsteinischer Landtag, 2007: 5106

[26] HELCOM, 2011a

[27] Newspapers here accuse the polluter in a more direct and drastic manner than ever could be done in the case of agriculture , using headlines such as: "WWF: The Baltic Sea remains a loo for cruise ship sewage", see Ostsee-Zeitung, 2008.

[28] This disproportionate public attention to shipping and agriculture in terms of their respective responsibilities for marine pollution is also stressed in the German National Strategy for the Sustainable Use and Protection of the Seas. See Federal Ministry for the Environment..., 2008: 33.

[29] Two officials, Federal Ministry of Transport, Building and Urban Development, June and July 2011

which is basically negligible if compared to the share of more than 60 per cent stemming from agriculture, some politicians act as if the problem of Baltic Sea eutrophication could largely be solved just by regulating this very marginal pollution source[30]. The link between the agricultural sector and Baltic Sea pollution is often not only ignored by politicians, the media and the farming lobby but also by German environmental NGOs, which have not satisfactorily integrated agricultural issues into those of their structures and campaigns that are focusing on the protection of the marine environment.[31]

**The insufficient consideration of region-specific requirements**

The agricultural sector in Germany is characterised by a rather heterogeneous structure. In the northern parts of the country large competitive farms prevail, while in southern Germany units are smaller and owners often only work as part-time farmers. It would thus be ideal if strategies to implement more environmental friendly farming practices would be tailor-made to these region-specific conditions. Instead, most of the agri-environmental programmes in Germany mainly suit the socio-economic conditions that prevail in the southern states such as Bavaria, Baden-Württemberg and Hesse. Consequently, in southern Germany they have been implemented to a much higher degree than in the northern part of the country. For example, in Schleswig-Holstein and Mecklenburg-Vorpommern only 26 per cent of the total Rural Development budget for the period of 2007–2013 is aimed at improving the environment and the countryside (axis 2 of the programme), while the average figure for Germany is 40 per cent[32].

Due to small structures and, in many cases, poor soils in southern Germany, most farms are not very productive. Thus, strong incentives exist to either switch to organic farming or apply for agri-environmental programmes (e.g. extensification or buffer strips). The farmers at least earn some money from compensation payments and have more time to concentrate on their main profession, as the

[30] See, for instance, the plenary debate in the Schleswig-Holstein state parliament under the item "Fäkalienverschmutzung in der Ostsee stoppen", Schleswig-Holsteinischer Landtag, 2007: 5105–5111.

[31] Representatives, BUND Schleswig-Holstein, May 2011 and BUND Germany, June 2011

[32] See WWF, 2009: 50

farming business forms a secondary occupation for many of them. In contrast, farmers in northern Germany more often depend solely on the income which they generate through intensive farming in large competitive units. In northern Germany, soils are often highly fertile and consequently any restrictions which would be imposed through the application of agri-environmental programmes are regarded as counterproductive, as they would prevent the farmers from getting the maximum possible yield from their land[33]

The federalist structure of the German political system seems to play an ambiguous role. On the one hand, the decentralised distribution of competences in the Federal Republic offers the two German Baltic Sea states, Schleswig-Holstein and Mecklenburg-Vorpommern, the opportunity to independently take action in order to ensure environmental protection and to lobby for the consideration of marine protection concerns at the national level. On the other hand, it should be noted that these two federal states are among the weakest in Germany, both politically and economically, and thus only have limited means by which to represent their interests vis-à-vis other states and at the federal level.

Involving the Federal Government in anti-eutrophication efforts within the framework of Baltic Sea cooperation has turned out to be rather difficult. Germany is often perceived to be the "weak link" among the Baltic Sea coastal countries, as it is keeping itself out of otherwise promising initiatives and projects undertaken by other Baltic Sea states in order to make agriculture compatible with marine protection requirements. Germany, for instance, refused to support an approach initiated by the European Commission and the other Baltic Sea states to establish a common standard for buffer strips within the whole Baltic Sea catchment area[34]. Moreover, Germany is the only Baltic Sea state that does not fully participate in some important projects, such as "Baltic Deal" and the "WWF Baltic Sea Farmer of the Year Award", which help to disseminate knowledge and experience on how to avoid on-farm nutrient losses. This reluctance can be explained by the difficulties in coordinating action between the federal states and the Federal Government, and by a lack of

[33] Several officials, Ministry for Agriculture and Environment of Schleswig-Holstein, May 2011 and Federal Ministry of Food, Agriculture and Consumer Protection, June 2011

[34] Official, European Commission, DG AGRI, September 2010

political interest within the Federal Government to actively engage itself in Baltic Sea cooperation in general, and in the fight against eutrophication in particular[35].

## *The way forward*

To improve the conditions for the fight against marine eutrophication in Germany, it is essential to raise awareness of the problem and its true causes. Evidently, eutrophication will hardly ever acquire such a prominent position in environmental debates as other challenges – which include combating climate change and phasing out nuclear energy. Therefore, a possible strategy could be to connect the policy of eutrophication to these topics and emphasise double benefits, thus avoiding the "more popular" aims being pursued at the expense of the less prominent ones[36]. For example, agricultural reforms should be designed in a way that ensures a reduction in greenhouse gases, ammonia and nutrient run-off at the same time; such measures should be accompanied by the promotion of new mindsets and consumption patterns. For instance, a reorganisation of structures and habits is necessary to decrease the amount of food that is thrown away[37], which in turn eases the pressure on the farming sector to increase production. To decrease meat consumption, it would also be helpful to encourage a change in individual attitudes.

In order to shape a broader social basis for agricultural reforms, it would be highly advantageous if the polarisation in Germany between conventional agriculture and NGO-supported organic

[35] Several Officials, Ministry of Agriculture, the Environment and Consumer Protection of Mecklenburg-Vorpommern, June 2011, Federal Ministry of Food, Agriculture and Consumer Protection, June 2011 and Schleswig-Holstein State Agency for Agriculture, Environment and Rural Areas, June 2011.

[36] Due to the primacy of the energy turnaround in German environmental politics, the cultivation of energy crops has been encouraged massively during the last few years. This development, reinforced by the Fukushima catastrophe in 2011, has already brought about a significant increase in nutrient runoffs to the environment. Official, Schleswig-Holstein State Agency for Agriculture, Environment and Rural Areas, June 2011.

[37] In Germany, about 20 million tonnes of food per year ends up in the rubbish bin. See The German Council for Sustainable Development, 2011.

farming could be overcome. The broader public gets the impression that these two extreme opinions are the only options. By maintaining this confrontational position, both sides contribute to the blocking of progress. They miss the chance to elaborate a pragmatic middle ground, i.e. to strive for the development and implementation of farming practices that serve both economic and ecologic interests at the same time[38].

It is essential that environmental policies are tailored more specifically to the requirements of the large-scale and highly productive farm structure in northern Germany. This could be realised, for instance, by giving subsidies to farmers who invest in modern environmental technology, such as devices that enable a more efficient distribution of fertilisers, or who aim to introduce a change in animal feed compositions in order to reduce the content of phosphorus in manure. Furthermore, it is necessary to avoid a situation in which co-funding problems in the federal states of Schleswig-Holstein and Mecklenburg-Vorpommern lead to a non-application of agri-environmental measures. One possible (European level) solution here would be to introduce an additional premium, paid completely out of the EU budget, which would be given to farmers who comply with the requirements of the Marine Strategy Framework Directive[39].

When developing a political strategy to combat eutrophication, it is not useful to single out individual pollution sources or sectors and impose abatement measurers on each of them independently. If done this way, there is a risk that it would merely lead to the application of alibi measures, imposed primarily on those polluters which have the weakest lobby. Instead, a comprehensive approach targeting all pollution sources (e.g. agriculture, transport, energy and shipping) at the same time would be more promising. It would help to refute the suspicion that the burden is distributed unequally, and would instead support the notion of a general social objective – the realisation of which is a task for all the concerned branches to tackle on equal terms.

[38] This impression is based on various interviews with representatives from farmers' organisations and environmental NGOs, as well as on the analysis of position papers, press releases, newspaper articles and parliamentary debates.

[39] The government of Schleswig-Holstein proposed this idea during the current reform process of the CAP. See Rumpf, 2010

# 8. Sweden – a pioneer with implementation inefficiencies[1]

Paula Schönach

Sweden is a central country in the Baltic Sea region, both historically and economically. It is also one of the most affluent democracies in the world and has a long tradition of a deliberative and consensus-seeking political culture. In environmental matters, Sweden has for decades been an enthusiastic forerunner and environmental policy innovator. From an early stage, it held high environmental ambitions and had an environmental legislation that was exceptionally strict when compared internationally. This has allowed Sweden to become a key player when it comes to combating eutrophication and Baltic Sea protection in general, the former of which evoked concerns in the 1960s and is currently considered the most severe environmental threat to the Baltic Sea[2].

The Baltic Sea and its environment are very important to Sweden, for geographical, economic and cultural reasons. Sweden has a long coast line, and the majority of industries and administrative centres are located close to the coast; furthermore, nearly 90 per cent of the population lives within 100 kilometres of the shoreline. Out of all the people around the Baltic, the Swedes spend the most time by the sea and coastal activities are an essential part of typical Swedish leisure time.

[1] The analysis presented in this chapter is based on the given literature, 13 semi-structured expert interviews and content analysis. The interviews were conducted in Sweden during January 2011. The interviewees represented the environmental and agricultural administration, natural and social science organisations? NGOs and political decision-makers.

[2] Naturvårdsverket, 2010a

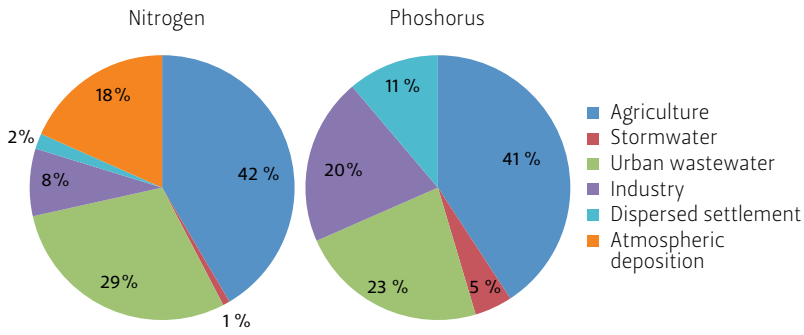


Figure 8.1. Different sources of total Swedish nitrogen and phosphorus loads to the Baltic Sea in 2006.

