

Review of recommendations in agriculture-related water policy and policy research

Deliverable O4.1. (Part I)

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Executive Summary

The current report reviews the agriculture-related water policy recommendations made by the European Commission, HELCOM and EU BONUS programme projects. 175 policy recommendations divided into 18 categories were identified. The most frequent policy recommendations (31%) were made under category 9 - governance (54 recommendations). These recommendations addressed institutions, management, reporting and stakeholder engagement, but also standards and indicators or action plans. The second and third largest category of policy recommendations were categories 8 – financing, and category 17 - methods and tools, with 18 and 17 policy recommendations, respectively.

This means that general recommendations to improve governance or financial measures were preferred when giving recommendations, whereas referring to global issues (such as taking into account biodiversity or climate change considerations) was much less common or those issues were not even mentioned altogether.

The study was conducted in the framework of Waterdrive project part-financed by Interreg Baltic Sea Region programme.

Keywords: policy recommendations, water policy, agri-environmental measures, EU, HELCOM, BONUS

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Introduction

The environmental status of the Baltic Sea has been a concern for decades. The call for joint action by the countries around the sea materialised into a multilateral environmental agreement - Convention on the Protection of the Marine Environment of the Baltic Sea Area, called the Helsinki Convention, in 1974. Since then, the Baltic Sea Region countries have established a special commission – the Helsinki Commission (HELCOM) - to jointly address the environmental, economic and social aspects with the ultimate aim to improve the ecological status of the Baltic Sea.

The aim of the current report is to review agriculture-water policy related recommendations proposed by the European Commission, HELCOM and the EU research programme BONUS specially addressing the agriculture-water policy issues. The report explores the categories of policy recommendations to group and identify the possible differences between the three sources of policy recommendations.

For the purposes of the current study, policy recommendation is a recommendation to decision makers to take new measures or improve current policy measures. Thus, a policy recommendation could also be regarded as a suggestion to introduce a new or change a current policy measure to improve the agri-water policy with the ultimate aim of improving the environmental status of the Baltic Sea.

As for the definition of a policy recommendation, herein we understand policy recommendation as a statement that makes or implies a proposal for policy action. Previously, David Glover¹ has differentiated between policy recommendations and policy implications, defining the former as “a statement that makes a specific proposal for action” and the latter as “interpreting data in ways that are useful to policymakers, but without specifying precisely what should be done”. In case these can still be seen as addressed to policymakers in some way, those policy recommendations (as per Glover’s definition – closer to policy implications) have been included as well, for instance: *“Offering advisory assistance for the farmers (from independent agricultural advisors) serves as an incentive by reducing paper work/transaction costs”*. David Glover’s approach to policy recommendation and policy implication has been applied in this study.

The study is comprising of 5 chapters. The first chapter outlines the objectives of the European Union and HELCOM and EC BONUS programme in relation to the agriculture-related water

¹ David Glover (2002) “What Makes a Good ‘Policy Paper’? Ten Examples,” For 18th EEPSEA Biannual Workshop: May 21-24, 2002

<https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/27168/118102.pdf?sequence=1&isAllowed=y>

policy. The second chapter gives an overview of the methodology applied in the study, both with regards to identifying the sources of policy recommendation as well as the typology of categories the policy recommendations have been divided into. In the third chapter, the results of the study have been presented: both in the form of the division of policy recommendations by categories. Furthermore, as part of the third chapter, the content of policy recommendations is analysed in more depth, trying to highlight the common themes. The fourth chapter is dedicated to discussion and comprises of 4 sub-chapters. Firstly, the definition of the policy recommendation in the current study is described in detail. After that, the methodological aspects of assigning a category to policy recommendations have been analysed. Following that, any content issues of policy recommendation that arose during the course of study have been looked at in more depth. The chapter concludes by outlining recommendations by the authors of the current study, addressed at (future) authors of policy recommendations. A conclusion follows.

The study was conducted in the framework of Waterdrive project, partly financed by Interreg Baltic SEA Region programme. This report was developed by the Stockholm Environment Institute Tallinn Centre and reviewed and commented by project partners.

1. EU and HELCOM agriculture-related water policies

1.1. Objectives of EC ND and WFD

The aim of the Nitrates Directive from 1991 is to protect water quality across Europe, doing that by preventing nitrates from agricultural sources polluting ground and surface waters, as well as promoting good farming practices. In the EU, it forms one of the key instruments for protecting waters against agricultural pressures.² The formal EU-issued infographic of the Nitrates Directive states that it “promotes good agricultural practices in nutrient management”. In order to do that, the infographic mentions a few major measures dealt with: applying the correct amount of nutrients for each crop, applying nutrients only in periods of crop growth and under suitable climatic conditions (that means applying nutrients during periods of heavy rainfall or frozen ground should be avoided, as that causes the loss of nutrients into the environment). Further on, manure storage should be safe and secure enough to prevent water pollution from run-off and leaching into ground and surface water, as well as establishing buffer zones protecting waters from run-off from the application of fertilizers.³

² Nitrates - Water pollution - Environment - European Commission
http://ec.europa.eu/environment/water/water-nitrates/index_en.html Accessed 5.06.2019

³ The Nitrates Directive - Solutions: Infographic. European Commission.
http://ec.europa.eu/environment/water/water-nitrates/pdf/nitrates_directive_solutions_infographic.pdf
Accessed 11.06.2019

The Water Framework Directive of 2000 commits EU member states to take steps to achieve good qualitative and quantitative status of all water bodies. That includes getting polluted waters clean again, as well as ensuring clean waters continue to be kept clean. In the proposal for implementing the Water Framework Directive, the following key aims were presented: a) to expand the scope of water protection to all waters (incl. surface water and groundwater), b) achieve “good status” for all waters for a set deadline, c) water management based on river basins (instead of according to administrative or political boundaries), d) “combined approach” of emission limit values, e) getting the water prices right, f) getting the citizen more closely involved, g) streamlining relevant legislation.

From an agri-environmental point of view, the Water Framework Directive can be seen as one of the key instruments in protecting waters against pressures from agricultural activities, however, under the framework, pollution from urban waste water is also addressed.⁴

1.2. Objectives of HELCOM Baltic Sea Action Plan

The objective of the HELCOM Baltic Sea Action Plan (BSAP) (adopted in 2007) is to restore the good ecological status of the Baltic marine environment by year 2021. This is hoped to be achieved by incorporating the latest scientific knowledge and innovative policy approaches into policy-making, as well as stimulating goal-oriented multilateral cooperation in the Baltic Sea region. As for more specific objectives of BSAP, these encompass issues such as Baltic Sea unaffected to eutrophication, favourable status of the Baltic Sea biodiversity, Baltic Sea undisturbed by hazardous substances and environmentally friendly maritime activities.⁵ As to eutrophication, the BSAP sets the goals to achieve a) clear water; b) natural level of algal blooms; c) natural distribution and occurrence of plants and animals; d) natural oxygen levels. The addressees of the BSAP are the Governments of the Baltic Sea Region countries and parties to HELCOM.

