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# An Assessment of the Baltic Sea Action Plan (BSAP) Using the OECD Principles on Water Governance

Savitri Jetoo

Department of Social Sciences, Åbo Akademi University, Tuomiokirkontori 3, 20500 Turku, Finland; savitri.jetoo@abo.fi or sjetoo@abo.fi; Tel.: +358-50-524-2874

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**Abstract:** This paper uses the Organization for Economic Co-operation and Development (OECD) water governance principles to assess the governance of the implementation of the Baltic Sea Action Plan (BSAP), with a focus on the eutrophication segment. Whilst governance assessments can be used as auditing functions, this study was done with the goal of stimulating reflection, in order to investigate whether the governance systems have made any improvements. This is especially needed, since the BSAP is to be renewed in 2021, so that any assessment of it at this moment is timely. This review has focused on the 12 principles of water governance and the three complementary drivers into which the principles are grouped: Effectiveness, efficiency and trust, and engagement. This paper focuses on national implementation actions. It uses qualitative thematic analysis to analyze the content of the national implementation plans for Baltic Sea Coastal countries. It identifies gaps in water governance and makes recommendations for enhancing effectiveness, efficiency and trust, and engagement in the governance of the Baltic Sea, including improved stakeholder participation, the establishment of a permanent lead agency for the implementation of BSAP, increased funding for implementation actions, and a better governance of trade-offs.

**Keywords:** water governance; governance principles; Baltic Sea; Baltic Sea Action Plan; eutrophication actions; OECD governance principles

## 1. Introduction

The Baltic Sea governance has been described as well-developed and robust, evolving from the signing of the 1974 Convention on the Protection of the Marine Environment of the Baltic Sea Area, commonly known as the Helsinki Convention [1]. Its aim was to take all appropriate measures to prevent and abate pollution, and to protect and enhance the marine environment of the Baltic Sea Area. However, the 1992 version of the Helsinki Convention was bolder in its aim to prevent and eliminate pollution for the ecological restoration and preservation of ecological balance of the Baltic Sea. The Helsinki Convention established the Baltic Marine Environment Protection Commission, the Helsinki Commission (HELCOM), as its governing body. However, despite this the Baltic Sea continues to suffer from stressors such as eutrophication, toxic substances and the overarching stressor of climate change. As such, there was a renewed call to action in 2007 when the HELCOM Baltic Sea Action Plan (BSAP) was signed by the coastal states and the EU, with the aim of restoring the good ecological status of the Baltic Marine environment by 2021 [2]. However, implementation by national governments has been varied, with seventeen out of seventy three national actions completed, as assessed in the HELCOM 2018 implementation report [3]. Further, for eutrophication, which focuses on nutrients reduction, 86% of joint actions related to measures and management coordination has been accomplished, whilst only one action implemented at the national level has been achieved by all HELCOM countries [3].

There is clearly a gap in the decision making and implementation of actions to achieve national nutrient reduction measures. It is this governance gap that spurs this study, which aims to assess the BSAP through the lens of the Organization for Economic Co-operation and Development (OECD) water governance principles. It explores the extent to which the HELCOM Baltic Sea Action Plan provides conditions for an effective application of the 12 principles of water governance, unveiled by the OECD in 2015. It focuses on the country level implementation of the BSAP, using the National implementation reports (NIP). Using this framework, it identifies factors that enable or constrain the implementation of the BSAP, and makes recommendations for improvement. This study is timely, as the findings can inform the process for the renewal of BSAP in 2021.

### *The Baltic Sea Action Plan*

The seminal report by the World Commission on Environment and Development, released on 27 April 1987, examined key issues on environment and development and made recommendations for dealing with them, including proposals for changes at the national, regional and international levels for implementation actions [4]. Under Section 2 on Oceans Management, it called for a regional management of regional seas due to the shared resource characteristics, recommending an ecosystem approach for the sustained use of these resources. The ecosystem approach has emerged as a central concept in Baltic Sea environmental governance. As a strategy, it refers to the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable manner [5]. It calls for the systems approach for the management of human activities for environmental sustainability, incorporating knowledge and adaptive approaches from connected actors across borders.

In 2003, it was officially recognized by a HELCOM Ministerial declaration (the Bremen declaration) that such a synergistic approach was needed for the Baltic Sea to bring attention to stressors such as eutrophication and oxygen depletion events, nutrients and hazardous substances discharges, threatened marine biological diversity and the environmental impact of shipping [6]. The HELCOM contracting parties, Finland, Sweden, Denmark, Poland, Germany, Latvia, Lithuania, Estonia, Russia and the European Community, adopted objectives to further the ecosystem approach that culminated in 2007 with the signing of the HELCOM Baltic Sea Action Plan (BSAP) at a November HELCOM Ministerial Meeting. The BSAP preamble stresses and defines its understanding of the ecosystem approach. It states “ACKNOWLEDGING that the ecosystem approach is based on an integrated management of all human activities impacting on the marine environment and, based on the best available scientific knowledge about the ecosystem and its dynamics, identifies and leads to actions for improving the health of the marine ecosystem, thus supporting the sustainable use of ecosystem goods and services” [2] (p. 4). The BSAP was thus the culmination of HELCOM’s planning process in the implementation of the ecosystem approach, which started after the Bremen declaration in 2003.

The HELCOM monitoring and assessment program of the state of the Baltic Sea revealed four major environmental problems that led to the adoption of four strategic goals reflecting the desired state of the Baltic Sea: (i), Baltic Sea unaffected by eutrophication. (ii), Baltic Sea with life undisturbed by hazardous substances, (iii), Maritime activities carried out in an environmentally friendly way, leading to (iv), Favorable conservation status of Baltic Sea biodiversity [2]. These goals were carried forward into the BSAP in the form of four thematic areas, namely, eutrophication, hazardous substances, maritime activities and biodiversity. Each of these thematic areas has desired goals and sub-objectives. For example, for the thematic area of eutrophication, the desired goal is ‘Baltic Sea unaffected by eutrophication’, with objectives being clear water, a natural level of algal blooms, the natural distribution and occurrence of plants and animals and natural oxygen levels [2]. The importance of the evaluation of actions to determine their effectiveness towards goal achievement, and to allow the modification of actions, has been written into the BSAP, which recognized the use of ‘appropriate’ indicators to measure progress. For the area of eutrophication, maximum allowable nutrient inputs were set for each bay of the Baltic Sea, and corresponding nutrient reductions, which were then allocated to each

coastal country, as shown in Table 1. From this table it is seen that Poland and Russia have the highest Phosphorus reduction requirements (8760 and 2500 tons, respectively).

**Table 1.** Table showing country-wise nutrient reduction requirements (after HELCOM) [2].

	Phosphorus (tons)	Nitrogen (tons)
Denmark	16	17,210
Estonia	220	900
Finland	150	1200
Germany	240	5620
Latvia	300	2560
Lithuania	880	11,750
Poland	8760	62,400
Russia	2500	6970
Sweden	290	20,780
Transboundary Common Pool	1660	3780

### The Implementation of the Baltic Sea Action Plan

By signing the BSAP, the Contracting Parties agreed to self-assess their implementation through monitoring and evaluation, using the core indicators that were agreed upon for this purpose. A set threshold value for an indicator defines good status against which the current status is assessed. The implementation of actions to achieve targets in the BSAP is also evaluated by HELCOM, and is recorded in formal reports and on its webpage via the HELCOM Explorer [7]. Explorer reports on the status of any completion of actions for BSAP implementation. In its assessment of any progress to achieve country reduction targets for eutrophication, HELCOM found that no country has achieved the phosphorus reduction targets, but one country (Finland), has achieved the nitrogen reductions, as shown in Table 1. This can be seen in Figure 1.

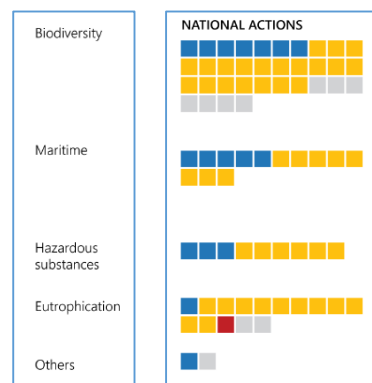
HELCOM MAI/CART scheme	Status
■ National programmes to achieve nutrient reductions	*
■ Achieving Country Allocated Nutrient Reduction Targets: Nitrogen	1 / 9**
■ Achieving Country Allocated Nutrient Reduction Targets: Phosphorous	
■ Evaluation of effectiveness of national programmes for reduction of nutrients and need for additional measures, in order to reach the country-wise reduction targets	4 / 9
■ Initiate joint activities to address transboundary nutrient inputs from non-Contracting Parties according to the HELCOM nutrient reduction scheme	3 / 8*** Target year: 2020

■ Accomplished	■ Partly Accomplished	■ Not Accomplished	■ Future Target Year
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**Figure 1.** Accomplishment of national actions to mitigate eutrophication related to measures and management coordination. \* All countries have nutrient reduction programs. \*\* Only one country (Finland) has achieved the country allocated reduction targets (CART) for nitrogen for all sub-basins. \*\*\* Estonia does not share any borders with non-contracting parties, thus the action is only relevant for eight countries. Adapted from HELCOM [3].