## *National eutrophication policy*

Swedish waters changed rapidly during the latter half of the 20th century; nitrogen (N) and phosphorus (P) inputs increased four-fold and eight-fold respectively[3] until the early 1970s.[4] During the 1970s, extensive investments in phosphorus removal from wastewater treatment (WWT) plants were carried out, and have now reached a current removal level of approximately 95 per cent. Following the implementation of the EU UWWTD, the nitrogen removal rate reached a nationwide average of 60 per cent in 2008.

While there is still potential for nutrient removal from WWT plants, the overall focus has shifted from point sources to diffuse sources. Attention is concentrated largely on agriculture and southern Sweden, even though the importance of single household and vessel-originating wastewater and air-borne nutrient load is also recognised. At present, reductions of both P and N are highlighted equally.[5]

The administrative structure of water protection in Sweden is in transition, as a new Marine and Water Environment Agency began operating on 1 July 2011 in Gothenburg. The new authority is viewed as a promising administrative actor when it comes to improved water

[3] Boesch et al., 2006: 1

[4] Jahn and Kuitto, 2008: 30–31

[5] Boesch et al., 2006. A small but loud opposition to this is presented by a group of Uppsala-based scientists who propose that greater emphasis be placed on phosphorus removal.

protection, but serious concerns exist about its capacity to work properly within the next 2–5 years. The reluctance of Stockholm-based experts to move will result in a considerable loss of competent and experienced personnel. Concern about the possible decrease of Baltic Sea focus within the new authority has been raised, given Gothenburg is located on the North Sea Coast.[6]

The 290 Swedish communities are responsible for a wide range of services, as well as the implementation of national policy goals at the local level. To a large degree, communities have independent taxing power, budgetary authority and a monopoly on monopoly. In water protection issues, the communities rely on the consultant advice provided by the counties and, if present, the voluntary water associations.[7]

Sweden has condensed its previously diverse and numerous goal-like expressions into 16 National Environmental Quality Objectives that ought to be achieved between 2020–2025. The accomplishment of these objectives has been doubted, and recently the objective "Zero Eutrophication" was viewed as very unlikely to be achieved.[8]

During the last 15 years, Baltic Sea protection, and eutrophication in particular, has been one of the environmental priorities of the Government. Substantial money has been allocated to a special budget line for marine environment and local water protection, though their environmental value and cost effectiveness have been questioned.[9] Additionally, a tax concession system for improving single household WWT facilities has recently been introduced.

Sweden is a major actor and initiator in HELCOM and is very committed to the BSAP, although the process of agreeing on the latter has attracted heavy criticism in Sweden (see "The way forward" later in this chapter). At the local level, which is crucial for successful implementation, HELCOM and the BSAP are seen distant. The Swedish BSAP NIP in particular has raised concern about costs and sufficient funding,[10] while the ENGOs consider the NIP

[6] All interviewees

[7] Lundqvist, 2004b: 36–39

[8] Naturvårdsverket, 2010b: 39–40

[9] Lundqvist, 2004b: 81

[10] Local politician, member of Water District Board, January 2011

to be vague and repetitive[11]. A recent follow-up on the progress of BSAP implementation shows that Sweden, together with Germany, performs best, though Sweden's measures are far too insufficient to meet the total reduction targets[12]. Since the focus and expectations of legally binding anti-eutrophication policies have shifted to Brussels, the role and status of HELCOM is widely seen to be in need of reconsideration in Sweden[13].

After Sweden's accession to the EU, the directives have become both a major steering power and a priority. Sweden's ability to influence EU policies during their preparation phase has increased; Sweden alone is considered "lightweight" in the EU, though together with other Baltic Sea states they could constitute an influential block[14]. During the Swedish presidency the Baltic Sea was raised as a priority issue, which led to the adoption of the EU Baltic Sea Strategy, which has eutrophication as one of its foci.

Sweden's bilateral activity in anti-eutrophication work has focused on financial aid to Poland and Russia – the latter was first supported through direct development aid and later through bilateral agreements. Currently, the emphasis of cooperation is shifting more towards multilateral funding frameworks and projects, via, for example, the Nordic Investment Bank, NEFCO, the Northern Dimension Environmental Partnership (NDEP), HELCOM and the EU. As in Finland (see chapter 9, p. 104), frustration towards insufficient governmental achievements has been manifested in the foundation of privately financed environmental organisations for the protection of the Baltic Sea, including BalticSea2020.

## *A critical evaluation of Sweden's protection policies*

Sweden combats eutrophication very actively,and takes its international commitments seriously. However, nitrate policies have been somewhat weaker in Sweden than in Germany and Denmark, for example, where reductions have been greater. In 2006, about 20

[11] Ministry of the Environment of Sweden, 2010: 8–9; expert, ENGO, January 2011

[12] WWF, 2011b: 10–11

[13] Several interviewees

[14] Expert, ENGO, January 2011; civil servant, MoA, January 2011

WWT plants in the most vulnerable southern parts of the country still did not comply with the nitrogen removal requirements of the Waste Water Directive[15]. Furthermore, Sweden has also been reluctant to increase its Nitrates Vulnerable Zone (NVZ).[16]

In sum, the main obstacles to Sweden's Baltic Sea protection policies are the deficiencies in policy implementation, the cost-effective allocation of abundant resources and the ambivalent and difficult position of agriculture as a major stakeholder.

**Protection or prosecution? The position of agriculture**

The agricultural and environmental sectors conflict in their views on anti-eutrophication policies, such as the perception of realistic and desired goal-setting, the degree of agriculture's responsibility and the principles of how to strive towards these goals. This has led to mutual mistrust and frustration, thus complicating negotiations and the will for compromise. Agriculture is accused of not carrying its historical eutrophication responsibility, and the environmental sector for setting unrealistic targets and not acknowledging the past contributions to nutrient reductions achieved by farmers.[17]

One key issue is the question concerning the speciality of agriculture among sectors, and hence the issues of voluntariness and legislative force. Proponents of more agricultural responsibility highlight the industrial nature of present day agriculture and thus question traditional protectionism. They prefer the idea that agriculture falls into line with other industries, and stress the polluter-pays-principle. This would mean reducing financial compensation and a more regulative approach, including strict control mechanisms[18].

The agricultural sector opposes regulative instruments because of the resulting competitive disadvantage compared to imported products. The economic burden and insufficient compensation, combined with frustration at increasing and laborious bureaucracy, is said to contribute to the continual decrease of agricultural

[15] Naturvårdsverket, 2006: 12–13. Sweden was, together with Finland, sued by the Commission – albeit unsuccessfully

[16] Jordbruksverket, 2006

[17] Civil servant, EPA, January 2011

[18] Professor, SU, Janaury 2011; Expert, ENGO, January 2011

production[19]. This means a loss of culturally important agrarian values, landscape and biodiversity values maintained by agriculture, and a relocation of production to other countries. This, in turn, could increase the environmental burden and lessen the possibility of national influence in areas such as food safety and animal welfare.

For the moment, it has been agreed that the future focus of eutrophication abatement in agriculture should be based on voluntary, financially compensated measures, and without new national legislative obligations[20]. Therefore, an educated farmer is a key stakeholder. Further awareness about eutrophication and the economic benefits of rational, efficient nutrient balances and the value of good quality waters as secondary sources of livelihood, in tourism, for example, is essential.

### Implementation efficiency

The slowness or inadequate implementation of decisions is a core problem in Swedish anti-eutrophication policy. The three main reasons for this can be identified as: a mental obstacle, a lack of governmental pressure to force municipalities to implement existing legislation, and a financial and prioritisation problem at the local level.

Sweden has a tradition of deliberative, consensus-seeking policy-making that includes a large degree of stakeholder participation. The various implementations of water protection commitments involve lengthy processes. It seems that occasionally the process of producing an action plan itself is seen as a sufficient result, rather than a starting point for work. The process then frequently stagnates after the finalisation of a plan, resulting in the concrete implementation being delayed by years[21]. This may result in wasting momentum, positive pressure, support from the public and even the increased capacities achieved during the preparatory process.

The Swedish Government has failed to develop the pressing instruments needed to force communities to implement existing

[19] In total, the arable area in Sweden has decreased by approximately 25 per cent. At the same time, the production of cattle and pig meat has increased by 15 and 75 per cent respectively; see Flygare and Isacson, 2003: 29ff

[20] Civil servant, MoE, January 2011

[21] Civil servant, MoE, January 2011

legislation; for example the requirements of the EU UWWTD and single household sewage treatment. Economic instruments, such as a trading system for wastewater discharges, are currently being investigated, but there are complex questions still to be answered before decisions can be expected[22]. Also, the National Environmental Quality Objectives evaluation has identified implementation problems originating from insufficient coordination and fragmented reporting, which lack the systematic and measurable statistical data needed to evaluate cost-effectiveness[23]. Goal-setting and problem identification at the local level have not been concrete enough, and the follow-up of achievements simply insufficient[24].

The environment-related expenses of communities have to compete with other sectors and welfare objectives, where positive outcomes can be observed in less time. Thus, these objectives are politically more attractive. Questions of prioritising within communal expenditures are controversial and subject to constant political debate. National funding is not directly allocated to the communal level but distributed to projects after applications have been submitted. Engagement and the activity at the local level are crucial, which also leads to a problem: how to ensure the participation of reluctant communities considering their autonomy and the funding mechanism?

The majority of municipalities have merged their environmental administrations into other sector administrations such as constructing and maintenance, which seems to have weakened the chances of good, ecological governance[25]. Competence, capacities and the motivation of communities to engage in eutrophication prevention work varies a lot and is highly dependent on the commitment of individual local politicians or civil servants[26].

[22] Civil servant, MoE, January 2011

[23] Lundqvist, 2004b: 141

[24] Naturvårdsverket, 2002: 32ff

[25] Lundqvist, 2004b: 32

[26] Several interviewees

## *The way forward*

**Cost-effectiveness through regionalised prioritisation**

Considering the significant investment in environmental marine protection, the results have drawn criticism. The variety of measures should be chosen according to the best expectable results, and in a flexible manner. In order to increase effectiveness, detailed information about local natural conditions should be gathered and made available; voluntary measures are currently directed by the personal interest of individuals, instead of cost-effectiveness. The available funding should be adequately allocated to the most beneficial measures and areas; for example, buffer zones are compensated equally throughout the country, irrespective of the area's vulnerability to eutrophication. Regional flexibility of compensatory payments according to their cost-effectiveness and the prioritisation of vulnerable areas are both needed in order to ensure the rational use of public finances. This kind of specialisation would also be beneficial for the improvement of single household WWT: 750,000 Swedish households or holiday homes are outwith communal facilities, and approximately only 60 per cent of them meet the current requirements[27]. This has a potentially large local impact on eutrophication, but not so much in inland areas as in the archipelagos. Since ensuring proper implementation of existing legislation, as well as the consequential follow-up, has proven to be difficult, the efforts should firstly be aimed at more vulnerable coastal areas than elsewhere.