1.3. Objectives of the EU BONUS programme

The EU BONUS programme is a joint Baltic Sea development and research programme, the objective of which is to support sustainable development and ecosystem-based management of the Baltic Sea region, based on sound and scientific knowledge, coming from multidisciplinary research.⁶

⁴ Introduction to the EU Water Framework Directive - Environment - European Commission
http://ec.europa.eu/environment/water/water-framework/info/intro_en.htm Accessed 5.06.2019

⁵ Baltic Sea Action Plan - HELCOM
<http://www.helcom.fi/baltic-sea-action-plan> Accessed 5.06.2019

⁶ About us - Bonus EEIG
https://www.bonusportal.org/about_us Accessed 5.06.2019

The five major strategic objectives of the BONUS programme are: understanding the Baltic Sea ecosystem and functioning (strategic objective 1), meeting the multifaceted challenges in linking the Baltic Sea with its coast and catchment (strategic objective 2), enhancing sustainable use of coastal and marine goods and services of the Baltic Sea (strategic objective 3), improving the capabilities of the society to respond to the current and future challenges directed to the Baltic Sea region (strategic objective 4), developing improved and innovative observation and data management systems, tools and methodologies for marine information needs in the Baltic Sea region (strategic objective 5).⁷

Furthermore, the programme encompasses five different sub-programmes or categories of projects: 1) viable ecosystem research projects, 2) innovation projects, 3) sustainable ecosystem services research projects, 4) Blue Baltic projects and 5) synthesis projects.

In the following paragraphs, particular themes from the BONUS specific research agenda 2011-2017 are addressed by the aforementioned five categories of projects are outlined to give a better overview of the issue each category of BONUS projects seeks to address.

1) Viabale ecosystem research projects (implementation of the projects 2014 - 2018)⁸

- Themes 1.1, 1.2, 1.3, 1.4, i.e. all four themes addressing BONUS strategic objective 1 'Understanding the Baltic Sea ecosystem structure and functioning'
- Themes 2.1 and 2.2, meaning Natural and human-induced changes in catchment land cover patterns, including the role of e.g. agriculture, forestry and urbanisation, and the role of coastal systems in the dynamics of the Baltic Sea
- Themes 3.3 and 3.4, dealing with the Baltic sea fish stocks and fisheries management
- Theme 4.1 Governance structures, policy performance and policy instruments as to better incorporate the governance and policy issues into broad multi-disciplinary research proposals, as well as to design research proposals with societal responses
- Theme 5.1, talking about developing the science basis of monitoring

2) Innovation projects (implementation of the projects 2014-2017)⁹

- Theme 2.4 Eco-technological approaches

⁷ Andrusaitis, A., K. Kononen, M. Sirola, et al. (2014), BONUS strategic research agenda 2011–2017, update 2014. BONUS Publication No. 14.

https://www.bonusportal.org/files/2981/Publication_No._14_update.pdf

⁸ BONUS call 2012: Viable ecosystem - Bonus EEIG

https://www.bonusportal.org/programme/competitive_calls/bonus_call_2012_viable_ecosystem Accessed 11.06.2019; BONUS strategic research agenda 2011–2017, update 2014. BONUS Publication No. 14

⁹ BONUS call 2012 - Innovation - BONUS EEIG

https://www.bonusportal.org/programme/competitive_calls/bonus_call_2012_innovation

- Theme 5.2 Developing and testing innovative *in situ* remote sensing and laboratory techniques
- Theme 5.3 User-driven new information and communication services for marine environment, safety and security

3) Sustainable ecosystem services projects (implementation of the projects 2015-2018)¹⁰

- Theme 2.3 Integrated approaches to coastal management
- Themes 3.1, 3.2 Enhanced, holistic cross-sector maritime risk analysis and management as well as assessing the effects of air and water pollution and the introduction of energy (including noise) by shipping activities
- Themes 4.1, 4.2, 4.3 - all 3 themes addressed under strategic objective 3, which deals with improving the capabilities of the society to respond to the current and future challenges directed to the Baltic Sea region

4) Blue Baltic projects¹¹ (implementation of the projects 2017-2020)

- Themes 1.3 and 1.4: Understanding the Baltic Sea ecosystem structure and functioning: focus on food web structure and dynamics and multilevel impacts of hazardous substances
- Theme 2.4: Eco-technological approaches to achieve good ecological status in the Baltic Sea
- Theme 3.5: Sustainable aquaculture in the Baltic Sea
- Themes 4.2 and 4.3: Linking ecosystem goods and services to human lifestyles and well-being and developing Maritime spatial planning from local to Baltic Sea region scale, which all contribute towards improving the capabilities of the society to respond to challenges directed to the Baltic Sea region
- Themes 5.1, 5.2 and 5.3 - all 3 themes under strategic objective 5, which deals with developing improved and innovative observation and data management systems, tools and methodologies for marine information needs in the Baltic Sea region

¹⁰ BONUS call 2014: Sustainable ecosystem services - Bonus EEIG
https://www.bonusportal.org/programme/competitive_calls/bonus_call_2014_sustainable_ecosystem_services Accessed 12.06.2019

¹¹ BONUS call 2015: Blue Baltic - BONUS EEIG
https://www.bonusportal.org/programme/competitive_calls/bonus_call_2015_blue_baltic Accessed 12.06.2019

5) Synthesis projects (implementation of the projects 2018-2020)¹²

Under the Synthesis sub-programme, the aim is to synthesise the research outputs that address the challenges related to sustainable use of the Baltic Sea ecosystem and the services it provides. This includes performing a critical review of research outputs and identifying the knowledge gaps and further research needs.¹³ Specific topics addressed by Synthesis projects are the following:¹⁴

- Connected to themes 3.5, 2.3, 4.2: Sustainable marine and freshwater aquaculture development perspectives in the Baltic Sea region
- Connected to themes 1.3, 1.2, 2.2: A synthesis of knowledge on the Baltic Sea food webs including an outlook for priority future studies
- Connected to themes 5.1, 1.1, 1.4, 4.1, 3.3: Towards improved environmental status assessment and monitoring systems for the Baltic Sea
- Connected to themes 4.1, 4.2, 1.1: researching policy instruments and institutions for nutrient abatement
- Connected to themes 5.2 and 5.1: researching high frequency automated in situ observations in the Baltic Sea
- Relevant to all strategic objectives of the BONUS strategic research agenda: Development of a unified access point for science-based virtual decision support tools for ecosystem-based management in the Baltic Sea and its drainage
- Connected to themes 4.2, 2.2, 3.4: research on non-monetary values of the Baltic Sea ecosystem goods and services provided to human lifestyles and well-being
- Connected to themes 3.1, 3.2, 5.3: Improved maritime risk analysis and mitigation
- Connected to themes 1.1, 1.2, 1.4, 3.2, 3.4, 4.3, 5.1: Research on Cumulative effects of human activities: linear and non-linear interactions and knowledge gaps

¹² BONUS call 2017 - Synthesis - BONUS EEIG
https://www.bonusportal.org/programme/competitive_calls/bonus_call_2017_synthesis Accessed 12.06.2019

¹³ BONUS call 2017 - Synthesis. Briefing number 28, August 2017.
https://www.bonusportal.org/files/5802/BONUS_Briefing_28_Synthesis.pdf Accessed 12.06.2019