The achievement of national actions in eutrophication is one example of the overall low level of achievement of national actions in the implementation of the BSAP (Figure 2).



**Figure 2.** Accomplishment of joint and national actions agreed under the BSAP and HELCOM Ministerial Declaration. Each block represents one action based on BSAP. ‘Other’ refers to actions in the areas of financing, awareness and monitoring, and assessment. Adapted from HELCOM [3].

The one action that was effectively implemented by all countries is the ratification of Annex v1 of MARPOL 73/78 convention on clean shipping [3].

## 2. Materials and Methods

### 2.1. The OECD Water Governance Principles

Water governance has been studied from many disciplinary perspectives, including institutional analysis, public administration, political science, leadership and management. As such, there are many definitions of water governance that range from the highly theoretical to its practical application. Since this article is examining the Baltic Sea Action Plan (BSAP), which focuses on practical actions for ecosystem resiliency, it will adopt a simple and practitioner-focused definition. According to the Organization for Economic Co-operation and Development (OECD) [8], ‘Water governance is the set of rules, practices and processes (formal and informal) through which decisions for the management of water resources and services are taken and implemented, stakeholders articulate their interest and decision-makers are held accountable’. Ineffective water governance impedes water policy design and its implementation through weaknesses such as ineffective or absent rules, inadequate financing or fragmented sectors. The OECD has studied and identified seven water governance gaps that hinder water policy design and implementation, namely; policy, accountability, funding, capacity, information, administrative and objective. This was used as a basis to study water governance in its selected member countries and the Latin American countries, and to carry out stakeholder policy dialogues for water reforms in several countries.

It was through the stakeholder dialogues on the multi-stakeholder platform of the OECD Water governance initiative that the OECD water governance principles were developed. These principles were designed to assist governments to strengthen water governance in order to meet the uncertainty associated with complex challenges now and in the future, challenges such as climate change and its associated extreme weather events, such as flooding and droughts, challenges that also led to the development of the BSAP. It acknowledges that water governance should foster inclusive decision making as the key to effective water policies. These principles were developed using the input of over 100 delegates from the private, public, and nongovernmental sectors who are part of the OECD Water Governance initiative. These principles were endorsed by over 170 stakeholder groups and governments. These principles are as follows [8]:

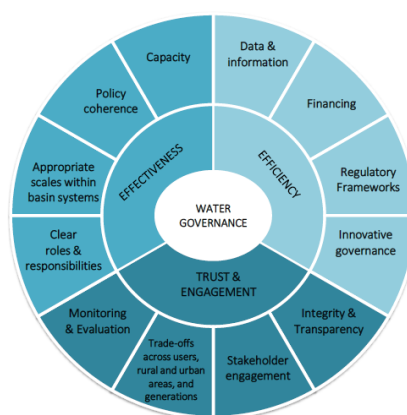
- (1) Clearly allocate and distinguish the roles and responsibilities for water policymaking, policy implementation, operational management and regulation, and foster co-ordination across these responsible authorities.

- (2) Manage water at the appropriate scale(s) within integrated basin governance systems to reflect local conditions, and foster co-ordination between the different scales.
- (3) Encourage policy coherence through effective cross-sectoral co-ordination, especially between policies for water and the environment, health, energy, agriculture, industry, spatial planning and land use
- (4) Adapt the level of capacity of responsible authorities to the complexity of water challenges to be met, and to the set of competencies required to carry out their duties
- (5) Produce, update, and share timely, consistent, comparable and policy-relevant water and water-related data and information, and use it to guide, assess and improve water policy
- (6) Ensure that the governance arrangements help mobilize water finance and allocate financial resources in an efficient, transparent and timely manner
- (7) Ensure that sound water management regulatory frameworks are effectively implemented and enforced in pursuit of the public interest
- (8) Promote the adoption and implementation of innovative water governance practices across responsible authorities, levels of government and relevant stakeholders
- (9) Mainstream integrity and transparency practices across water policies, water institutions and water governance frameworks for greater accountability and trust in decision-making
- (10) Promote stakeholder engagement for informed and outcome-oriented contributions to water policy design and implementation
- (11) Encourage water governance frameworks that help manage trade-offs across water users, rural and urban areas, and generations
- (12) Promote a regular monitoring and evaluation of water policy and governance where appropriate, share the results with the public, and make adjustments when needed.

There are three complementary drivers into which these principles are grouped: Effectiveness, efficiency, and trust and engagement. These are defined by the OECD [8] as follows:

- (1) **Effectiveness** relates to the contribution of governance to define clear sustainable water policy goals and targets at all levels of government, to implement those policy goals, and to meet expected targets.
- (2) **Efficiency** relates to the contribution of governance to maximize the benefits of sustainable water management and welfare at the least cost to society.
- (3) **Trust and Engagement** relate to the contribution of governance to building public confidence and ensuring the inclusiveness of stakeholders through democratic legitimacy and fairness for society at large.

These drivers and principles are summarized in Figure 3 [8].



**Figure 3.** Overview of the Organization for Economic Co-operation and Development (OECD) Principles on Water Governance [8].

## 2.2. Data Sources and Content Analysis

This analysis of the BSAP is conducted in relation to the OECD's 12 principles using secondary data. It centers on one of the key focal areas of the Baltic Sea Action Plan, eutrophication, as it is the biggest threat to the Baltic Sea. Eutrophication actions are examined as examples of governance mechanisms to reduce nutrient impact on the Baltic Sea through provisions in the Baltic Sea Action Plan. The main sources of secondary data includes HELCOM-published reports and BSAP-related reports. The National Implementation Plans (NIP) as located on HELCOM's website are also used as a key source of information, as this documents each Member State's approach to any implementation of the BSAP in their own country. This information is used to elucidate any trends that can highlight factors that enhance or impede the implementation of the BSAP.

This work is a qualitative research study using thematic analysis for the extraction of key themes in the National Implementation reports. Each national implementation report detailed the action of each coastal country in its individual implementation of the BSAP. Each of the eight reports (Finland, Sweden, Germany, Denmark, Poland, Latvia, Lithuania, Estonia and Russia) were structured differently. Most reports ranged from 17 to 26 pages, but two were closer to 100 pages (Germany and Russia). These reports were opened, read and coded in pdf format. Some reports were organized around the key goals of the BSAP, while for others, there was no table of contents. The core themes were sourced from each OECD governance principle and analyzed for eutrophication actions. The text from the reports were coded according to these themes, identifying not just obvious, but latent content as well. Some example of this probing further than the surface can be seen, for example, in stakeholder analysis, linking the type of stakeholder engagement to the dominant governance mode of the country. To give an example, for OECD governance principle 1, 'clearly allocate and distinguish roles and responsibilities for water policy making, policy implementation, operational management and regulation, and foster coordination across these responsible authorities'; content analysis was conducted with key themes 'lead agencies' and 'accountability mechanisms'.

## 3. Results and Discussion

This section presents the results of the findings in the order of the principles, as they appear on the list on pages four and five, and grouped under the drivers. Effectiveness is presented first, followed by efficiency and then, trust and engagement. As stated in the Materials and Methods Section, this paper has relied on grey literature and self-reported actions. This is the main limitation of this study, as there was no verification through interviews, that what was contained in the documents, was that which was translated on the ground.

### 3.1. Effectiveness

#### 3.1.1. Clear Roles and Responsibilities

**Principle 1.** *Clearly allocate and distinguish the roles and responsibilities for water policymaking, policy implementation, operational management and regulation, and foster co-ordination across these responsible authorities.*

There is a unanimous agreement among the countries to cooperate on the Baltic Sea pollution reduction, as evidenced by the Helsinki convention and the establishment of HELCOM as the governing agency. The BSAP is the main tool used by HELCOM to achieve its goal of 'restoring the good ecological status of the Baltic marine environment by 2021'. As such, the role of HELCOM is clear as the designated lead agency for oversight and as the environmental focal point for the BSAP on the transnational level. The HELCOM coordinating secretariat is located in Helsinki, Finland, but its chairmanship rotates amongst the member states every two years [9]. This rotation fosters coordination, as it allows each member state to understand the decision-making process and the governance of HELCOM, and instills a sense of ownership for the results.