Increasing cost-effectiveness also requires better follow-up procedures and the evaluation of actual results as a basis for a continuous learning process, in order to redirect action according to previous experience and the newest scientific findings. Insufficient and ill-working feedback mechanisms, from the local and county levels to the national level, are identified as bottlenecks of proper follow-up and evaluation. Reporting conducted via multi-phased sequences through various organisations and administrative bodies often results in a loss of information[28]; furthermore, a more

[27] Naturvårdsverket, 2006: 10

[28] Scientist, independent research institute, January 2011; local politician, member of Water District Board, January 2011

comprehensive ecosystem approach towards environmental goals in general is called for as a part of the cost-effectiveness issue, and investments should be targeted at innovations with diverse, simultaneous benefits[29].

Swedish experts also welcome regionalisation within EU work, and see the Baltic Sea Strategy as a positive step. The EU-level regional differences in environmental protection need should be taken into account, as common ambition levels lead to very vague compromises due to different national foci.[30]

### The full political potential of broad stakeholder knowledge

Swedish decision-making on environmental matters is assumed to rely heavily on (natural) scientific research[31]. The scientific back-up is excellent: quality of research is high and finances to conduct research are good. However, comprehensive socio-politico-economic and solution-oriented research with focus, for example regarding implementation problems and cost-effectiveness, are called for[32]. Simultaneously, the information sources could be diversified: lay knowledge, often of special local conditions, is valuable and could be incorporated and used in a more active way.

Stakeholders have good possibilities to contribute to policy-making through an open, tolerant and communicative culture, relative transparency of decision-making and good access to information and various means and platforms to take initiatives – not least through the numerous influential NGOs[33]. Stakeholder participation is currently included in decision-making processes, but often merely as a matter of mandatory routine and without significantly impacting the concrete outcomes. This weakens the legitimacy of the policy processes and public commitment, both of which are crucial given eutrophication abatement increasingly focuses on diffuse sources.

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[29] Scientist, Agricultural University, January 2011

[30] Professor, Stockholm University (SU), January 2011; civil servant, Naturvårdsverket, January 2011; expert, ENGO, January 2011

[31] One of Sweden's main priorities for the HELCOM chairmanship was the emphasis on solid scientific knowledge as a base for decision-making.

[32] Civil servant, MoE, January 2011; evaluation of Swedish..., 2010:50

[33] Larsson and Bäck, 2008: 275ff

The Swedish water administration has struggled to combine democratic principles, public participation and legitimacy effectively[34]. The process could be enhanced through actively developing participatory mechanisms and facilitating "neutral" platforms of knowledge sharing; communication between the authorities responsible for policy-developing and the stakeholders needs to be continuous, persistent and two-way.

One of Sweden's major anti-eutrophication policy problems is the lack of broad knowledge-based support for decision-makers, who confront a multitude of complex and complicated questions while not being able to draw concrete conclusions about the issues and transfer them into policy formulations. The dialogue between researchers and decision-makers could be improved by the better training of researchers, encouragement and rewards for improved science communication. More concretely, these could be enhanced and directed via conditions set in the funding mechanisms.[35]

The criticised process of agreeing on the BSAP showed that a successful environmental decision-making process in Sweden should combine a set of diverse research instead of relying on one model only; social scientific approaches and enough time for thorough discussion before decision-making should be included. Furthermore, an open and deliberative process is expected due to the tradition of communicative culture. A deflection of the common procedure weakens the acceptability of policies and, as in the case of Sweden, leads to increased demands for a delayed revision process.

### Cross-level commitment

In Sweden, eutrophication is treated as an expert-driven issue where solutions are in the hands of authorities and politicians. The ordinary citizen and consumer choices are invisible within the public debate[36]. However, basic structures of Western consumer habits and lifestyle, especially the tremendous increase in meat consumption and the respective intensification of agricultural production, are significant contributors to eutrophication. Major changes in both lifestyle and consumer habits would be needed, though these are very difficult

[34] Lundqvist, 2004a

[35] Professor, SU, January 2011

[36] Jönsson, 2011: 128

to achieve. However, cigarette smoking is an encouraging example of consumer habits and public opinion changing rather quickly. Influencing the meat consumption of individual consumers could be realistic, especially via the promotion of public health arguments.[37]

Both communities and individual people need positive incentives to increase their commitment and participation. The possibilities of combining eutrophication abatement with economic opportunities should be encouraged. Motivation is also crucial, in order to avoid the negative mental response to strict top-down commands – in other words, participating should be easy and rewarding. For instance, farmers see applying for agro-environmental measures as difficult, complicated and burdensome when compared to the expected compensation. Financing procedures should therefore be as simple as possible[38].

Sweden has had, and should also have in the future, a very important role to play in the protection of the Baltic Sea, as a forerunner, role model and cheerleader for other countries. The ban on phosphates in detergents (2009) and in dishwasher detergents (from 1 July 2011) are examples of measures that have a minor effect on the nutrient discharges of Sweden as a whole, but that carry a significant signal and exemplary effect – especially in other countries where WWT is not at an equally high level.

Conversely, measures with a negative signal value weaken the credibility of Sweden's commitment – such as the removal of the unique fertiliser tax, which was officially implemented to improve Swedish farmers' competitiveness, but was commonly believed to be compensation for the climate protection-based hike of the diesel fuel tax[39] The negative mental effect of the decision contributes more than the actual foreseeable environmental damage or the increased competitiveness of farmers. The subordination of Baltic Sea protection to political trade-offs, as well as the competitive positioning of different environmental threats, is harmful to the reputation of Sweden as an environmental forerunner. Given the significant investments in eutrophication abatement, Sweden should be able to afford both climate policy and Baltic Sea protection simultaneously.

[37] Professor, SU, January 2011

[38] Civil servant, MoA, January 2011; Scientist, Agricultural University, January 2011

[39] All interviewees

# 9. Finland – no easy solutions left[1]

Mia Pihlajamäki

Water is an extremely visible element within the Finnish landscape, resulting in 1,250 kilometres of Baltic Sea coastline, nearly 200,000 lakes and over 179,000 islands – 40,000 of which are in the Archipelago. The state of the water directly affects society in many ways – for example water use, business activities and leisure. Much of the land and water is privately owned, which led to the adoption of the polluter-pays-principle under the 1960s Water Rights Act, which set the first regulations on wastewater treatment and permit procedure for polluting water areas. From this perspective, it is no surprise that Finns are generally well aware of problems relating to environmental degradation, and to eutrophication in particular[2]. In 2008, Finns chose the solving of the Baltic Sea's environmental problems as the number one foreign policy topic[3].

Finland, like Sweden, is a front runner when it comes to the protection of the Baltic Sea, especially in relation to HELCOM activities[4] and EU initiatives such as the Northern Dimension of the European Union. Despite the various protection measures, the state of more than half of the coastal waters of the Baltic Sea is currently classified as "lower than good"[5]; however, the severity and extent of eutrophication varies along the long Finnish coastline. The Gulf of Finland, and especially the only remaining hot spot – the Archipelago Sea – suffers the most, while in the Gulf of Bothnia the problem of eutrophication has so far remained rather marginal.

[1] In addition to policy documents and reports, the analysis presented in this chapter is based on 37 interviews carried out in Finland between September 2009 and August 2011. These include interviews with the Members of Parliament, officials in Ministries of the Environment and Agriculture and Forestry, representatives of the Association of Finnish Local and Regional Authorities (Kuntaliitto), the Central Union of Agricultural Producers and Forest Owners (MTK), members of local administration (environment centres) and representative of the WWF, as well as HELCOM and academic eutrophication experts.

[2] Flash Eurobarometer on water, 2009; Söderqvist et al., 2010

[3] Haavisto and Kiljunen, 2008

[4] Räsänen and Laakkonen, 2008

[5] Finnish Environment Institute, 2008

National legislation and regulations, enhanced for example by the structural change in forestry, have succeeded in decreasing nutrient load originating from Finnish municipalities, industry, forestry and fisheries. As the biggest source of nutrients, agriculture remains the most important target for nutrient abatement (see figure 9.1). Other significant sources are wastewater treatment (from both urban and dispersed settlements) and atmospheric deposition, which mainly originates from other countries and is thus mostly regulated by international policies such as MARPOL 73/78.

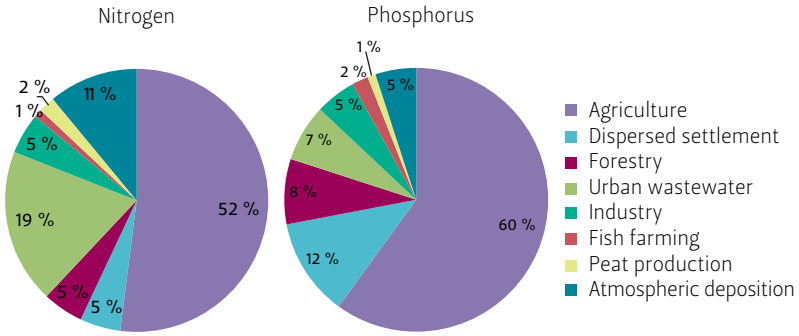


Figure 9.1. Different sources of total Finnish nitrogen and phosphorus loads to the Baltic Sea.[6]

## *National Eutrophication Policies*

### An overview of the main policies and regulations

Deterioration in the quality of lakes, rivers and coastal areas resulted in the adoption of the first principles of water pollution control in 1974. Wastewater from industry and municipalities were identified as the main sources of nutrients, while agriculture, forestry, fisheries and dispersed settlement were noted to only "produce slow eutrophication"[7]. Only some years after the foundation of the

[6] Uusitalo et al, 2007

[7] Finnish National Board of Waters, 1974

Ministry of the Environment in 1983, was agriculture recognised as an equal polluter[8].