¹⁴ BONUS call 2017 - Synthesis - BONUS EEIG

2. Methodology

2.1. Sources of policy recommendations

Three sources of recommendations associated with agriculture-related water policy were utilised: 1) official European Union (EU) reports on the implementation of the EU Nitrate Directive (ND) and the EU Water Framework Directive (WFD), *the one concerning WFD dating from February 2019 and the one dealing with implementation of the ND from May 2018. For ND, also recommendations published on the official EU ND webpage have been included, which has last been updated in May 2019.*

2) HELCOM reports and official recommendations. For instance, these included official year reports of the Baltic Sea Action Plan (BSAP) as well as publications by thematic groups, such as AGRI and PRESSURE¹⁵, published in 2014-2019. *The official HELCOM recommendations under analysis are the only content taken from a pre-2014 period as well, simply for the reason that during the years 2014-2019 merely one topic-relevant official recommendation was released. Therefore, the official HELCOM recommendations come from 2017 (1 recommendation), 2010 (1), 2007 (3) and 2003 (2). As for publications by HELCOM AGRI, topic-relevant content was found from 5 documents, two of them published in 2018, one in 2015 and the remaining two dating back to 2014.*

3) BONUS programme sets 5 priorities for certain periods (Viable Ecosystems 2014-2018, Innovation 2014-2017, Sustainable Ecosystem Services 2015-2018, Blue Baltic 2017-2020, Synthesis 2018-2020). More precisely, in most cases, the main sources of policy recommendations were the final reports of the projects. 48 projects were implemented during 2014-2019 and out of those, 9 were found to contain topic-relevant recommendations. In case a project was still ongoing, recommendations from last available (yearly) reports were taken for analysis. In some cases, the analyzed content included other available deliverables of relevant BONUS projects, which could include policy recommendations, such as presentations given at a conference or academic articles written as part of the project.

The time period 2014-2019 (-2020) chosen for the study corresponds to the current multiannual financial framework (MFF) of the EU.

¹⁵ It should be noted that whereas publications by HELCOM PRESSURE group were reviewed in search of recommendations, nothing of relevance to the topic was found, thus in reality no policy recommendations taken from HELCOM PRESSURE have been analysed.

2.2. Typology of categories of policy recommendations

Based on the objectives of the aforementioned policy documents, 18 categories of policy recommendations were developed (Table 1).

Table 1. Categories of policy recommendations in agriculture-related water policy

No	Category of policy recommendation	Coverage of issues by the category of the policy recommendation		
1	Fertiliser (incl manure) application	application technology	best practice (timing, ...)	manure application technology
2	Fertiliser (incl manure) storage and handling	storage technology	storage capacity	
3	Content of fertilisers (incl manure)	heavy metals	removal of nitrogen	
4	Nutrients	recycling; treatment	removal of nutrients	nutrients accounting
5	Crops to cultivate	choice of crops	winter crops	catch crops
6	Extension/advisory services	accessibility;	trainings	capacity building; content of advice/training
7	Awareness raising	of farmers; of general public	of policy makers	
8	Financing (incl. AE support system) and costs	Outcome/result/performance-based payments	cost calculations	cost-benefit analysis, also of measures
9	Governance	institutions; management; reporting; stakeholder engagement	standards and indicators; plan improvement	
10	Data	data quality, data availability, data accessibility, site-specific data	Spatially differentiated data	Inventories (data gathering)
11	Climate change considerations	climate change is important to consider		
12	Biodiversity considerations	BD issues need to be addressed	protected areas/Natura 2000 sites to consider	

No	Category of policy recommendation	Coverage of issues by the category of the policy recommendation		
13	Research	new research agenda	knowledge gaps	Innovative technology research
14	Policy	change of policy needed; policy design	innovation in policy	policy coherence
15	Regulations	Amending regulations		
16	Monitoring system	Improving monitoring system	Increasing monitoring sites, sampling sites	
17	Methods and methodologies and tools	of assessment, quality	of inventories	improving methods....
18	Enforcement	inspections	finances and fees	

Categories have been assigned to the activity (policy measure), not to the objective or outcome of the activity. For example, if there is a recommendation to collect better and more site-specific data for better decision-making, in that case the activity is "data collection" and appropriate category 10 is assigned to it (not category 8 - governance issues). The reason behind that is to showcase and maintain the original proposal of the authors of policy recommendation as much as possible, as well as to avoid simply (and possibly mistakenly) guessing the long-term intended objectives or outcomes of the recommendation.

However, in case a statement is phrased more in a way of presenting data or drawing conclusions, without any proposal for further policy action, these statements have been excluded from our analysis. For instance: *“Out of 3 measures (catch-crops, improved fertilizer application, set-aside), catch crops is generally most preferred and fertilizer utilization is least preferred. On average, catch crop contracts require lowest compensation level, followed by set aside and fertilizer utilization contracts. However, big heterogeneity exists between farms.”* would be excluded according to definition of a policy recommendation in the current study, as is merely stating the findings of a study or a project but is not addressing anyone to take policy action based on the findings.

That means that in some cases policy recommendations have been included, which have NOT been formally stated to be policy recommendations by the authors implicitly (e.g by putting them in a separate section entitled “Policy recommendations”), but rather are similar in content to the aforementioned definition of policy recommendation. The logic behind that is that the aim of almost all published sources analyzed is also to inform policy makers, meaning the general aim of the reports are to improve policy-making and governance to achieve the set goals. Therefore, a

broader approach was taken to include also recommendations that were not explicitly formulated as distinct recommendations, but rather provided in a descriptive way.

Only land-based agriculture-related water policy recommendations have been identified and classified, leaving out, for example, marine fisheries and aquaculture, wastewater treatment, shipping related policy recommendations etc.

If a policy recommendation included several recommendations of several categories in one sentence or a strand of thought, the policy recommendation was split into several recommendations, depending on the number of content-based categories it comprised of. For example, a policy recommendation: "*Wider use of microalgae could be enhanced by supporting research on cost-efficient industrialization of algae production following the wastewater-based algae-to-fuel approach, conducting market surveys about potential products, by creating markets for new products and increasing public awareness about the products and accompanied environmental services.*", was split into 2 recommendations: 1) supporting research (cat. 13) and 2) increasing public awareness (cat. 7).

The original wording of the recommendation is in most cases maintained as closely as possible, however, in some cases the recommendation has been rephrased or shortened slightly in order to highlight the action-oriented content of the recommendation.

3. Results

3.1. Division of policy recommendations by categories

As a result of the application of the methodology, 175 policy recommendations were identified that fulfilled the set criteria for land-based agriculture-related water policy recommendations in the Baltic Sea Region context. Out of those 175, nearly half - 83 - were identified from various BONUS projects. The number of recommendations from EU ND + WFD and HELCOM were 42 and 51, respectively.

Out of the 175 recommendations, the largest number by far fell into the category of governance issues (54 recommendations), followed by financing and costs (18) and then methods and tools (17) (Table 2).

For two categories - biodiversity considerations and enforcement - no recommendations were identified, and under the category dealing with content of fertilizers (category 3), only one recommendation was identified.