It also allows member states equal opportunities to advance their priorities during this time and as such, can be used to advance any measures for their individual country's implementation. The Commission holds annual meetings with heads of delegation (HOD) from the contracting parties. These meetings are decision-making forums for key issues, such as finances and recommendations for the protection of the marine environment, with any decisions being made by consensus. In addition to these meetings and those of the HOD, HELCOM's working structure consists of eight working groups, as shown in Figure 4. It can be deduced from the achievement of joint eutrophication targets (only two not completely accomplished, five are accomplished and one will be in future years), that this structure is effective at fostering cooperation across national level authorities. However, it can also be argued that the working Group Gear is not so effective at integration and coherence, as evident in the lagging national implementation results. The ratification of Annex v1 of the MARPOL 73/78 convention on clean shipping by all contracted parties reinforces the effectiveness of HELCOM in promoting national level cooperation on its priority issues.

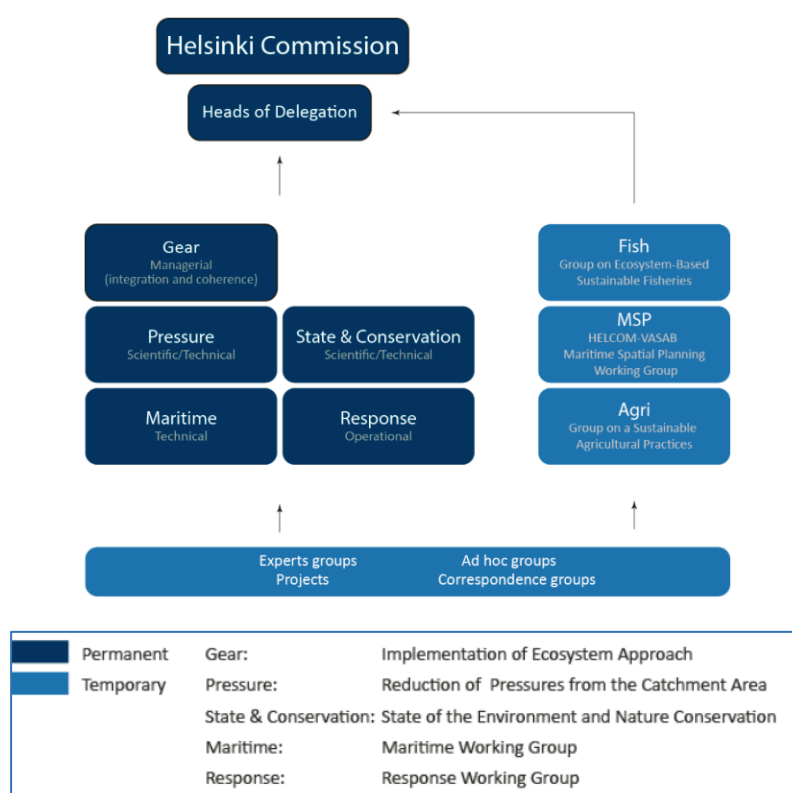


Figure 4. HELCOM working structure [9].

On the national level, there are varying institutional responsibilities for the implementation of the BSAP, from national to diffusion on the local level, as reported in the country's NIP and BSAP documents. There are no clear institutional structures for implementation in many of the NIP reports, nor is governance of the BSAP given as a heading in any of the reports. It could be argued that this omission of governance is an indication of the lack of importance given to it by the member states in the implementation of the BSAP measures. However, upon reading through the reports, there are clues to the governance of the actions. For example, Finland's NIP included a foreword by Paula Lehtomäki, the Minister of the Environment [10], giving it the lead agency role in the BSAP implementation. The Ministry of the Environment approved the Action Plan for the Protection of the Baltic Sea in 2005, a plan that includes implementation measures [10] that show that Finland is undoubtedly one of the forerunners in protection of the Baltic Sea, as in 2002 the Government of Finland compiled Finland's program for the protection of the Baltic Sea [10].

Likewise, Sweden's implementation of the BSAP is done within the context of its Bill/2008:170 on a Coherent Swedish Marine Policy (Marine Policy Bill2), which stated that the BSAP NIP would be based on input from agencies and other information [11]. Here the governance for the implementation plan is clear; it was a multiagency stakeholder process led by the Swedish Environmental Protection Agency (SEPA), which came up with an inter-agency agreement for the BSAP implementation. Other agencies in this collaborative process included the Board of Agriculture, the Chemicals Inspectorate, the Maritime Administration, the Coast Guard, the Board of Fisheries, the Swedish Energy Agency, the Defense Force, the Forest Agency, the Swedish Meteorological and Hydrological Institute, the Geological Surveys of Sweden, and the Water Basin Authorities in the south Baltic, the north Baltic and the west Coast [11].

The accountability for Denmark's NIP lies at the level of the central government, which has the mandate for international obligations under the Environmental Objectives Act, but local government, ensures its implementation actions [12]. It falls under the Danish Environmental Protection Agency, which is under the umbrella of the Ministry of Environment and Food of Denmark. Implementation of the BSAP commitments for P and N reductions in Denmark is done within the framework of the Green Growth Agreement of 2009 [12]. This agreement between political parties is a strategy for the protection of the environment and nature with a modern and competitive agricultural production. The Green Growth reductions are more ambitious than HELCOM's, as it aims to effect a reduction of waterborne loads of 18,000 tons of N and 210 tons of P (compared to HELCOM's 17,210 tons of N and 16 tons of P). One of the instruments used in the Green Growth Agreement is the creation of new nature reserves, while making better conditions for growth in the agriculture and food industry. Similarly, in Germany, another environmental forerunner country, the federal government is responsible for the EEZ, and its structure has to be taken into consideration during any implementation by States of their particular section of Germany's territorial waters [13]. Germany implements its measures within the framework of national directives by the Federal Environment Agency (the designated lead agency) (the Nitrogen Reduction Program of 1996 and the Regulation of Phosphorus usage in agriculture in the 1996 Fertilization Ordinance (Düngegesetz) and EU directives, (the Urban Wastewater Treatment Directive (UWTD), Nitrates Directive (ND), Ground Water Directive (GWD) and Water Framework Directive (WFD)).

In the Baltic States, the implementation of the BSAP varies. In Latvia, the designated lead agency is the Ministry of Environment, designated by the Cabinet to incorporate BSAP actions into the National Environmental Policy Strategy for 2009–2015 [14]. There are also cabinet regulations No. 34 for the discharge of polluting substances in water, which prohibits discharged untreated industrial wastewater and wastewater sludge from businesses and industrial sites into the environment [14]. An evaluation report found no significant polluters have been identified for discharging untreated material into the environment, but this does not say that there was no discharge into the environment. Likewise, in Lithuania, the Ministry of the Environment is the designated lead agency with a mandate from the Government of Lithuania to oversee the 'Baltic Environment Marine Protection Strategy' for the implementation of BSAP measures in Lithuania [15]. It is also mandated to provide an annual report on the evaluation of implementation by the 1st of March to the Government of the Republic of Lithuania. These evaluation reports are based upon input from implementers to the Ministry of the Environment. In the other Baltic State, Estonia, the Government of the Republic (GR) adopted a resolution No 784 (12 December 2005) for an inter-ministerial committee for coordinating maritime issues, the Maritime Committee [16]. This Committee was tasked with the preparation of the Baltic Sea Action Plan Implementation Program, 2008–2011 (BSAIP) [16]. The Ministry of the Environment has the task of providing support services for the Maritime Committee, and is the lead on the eutrophication actions, with some involvement by the Ministry of Agriculture. The Ministry of Environment Development Plan 2008–2011 is one of the key instruments used for Eutrophication, with amending the GR regulation No. 269 for discharging effluent into water bodies or soil being one of the key actions for eutrophication abatement measures [16].