New regulations in the 1990s included laws on permission procedure and the environmental impact assessment (EIA). Adopted in 1995, the Water Protection Targets to 2005 was the first national programme in which nutrient reduction targets were set[9]. Based on these targets, Finland's Programme of the Protection of the Baltic Sea was adopted in 2002, and the related action plan in 2005[10]. More recent national programmes include Water Protection Policy Outlines to 2015 and the Government Report on Challenges of the Baltic Sea and Baltic Sea Policy[11].

Accession to the EU in 1995 brought about major changes to eutrophication governance, as EU directives were now duly integrated into national legislation. In 2000, the Environmental Protection Act (EPA), which was triggered by the EU IPPC directive, was adopted. This act, together with the subsequent Environmental Protection Decree and the Decree on Urban Waste Water Treatment, implements the EU UWWTD (see chapter 3, p. 33). Since 2004, the Government Onsite Wastewater System Decree has set minimum standards for wastewater treatment in households not connected to sewage networks. The plans for the river basin district management, an integral part of the implementation of the EU WFD, were adopted by the Finnish Council of State in 2009.

In addition to the abovementioned, Finnish agricultural policy was affected by the introduction of the EU Nitrate Directive and the CAP's agri-environmental payment scheme (see chapter 3, p. 34 and 36). The former has been partly integrated to Finnish legislation thanks to the Government Decree on the Restriction of Discharge of Nitrates from Agriculture into Waters, which focuses on manure storage and the application of manure and fertilisers. The scheme is considered to be the main instrument for nutrient abatement and has three targets: to reduce nutrient load into the environment, to preserve biodiversity and the cultural scene, and to maintain source of

[8] Ministry of the Environment of Finland, 1988

[9] These were 45% of the phosphorus and 40% of the nitrogen levels of 1991–1995 (Ministry of the Environment of Finland, 1998)

[10] Ministry of the Environment of Finland, 2005; 2002

[11] Ministry of the Environment of Finland, 2007; Prime Minister's Office Finland, 2009

livelihood and agricultural production. The scheme is included in the Rural Development Programme for Mainland Finland (2007–2013)[12] and consists of three different types of measures: basic measures, additional measures and special support contracts. Basic measures are compulsory for all the farmers participating in the scheme, whereas additional measures and support contracts offer more specifically targeted measures for certain field and farm types[13].

### Regional cooperation and the role of NGOs

The recent national programmes introduced above, fall in line with the HELCOM BSAP (see chapter 2, p. 24). From a Finnish perspective, however, there are three major problems related to the BSAP: 1) the plan does not bring anything new to Finnish policies, as national regulations are generally more stringent[14]; 2) the use of HELCOM-set limits has been difficult in the Finnish legal system due to their non-legally binding nature[15]; and 3) the BSAP ignores the Archipelago Sea. Therefore, and despite the financial and human resources invested in the participation in HELCOM, the implementation of EU directives, not HELCOM recommendations, is a top priority in Finland.

The Northern Dimension of the EU is another important platform for regional cooperation. The development of the St. Petersburg water sector has formed one of the foci of the Northern Dimension Environmental Partnership Fund (NDEP), which was established in 2001. From a Finnish perspective, the development of the St. Petersburg water sector is the fastest and most cost-effective way to

[12] Ministry of Agriculture and Forestry of Finland, 2006

[13] *Basic measures:* environmental planning and monitoring, the fertilisation of arable and horticultural crops, headlands and filter strips, preserving biodiversity and landscape management. *Additional measures:* reduced fertilisation, more accurate nitrogen fertilisation on arable crops, plant cover in winter (few variations available), extensive grassland production, the spreading of manure during the growing season, nutrient balance, and the cultivation of catch crops. *Special measures:* the establishment and management of riparian buffer zones, the management of multifunctional wetlands, arable farming in groundwater areas, the more efficient reduction of nutrient load, runoff water treatment methods, and the incorporation of liquid manure in the soil.

[14] HELCOM, 2011a

[15] Member of the local administration, Salo Environment Centre, August 2011

prevent eutrophication in the Gulf of Finland[16]. Therefore, Finland has been actively involved in the improvement of wastewater treatment in St. Petersburg, by, for example, participating in the funding of the St. Petersburg south-western wastewater treatment plant, which was completed in 2004. Public and private funding has also been channelled through the John Nurminen Foundation, an NGO that has carried out projects in various Baltic Sea cities in order to implement chemical phosphorus removal from wastewater in local WWTPs.

WWF Finland has been actively involved in anti-eutrophication work; their Baltic Sea campaign, for example, involved building wetlands and coordinating the annual competition for "Baltic Sea Farmer of the Year Award". Another Finnish NGO, the Baltic Sea Action Group (BSAG), was behind the high-level Baltic Sea Action Summit in 2010, which brought together heads of states, companies and NGOs from around the region to present their commitments to save the Baltic Sea. During the summit, the Finnish Government committed to the improvement of the state of the Archipelago Sea by the year 2020. Subsequently, in 2011 a memo was published which presented the actions needed to achieve this goal and sets the region as a model for nutrient recycling[17].

**Nutrient removal from wastewater and agriculture**

Over 80 per cent of the Finnish population is connected to wastewater treatment networks, which are able to remove 96 per cent of all phosphorus and 56 per cent of all nitrogen[18]. Thus, the reduction of phosphorus exceeds the EU UWWTD requirement, but the nitrogen level is clearly below it. Just as Sweden did (see chapter 8, page 93), Finland and the European Commission disagreed on the interpretation of the directive; Finland argued that the WWTPs only have to remove nitrogen if the removal improves the state of waters. This view prevailed and, to date, there are no general requirements for nitrogen removal from WWTPs. Instead, the need is determined in the environmental permit procedure of each plant, and if an obligation is given the WWTP must then meet the 70 per cent reduction requirement.

[16] e.g. Pitkänen and Tallberg, 2007

[17] Ministry of Agriculture and Forestry of Finland, 2011

[18] Finnish Environment Institute, 2011

Interestingly, the Onsite Waste Water Decree sets minimum reduction targets for both nutrients. The requirement concerns about 200,000–250,000 households and about 140,000 summer cottages, but by 2009 only 10–15 per cent of the households had acted upon it[19]. In the same year, the decree was a topic for heated public and political discussion. It was widely criticised, as it introduces compulsory actions to all areas, regardless of its location with respect to the water system. Moreover, the implementation requires substantial financial contribution from single households, regardless of the socio-economic aspects. As a result, the general nitrogen and phosphate reduction targets were lowered in 2011 and an exemption possibility, based on age or certain socio-economical justifications, was included.

Environmental conditions for agriculture are particularly difficult in Finland due to geographical location and natural conditions, which result in a short growing season and affect the quality and quantity of cereal production. Self sufficiency in food production has, however, been the key driving force behind Finland's agricultural policy. Before EU membership, the Ministry of Agriculture and Forestry and the farmers union negotiated the prices on an annual basis[20], but EU membership has resulted in a 40–50 per cent decrease in farmers' income from 1994 to 1995[21]. As the main goal is to secure the competitiveness of Finnish agriculture in the common EU market, Finnish agriculture is currently heavily subsidised.

Around 90 per cent of Finnish farmers – which is equivalent to 96 per cent of the farm land – are participating in the voluntary agri-environmental payment scheme. Despite all the measures implemented since 1995, and the achieved decrease in the use of artificial fertilisers, the leaching of nitrogen from most of the drainage basins and phosphorus from the Archipelago Sea drainage basin is in fact increasing[22]. These findings are worrying, especially given that the number of water protection measures is higher in Finland than in any other country participating in the scheme[23]. To make matters

[19] Ministry of the Environment of Finland, 2009

[20] Jokinen, 2000

[21] Niemi and Ahlstedt, 2010; Jokinen, 2000

[22] Ministry of Agriculture and Forestry of Finland, 2010

[23] 67% of basic, 90% of additional and 46% of special measures in the Finnish agri-environmental scheme target water protection (see Härjämäki and Lundström, 2011)

more interesting, the Commission has requested that Finland does not add more water protection measures and instead concentrates more on biodiversity[24].

Nutrient abatement from agriculture is particularly difficult for two reasons: 1) the substantial nutrient input following the excessive use of fertilisers, especially in the 1970s, is still partly present in the soil and bottom sediment, and 2) certain agricultural fields are more prone to nutrient leaching because of soil conditions and the slope of the cultivated parcel. From a political perspective, the reasons behind the failure to meet the reduction targets are due to conflicting interests between different sectors, the insufficient implementation of the instruments, their poor functioning or the complete lack of them (see below).

## *Challenges for the more effective protection of the Baltic Sea in Finland*

### Social challenges

In Finland there is an apparent attitudinal resistance towards more efficient measures, which results from the sense of unfairness and frustration[25]. Because Finland has a more stringent eutrophication policy than most other countries, it is considered highly unfair that the Finnish tax payer has to pay for nutrient abatement in other (sometimes richer) countries as well (e.g. the building of the WWTPs in St. Petersburg)[26]. More to the point, it is hard to justify further nutrient abatement efforts if others (i.e. other countries and the agricultural sector) do not share the load. Subsequently, the role of Finland, with respect to Poland and Russia in particular, as well as the role of different actors (e.g. agriculture versus dispersed settlement) are often criticised in political and public debate.

[24] Representative (#1), The Central Union of Agricultural Producers and Forest Owners (MTK), May 2011

[25] Characteristics identified by several interviewees

[26] Plenary session of the Finnish Parliament, 2010; official, the Association of Finnish Local and Regional Authorities, May 2011; Former MP, Centre Party, May 2011

In addition, the current eutrophication policies and instruments fail to motivate action. On the one hand, this is due to the inflexibility of the agri-environmental payment scheme and the related bureaucracy and paperwork. For example, participation in the scheme requires a long-term commitment to the measures, regardless of whether they work. In addition, the selection of certain measures affects what else can be chosen.[27] The worst example of this involves farmers that have not applied for the non-productive investment payment because it is too complicated and time consuming[28]. On the other hand, given that there still are uncertainties related to the ecological processes both inland and offshore, the final impact of various measures is often unknown. Therefore, it is no surprise that farmers, and citizens outside sewage networks, are reluctant to invest significant amounts of money on measures which might not work after all[29]. The situation is further complicated by the existence of differing interpretations of the problem and its solution possibilities in the Finnish media and political debate, some of which imply that no further measures are needed inland[30].