Table 2. Division of policy recommendations across categories (split into 2 tables due to design constraints)

	1	2	3	4	5	6	7	8	9
	1.Fertiliser (incl manure) application	2.Fertiliser (incl manure) storage	3.Content of fertilisers (incl manure)	4. Nutrients	5.Crops	6.Extension/advisory services	7.Awareness raising	8.Financing (incl. AE support system)	9.Governance issues
EC ND+WFD	2	1	0	0	1	0	0	2	21
HELCOM	7	3	1	3	2	1	4	1	12
BONUS projects	2	2	0	6	0	2	4	15	21
ALL	11	6	1	9	3	3	8	18	54

	10	11	12	13	14	15	16	17	18	Total
	Data	Climate change considerations	Biodiversity considerations	Research	Policy	Regulations	Monitoring	Methods, tools	Enforcement/inspection	
EC ND+WFD	2	1	0	0	0	0	6	5	0	41
HELCOM	4	0	0	2	1	2	3	5	0	51
BONUS projects	4	1	0	2	13	2	2	7	0	83
ALL	10	2	0	4	14	4	11	17	0	175

On the following figures (Figure 1 - Figure 4), division of policy recommendations across categories is shown, first individually by source: EC Nitrates Directive + Water Framework Directive (Figure 1), HELCOM (Figure 2) and BONUS projects (Figure 3). Then, division of policy all policy recommendations from all sources compiled is illustrated on Figure 4.

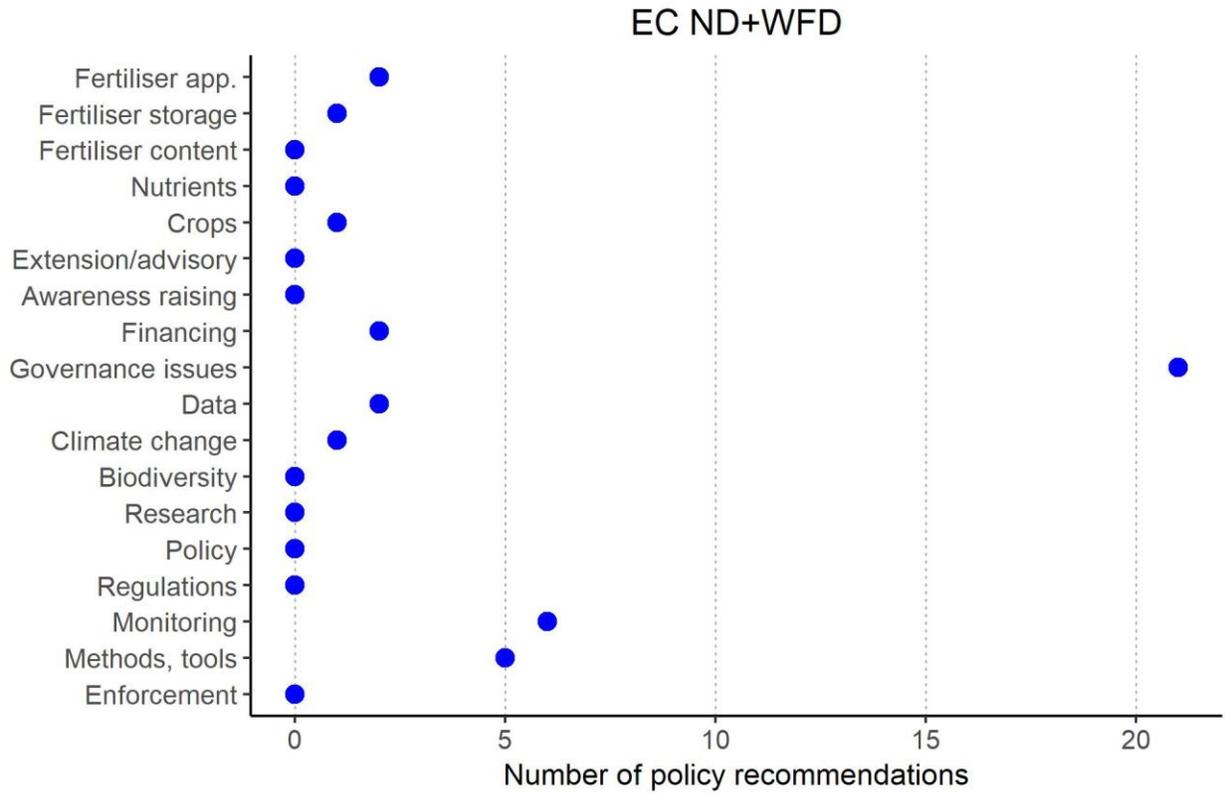


Figure 1. Division of policy recommendations across categories, recommendations from EC Nitrates Directive (ND) and Water Framework Directive (WFD)

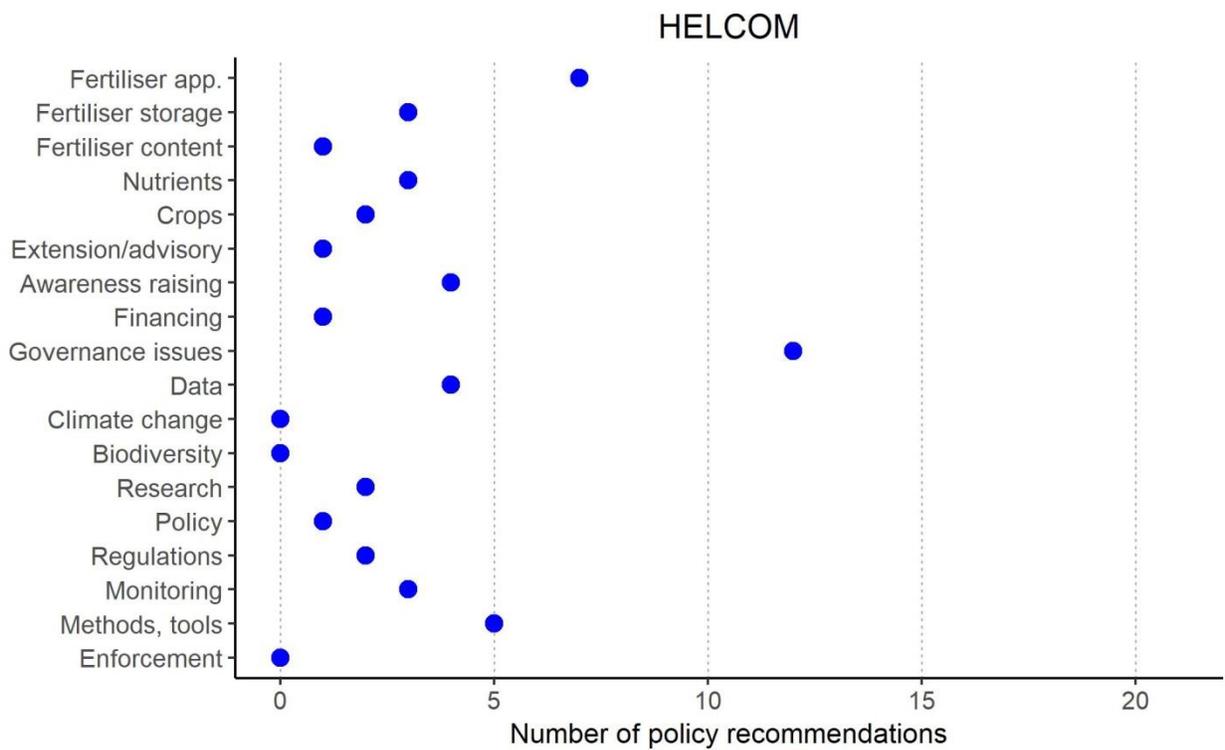


Figure 2. Division of policy recommendations across categories, recommendations from HELCOM