The implementation of BSAP in Poland is led by the Ministry of the Environment (Chief Inspectorate for Environmental Protection), with active involvement by the Ministries of Agriculture and Rural Development, Economy and Infrastructure. Implementation of measures for eutrophication is done within the framework of EU directives and is implemented in National programs such as the National Water Environmental Program [17]. Measures for the reduction of nutrients from wastewater are implemented within the framework of the National Program of Urban Wastewater Treatment (KPOŚK) [17]. In the case of Russia, the implementation of BSAP actions is done within the framework of federal target programs [18]. There are three programs that are highlighted in the Russian NIP: “National System of Chemical and Biological Safety of the Russian Federation (1 state—2009–2014)” approved by the resolution of the Government of the RF No. 791 dated 27 October 2008; “Clean Water” for 2011–2017, approved by the resolution of the Government of the Russian Federation No. 1092, dated 22 December 2010 and “Development of the Water Resources Utilization System of the Russian Federation in 2012–2020”, approved by the resolution of the Government of the RF No. 350, dated 19 April 2012. Reading through the implementation actions, there seems to be a variety of ministries involved, with no stipulated agency for any accountability of actions.

### 3.1.2. Appropriate Scales within Basin System

**Principle 2.** *Manage water at the appropriate scale(s) within integrated basin governance systems to reflect local conditions, and foster co-ordination between the different scales.*

The Baltic Sea Action Plan (BSAP) has the ecosystem approach as its overarching implementation philosophy and as such, it would imply that countries are using scientific principles to integrate human and natural systems for place-based implementation. The effects of eutrophication are evident at the larger scale in the Baltic Sea, with trophic shifts from oligotrophic to eutrophic, and is seen as one of the biggest problems to the Baltic Sea [19]. The effects of eutrophication are also seen at the smaller scale, such as the basin scale, which leads to basin wide nutrient reduction targets, and hence to country allocation limits. This is in line with an ecosystem being an entity that varies in scale, from very small objects to systems covering the entire planet, with boundaries being ill-defined and compositions changing [20]. Since ecosystems vary in scale, it becomes important for governance to vary in scale and to be place dependent, as in the multilevel governance architecture of the Baltic Sea Action Plan (BSAP), which allows for freedom of measures at the regional, national and local scales. Accordingly, the HELCOM nutrient reduction programme is a regional approach for sharing the burden of nutrient reduction in the Baltic Sea as a whole, and is based on two components, reflecting different scales. At the sub basin scale, there are the maximum allowable inputs (MAI) of nutrients, depicting the maximum inputs of water and airborne nitrogen and phosphorus that can be allowed into these sub basins for a non-eutrophied sea [9]. This then led to the second scale, the country-allocated reduction targets (CART), or the amount of nutrient inputs member states need to reduce, vs. the reference period of 1997–2003 [9]. CART reflects HELCOM’s portioning off the 15,000 tons of phosphorus (P) and 135,000 of nitrogen (N) annual reductions that would be needed to achieve the ‘clear water’ objective of the BSAP.

The implementation of these targets varies with countries in the Baltic Sea region. All the EU member countries (with the exception of Russia) are mandated by the Water Framework directive to set up river basin districts. Hence, for those countries that link their implementation of the BSAP measures with the WFD, the river basin is one scale of governance. The WFD defines a river basin district as “the area of land and sea made up of one or more neighboring river basins, together with their associated underground and coastal waters” [21] (p. L327/6). Member states are thus mandated to conduct an environmental impact of human activity and the economic analysis of water use at the river basin scale. Whilst the WFD pertains to river basins or coastal waters, whereas the BSAP concerns the offshore waters of the Baltic Sea, the waters coming into the Baltic sea from the rivers impact the quality of Baltic Sea water. Whilst there was mention of using the WFD to implement the measures of

the BSAP by EU member countries, there was no concrete mention of how this was coordinated with other scales of governance, even for the environmental forerunner countries.

For example, Sweden indicated that the proposed river basin management programs under the WFD signal the need for national support for relevant local authorities to take action on specific water bodies [11]. Finland's NIP referred to, e.g., the river basin management plan for the river Kymijoki-Gulf of Finland river basin management area, and includes measures for the reduction of nutrients from agriculture to the Gulf of Finland, but also stresses the need for an improvement of governance [10]. Denmark's NIP indicated that the WFD river basin plans allow Denmark to achieve the gaps in their nutrient loading reductions (Nitrogen) that are not met by the green growth agreement [12], and it mentions cooperation between public authorities at different levels of administration. The German NIP noted that the comprehensive concept of river basin planning, as stipulated in the WFD, is based on the natural classification of the river catchment areas, extending beyond the boundaries of the Federal Länder and member states; as such, greater cooperation is needed between administrative bodies and different countries for an effective implementation of the measures [13].

There is varied reference to basin scale in the NIP of the Baltic States and Poland and Russia. Lithuania mentions that compliance with EU requirements reduces pollutants' input to the Baltic Sea, but notes that these requirements are not adhered to in Russia and Belarus, leading to the pollution of the Nemunas river basin and the Baltic Sea [15]. There is no mention of River Basin management plans anywhere in this NIP. Latvia's NIP also states that given the timeframe for implementation of the WFD, the national implementation of nutrient loading reductions for the BSAP will largely be based upon the implementation of the WFD [14]. It also notes that cooperative actions need to be taken with Belarus to curb pollution from its waters to the Baltic Sea. In contrast, Estonia's NIP has no mention of the WFD, but mentions the development of measures to limit the loss of P and N from agriculture, in line with the water management plans of sub-basins [16]. Poland, a non-Baltic State and an EU member country, included the transposing of the requirements of the WFD into the Water Law Act, as one of the measures for implementing the BSAP eutrophication loading reduction requirements. There was no mention of a lead agency, or how this would be coordinated from national to local levels. Lastly, Russia has a program called the 'Elaboration of Schemes of Integrated use of Water Bodies (SKIOVO)' which it states is analogous to the schemes of water basin management of the EU Water Framework directive [18]. This is part of the program of the measures for the Water Strategy of the Russian Federation in 2009–2015. There were draft SKIOVO for the Neman River and other rivers of the Baltic Sea basin of the Kaliningrad region (the Pregolya, the Instruch, the Pissa, the Angrana, the Lava, the Mamonovka, the Deima, the Sheshupe and other small rivers). However, there were no SKIOVO for the Luga river and the rivers of the basin of the Gulf of Finland (from the northern boundary of the Luga river to the southern boundary of the Neva river) [18]. There was mention of cooperation across scales to reduce nutrients from the 'Vodokanal of Saint Petersburg' into the Baltic Sea. Commitments included the treatment of domestic and industrial sewage and the recycling of farm animal and poultry waste in cooperation with regional authorities, private companies and nongovernmental organizations. Whilst these commitments were mentioned, there was no indication of leadership, nor achievement updates.

The national NIP showed that implementation was done at different scales, but none demonstrated how the national and local organizations effectively coordinated and collaborated with each other. There were no clear indications how conflicts were handled nor how priorities were balanced within a nation state. There was mention of cooperative mechanisms on the horizontal level between nation states. For example, Finland has cooperated with Russia to reduce the eutrophication of the Gulf of Finland [10], by cooperating on the upgrade of three largest wastewater treatment plants in St. Petersburg, resulting in 97% phosphorus removal efficiency (16% of costs (5M Euros total) were financed by Finland) [22]. This project resulted in an annual reduction of 1000 tons of P to the Gulf of Finland. However, this type of cooperation was not seen with the other environmental forerunner countries. Whilst all national NIP mention cooperation to some degree, most mention domestic level

cooperation. In the foreword to the NIP, Sweden's Minister of Environment noted that for the successful implementation of measures, cooperation between countries needed to be strengthened at all levels, but there was little evidence of this in the NIP, especially with respect to nutrient reduction to the sea.

The German NIP is more inward looking, noting that with the protection of the Wadden Sea, Germany meets its commitments to nutrient load reductions to the Baltic Sea. Both Lithuania and Latvia mentions the need for cooperative actions with Belarus for nutrient reductions in the Baltic Sea, and Lithuania stresses the need for these actions with Russia also. What this discussion on the implementation of actions at different scales highlights, is the scarcity of cooperation across basins for nutrient reductions. Thus, there is a clear need for more cooperation for joint implementation mechanisms, with leadership by environmental forerunners, as in the example of Finland, and the reduction of nutrients from wastewater into the Gulf of Finland. There is a need to establish that joint horizontal implementation can lead to a faster good ecological status of the Baltic Sea.