### Economic challenges

The lack of sufficient socio-economic analysis (i.e. the identification of costs, the sources for financing, and those in charge of the implementation) concerning the implementation of protection policies has been identified as one of the major obstacles for the more effective protection of the Baltic Sea[31]. Implementation is expensive, and in most cases municipalities and individual citizens are the ones made to pay. For example, the slow implementation of the Onsite Waste Water Decree is unquestionably due to the high costs and long implementation period – the latter makes financial investments risky, as there is the possibility that the decree could be changed

[27] Several interviewees

[28] Representative, WWF, May 2011

[29] Several interviewees

[30] Mentioned by scientists in several interviews; for media debate, see e.g. *Helsingin Sanomat*, 24 February 2010, 28 February 2010 and 2 March 2010; *Maaseudun Tulevaisuus*, 14 September 2009; YLE, 7 May 2009; and for political debate, see: plenary session of the Finnish Parliament, 2010.

[31] Official (#1), Ministry of the Environment, March 2010

before the period runs out (as it did). In addition, financial resources affect the municipalities' possibilities to follow-up and provide adequate advice. Without additional funding from the Government, the implementation of the decree in those municipalities where the number of households in question is particularly large will be impossible to achieve by 2016[32].

Of all the financial resources invested in Baltic Sea protection, the agri-environmental payment scheme is the most substantial: about €300 million per year is divided between the farmers participating in the scheme. This is problematic from the eutrophication governance point of view, because on the one hand, it is assumed that the same measures have the same positive environmental effects on every farm, which, due to different local conditions, is not the case. On the other hand, the amount of nutrient leaching (i.e. the contribution to eutrophication) from different farms and fields varies[33]. Thus, dividing the payments between 90 per cent of the farmers (and therefore 96 per cent of the farm land) is not a cost-efficient way to prevent eutrophication.[34] Of course, the agri-environment payments have two other targets as well (see page 102), which explains the inclusion of as many farmers as possible[35]. In addition, during the first payment period the payments had a pronounced function as an income subsidy[36]; currently about 20 per cent of the total payment functions as "an income subsidy", which has been calculated to compensate for the related work[37].

Cost-efficiency issues have also been raised in the case of more effective nutrient removal from WWTPs. Generally, the costs for increasing nitrogen removal to 70 per cent are considered too high with respect to the gained benefit[38]. However, the WWTPs have huge

[32] Member of the local administration, Keski-Uusimaa Environment Centre, August 2011

[33] About 20% of the farms are responsible for 80% of the nutrient load (Simplification used by many scientists). See e.g. Pihlajamäki and Tynkkynen, 2011: 197.

[34] Several interviewees

[35] Several interviewees

[36] This was mainly because the LFA covered only part of the country. From the second period onwards, the LFA has been used for income purposes in the whole country, which means that agri-environmental payments are no longer needed for this purpose.

[37] Interview, Official, Ministry of Agriculture and Forestry, March 2010

[38] Several interviewees

nitrogen reduction potential: by increasing the removal efficiency to 70 per cent, an annual reduction of 2900 tonnes could be achieved[39], which is over twice as much as the BSAP requires (see chapters 2 and 10).

### Political challenges

Finnish environmental politics is typically characterised as top-down rather than bottom-up, and eutrophication governance is no exception[40]. The Onsite Waste Water Decree and the agri-environmental policy – the former in particular – have been pushed down on to the citizens and farmers, instead of the effort being made to include them in policy-making[41]. Consequently, many of the problems relating to more effective eutrophication prevention are rooted in the implementation phase.

Finnish nitrogen politics, when compared to its phosphorus counterpart, is lagging behind. In part, this is due to different scientific interpretations relating to its role in eutrophication – especially in Finnish coastal waters[42]. The views supporting the "less significant" role of nitrogen in eutrophication, and the nitrogen retention capability of waterways have offered the decision-makers an excuse for their inaction. Despite the increasing amount of scientific evidence supporting the need for nitrogen reduction as well[43], the process of determining the need to increase nitrogen removal efficiency in WWTPs to 70 per cent is extremely slow. Moreover, the dismissal of the Commission's action implies that there is no real pressure to change the current behaviour[44].

Resulting from the agri-environmental policy, two reasons for the failure to meet the nutrient reduction targets can be distinguished: the first is due to the structural change in agriculture (peaking in the 1970s), as a result of which the production sector diverged. Animal husbandry concentrated on certain areas, which increased nutrient leaching as a result of increased amount of manure in relation to

[39] Pitkänen et al., 2009

[40] See e.g Björkell, 2008; Joas, 2008; Mickwitz et al., 2011

[41] Several interviewees

[42] Pihlajamäki and Tynkkynen, 2011

[43] Several interviewees, see also e.g. Pitkänen et al., 2009

[44] *Helsingin Sanomat*, 14 November 2009

cultivated land in these areas. Due to long distances, the separation of the production sectors complicates the cost-efficient use of manure, therefore the use of fertilisers increased initially.[45] Secondly, the CAP and the Finnish agri-environmental scheme, as well as their related payments, encourage farmers to increase their cultivated land area and farm size[46], and to intensify production. As a consequence, these actions have increased nutrient leaching;[47] in fact, experts believe that by directing agriculture towards bigger and more efficient practices, the CAP undermines the nutrient reductions achieved at farm level using environmental measures[48]. As a result, the biggest obstacle for more effective nutrient abatement from agriculture is that environmental protection in general, and the agri-environmental scheme in particular, is not effectively integrated into agricultural policy.

Another explanation as to why attempts have not led to more effective eutrophication prevention is that eutrophication governance is not integrated into the transportation, fisheries and energy sectors efficiently enough. For example, the national actions designed to reduce airborne nutrient reduction, especially from traffic, are implicitly touched upon in the national programmes[49]. The question, however, is not only about the ways in which different sectoral policies could lead to "cleaner" production processes, but is also related to finding synergies between the sectors – for example by providing preconditions for nutrient recycling (i.e. energy production from non-commercial fish or manure)[50].

[45] Several interviewees

[46] The amount of farms in Finland decreased from 129,114 in 1990 to 64,175 in 2009, while the average farm size has increased from 17.3 hectare/farm in 1990 to 35.9 hectare/farm in 2009 (Farm register Finland, 2009)

[47] Several interviewees, see also: Lankoski and Ollikainen, 2011; Uusitalo et al., 2007

[48] Several interviewees

[49] Ministry of the Environment of Finland, 2007; 2005; 2002; Prime Minister's Office Finland, 2009

[50] Former MP, Centre Party, May 2011

## *The way forward*

In order to prevent eutrophication, it is essential that decision-making is based on wider analysis, including socio-economical aspects. The participation of different stakeholders (i.e. the key actors in the implementation phase) in the decision-making should be further increased, as this provides a way to take into consideration the local conditions (i.e. the regionality of the problem), as well as their practical experience regarding the solution possibilities[51].

More effective eutrophication governance requires regional, local and even farm level protection policies, i.e. localised solutions to localised problems. In addition, protection plans should include prioritisations, timetables and sources of financing[52]. Financial resources should be focused on those measures with which the best reduction potential could be achieved. In order to make the implementation of existing measures more effective, advisory services and more systematic follow-up procedures should be provided – especially for the farmers and households outside the sewage networks[53]. Effective implementation also calls for long-term political commitment combined with more flexible governance structures, as well as the encouragement of stakeholder participation and the enablement of faster reactions to new solution possibilities.

The more efficient integration of different sectors requires that the protection of the Baltic Sea is seen as a possibility, and not as a threat. The development of new solutions calls for vision and innovation, and should be actively sought[54]. Furthermore, the private sector should also be engaged in the protection of the Baltic Sea[55]. Last but not least, the lack of binding international agreement feeds attitudinal and motivational problems relating to more effective protection of the Baltic Sea. All the coastal countries, and different sectors, need to be more efficiently engaged in the quest.

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[51] cf. Haila, 2008; see also TEHO-project 2011, in which cooperation between the farmers' union, the farmers and environmental authorities has been proven to be a good and functional way of promoting water protection in agriculture

[52] Several interviewees

[53] Several interviewees; see also TEHO-project, 2011

[54] Official (#2), Ministry of the Environment, March 2010

[55] Expert, Finnish Environment Institute, October 2009

# 10. Making the Baltic Sea Action Plan workable: a nutrient trading scheme

Sami Hautakangas and Markku Ollikainen

Chapters 2 and 3 of this report demonstrate that both HELCOM and the European Union face many challenges if they really wish to implement the Baltic Sea Action Plan (BSAP); and in this chapter we search for ways to promote its implementation. The BSAP defines the good ecological status of the Baltic Sea as its target. For nutrient reductions, an even higher ambition is at stake: to achieve water quality that is close to the pristine state of the sea. Experience from economic analysis suggests that setting ambitious targets requires careful examination of how well the existing technologies, costs and social attitudes would warrant the goal.

Such consideration cannot be found in the BSAP. Perhaps not surprisingly, we show in this chapter that apart from the asymmetric distribution of net benefits, the estimated aggregate costs greatly exceed the estimated aggregate benefits and furthermore describe people's willingness to pay for nutrient reductions. From a policy perspective, these facts alone would suggest an adoption of a more flexible implementation strategy. The ecologically-set reduction targets could be treated as a long-term target, which is approached in a step-by-step manner via short-term intermediate goals. These intermediate goals should be tied up more closely with the instruments and technological possibilities that are actually available to reduce nutrients. Intermediate goals would make the implementation of the BSAP more concrete and could also alleviate the asymmetrical distribution of costs and benefits of the BSAP between the littoral countries.

A step-by-step implementation of the BSAP can either be facilitated by designing a nutrient trading system for point sources or, alternatively, by using a direct transfer of money – referred to as side payments in economic terms – to make net benefits between countries equal and to boost investments in abatement of point source loads. We illustrate the features of both systems below, and focus on the country-based costs and benefits at the aggregate level

of the Baltic Sea instead of using sub-region level; thus, our approach is more aggregated than in the BSAP.

We demonstrate that the goals of the BSAP can be achieved, to a fairly large extent, using nutrient trading between point sources and show that trading allows us to make the implementation of the BSAP more feasible and equitable. Together with improvements in the governance of water policies in each country, intermediate steps and nutrient trading improve the economic feasibility of the plan and provide a route towards more rapid progress in the protection of the Baltic Sea.

## *Asymmetric net benefits and the system of side payments*

Table 10.1 provides an assessment of the economic content of the BSAP's nutrient goals. It presents the country-specific reduction targets and calculates how much the amount of nutrients would be reduced in each country's coastal waters if the BSAP was implemented. We express this reduction in nutrients using N-equivalents (by multiplying P emissions by Redfield ratio, 7.2) and calculate the monetary estimate of benefits from the nutrient reduction in the third column.[1] Based on these figures, we define the benefits and costs of the BSAP.