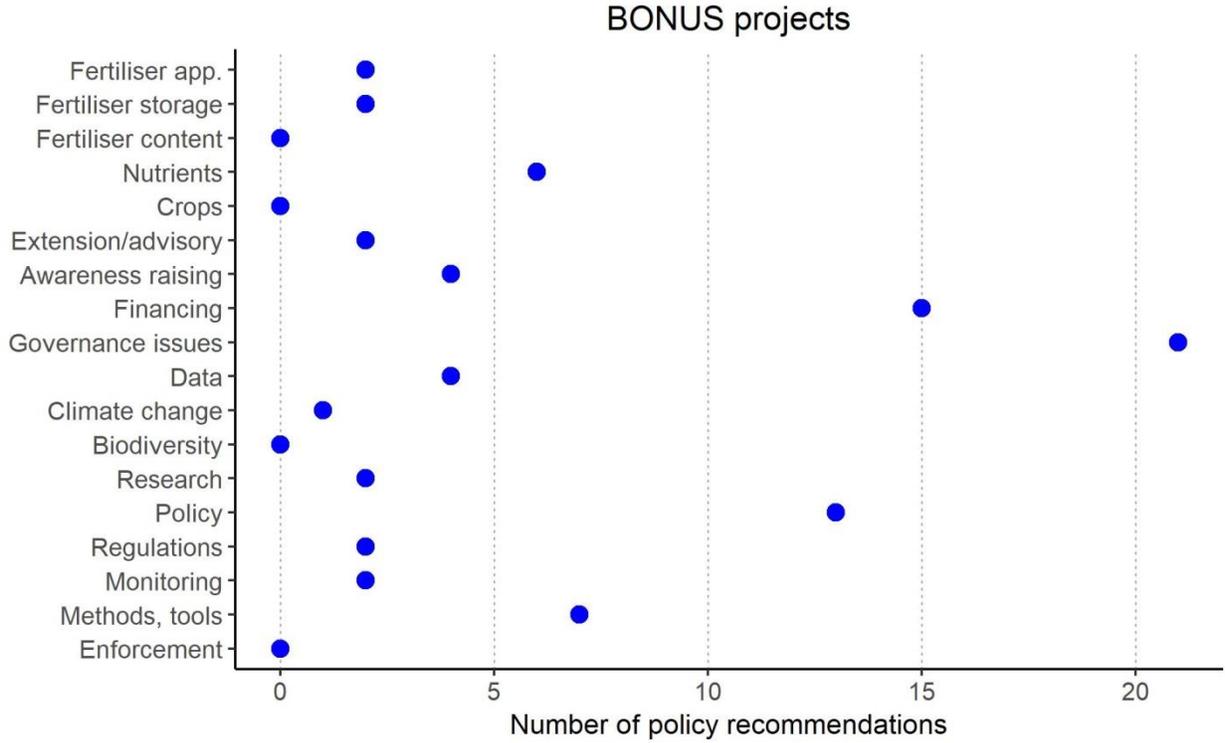


Figure 3. Division of policy recommendations across categories, recommendations from BONUS projects

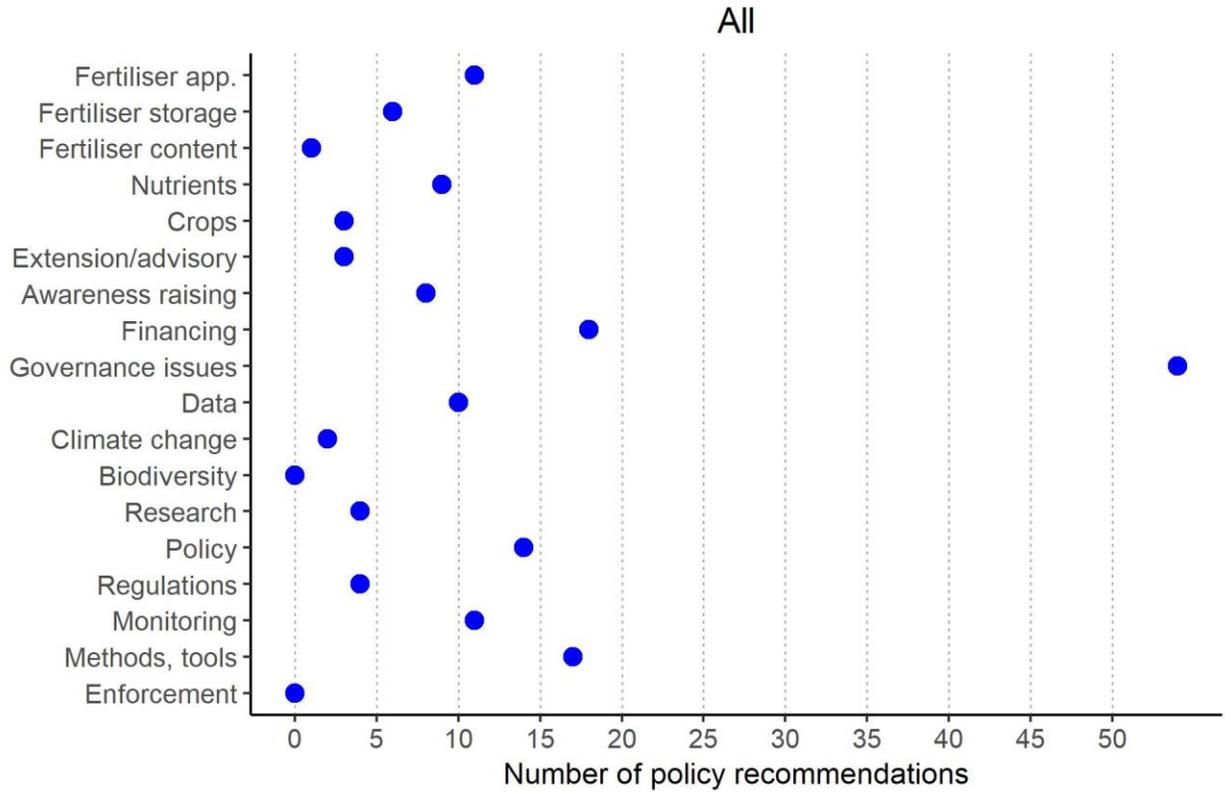


Figure 4. Division of policy recommendations across categories and all sources

In the next sub-chapter, specific content and examples of all categories of recommendations will be looked at, in order to give a better overview of what kind of concrete changes are contained within the recommendations looked at.

3.2. Content of policy recommendations

The 18 categories of policy recommendations have different content issues that they address. In the following, the content issues are described in a more detailed way.

Category 1 - Fertilizer (including manure) application:

Altogether, 11 recommendations were given in the fertilizer application category, most of them in HELCOM documents. The recommendations dealt with issues such as limiting conditions to fertilizer application (e.g. on steeply sloping ground, near water courses etc) to prevent nitrate losses from leaching and runoff. Specific limitation to or tailoring of fertilizer application, taking into account various factors, such as crop or plant needs and phosphorus and nitrogen content already in the soil, is also presented in various suggestions. Another set of recommendations dealt with incentivising for all manure to be made of use as an organic fertilizer.