### 3.1.3. Policy Coherence

**Principle 3.** *Encourage policy coherence through effective cross-sectoral co-ordination, especially between policies for water and the environment, health, energy, agriculture, industry, spatial planning and land use.*

The implementation of the BSAP by EU member countries in the Baltic Sea region is strongly linked to the implementation of the WFD as discussed in the preceding section. Whilst this regulatory steering of the WFD represents the autocratic 'top down' governance, with the aim of achieving set objectives, it promotes policy coherence through the inclusive approach that mandates the integration of social, economic and environmental elements. However, there is a gap in linking these measures with the measures of the BSAP, especially since there is no coherence in these objectives. For example, the WFD definition of 'good status' is "the values of the biological quality elements for the surface water body type show low levels of distortion resulting from human activity, but deviate only slightly from those normally associated with surface water body type under disturbed conditions" [21] (p. L327738). Good ecological status of the Baltic Sea under the BSAP is tied to the goals of the BSAP, e.g., it means a Baltic Sea free of eutrophication, with the goal being achieved when the country in question has achieved its set nutrient reduction targets [2]. Coherence of different instruments such as the BSAP and the WFD would pave the way for easier and more coherent national implementation actions.

The implementation of the BSAP is done within the framework of additional legal and policy obligations. Policy coherence is stressed in the wording of the BSAP. The preamble speaks to 'the need to coordinate and harmonize the work within the HELCOM BSAP to various ongoing initiatives at the international and national level, including the proposed EU Marine Strategy Directive (MSFD), the EU Maritime Policy and the Maritime Doctrine of the Russian Federation' [2] (p. 4). As such, HELCOM acts as the trusted bridge for the regional implementation of EU directives (for all countries except Russia) such as the MSFD and the WFD. For Russia, the only non-EU member, coherence is sought with the environmental policy of Russia up to 2020 for maritime activities. One area for which there is needed policy coherence is wastewater [22]. The EU Urban Wastewater Treatment Directive (EUWWTD) is lower in its ambitions than HELCOM's goals, as it has no guidelines for single family homes, nor for small wastewater treatment plants.

In an action that can promote policy coherence, HELCOM contracting parties agreed (2017) to the regional implementation of the UN Sustainable development goals (SDG), with HELCOM as the leader or trusted coordinator [9]. Focus is on SDG 14, 'to conserve and sustainably use the oceans, seas and marine resources for sustainable consumption' and HELCOM has documented its actions to meeting these measures. In its report on aligning BSAP with the UN sustainable development goals, HELCOM devoted one page to speaking on partnerships and its networks with other sea conventions and organizations, such as the Great Lakes Commission (Figure 5). HELCOM acknowledges that partnerships are the horizontal component of its work, and that it would be impotent without it,

and gives examples, such as partnerships on green shipping, sustainable agriculture and maritime spatial planning [23].

Maritime spatial planning has been advancing through a HELCOM and VASAB (Vision and Strategies around the Baltic Sea) working group that was established in 2010 as a forum for intergovernmental discussions on maritime spatial planning.

GOVERNMENTS	Government of Belarus	Government of Ukraine
Inter-governmental Organizations		
Agreement on the conservation of African-Eurasian Migratory Waterbirds (UNEP/AEWA)	Black Sea Commission	International Maritime Organization (IMO)
Agreement on the conservation of small cetaceans of the Baltic North East Atlantic, Irish and North Seas (Ascobans)	Bonn Agreement Baltic Sea Parliamentary Conference (BSPC)	World Health Organization, Regional Office for Europe (WHO/EURO)
Council of the Baltic Sea States (CBSS) Expert group on sustainable development – Baltic 2030	Intergovernmental Oceanographic Commission (IOC) of Unesco	United Nations Economic Commission for Europe (UNECE)
Baltic Pilotage Authorities Commission (BPAC)	Great Lakes Commission	Ospar Commission
International Council for the Exploration of the Sea (ICES)	International Atomic Energy Agency (IAEA)	World Meteorological Organization (WMO)

Figure 5. HELCOM governmental and intergovernmental observers [24].

VASB is an intergovernmental cooperation of ministers, and includes all Baltic Sea countries, plus Belarus and Norway, and is part of the network of the Council of Baltic Sea States. Maritime spatial planning (MSP) is defined by the partnership as “an instrument for analyzing, coordinating and allocating the spatial and temporal distribution of human activities in marine areas to achieve a balance between economic, environmental, social and any other interests in line with internationally and nationally agreed objectives” [25] (p. 5). It lists ten guiding principles for achieving better coherence in MSP in the Baltic Sea region; sustainable management, ecosystem approach, long term perspectives and objectives, precautionary principle, participation and transparency, high quality data and information basis, transnational coordination and consultation, coherent terrestrial and maritime spatial planning, planning adaptive to characteristic and spatial conditions at different areas and continuous planning [25]. These principles are in alignment with the guiding principles for the implementation of the BSAP, and can be used to balance the trade-off between competing sectors nationally and also regionally. Whilst this forum has the potential to bring together actors from different ministries representing economic, environmental and societal interests for greater policy coherence, it is must be noted that participants to the HELCOM–VASAB (2010–2013) workgroup were mainly from environmental and resource management ministries [25] (p. 60).

The country plans as reflected in the NIP do not fully utilize the potential of MSP for policy coherence. There is some evidence of collaboration between different sectors for NIP implementation. For example, Latvia established an interministerial, interinstitutional working group for the coordinated planning and implementation of BSAP measures; ministries included the agriculture, economy, foreign affairs, regional development and local government, transport, state environmental service and local government, geology and meteorology center, aquatic ecology, maritime transportation, and the national port authority [14]. Sweden also established a similar group, which reached an inter-agency

agreement on the measures for BSAP implementation [11]. Such a working group has the potential to act as a forum for discussion and knowledge sharing, and for coming to a mutual understanding, that reduces resource use conflicts and allows the building of consensus and commitment. This working together is not evident in all NIP. For example, whilst the Russian NIP lists several national laws and administrations involved in the implementation of the BSAP; it was unclear where the accountability for the implementation of the BSAP lies. Further, there is conflict between environment, economy and agriculture.

For example, whilst its NIP stated that measures will be taken to reduce nutrient discharges from agricultural activities in the Leningrad Oblast, there is the conflicting goal of increasing chicken and egg production in the same region as part of the Russian agricultural reforms [26]. This tension between environment and economy can be likened to the tensions between the environmental aspirations of the EU Marine Strategy Framework Directive and the economic aspirations of the EU Common Agricultural Policy (EU CAP). One of the accomplished actions on HELCOM Explorer, that is based on international cooperation and has the potential to reduce this tension, is the creation of the HELCOM Agriculture and Environment Forum (HELCOM AGRI/ENV FORUM), that was created in 2008 [7]. It aims to promote sustainable agriculture by sharing knowledge and experiences through Baltic-wide meetings and other modes, such as personal communication and networking.

#### 3.1.4. Capacity

**Principle 4.** *Adapt the level of capacity of responsible authorities to the complexity of water challenges to be met, and to the set of competencies required to carry out their duties.*

Eutrophication is the most severe threat to the Baltic Sea ecosystem, but its causes and impacts are not evenly distributed among contracting parties. These countries suffer to different extents from the impact of dead zones, and hence economic and cultural livelihoods are impacted differently among individual member states. This difference is also reflected in the different implementation capacities in these member states, depending upon the level of importance that the environment is given and the state of development, year and status of membership in the EU. For example, environmental forerunner countries and earlier members of the EU, such as Finland and Sweden, have different experiences and administrative capacities than, e.g., the Baltic Sea states, which joined the EU later, and are in a different developmental stage. As such, knowledge and experience sharing and other capacity building measures are important mechanisms for bridging the implementation barriers. This is acknowledged in the BSAP preamble, where member states “stress the importance of further capacity building within and between authorities” [2] (p. 4). This is translated into some NIP, e.g., Sweden’s NIP acknowledged that the implementation efforts go beyond the capacity of an individual country. However, for nutrient reduction measures, it did not indicate any capacity sharing measures with other nation states.