Table 10.1 is illuminating in many ways. Using the abatement costs as a starting point, Poland alone bears 78 per cent of the total cost burden of the BSAP, and Poland, Russia and the Baltic States together as much as 96 per cent. This leaves only 4 per cent of the cost burden for Denmark, Finland, Germany and Sweden. Naturally, each country benefits from the improvement in the water quality of its marine areas. The benefits for Poland are great, at roughly €760 million, although they are much smaller than the abatement costs. Furthermore, Denmark receives fairly high benefits from the BSAP, and they clearly exceed the country's costs.

[1] The transfer of nutrients is from Ollikainen and Honkatukia, 2001; for benefits we use the willingness to pay estimated in Gren (2001); the cost estimates are from Gren, 2008.

Table 10.1. The BSAP: estimated reductions in national water areas, net benefits and side payments

| Country | BSAP reduction targets, tonnes | | Nutrient reduction in water, tonnes | Benefits, m€ | Costs, m€ | Net benefits, m€ | Side payment | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1 | 2 |
| | N | P | N-eq. | N-eq. | total | total | 442 m€ | 302 m€ |
| Denmark | 17,210 | 16 | 19,073 | 156 | 90 | 66 | 352 | 369 |
| Estonia | 900 | 220 | 2391 | 12 | 19 | - 7 | 423 | 296 |
| Finland | 1200 | 150 | 3254 | 27 | 23 | 4 | 419 | 306 |
| Germany | 5620 | 240 | 2293 | 19 | 40 | -21 | 402 | 281 |
| Latvia | 2560 | 300 | 5412 | 28 | 119 | - 91 | 323 | 211 |
| Lithuania | 11,750 | 880 | 18,361 | 94 | 353 | - 259 | 89 | 43 |
| Poland | 62,400 | 8 760 | 148,916 | 759 | 3099 | - 2340 | - 2657 | - 2037 |
| Russia | 6970 | 2 500 | 17,419 | 89 | 153 | - 64 | 289 | 238 |
| Sweden | 20,780 | 290 | 8443 | 69 | 79 | -10 | 363 | 293 |
| Total | 128,390 | 13,356 | 225,562 | 1009 | 3 899 | - 2722 | 2657 | 2037 |

Net benefits are decisive in order to conduct an overall assessment of the BSAP's nutrient reduction goals. Given the evident uncertainty surrounding the willingness to pay estimates, we think that Denmark, Estonia, Finland, Germany and Sweden are better off, or at least break-even, when complying with the BSAP reduction targets: that is, their benefits at least cover the abatement costs. In contrast, Poland, Lithuania, Latvia and Russia face considerable negative net benefits thanks to their high abatement costs. Given the fact that abatement cost functions in wastewater treatment plants (UWWTP) and agriculture do not differ considerably between countries (unlike current abatement rates), the reason for the negative net benefits for these countries is simply the high load reduction targets allocated to them. We find this uneven distribution of net benefits to be the main obstacle to the BSAP's implementation.

In the last two columns, we provide an answer to the following question: assuming that all countries agree they should derive equal net benefits from the BSAP, or have an equal cost burden from its implementation, how much money should each country transfer in order to balance the net benefit, and to which countries should the transfers go? We define side payment 1 on the basis of abatement costs only, while side payment 2 is derived from the net benefits. Side payment 1 is produced by dividing the overall abatement costs of €3,899 million by 9 countries, in order to obtain €442 million. This is the balanced level of abatement costs for each country. Countries with lower abatement costs than this would then pay the difference to countries that have abatement costs higher than €442 million. Presently, only Poland falls into this category, meaning all countries would pay Poland a sum defined as the difference: €442 million minus their own abatement costs. This procedure would give Poland a compensation sum of €2,657 million, although if side payments were based on the net benefits, the sums transferred between countries would be lower. A sum of €332 million would make the (negative) net benefits equal for each country; and again, every country would pay Poland.

In Table 10.1 we used the simplest criterion: costs or net benefits being equal between countries. Other principles more sensitive to fairness, such as the ratio of Gross National Products, would work equally well. However, the above analysis makes the idea of side payments clear; also, it is immediately evident that if countries

can agree on a side payment scheme (the above example is a simple illustration of just such a scheme), it would lead to a binding agreement and create incentives to implement the BSAP. However, arranging direct money transfers may be politically difficult, meaning we therefore go on to examine the possibilities of nutrient trading as a means of achieving reductions in nutrient loads. Furthermore, we tie our discussion into NEFCO's suggestion of building a nutrient trading scheme for the Baltic Sea and examine how the nutrient trading system could be used to alleviate the uneven distribution of costs and benefits.

## *Nutrient trading: design, expected price and equitable initial allocation*

NEFCO suggested building the nutrient trading scheme in a piecewise manner, starting with point sources, because abatement technology is well-defined for point sources and monitoring is easy compared to non-point sources. Focusing on point sources provides a natural intermediate step towards the final target for two reasons: firstly, urban wastewater treatment plants still provide a large amount of phosphorus loads in Russia, Poland and Baltic countries, and considerable nitrogen loads in all riparian countries, except Germany and Denmark. Secondly, our work suggests that the abatement costs of both nitrogen and phosphorus in UWWTPs are much lower than expected.

The EU Urban Waste Water Directive requires roughly 70 per cent and 80 per cent abatement of nitrogen and phosphorus, respectively. This is less than recommended by HELCOM, which suggests roughly an 80 per cent reduction in nitrogen and 90 per cent in phosphorus. Based on our findings of low abatement cost, we examine a case where the overall reduction target is set to 95 per cent for phosphorus and 90 per cent for nitrogen. We assume that this reduction is made in the aggregate loads from all UWWTPs and is implemented in a cost-efficient manner. The outcome is presented in Table 10.2[2].

[2] Our calculations draw on Hautakangas, S., Ollikainen, M., Aarnos, K. and Rantanen, P. (forthcoming)

Table 10.2. The abatement potential of UWWTPs in each country

| Country | Current loads and abatement, (tonnes and %) | | | | Implementation of recommendations, tonnes | | | | Share of BSAP, % | |
|---|---|---|---|---|---|---|---|---|---|---|
| | N load | P load | N aba | P aba | N load | P load | N aba | P aba | N | P |
| Denmark | 2777 | 333 | 92 | 94 | 2777 | 257 | 0 | 76 | 0 | 475 |
| Estonia | 1743 | 226 | 61 | 69 | 221 | 15 | 1522 | 211 | 169 | 96 |
| Finland | 9662 | 109 | 60 | 97 | 3215 | 109 | 6447 | 0 | 537 | 0 |
| Germany | 1791 | 56 | 86 | 97 | 1536 | 56 | 255 | 0 | 5 | 0 |
| Latvia | 2718 | 273 | 34 | 63 | 205 | 53 | 2513 | 220 | 98 | 73 |
| Lithuania | 3517 | 355 | 65 | 75 | 508 | 60 | 3009 | 295 | 26 | 34 |
| Poland | 65,946 | 8512 | 49 | 59 | 14,442 | 1070 | 51,504 | 7442 | 83 | 85 |
| Russia | 10,259 | 1284 | 61 | 74 | 1313 | 245 | 8946 | 1039 | 128 | 42 |
| Sweden | 11,181 | 170 | 67 | 97 | 3692 | 170 | 7489 | 0 | 36 | 0 |
| Total | 109,594 | 11,318 | | | 27,909 | 2035 | 81,685 | 9283 | 63 | 70 |

The first part of Table 10.2 represents our own estimate of the current loads of UWWTPs in the Baltic Sea countries – nutrient loads and abatement rates vary significantly between countries. Denmark and Germany perform best in both nutrient categories, while Finland and Sweden do well with phosphorus but fail in nitrogen abatement. The rest of the countries, however, have much to do to improve the abatement of both nutrients.

The next part of Table 10.2 indicates loads and abatement if phosphorus and nitrogen are reduced up to 95 per cent and 90 per cent, respectively. Aggregate loads are hugely reduced, because the abatement of nitrogen increases by up to 81,685 tonnes, and that of phosphorus to 9,283 tonnes. The aggregate targets of the BSAP are a 129,390-tonne reduction of nitrogen and a 13,356-tonne reduction of phosphorus. Thus, Table 10.2 reveals that we have a relatively cheap option to achieve 70 per cent of the phosphorus target and 63 per cent of the nitrogen target of the BSAP just by increasing abatement in UWWTPs. This reduction can be achieved via investments and improved operational efforts in just a few years. Moreover, this reduction in UWWTPs would provide the large amount of time (20–30 years) needed to reduce soil phosphorus content in agriculture, which is obligatory when reducing dissolved phosphorus using tight phosphorus fertilization limits over time.

Phosphorus abatement is allocated to Poland, Russia, the Baltic States and Denmark, because Germany, Finland and Sweden already abate more than 95 per cent of their phosphorus. Nitrogen reduction is allocated mainly to Poland, Russia, Finland and Sweden. This allocation is made on the basis of a cost-efficient solution and therefore differs from the allocation defined in the BSAP. We provide a comparison of cost-efficient allocation with the allocation of the BSAP in the last two columns of Table 10.2, which reports the share of the allocated reduction in UWWTPs compared to the reduction postulated in the BSAP. In the case of phosphorus, Denmark would face a higher reduction burden than it has in the BSAP, while Estonia, Finland and Russia would have higher nitrogen reduction targets.

Consider now a nutrient trading system established between the installations to enforce the wanted reduction in nutrients. Suppose further that UWWTPs are given a free initial allocation of permits. Then, the remaining nitrogen and phosphorus loads – 27,909 tonnes of nitrogen and 2035 tonnes of phosphorus – would constitute the amount permits distributed to UWWTPs for use and trading. Following NECFO's suggestion, we would request that no point source is allowed to increase its loads above the pre-trade loads; however, it can freely buy permits to moderate the required increase abatement and let those installations which have lower abatement costs abate further. Furthermore, we assume that trading for P and N is carried out separately, even though from the viewpoint of liquid markets, N-equivalents would be convenient units. The cost-efficient implementation of the requested aggregate reduction suggests that the permit prices would be 15.73 €/kg for phosphorus and 10.60 €/kg for nitrogen. Given the high reduction rate, we find these prices surprisingly low (in comparison, a 10 per cent reduction in phosphorus loads in Finnish agriculture costs more than 35 €/kg in the short-term).