Category 2 - Fertilizer (including manure) storage and handling:

In the fertilizer storage category, altogether 6 recommendations were given. For instance, recommendations deal with setting a minimum requirement capacity for livestock manure. Another stream of recommendations deals with issues such as upgrading and modernising their technical facilities for manure handling. In order to do that, investment in manure storage is required as well to reducing manure leakage cost-efficiently.

Category 3 - content of fertilizers (including manure):

In the fertilizer content category, only one recommendation was given throughout all sources. That recommended adjusting the composition of the diet as per requirements of an individual animal in order to avoid a surplus of nitrogen in the manure.

Category 4 - nutrients:

Regarding nutrients, 9 recommendations were given altogether, two thirds of them throughout several BONUS projects and none by the two EU directives analysed. Among the recommendations, the idea of promoting and facilitating nutrient accounting, taking into account specific farm conditions, was brought forward. Innovation and technologies are needed for nutrient recycling and logistics as well in order to share the nutrients between those who are lacking and those who have then in excess. Another connected recommendation is to pursue nutrient neutrality

by creating clear systems for nutrient compensations and keeping pace with new innovations, such as nutrient offsets.

Category 5 - crops to cultivate:

Altogether, three recommendations were given under the crops to cultivate category: one in the EU Nitrates Directive and two others by HELCOM. Among in those documents, crop rotations, soil winter crops and catch crops are presented as a useful tactic to prevent nutrient loss through erosion.

Category 6 - extension/advisory services

The number of recommendations given under the extension and advisory services category is the same as in category 5 - three recommendations were given, one by HELCOM and two in BONUS projects. In those recommendations, intensified rural extension services and stronger focus on nutrient accounting in advisory services are seen as a way to support and promote voluntary nutrient accounting. Providing training and assistance to farmers/stakeholders (e.g. from independent agricultural advisors) could provide an incentive for them to participate in agri-environmental schemes.

Category 7 - awareness raising

With regards to awareness raising, 8 recommendations were identified: 4 by HELCOM and 4 throughout various BONUS projects. More precisely, most of the recommendations suggest making use of different methods for awareness raising, such as information events or preparation of materials for teachers. However, on several occasions, the specific methods have not even been specified, with recommendations just stating that public awareness of agri-environmental issues, nutrient recycling etc needs to be raised, but offering no specific guidelines on how this could be achieved. While in most cases, raising awareness of the consumers or general public is what has been suggested, in some instances the idea of targeting companies (producers) or governance structures has been brought forward.

Category 8 - financing (including agri-environmental support system) and costs

Recommendations related to financing issues and costs formed the second largest group within all recommendations, with 10.2% of all recommendations (that means 18 recommendations) related to this topic. However, an overwhelming majority (15) of those 18 came from different BONUS projects, with financing topic only being mentioned in the EU Directives twice and by HELCOM merely once.

A big block of recommendations related to financing revolves encompasses the issue of outcome-/result-based payments, which have been remarked by BONUS projects to bring about multiple benefits, such as increasing farmers' incentives for participation in agri-environmental schemes. While in most cases it has not been specified who precisely the recommendation to shift to result-

based payment scheme has been addressed to, one recommendation even talks about changing the corresponding EU regulation.

Another common set of financing measures presented are dealing with revisiting characteristics of contracts (e.g contract length, flexibility) given to farmers or environmental producers. For instance, increasingly flexibility of AE contracts and differentiating them across different farm types would incentivize both farmers to participate as well as improve cost-efficiency of such agri-environmental schemes.

Category 9 - governance

Recommendations in the governance category comprised overwhelmingly the biggest share among all recommendations analysed, encompassing very different topics. Out of all 54 governance-related recommendations (30.7% of all policy recommendations), 21 recommendation were given both by BONUS projects and EU directives, which leaves 12 recommendations given by HELCOM.

Governance-related recommendations given either by the EU WFD or the ND have been addressed to respective governments and are concerned with issues such as advising governments to (better) develop plans related to agri-environmental issues, better justify exceptions granted under the WFD, set clearer time frames for reaching different objectives, ensure the existence of reference conditions for all quality standards, establish different action programmes to be implemented by farmers in nitrate vulnerable zones and so on.

HELCOM governance-related recommendations put somewhat more emphasis of cooperation of countries (for instance, in the framework of the Helsinki Commission) and establishing, harmonizing or revising guidelines and standards, which deal with agriculture-water policy issues, such as harmonizing standard values for nutrient content in manure or nutrient uptake of crops.

Recommendations related to governance made in different BONUS projects probably form thematically the most varied group. Topics addressed include promoting systems understanding instead of focusing one issue at a time, which means improving coordination between sectoral policies, facilitating good practices exchange etc. Other recommendations address the issue of stakeholder engagement and co-governance, which should be facilitated instead of a prescriptive approach from the side of decision-makers. Balancing innovative methods, such as spatially targeted regulations, with existing local governance structures and socio-cultural systems is a point brought forward which can be seen as belonging to the governance category.

Category 10 - data

Recommendations related to data were moderately prevalent, with 10 recommendations given altogether in the materials analysed. Areas where more or better data is required include setting site specific values for nutrient surpluses in sustainable agriculture or even determining the amount of emissions or (nutrient) discharges with more accuracy. Specifically, the importance of acquiring better data at a local (field/stream) level in addition to catchment level data is mentioned, as this would help to obtain full benefits of the spatially differentiated approach also suggested. However,

in some instances the recommendations given with regards to improving data quality or availability just claim that better data is needed, however, without going to specifics about which specifics are lacking or what is the precise area of improvement.

Category 11 - climate change considerations

Recommendations referring to climate change considerations were quite rare, with only one such recommendations found in the implementation reports of the EU directives and one among the BONUS projects. In both cases, taking the latest findings on climate change impact on the Baltic Sea Region into account for preparing or revisiting policy documents, such as WFD, HELCOM Baltic Sea Action plan or in the case of Finland - national Drought Management Plans.

Category 12 - biodiversity considerations

In all materials and documents analysed, no recommendations referring to biodiversity considerations were found.

Category 13 - research

In the research category, also quite a limited number of recommendations were identified - 4. Out of those, 2 were found in the HELCOM materials and the remaining two in the materials of the BONUS projects. The HELCOM recommendations related to research were in turn very closely connected to data issues (category 10) - namely suggesting that in order to have more reliable data for efficient nutrient bookkeeping, focused research is needed. The two recommendations given in BONUS projects were in case much more specific, the first one suggesting to research more extensively how eco-technologies could potentially turn carbon and nutrients into benefits instead of environmental problems, and the other suggesting to support research on cost-efficient industrialization of algae production.

Category 14 - policy

The number of policy-related recommendations was moderately high, however, these recommendations were divided very unevenly across the three types of sources: out of the 14 recommendations given altogether, 13 originate from different BONUS projects, only one from HELCOM and no recommendations at all in the EU directives implementation reports. The content of the recommendations could vary a lot, however, for instance, updating sections of international treaties dealing with pollution from agriculture, taking a long-term perspective (30 years) while determining measures to reduce nutrient loads and so on. As for thematic ideas related to policy design or change of policy, recommendations advising rethinking boundaries of issues areas, adopting a cross-sectoral approach and ensuring better policy coherence were common among policy-related recommendations. In the case of designing policies, the prescriptive approach needs to be replaced by increased collaboration between stakeholders (stakeholder co-inquiry process) and offering better incentives for participation in policy-making (e.g economic incentives).