One explanation for the low level of achievement shown on HELCOM Explorer for the implementation of the nutrient reduction measures is the lack of capacity. For example, one of the weaknesses stated in Lithuania’s NIP is the “insufficient legislation to maintain the good environmental status of the Baltic Sea” [15]. Capacity sharing could mean working together with another country to develop the legal framework in Lithuania. Environmental forerunner countries such as Sweden, Germany, Finland and Denmark, place emphasis investments in wastewater treatment plant upgrades prior to 2007, with stricter standards than the BSAP, in the NIP. As such, there would be less incentive to cooperate for mutual benefit, but these countries can play an important role in capacity building for the other countries. For example, Russian NIP highlights the need for investment to upgrade wastewater treatment plants. The collaboration of Finland for the St. Petersburg wastewater treatment plant upgrades is a successful example of capacity building, as not only were the plants upgraded, but also operators were trained. A similar initiative is needed to help with manure handling from countries that emphasize the need to better this area (Russia and Poland in their NIP). Similarly, all contracting parties except Russia have eliminated phosphorus in detergents for consumer use [7]. These countries could

work together with Russian companies for capacity building from their industries to Russian industries for manufacturing phosphate-free alternatives. The Russian NIP includes capacity building in line with the top down governing style, saying that there will be training conducted by experts for practitioners and local authorities, and it also recommends translating HELCOM publications into Russian as a means to build capacity through informing local authorities and the general public. Poland's NIP advocated capacity building of the public as environmental stewards through education, advertising campaigns, information sharing and the promotion of environmentally friendly measures [17].

On the transnational level, there are many organizations that are engaged in capacity building for the implementation of BSAP. One capacity building initiative of the Union of the Baltic Cities, a citywide network in the Baltic Sea Region, is the integrated water management project (IWAMA). This EU-funded 4.6M Euro project is a flagship project for the EU strategy for the Baltic Sea region (EUSBSR), and is aimed to improve wastewater management in the Baltic Sea Region [27]. IWAMA included the upgrade of wastewater treatment plants for energy efficiency and sludge management. Plants in Estonia, Belarus, Latvia, Lithuania, Germany and Poland were upgraded. This project also included the capacity building of wastewater treatment plant operators through a structured lifelong learning and expertise exchange of WWTP staff in a bid to increase the mainstreaming of the best available technologies. Whilst there are these and many other capacity building initiatives in the region, there still exists a gap in matching the level of capacity with the complexity of governing eutrophication abatement in the Baltic Sea region.

### 3.2. Efficiency

#### 3.2.1. Data and Information

**Principle 5.** *Produce, update, and share timely, consistent, comparable and policy-relevant water and water-related data and information, and use it to guide, assess and improve water policy.*

There seems to be much information on BSAP planning and implementation, but not much up to date and comparable information. HELCOM reports and HELCOM explorer represent the best sources of information on the status of country implementation. HELCOM summary reports, such as the status of the implementation BSAP reports, are good sources of information. Their key weakness is that they rely on contracting parties providing information, and not on independent assessment. HELCOM explorer provides a good and user friendly overview of the status of actions on the implementation of the measures in the BSAP. For example, it shows that five out of eight joint actions for the eutrophication measures were already accomplished, two are partly accomplished, and one is going to be accomplished at a future target date. It also allows the easy viewing of national actions. For example, only one national action has been accomplished by all contracting parties. It is the action to "initiate activity to verify areas critical to N and P losses utilizing the available data, and as a starting point to enable directing targeted and cost effective measures" [7]. This information can be improved if it is linked to source documents and by real time updating. The information currently displayed was updated on 2 March 2018. This is more than a year gap in a tool that is supposed to provide timely information that can aid in the identification of gaps and measures to support implementation.

The country NIP places a different emphasis on data and knowledge for nutrient abatement measures. Finland stresses the need for research and information in all areas except eutrophication, for example, stating that the generating and distribution of research-based information for cost efficient and adjustable biodiversity conservation is one of its strategic targets [10]. On the other hand, Sweden, Estonia and Germany mention the need for knowledge in relation to eutrophication abatement measures for better implementation. For example, Sweden NIP states that "improved knowledge is necessary. Therefore, concrete physical and cost effective measures to restore water quality in freshwater bodies and coastal areas are to a large extent still lacking" [11] (p. 12). Poland's

NIP gives the Ministry of Agriculture and Rural development the task of monitoring, calculating and reporting complete data sets on point and area sources of nutrients, as part of the research and control tasks for BSAP implementation. It also asks for improved cost estimates. Latvia's NIP highlights the need for better data, so that the source of transnational nutrient flows can be determined. Russia's NIP calls for the creation of databases containing information on the current ecological situation of agricultural enterprises in regions such as Leningrad and Kaliningrad [18].

Whilst all NIP demonstrated the need for better information and data, there was no mention of cooperative strategies for knowledge production and information sharing. This is one of the key gaps for the regional implementation of the BSAP.

### 3.2.2. Financing

**Principle 6.** *Ensure that governance arrangements help mobilize water finance and allocate financial resources in an efficient, transparent and timely manner.*

This OECD principle addresses the role of governance in mobilizing financial instruments for an effective implementation of the BSAP. It highlights five ways to mobilize financial resources; (i) promoting governance arrangements that help raise revenue for the necessary functions; (ii) sector reviews and strategic financial planning to help ensure financing; (iii) transparent practices for budgeting and accounting; (iv) mechanisms for the efficient and transparent allocation of funds; and (v) minimizing unnecessary administrative burdens. This study finds that the BSAP recognizes the need for adequate and comprehensive financial resources for investments in implementation actions, devoting a section to it and underscoring the need for cost benefit analysis, including the cost of non-action [2]. It further states that the Nordic Environment Finance Corporation (NEFCO) defines cost-efficient phosphorus reduction as projects with a unit abatement cost (UAC) below €150,000 per ton, and that these should be implemented immediately [2]. BSAP also goes on to list examples of cost-efficient projects for phosphorus reduction, such as an optimal manure management for large animal facilities, the addition of chemical phosphorus treatment in existing wastewater treatment plants, the removal of phosphorus in detergents (or at least its reduction) and the upgrading or construction of wastewater treatment systems in cities/municipalities [2].

In line with the OECD's five ways to mobilize resources stated above, the BSAP provides a governance framework that helps to mobilize funding and lists sources of funding that can be applied for. For EU countries, it lists EU sector programs and structural funds, including EU cohesion funds and the Regional Fund (Territorial cooperation). It also points out that non-EU member states as such can benefit from financing in the context of these EU neighborhood and partnership instruments. It also articulates that state budgets are a major funding source. Other bilateral sources were highlighted: European Neighborhood and Partnership Initiative (ENPI) and Northern Dimension Environmental Partnership (NEDP), offering grants for environmental projects in Russia that are rated as high priority. These instruments were utilized by Russia, and the success is evident in the reduction of hot spots (HELCOM designated severely contaminated areas) in Russia, the majority of which were instances of untreated or partially treated wastewater that were eliminated due to financial support from international cooperation [28]. During the period 1992 to 2011, 15 (of a total of 34) hot spots in Russia were eliminated. One ceased to exist in Kaliningrad Oblast due to the bankruptcy of the pulp and paper factory, but the other 14 were as a result of the reconstruction of wastewater treatment in St. Petersburg [29]. One of Russia's remaining hot spots, Krasny Bor (established to manage hazardous waste from the St. Petersburg and Leningrad Region), where 1.7 million tons of hazardous waste is stored, is now benefiting from international collaboration for its clean up. The Committee for Nature Use, Environmental Protection and the Ecological Safety of St. Petersburg; the State Unitary Environment-Protection Enterprise "Polygon Krasny Bor" and NEFCO (funding from Finland and Sweden) have signed a Memorandum of Understanding on improving the environmental status of the Krasny Bor hazardous waste site [30].

NEFCO in the past has financed (or rather, managed finance from the governments of Sweden and Finland) numerous projects in their feasibility stage under the BSAP fund. For example, it has financed the following projects [26]:

- i. Business plans for poultry factories in the Leningrad region (Russia)—BSAP support 200,000 Euros.
- ii. Novgorodsky biogas plant (Russia)—BSAP support 300,000 Euros.
- iii. Full scale site solution of phosphorus retrieval from biowaste (Sweden)—BSAP support of 175,000 Euros.
- iv. St. Petersburg nutrient removal in small wastewater treatment plants (Russia)—BSAP support 625,720 Euros
- v. Investment preparation in the ports of Tallinn, Muuga and Paldiski (Estonia)—BSAP support of 34,446

Whilst the BSAP includes finances as a key component, this funding is vulnerable to the politics of the region. The funding priorities of various EU policies, such as the cohesion funding, are facing pressures and thus they may decrease. Funding restrictions resulting from EU sanctions have prevented new Northern Dimension environmental cooperation projects in Russia [10]. For solving common problems in the Baltic Sea, a common pool fund is needed that is devoid of political pressures.