It is a well-established fact that emissions trading systems are cost-efficient, irrespective of the initial allocation of emission permits, and this also holds true for nutrient trading. However, initial allocation has an impact on the position of installations in the permit market: by and large, those with a plentiful initial allocation of permits relative to their needs become sellers and receive extra revenue, while those with a scarce allocation will become buyers. Thus, we can use the initial allocation of nutrient permits to make

the net benefits between the Baltic Sea countries more even. Table 10.3 provides an example of an initial allocation, which promotes the following aim: we give Poland 80 per cent of all permits. The remaining 20 per cent of the allowances is distributed among the rest of the countries in relation to their share of side payment 1 (see Table 10.1). It is worth noting that the total sum of the permits is still exactly the same as the total loads after the 90 per cent and 95 per cent reductions, but the initial allocation is different from what each country would load after the cost-efficient solution.

Table 10.3. Nutrient trading: an equitable initial allocation of allowances

| Country | initial allocation of allowances, tonnes | | trade flows buys: + sells: –, tonnes | | value of trades buying cost: + selling revenue: –, m€ | | | total compliance costs + allowance costs, m€ | |
|---|---|---|---|---|---|---|---|---|---|
| | N | P | N | P | N | P | total | abate c | total c |
| Denmark | 739 | 54 | 2038 | 203 | 21.6 | 3.2 | 24.8 | 1.2 | 26.0 |
| Estonia | 888 | 65 | – 667 | – 50 | –7.1 | –0.8 | –7.8 | 14.3 | 6.5 |
| Finland | 879 | 64 | 2336 | 45 | 24.8 | 0.7 | 25.5 | 51.7 | 77.2 |
| Germany | 844 | 62 | 692 | –6 | 7.3 | –0.1 | 7.3 | 2.7 | 10.0 |
| Latvia | 678 | 49 | – 473 | 4 | –5.0 | 0.1 | –5.0 | 17.4 | 12.4 |
| Lithuania | 187 | 14 | 321 | 46 | 3.4 | 0.7 | 4.1 | 27.1 | 31.2 |
| Poland | 22,327 | 1628 | –7885 | – 558 | –83.6 | –8.8 | –92.4 | 488.7 | 396.3 |
| Russia | 606 | 44 | 707 | 201 | 7.5 | 3.2 | 10.6 | 79.8 | 90.4 |
| Sweden | 762 | 56 | 2930 | 114 | 31.1 | 1.8 | 32.9 | 62.5 | 95.4 |
| Total | 27,909 | 2035 | 0 | 0 | 0.0 | 0.0 | 0.0 | 745.4 | 745.4 |

The initial allocation in Table 10.3 makes installations in Poland, Latvia and Estonia sellers of nitrogen permits, while phosphorus permits are sold by installations in Estonia, Germany and Poland. UWWTPs in Poland would gain particular benefit from trading, to the tune of more than €92 million, while Estonia and Latvia together would gain €12.8 million. The biggest buyers would be Denmark, Finland and Sweden. The last column presents the compliance costs of achieving total nitrogen and phosphorus reduction; the compliance costs are a sum

of the abatement costs and permit costs or revenues. The total cost of achieving, cost-efficiently, around 70 per cent of the BSAP targets for nutrients is €745 million, meaning it only accounts for approximately 30 per cent of the cost originally estimated for the whole BSAP. The solution is cheap, mostly thanks to improved nitrogen abatement technology, while trading works as a means of equalizing the cost burden between countries. The initial allocation reduced Poland's costs by a considerable 20 per cent, and both Estonia and Latvia benefit from trading. Other countries are buyers, and they will benefit from buying by reducing their abatement effort slightly.

Our analysis shows that a suitable initial allocation of permits can be used to moderate the cost differences between the Baltic Sea countries. However, as Table 10.3 suggests, under a free initial allocation of permits, a complete equalization of costs may not be possible. Things change if the countries decide to auction the permits to the installations and let them trade the permits in after-markets. The revenue collected from the auctions would then be reallocated to installations, in order to equalize the cost burden or net benefits. An auction would be a quick way of solving the financial needs of countries having large investments, and in our case, assuming an efficient auction took place, the countries would gather roughly €328 million. Auctioned permits resemble an international nutrient tax that could be imposed on UWWTPs and used in a common financial pool to arrange the side payments to installations between countries. The sum of €328 million would therefore allow a fairly decent equalization of costs between countries.

## *Conclusions*

We demonstrate above that the net benefits from the BSAP are very unevenly distributed, which, unless side payments are arranged, may be the main obstacle to implementing the BSAP – especially in countries which currently have high nutrient loads. Therefore, we have suggested and examined a step-by-step approach to achieving the BSAP target. We have focused on the possibilities of nutrient trading between UWWTPs, because they still have the very real potential to reduce both phosphorus and nitrogen loads. Allowance

prices remain small (15.73 €/kg and 10.60 €/kg) and initial allocation can be made in a way which equalizes the net benefits from load reduction. Better economic incentives, together with the improved governance of national water policies, are necessary to successfully implement the Baltic Sea Action Plan. Nutrient trading can begin as a voluntary system; however, a prerequisite for comprehensive nutrient trading aimed at a large reduction of nutrient loads is a truly binding environmental agreement designed to protect the Baltic Sea instead of current recommendation.

# 11. Conclusions

Nina Tynkkynen and Mia Pihlajamäki

The case studies demonstrate that the differing historical, political and socio-economic backgrounds of the countries have implications on what kind of societal effects environmental problems, such as eutrophication, have and how these problems are managed. In addition, the riparian countries do not suffer equally from the problem of eutrophication and there are also differences between the countries concerning the awareness of the problem. As the case studies show, differing motivations to protect the Baltic Sea can in part be explained by geopolitics, too: for Russia and Germany the Baltic Sea is of less geopolitical interest, which is reflected in their relatively low motivation, whereas for Finland and Sweden the Baltic Sea is, in a geopolitical sense, much more significant and is thus also deserving of environmental attention.

Accordingly, national policies and regulations designed to combat eutrophication vary between countries. The case studies also indicate that various international collaboration arrangements have not replaced national regulations and initiatives, but have instead generated a complicated system of governance which actors often struggle to cope with. On the basis of the case studies, we argue that in order to improve Baltic Sea eutrophication governance, four sets of measures need to be urgently taken at various levels ranging from international to local. These four sets of measures are: 1) a macro-regional, binding, cost-effective and fair agreement on the protection of the Baltic Sea from eutrophication; 2) the spatial and temporal specification of policies; 3) the more effective and thorough integration of different policy sectors; and 4) increasing publicity, environmental awareness and deliberative democracy.

## *1) A macro-regional, binding, cost-effective and fair agreement regarding the prevention of eutrophication*

Given that multi-level governing of a common property resource such as the Baltic Sea is clearly an immense challenge, some sort of

transnational 'primus motor' for protection is evidently needed. At the moment, two main alternatives for such a motor stand out: the EU and HELCOM. With the introduction of the Baltic Sea strategy and certain directives, most notably UWWTD and WFD, the EU has taken steps towards a more determinate style of Baltic Sea eutrophication management.

As demonstrated in the country cases, the implementation of EU directives is a top priority in the EU member states, no matter the financial and human sources invested in HELCOM. Therefore, the EU has significant potential to enhance eutrophication prevention in the eight riparian countries. From a pan-European perspective, however, the Baltic Sea environment appears to be a rather marginal problem. As a result, many EU directives are too lax for the environmentally sensible Baltic Sea, but agreeing on a more stringent Baltic Sea protection plan within the framework of the EU is difficult. More to the point, the exclusion of Russia and other relevant countries within the catchment area is considered the EU's biggest weakness as an international actor in the Baltic Sea region. In Russia, the leading role of the EU in Baltic Sea environmental governance is not seen as unproblematic, and as a major polluter Russia is a central actor whose interests need careful consideration. This implies that the position of the EU as the 'primus motor' of Baltic Sea environmental protection is not self-evident.

With regards to the regional level arrangement, i.e. the HELCOM regime and the Baltic Sea Action Plan (BSAP) agreed upon within its framework, its biggest assets are the participation of all nine coastal countries and the possibility of taking the whole catchment area into account in a more effective way. It also maintains expertise and advances data collection concerning a variety of issues, ranging from biodiversity to oil destruction measures. A number of problems remain, however. Firstly, and in relation to international law, the BSAP and the underlying Helsinki Convention are not binding agreements; they can produce only recommendations. Accordingly, countries have the leeway to burnish their image by committing themselves to the BSAP ostensibly, while taking only a few practical steps towards its implementation. As is shown by the case studies, the recommendations put forth by HELCOM do not materialise in national regulations effectively enough. Secondly, while stemming merely from ecological principles, the BSAP leaves socio-economic and

political questions related to the division of protective responsibilities unsolved; cost-effectiveness and net benefits are discussed implicitly, if at all. The large differences in the country-wise reduction targets lead to huge differences in abatement costs. When measured in monetary terms, improvement in water quality leaves some countries better off, or at least allows them to break-even, but Poland, Russia, Latvia and Lithuania all face large negative net benefits. Is it therefore at all surprising that commitment to abatement measures is difficult to achieve?

Consequently, in order to motivate the parties to implement the planned measures of protection, a legally binding agreement is needed; and this agreement needs to take into account both the financial standing of the countries and their socio-economic heterogeneity. In addition, the proposed actions need to be cost-effective, in order to create incentives for their implementation. In general, the allocation of responsibilities should be cost-effective and fair. Mechanisms such as nutrient trading – examined in detail in chapter 10 – for instance, are among the possible solutions needed to improve these aspects.

## *2) The spatial and temporal specification of policies/measures*

As is often noted, environmental problems do not appreciate administrative borders; and neither does eutrophication of the Baltic Sea. In accordance with this idea, the environmental governance of the Baltic Sea has been driven towards ever wider practices that ultimately aim at the environmental policy unification throughout the region. This is understandable, as there has been a need to gain symbolic weight for environmental concerns in, for example, EU policies towards the Baltic Sea[1]. However, the sensitivity to eutrophication and the amount of external load vary across the region, as do the severity of the problem and its ecological and societal consequences. This 'regionality' of the problem concerns agriculture

[1] Haila, 2008:194, 208

in particular, as its nutrient loads depend on the site-specific features of field parcels and their location with respect to the water system.