Category 15 - regulations

In the regulations category, four recommendations altogether could be identified: two by HELCOM and two by BONUS projects. The regulations-related recommendations were generally dealing with changing or simplifying legal background and regulations in order to achieve something, for instance, coming up with feasible regulations to restrict nutrient application might reduce economic disadvantages of more sustainable practices. As also brought forward, instead of traditionally uniform regulations, spatially differentiated regulations should be applied, for instance special regulations targeted towards areas where natural retention of nutrients is low.

Category 16 - monitoring system

In the monitoring system category, altogether 11 recommendations were given: six in the EU directives implementations reports, three by HELCOM and two by BONUS projects. The official recommendations given in the implementation reports of EU directives speak generally of improving trend monitoring of substances, or - especially common - improving monitoring of surface waters. Improved monitoring could be for instance achieved by covering all relevant quality elements, increasing the confidence in the assessment of status of water bodies etc. Examples of recommendations by HELCOM and BONUS are for instance developing the concepts of monitoring (on farm level) and harmonizing monitoring networks on the EU and Baltic Sea Region level.

Category 17 - methods, methodologies and tools

Methods and tools related recommendations compiled the third largest category, with 17 recommendations given altogether. As for the specific distribution, this was quite even across the three main sources, with 5 recommendations coming from the EC, 5 from HELCOM and 7 from BONUS projects. Among those, a few common themes stand out. Especially stressed by the EC, improving methods of assessment of pollutant loads, biological quality elements etc is needed. Other recommendations bring examples of specific methods or tools to make use of, such as harmonizing standard values for issues such as manure excretion, nutrient content in manure etc. Another recommendation suggests making better use of interactive data visualization. A common method recommended also was to account for spatial differences and different historical and environmental pre-conditions while evaluating or planning policies.

Category 18 - enforcement

No policy recommendations related to enforcement were identified.

4. Discussion

4.1. Defining a policy recommendation

As for the definition of a policy recommendation, in the current study we understand policy recommendation as a statement that makes or implies a proposal for policy action, either by taking new policy measures or by amending current policy measures. Previously, David Glover¹⁶ has differentiated between policy recommendations and policy implications, defining the former as “a statement that makes a specific proposal for action” and the latter as “interpreting data in ways that are useful to policymakers, but without specifying precisely what should be done”. In case these can still be seen as addressed to policymakers in some way, those policy recommendations (as per Glover’s definition – closer to policy implications) have been included as well, for instance: *“Offering advisory assistance for the farmers (from independent agricultural advisors) serves as an incentive by reducing paper work/transaction costs”*.

4.2. Methodological aspects of assigning a category

Whilst determining appropriate methodology to apply in the current study, a few aspects could be identified as potentially problematic, which the study all tried to address.

As a first issue, the question on how to fit a recommendation into a category in case it seems to fall under 2 (or more) categories. As a solution, the recommendation was split correspondingly into 2 (or more) parts, each part then classified under the relevant category.

A second concern might be to do with the identification of categories more generally, namely that some categories, such as ‘governance’ or ‘policy’ might at first glance seem quite close to each other. In order to address that, sub-categories or specifications of each category have been further added to the table of categories of policy recommendations.

In some cases, it might have been somewhat hard to correctly interpret if a statement is meant as a policy recommendation or simply a result or conclusion of a broader document/study etc. In order to tackle that, all recommendations were looked at in a broader context, which helped to decide, how to draw the line between a policy recommendation and policy implication (a differentiation which has been described above, in the Methodology section).

An exception was made for two BONUS projects - Miracle and Go4Baltic that specifically address agriculture-related water policy. Not only the final report but also supplementary documents, such as policy briefs and presentations were also used. The sources of these documents are listed in the chapter of references.

¹⁶ Glover (2002)

4.3. Content aspects of policy recommendations

In the case of the most frequent categories with many sub-categories, thematically rather different recommendations were given under one category. For instance, under governance category (category 9), topics as diverse as “harmonizing standard values for nutrient contents in manure” to “promoting systems understanding instead of focusing merely at one issue at a time” illustrate the situation. That means again that instead of focusing merely on the content or thematic aspects of the recommendation, the action that they propose was identified and categorised. As before explained in chapter 2.2, in the current study, categories have been assigned to the activity (policy measure proposed), not the desired outcome, to provide a clear account of which kind of specific actions have been recommended to improve agri-water policy in the Baltic Sea Region. An overview of which different kind of topics were addressed under each category of policy recommendations, and especially the categories with several sub-categories, a more detailed look into the topics covered in each category has been provided in both chapter 3.2. Studying Annex 2, where all policy recommendations and the categories they have been assigned, might be useful as well.

In most cases, the addressee of policy recommendation is not clear, as often the recommendations are posed in third person mode: to engage, to increase, to improve etc, without a concrete addressee. Nevertheless, almost all recommendations seem to be targeting various public authorities, with no mention of any specific institution. Interestingly enough, almost no recommendations seem to be targeted at companies/enterprises or the general public.

There is also the concern that to an extent, recommendations might leave an incorrect picture of the intentions of published materials, the examples of that being serious global issues, such as biodiversity or climate change considerations, which have deserved almost no mention among recommendations in all sources looked at. In that case, a broader knowledge context might be useful to avoid drawing mistaken conclusions as if climate change or biodiversity considerations would be excluded altogether from the sources looked at. Instead, these overwhelming global issues have often been mentioned or stated as facts in the introduction of reports or taken as a piece of background information, however, seemingly not as well integrated into the recommendations or conclusions of the documents or reports. It would also be useful to be reminded that references to those big global issues are already integrated into other documents, such as EU Birds Directive and EU Nature Directive, which are legally binding for all EU Member States, and in which climate change and biodiversity considerations have been identified as central concerns. Therefore, the absence of policy recommendations related to those issues in the current study is definitely noteworthy, but should not be automatically interpreted as complete lack of attention to those concerns.

4.4 Recommendations for authors of policy recommendations

As a suggestion for the future authors of policy recommendations, a few points are to be made in order to make agriculture-related water policy recommendations more effective.

First, the addressee of the recommendation should be made as clear as possible, in order to avoid confusion and avoidance of responsibility.

Second, authors of policy recommendations should be as succinct as possible about what the current policy is what needs to be changed or precisely what kind of new policy measures are recommended.

Third, the overall aim or goal of the policy recommendation (the issue that policy recommendation is meant to solve or improve) should be specified, to help policy-makers understand the salience of the topic, as well as better calculate the implications of following the policy recommendation.

Fourth, implicitly stating a statement to be a policy recommendation and making it stand out in the text, either by using a different font, text colour or even putting it under a separate sub-heading would be recommended, as it helps policy-makers to find it quickly, as well keep anyone from guessing as something indeed is a policy recommendation or simply a statement or a finding of some research etc, without any encouragement for policy action.