### 3.2.3. Regulatory Frameworks

**Principle 7.** *Ensure that sound water management regulatory frameworks are effectively implemented and enforced in pursuit of the public interest.*

The EU Water Framework Directive and other EU directives have a strong influence on domestic water management frameworks for contracting parties that are members of the EU (all except Russia). It has prompted institutional and regulatory changes in the form of river basin districts in member states. This effect has carried forward to the implementation of the BSAP, and is coupled with other EU directives such as UWWTD, MSFD, etc. The BSAP stipulates the loading reduction requirement by country, but leaves it up to the country to decide on implementation measures. As such, each country translates these requirements differently at the national level. For example, Finland's government approved the water protection principles to 2015 and unveiled a 2009 report on Finland's Baltic Sea policy; it also approved seven river basin management plans for the period 2010–2015 [10]. Germany, Sweden and Russia went into detail on their legislations (or limits in the case of Sweden) for nutrient management. For example, Sweden listed measures to implement the nitrates directive e.g., "The prohibition of spreading both manure, other organic fertilizers and mineral fertilizers has been prolonged and the spreading is now forbidden between 1 November and 28 February".

The environment forerunner countries such as Sweden, Finland, Denmark and Germany place emphasis on national legislation, planning and targets for nutrient management. The Baltic Sea countries highlight the national laws and the responsible ministries for implementation of them. This pattern is also evident in Poland and Russian NIP. Russia lists a suite of laws that will aid in the implementation of the BSAP measures. These include: The Water Strategy of the Russian Federation for the period until 2020; the Strategy of Marine Activities Development for the period until 2030; the Regulation on the State Monitoring of the Condition and Pollution of the Environment and Federal Law No. 287-FZ, dated 30 December 2012, On Introduction of Amendments to Federal Law On the Continental Shelf of the Russian Federation, and Federal Law On Internal Marine Waters, Territorial Waters and the Adjacent Zone of the Russian Federation, came into effect on 1 July 2013. However, the Russian NIP indicates that current regulations are not enough and work is still ongoing. There are several needed measures as stated under the "The Plan of Actions for implementation of the fundamentals of the state policy in the sphere of ecological development of the Russian Federation for the period until 2030 approved by the Order of the Government of the Russian Federation No. 2423-r,



dated 18 December 2012”, such as the need for executive orders of the Government on the state supervision and enforcement of the laws relating to the environment [18]. The plan of actions for the implementation above includes the preparation of draft executive orders of the Government of the Russian Federation [18], “on the criteria and (or) indicators of the adverse environmental impact of objects of economic and other activities to be used as the basis for establishing categories of economic and other activities for the purposes of state ecological supervision of subjects of the Russian Federation; on state supervision in the sphere of protection and use of specially protected nature territories of federal significance” [18] (p. 7).

### 3.2.4. Innovative Water Governance

**Principle 8.** *Promote the adoption and implementation of innovative water governance practices across responsible authorities, levels of government and relevant stakeholders.*

The Baltic Sea action plan, as an instrument, represents innovative water governance. Member states agreed on the nutrient reduction targets based on maximum allowable inputs of nutrients to the Baltic Sea. Additionally, contracting parties worked out principles for fair burden sharing in line with the polluter pays principle, for atmospheric nitrogen requirements. However, BSAP country implementation is flexible depending on local circumstances. Voluntary measures and public pressure work better for environmental forerunner countries such as Sweden and Finland, whilst legal measures are more important in Russia [31]. The BSAP has also stimulated financial measures such as the NEFCO administered Baltic Sea Fund, which has spurred innovation due to seed funding for pilot projects. Innovative projects include the removal and retrieval of phosphorus from biowaste (Sweden and Russia), a pig manure based demonstration biogas plant in Poland and the elimination of pollution to the Baltic Sea by the run off of poultry and pig waste, through the cost-effective production and export of biomethane and organic fertilizers in Russia [26]. Whilst these measures are innovative, the lack of replication and scaling up suggests that there is room for improvement in the communication of the best practices.

Whilst the Baltic Sea action plan and some of the events it has spurred, such as the environmental and agriculture forum are innovative, there may be a need for additional innovation to effectively combat the wicked stressors plaguing the ecosystem. For governance innovation with regards to eutrophication, one can look at the example of the North American Great Lakes. In 2014, a water crisis was announced in Toledo, Ohio when the source water for the water treatment plant was contaminated with the harmful toxin microcystin from the algae in Lake Erie, leaving half a million residents without drinking water [32]. This and other algae events in Lake Erie has spurred a referendum in Toledo, where voters voted 61% to 39%, passing the Lake Erie Bill of rights, granting it the legal rights of a human being or corporation [33]. This is a historic vote, and thus it has implications for the protection of Lake Erie, as it means that polluters can be sued if they interfere with Lake Erie’s rights to exist, flourish and naturally evolve. The implementation of the Baltic Sea action plan can benefit from such bold initiatives.

## 3.3. Trust and Engagement

### 3.3.1. Integrity and Transparency

**Principle 9.** *Mainstream integrity and transparency practices across water policies, water institutions and water governance frameworks for greater accountability and trust in decision-making.*

The Baltic Sea Action plan was established in 2007 due to the trust that the contracting parties had established as part of the process on working together for the protection of the Baltic Sea under the Helsinki convention of 1974. The BSAP also stipulates that any monitoring of the implementation of the BSAP will be done using the HELCOM agreed upon indicators, and this has led to the HELCOM

explorer and summary reports. Ministerial meetings include processes that are used for greater transparency in the implementation of the BSAP country measures, as the results are presented and discussed. However, given that current measures are not sufficient to reach the good overall environmental status of the Baltic Sea [34], something is lacking. Even though the BSAP was reviewed in 2013 at the Ministerial meeting as agreed upon in the document, the BSAP implementation group does not exist anymore as mandated in the BSAP [2] (p. 36). Contracting parties had agreed, that as a sign of the political priority given to the BSAP, there was a need for a BSAP Implementation group with high level steering, and that builds upon the close cooperation of the HELCOM bodies [2] (p. 36). It further says that adjustments of the HELCOM working structure may also be needed. HELCOM Explorer states that the action 'Establish a Baltic Sea Action Plan Implementation Group and to decide on its Terms of Reference' at HELCOM 29, 2008, has been accomplished [7].

It references the Ministerial declaration 2013 for more information, but there was no mention of this group in the minutes. The establishment of such a group would give greater urgency and transparency to the implementation process.

The decision of the HELCOM 2018 Ministerial Meeting to mandate that contracting parties' update of the BSAP by 2021 is a sign of the trust and accountability that are present. At this meeting a commitment was given by the Ministers to continue the process toward a good environmental status of the Baltic Sea, in line with the relevant ocean and water targets of the UN SDG 2030 [34]. As such, the governance framework into which BSAP exists promotes accountability and transparency. For example, the management by the independent NEFCO of the common pool funds given by Finland and Sweden assures transparency and accountability in the allocation of these funds. Similarly, EU cohesion funds are given within a framework of established and accepted financial instruments. However, these funds need to be unhooked from political constraints, so that they can be used for the purpose of implementing BSAP measures, without encumbrances such as political sanctions.

### 3.3.2. Stakeholder Engagement

**Principle 10.** *Promote stakeholder engagement for informed and outcome-oriented contributions to water policy design and implementation.*

The OECD principle stresses the need for stakeholder engagement as a means to increase the legitimacy and effectiveness of any measures. The engagement of stakeholders is given different emphasis in each NIP. Finland's NIP excludes stakeholder engagement as an implementation measure, and there was not a single mention of the word stakeholder in the NIP. It states that "the status of coastal waters greatly depends upon local circumstances; the action plan does not include any provisions for local reviews or proposals for measures" [10] (p. 2). In contrast, there were nine mentions of the word stakeholders in Sweden's NIP, which stated that "a wide range of authorities and stakeholders have been involved in preparing and commenting on the Swedish implementation plan" [11] (p. 5). Further, a government communication on Measures for a Living sea, for BSAP implementation, was adopted and presented to Parliament [11]. Similarly, the Danish NIP outlines measures for consulting with the public, such as sending draft versions of the River Basin Management plans for an eight week consultation round, followed by a six months public hearing to be conducted before the plans can be adopted [12]. Similarly, the Natura 2000 plans faced a similar process for public input.