Accordingly, due to a multiplicity of the spatial and temporal scales related to the problem of eutrophication, a governance framework that takes the whole system as a starting point does not work. It can be argued that region-wide frameworks (such as those introduced by HELCOM and the EU) lead to inefficient protection policies such as the inaccurate allocation of responsibilities and, ultimately, the waste of funds targeted at protection. Therefore, differentiation of policy instruments and forms of implementation on a spatial basis are needed. To a certain extent, this suggests the neglection of administrative borders – not by enlarging the framework, though, but by adjusting it. This implies that protective policies are taken where the benefits are greatest. In other words, protective measures – including the financial resources which are always scarce – should be targeted at areas where the pollution load is heaviest.

Consequently, we suggest the spatial specification of protective actions. Spatial specification implies that the focus is on specific situations and differentiating bottom-up management practices. Here, the ecosystem management approach (see chapter 2) on which the BSAP, for example, is based is not enough: the approach should consider not only the ecological character of the practice with which the impacts are associated, but also how this practice is embedded within wider society, such as in the way physical impacts affect the interests of particular societal groups, the distribution of social power resources and the character of the institutional frames within which solutions are to be worked out[2]. An approach emphasising the spatial specification of measures is bottom-up rather than top-down in character. Thus, it takes the experience-based knowledge of local stakeholders more carefully into account[3] and closely engages various stakeholder groups, such as farmers and other local practitioners, in the planning and implementation of protective efforts. A smaller scale helps to enhance flexibility and innovation, rather than top-down coercion and regulation. In sum, the approach adjusts and combines the various EU and national policies, recommendations put forth by HELCOM and practical activities taking place at the various levels.

[2] cf Meadowcroft 2002

[3] Tynkkynen 2008

The spatial specification of measures should be considered in order to address nutrient load from diffuse sources, and from agriculture in particular. As this report has demonstrated, the EU's common agricultural policy is exacerbating the negative impact of agriculture on the state of the Baltic Sea, as it increases the area under cultivation and, consequently, nutrient leach to the water systems. Agri-environmental programmes, in turn, are not effective enough, but more stringent regulations are generally considered to harm the competitiveness of agriculture. However, the effectiveness of agri-environmental programmes could be significantly improved by introducing spatial differentiation; that is, by tailoring agri-environmental programmes to reflect differences in the environmental sensitivity of field parcels, for instance, by environmentally beneficial index -based tendering systems, which can be used to regionalise agri-environmental policies. The EU WFD creates new possibilities in order to realise this goal, but it needs to be more thoroughly integrated into agricultural policy (see below).

Also, temporal specification, i.e. the definition of intermediate steps designed to reach final goals, would facilitate the implementation of policies and improve the effectiveness of Baltic Sea protection. For example, defining intermediate steps would help to implement the BSAP, given the large and asymmetrically distributed abatement costs. Such a temporal dimension is built in NEFCO's suggestion to develop a nutrient trading system in the Baltic Sea, for instance. Starting nutrient trading between point sources would bring reductions in nutrient loads quickly - in contrast to the inevitably slow progress achievable in agriculture. Nutrient trading has two favourable features: the initial allocation of load permits works simultaneously as a means of redistributing net benefits more evenly, and the reduction in nutrient loads is achieved with the lowest possible costs. Reducing nutrient loads from UWWTPs using a trading mechanism would constitute roughly 70 per cent of the BSAP's reduction targets. This reduction is large and, based on the consequent changes in water quality and algal blooms, it would provide an opportunity to reconsider and fine-tune the BSAP's targets.

### *3) The more effective and thorough integration of different policy sectors*

Various land-based activities taken throughout the catchment area either directly or indirectly affect the state of the sea. Therefore, the state of the Baltic Sea cannot be improved by exclusively focusing on marine/water protection, but protective activities should be closely linked to all societal activities. When the land-based activities affecting the problem of eutrophication are targeted, many policy sectors become intertwined with the environmental policy sector. The use and nurture of the Baltic Sea thus exceeds administrative borders, not only in geographical terms but also in those of policy sectors. This indicates that the protection of the Baltic Sea from eutrophication should be seriously taken into account in most of the administrative branches and in every policy sector, at both the national level and within the EU. In short, policy integration needs to be enhanced at every governance level.

The case studies in this report demonstrate that so far policy integration has succeeded imperfectly – particularly with regards to the integration of environmental concerns into agricultural policy. In the EU, which is currently regulating agri-environmental policy in its member states, agricultural decision-making has, for many decades, taken place within a rather isolated policy network, and in many national cases strong farming lobbies are against more stringent environmental policies, in fear of the loss of income. As a result, the environmental impacts of agricultural policy actually undermine the achievements of agri-environmental policy regarding water protection. This kind of strong policy fragmentation calls for an exhaustive reform.

A better integration of policy sectors firstly presupposes the explication of interrelations between different policy areas. In addition, trade-offs and synergies between environmental policy and industrial, energy, transport and fisheries policies should be more systematically taken into consideration at every level of governance. This underlines the importance of socio-economic and policy analyses, as well as proper coordination. What we have suggested above, i.e. the spatial specification of measures, is one way to meet the challenges of policy integration. Namely, it cuts the problems

into more manageable pieces, which are easier to perceive and tackle. Furthermore, a binding agreement would facilitate policy integration.

## *4) Increasing publicity, environmental awareness and deliberative democracy*

Despite the general image of the Baltic Sea countries as environmental forerunners, there is still a lot to do before the normative goals of environmental politics can be reached. As the chapters of this report demonstrate, the level of information concerning the Baltic Sea is surprisingly low in most parts of the region. Therefore, in order to achieve the good ecological status of the Baltic Sea by any date, it is of crucial importance to strengthen environmental awareness in general and the Baltic Sea in particular – not only in Poland, Germany, the Baltic States and Russia, but throughout the region. In the long-term, education must play a key role in increasing environmental awareness, which in turn opens up possibilities for public pressure, everyday activism, greening of business culture – all of which are increasingly important instruments of environmental policy-making.

Increased awareness concerning various double benefits that may emerge from combating eutrophication convinces the public that the problem is worth acting upon. Positive effects could be expected both in regard to other environmental objectives, for example climate protection and biodiversity, and in terms of socio-economic interests such as improved drinking-water quality, cost savings through increased fertiliser efficiency and improved conditions for the tourism and fisheries sectors.

Awareness is, obviously, rooted in scientific research. There is a lot of scientific knowledge concerning the ecological state of the Baltic Sea; however certain features of scientific knowledge challenge the linking of science and policy. For example, there are uncertainties relating to eutrophication and differing interpretations of the problem and its solution possibilities amongst Baltic Sea scientists. One problem with uncertainty is that it can direct public discussion towards scientific weaknesses – thereby undermining the main message conveyed by the discovered results. In the worst case scenario, this slows down policy-making processes and can

be used to justify inaction. The existence of varying and sometimes contradictory scientific knowledge implies that society can choose which interpretation to take on board. But even when there is a unanimous scientific understanding, scientific interpretations are usually challenged by other, competing views on the issue, which can all too easily gain publicity[4].

The media plays an important role in raising awareness, especially when it communicates science news to the public and raises environmental issues within both public and political debate. Therefore, it is important that the media takes a responsible role in the prevention of eutrophication; sometimes, partly due to the abovementioned reasons, the problems raised by the media appear randomly chosen and, at worst, the message can be misleading[5]. This, combined with the sheer volume of information available, makes it difficult for the wider public to know which information they can trust.

Finally, the importance of open deliberation concerning environmental issues in general, and stakeholder participation in the definition of relevant environmental policies and activities in particular, cannot be exaggerated. Scientific knowledge and respective rationalities need to be complemented by the experience and knowledge of stakeholders – those people and organizations to whom the Baltic Sea serves as a source of livelihood or recreation. But, despite noble words, there is a lack of effective ways to guarantee stakeholder participation in Baltic Sea eutrophication policy-making.

In addition to an improved exchange of information, stakeholder participation requires various practical arrangements. As noted above, the spatial specification of policies would guarantee stakeholder engagement. Improved stakeholder participation would, in turn, facilitate individual commitment to the protection of the Baltic Sea and therefore encourage a change, from the use of direct top-down regulations to the introduction of incentive-based flexible instruments and individual voluntary efforts made in order to protect our sea.

[4] See Pihlajamäki & Tynkkynen, 2011

[5] Pihlajamäki and Tynkkynen, 2011

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# List of Abbreviations

| | |
|---|---|
| BSAP | Baltic Sea Action Plan |
| BSAG | Baltic Sea Action Group |
| CAP | Common Agricultural Policy |
| ENGO | Environmental Non-Governmental Organisation |
| EC | European Commission |
| EU | European Union |
| HELCOM | Helsinki Commission |
| MSFD | Marine Strategy Framework Directive |
| ND | Nitrate Directive |
| NGO | Non-Governmental Organisation |
| NECD | National Emission Ceilings Directive |
| NEFCO | Nordic Environment Finance Corporation |
| NDEP | Northen Dimension Environmental Partnership |
| NIB | Nordic Investment Bank |
| NIP | National Implementation Plan |
| NVZ | Nitrates Vulnerable Zone |
| RBMP | River Basin Management Plan |
| UNESCO | United Nations Educational, Scientific and Cultural Organisation |
| UWWTD | Urban Waste Water Treatment Directive |
| WDF | Water Framework Directive |

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# Governing the blue-green Baltic Sea

*Societal challenges of marine eutrophication prevention*

Mia Pihlajamäki & Nina Tynkkynen (eds.)

Eutrophication is currently regarded as the most serious ecological problem for the whole Baltic Sea. Considering that the Baltic Sea has already been the focus of environmental management efforts for 40 years, it is surprising that in reality the ecological state of the Baltic Sea is not improving. This implies that protective efforts such as international and national policies and regulations, as well as their implementation, have not been effective enough.

Management of Baltic Sea eutrophication is challenged by the complex ecological characteristics of the eutrophication problem, societal differences across the Baltic Sea region, and the multitude of actors involved in governing these efforts. As a consequence, the awareness of the problem of eutrophication, as well as national and sub-national aspirations, the ability to address eutrophication in national policies and the strengthening of policy implementation, varies across the region. Furthemore, the lack of a legal arrangement of Baltic Sea protection to cover all the coastal countries makes the situation intricate.

The ultimate aim of this report is to improve Baltic Sea eutrophication protection by identifying the challenges of more effective Baltic Sea eutrophication governance at national, regional and European Union levels, and the examination of nutrient trading as an instrument to more effectively combat eutrophication. In order to improve Baltic Sea eutrophication governance, the report outlines four sets of measures that, on the basis of the case studies, are urgently needed at various governance levels – ranging from international to local.

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