The German NIP devoted a section of the report to public awareness and capacity building, but it focuses on raising the awareness of the public on environmental matters, rather than engaging the public or giving them a voice in the BSAP planning or implementation process. For public awareness on eutrophication, it highlights two projects; water resource management in cooperation with agriculture, and wetlands for clean water (to develop public awareness on reducing the nutrients inflow to the Baltic Sea through wetlands) [13]. This top down perspective on public engagement was also reflected in the Estonian and Russian NIP. Estonia's NIP lists several training exercises for pollution control and to build the capacity of operators. Similarly the Russian NIP states that experts and representatives

were trained for protecting marine and specially protected areas. It also states that conservation regimes were established by agreements with land proprietors, land users and other stakeholders [18]. Environmental matters such as the Baltic Sea environment is not addressed in public policy in Russia, as something that needs public input [28]. Similarly, there was no evidence in the Lithuanian NIP of public input into the BSAP implementation process. There was mention in the Latvian NIP of developing a public information strategy to raise public awareness.

### 3.3.3. Trade-offs Across Users, Rural and Urban Areas and Generations

**Principle 11.** *Encourage water governance frameworks that help manage trade-offs across water users, rural and urban areas, and generations.*

The BSAP assigns nutrient reduction targets that do not take into consideration the economic status of these countries, nor are there trade-offs based on cost benefit analysis. The countries around the Baltic Sea reflect different administrations, developmental levels and cultures. In the environmental forerunner and more developed countries such as Sweden, Finland, Denmark and Germany, more priority is given to environmental protection than in the other countries. The welfare of citizens around the Baltic Sea could improve by 3.8 to 4.4 billion euros if the status of good eutrophication [34] is achieved, but these benefits vary by countries. Improvements in water quality have the greatest benefits on countries with the largest coastlines, such as Sweden, Finland and Estonia. However, the costs are higher for the countries whose water drains into the sub-basins that are in the poorest ecological state, and thus have the greatest nutrient abatement targets [35]. According to one study, the total cost for meeting country reduction nutrient targets are 1978 M euros, with the highest costs per GDP being borne by the poorest countries (Sweden—54, Finland—158, Russia—536, Estonia—158, Latvia—136, Lithuania—72, Poland—776, Germany—86 and Denmark—3 (M Euros). The numbers for Poland and Russia stand out as the highest cost burdens for implementing the nutrient abatement measures in the BSAP [36]. Implementation of the BSAP would be more efficient if investments are made where net marginal costs are the lowest, utilizing flexible cost sharing mechanisms, but such transfer of payments between countries would be politically challenging [37].

Country NIP reports talk about cost sharing trade-offs to different degrees. Denmark, with the lowest country cost burden for implementation measures does not mention cost sharing mechanisms. Sweden's NIP discusses costs at length and the need for cost sharing, stating that "it has proven difficult, especially politically, to find instruments that will lead to the implementation of efficient and cost effective measures" [11] (p. 10). Russia's NIP included cost estimates for wastewater treatment plant upgrades, but noted that the funding is incomplete [18]. Estonia called for funding from EU mechanisms [16], while Poland mentioned the lack of detailed cost estimates for projects [17]. Detailed cost estimates can lead to better trade offs and for cost sharing mechanisms, such that the richer countries with the most to gain from the good ecological status can bear some of the costs of implementing measures in the countries with greatest nutrient reduction burdens.

Finally, a discussion on trade-offs would not be complete without a discourse on climate change. Whilst the BSAP mentioned the significant impact of climate change on the Baltic Sea, it was left out as a key focus area in the measures. This is a serious gap as climate change is the one overarching stressor that will impact all other stressors and governance of the Baltic Sea, now and in the future. Climate change governance should be the central theme of the new BSAP.

### 3.3.4. Monitoring and Evaluation

**Principle 12.** *Promote regular monitoring and evaluation of water policy and governance where appropriate, share the results with the public and make adjustments when needed.*

The BSAP includes the commitment to review and revise targets. In the section on implementation and review, it is stated that "we agree to monitor and evaluate the status of implementation of

the Baltic Sea Action Plan by making use of indicators agreed upon as well as HELCOM thematic assessments" [2]. However, these indicators are scientific indicators reflecting the state of the Baltic Sea, and are not governance-based indicators. For example, the indicators for the eutrophication measure concentration of nutrients in water, water clarity, algae blooms and oxygen concentration. There are no indicators for the effectiveness and use of monitoring mechanisms, trade-offs, stakeholder engagement etc. There is no regular transboundary monitoring and evaluation of water policy, nor monitoring of the extent to which policies fulfil expected outcomes and whether the water governance mechanisms are functional. This is acknowledged in the HELCOM Holas II report, which stated that the sufficiency of existing measures to improve the status of marine environment has not yet been fully evaluated [31]. It attributed this to knowledge gaps, and changes in the intensity and character of the pressures due to human development. As such, there is a gaping hole in the evaluation of policies and the modification of them in line with adaptive governance, to reflect the changes in the environment.

There also needs to be modeling or estimates of the future effects of implementation of measures. This will help in evaluating whether the measures in the BSAP are capable of reaching good environmental status. Whilst the HELCOM Explorer is a good step and shows self-reporting of actions completed, there needs to be independent policy evaluation to help in adapting measures so that the most cost efficient and effective measures are implemented.

#### 4. Conclusions

This paper uses the OECD water governance principles to assess governance of the implementation of the Baltic Sea Action Plan (BSAP), with a focus on the eutrophication segment. Whilst governance assessments can be used as auditing functions and to investigate whether the governance systems have made improvements, this study was done with the goal of stimulating reflection. This is especially needed, since the BSAP is to be renewed in 2021, so any assessment of it at this moment is timely. This review has focused on the 12 principles of water governance and the three complementary drivers into which the principles were grouped: Effectiveness, efficiency and trust and engagement. The concluding discussion will be focused on these three drivers.

The effectiveness discussion focused on roles and responsibilities, governance at appropriate scales, policy coherence and capacity. In all the national NIP reviewed, governance is not given any priority. It is an obvious area that needs to be elevated in the future update of the BSAP. The contribution of governance to the achievement of the goal of good ecological status and to implement these goals need to be elevated in the discussions. Although all the NIP refer to various governmental agencies for implementation of measures in the BSAP, there is no implementation or coordinating agency for a more comprehensive and integrated implementation. As such, it is recommended that the future version of BSAP not only reiterates the need for a high level BSAP implementation group, but also follows through and establishes a permanent one. It should be noted that the NIP country reports triggered a move toward a national inventory of actions toward nutrient abatement measures. The opportunity that the BSAP provides for linking these aspirations with collective action and the sharing of experiences and capacity building needs to be harnessed through better implementation.

The efficiency driver was guided by the principles of data and information, financing, regulatory frameworks and innovative governance. The BSAP itself can be seen as a governance innovation, as it captured country's aspirations toward collective action for good ecological status. The novelty lies in the approach of allocating nutrient reduction targets but having flexible implementation. However, governance was not able to maximize the benefits of sustainably managing the Baltic Sea at the least cost to society as the targets were not allocated bearing in mind individual country's economic realities. Some countries such as Russia and Poland bear the largest nutrient reduction and hence financial burdens. The process for renewing the BSAP should take the economic disparities into consideration and use tools e.g., nutrient trading to help poorer countries with greater nutrient reduction burden to meet the cost of implementation actions. Their NIP clearly articulate the need for additional funding for implementation action.

The trust and engagement driver revealed that the governance principles followed the governance mode of the country. For quite a few countries, integrity and transparency, stakeholder engagement, trade-offs and monitoring and evaluation followed the top down governance mode. For example, stakeholder engagement in the Baltic States and Russia mainly referred to expert training of locals or awareness raising. By contrast, there were several consultation rounds with stakeholders in Denmark, and a further six months review period. There is no study to date that looks at the impact of stakeholder engagement on implementation effectiveness. This section also revealed the need for better allocation of targets to reflect the socioeconomic realities of countries and the need for monitoring and evaluation of governance measures. There are no efforts to date that has reviewed the effectiveness of the measures that are implemented. As such, governance indicators can help to reveal trends and allow countries to measure their progress against their aspirations, leading to better implementation results.

This paper has used the OECD principles to assess the governance of implementation of the BSAP. It is pertinent to finish by commenting on the utility of these tools. These principles were an effective means of assessing governance as they are comprehensive and allowed the author to think on the different aspects of governance. As such, these tools can be effective also for persons in the governance system, to help them to assess their performance. As such, it is recommended that these tools be shared with the implementers and that they are used in self-evaluation and for adaptive governance. It would be useful for actors to use these tools to assess their actual practices. As an extension, these governance principles should also be used to table new issues, to foster reflective practices and learning for new action. This paper can be seen as one of the first actions towards this. One limitation of this study has been that the author has relied on self-reported actions by countries and has not conducted interviews nor verified implementation measures. As such, future research should continue to use the OECD principles, triangulating with primary data and looking at the interconnections between the principles.

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