5. Conclusions

In conclusion of the study undertaken, altogether 175 land-based agriculture-related water policy recommendations from 3 main groups of sources (EC Nitrates Directive + Water Framework Directive) were identified, which were then divided into 18 thematic categories by the type of action recommended.

Out of the 175 recommendations, the largest number by far fell into the category of governance issues (54 recommendations), followed by financing and costs (18) and then methods and tools (17). Global issues such as climate change or biodiversity consideration were not much integrated into the policy recommendations, however, can often be found in other convention or materials bindings for the countries.

In many cases, the addressee of the recommendation was not made clear, largely recommendations seem to be addressed at public authorities, with no mention to the more specific institutions.

Stemming from that, a number of suggestions have been made by the authors of the current study how to improve making policy recommendation and thereby enhance their potential impact in the future. The addressee of policy recommendation should be as clear as possible. In addition to that, policy recommendations should be phrased as clearly as possible, also specifying the intended aim

of the recommendation. Making it easier to identify policy recommendations in a text, either by using a different font, text colour or putting it into a corresponding sub-chapter etc, is also a recommendation.

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Annexes

Annex 1. List of BONUS projects reviewed in this study

Out of 48 BONUS projects implemented in 2014-2019, 9 contained recommendations relevant for the current study. These 9 projects (sub-programme in brackets) were:

- 1) BONUS MIRACLE (Sustainable Ecosystem Services 2015-2018)
- 2) BONUS GO4BALTIC (Sustainable Ecosystem Services 2015-2018)
- 3) BONUS COCOA (Viable Ecosystem 2014-2018)
- 4) BONUS SOILS2SEA (Viable Ecosystem 2014-2018)
- 5) BONUS RETURN (Blue Baltic 2017-2020)
- 6) BONUS DESTONY (Synthesis 2018-2020)
- 7) BONUS TOOLS2SEA (Synthesis 2018-2020)
- 8) BONUS MICROALGAE (Innovation 2014-2017)
- 9) BONUS PROMISE (Innovation 2014-2017)

Annex 2. List of policy recommendations used in the current study

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from EU WATER FRAMEWORK DIRECTIVE AND THE NITRATES DIRECTIVE				
No of policy recommendation	Recommendation	Category assigned	Category description	Source
1	Improve for all RBDs trend monitoring for all relevant substances, in a way that provides sufficient temporal resolution and spatial coverage.	16	monitoring system	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF
2	Justify better the application of exemptions under Article 4(4) and Article 4(5), in particular the justification on disproportionate costs.	9	governance	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF
3	Complete a comprehensive gap assessment for diffuse pollutant loads from agriculture across all waters in all RBDs and link it directly to mitigation measures. Additional actions are needed to prevent pollution induced by nitrates from agricultural pressures.	17	methods, methodologies, tools	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from EU WATER FRAMEWORK DIRECTIVE AND THE NITRATES DIRECTIVE

No of policy recommendation	Recommendation	Category assigned	Category description	Source
4	Consider developing Drought Management Plans for areas more at risk of drought.	9	governance	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF
5	Clarify the apportionment of significant pressures among different sectors in order to be able to identify the appropriate mitigation measures.	10	data	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF
6	Improve monitoring of surface waters by covering all relevant biological, physico-chemical and hydromorphological quality elements in all water categories and increase the proportion of water bodies covered by monitoring for River Basin Specific Pollutants.	16	monitoring system	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF
7	Complete the development of assessment methods for all biological quality elements in all water categories, including methods that are sensitive to nutrients in rivers and include hydromorphological quality elements in the classification of ecological status.	17	methods, methodologies, tools	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from EU WATER FRAMEWORK DIRECTIVE AND THE NITRATES DIRECTIVE

No of policy recommendation	Recommendation	Category assigned	Category description	Source
8	Ensure that reference conditions are established for all relevant Quality Elements for all surface waters.	9	governance	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF
9	Complete inventories of emissions, discharges and losses of chemical substances.	10	data	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF
10	Step up efforts to assess the status of all water bodies, increasing the confidence in the assessment of status and reducing the proportion of unknown status. Monitoring should provide sufficient temporal resolution and spatial coverage (including in biota).	16	monitoring system	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF
11	Better justify exemptions by developing and applying clear criteria for the application of Article 4(4) and distinguish these clearly from the criteria and justifications used under Article 4(5).	9	governance	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from EU WATER FRAMEWORK DIRECTIVE AND THE NITRATES DIRECTIVE

No of policy recommendation	Recommendation	Category assigned	Category description	Source
12	Ensure better monitoring of surface waters, to cover all water bodies for all relevant quality elements, including hydromorphological quality elements and River Basin Specific Pollutants in coastal waters.	16	monitoring system	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF
13	Set a clear time frame in the FRMPs for the achievement of objectives.	9	governance	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF
14	Improve for all RBDs trend monitoring for all relevant substances, in a way that provide sufficient temporal resolution and spatial coverage.	16	monitoring system	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF
15	Ensure a thorough assessment of proposed new modifications in line with the WFD requirements, in light of the expectation that deterioration from high to good status may not trigger an Article 4(7) assessment.	9	governance	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from EU WATER FRAMEWORK DIRECTIVE AND THE NITRATES DIRECTIVE

No of policy recommendation	Recommendation	Category assigned	Category description	Source
16	Ensure the proper implementation of Article 9 on cost recovery, including the calculation and internalisation of environmental and resource costs.	8	financing (incl AE support system) and costs	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF
17	Based on the prevalence of local or sub-basin drought spells as one of the effects of climate change, reconsider preparing Drought Management Plans where appropriate.	11	climate change considerations	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF
18	Based on the prevalence of local or sub-basin drought spells as one of the effects of climate change, reconsider preparing Drought Management Plans where appropriate.	9	governance	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF
19	Identify sources of funding to facilitate the implementation of the WFD objectives.	8	financing (incl AE support system) and costs	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from EU WATER FRAMEWORK DIRECTIVE AND THE NITRATES DIRECTIVE

No of policy recommendation	Recommendation	Category assigned	Category description	Source
20	Complete the development of assessment methods for all biological quality elements. Methods for the assessment of the hydromorphological quality elements should be developed for transitional and coastal waters.	17	methods, methodologies, tools	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF
21	Ensure that for potential future application of Article 4(7), a thorough assessment of possible new modifications is made.	9	governance	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF
22	Ensure adequate co-ordination of the RBMPs with the Floods Directive and Flood Risk Management Plans.	9	governance	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF
23	Strengthen monitoring of surface waters by covering all relevant quality elements in all water categories.	16	monitoring system	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from EU WATER FRAMEWORK DIRECTIVE AND THE NITRATES DIRECTIVE

No of policy recommendation	Recommendation	Category assigned	Category description	Source
24	Provide a complete assessment of ecological status for all categories of water, including assessments of all relevant quality elements.	9	governance	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF
25	Increase efforts to develop a consistent methodology for the designation of heavily modified water bodies for all relevant water categories.	17	methods, methodologies, tools	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF
26	Ensure that the use of exemptions under Article 4(7) is based on a thorough assessment of all the steps as required by the WFD.	9	governance	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF
27	Derive and implement ecological flows	17	methods, methodologies, tools	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF

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No of policy recommendation	Recommendation	Category assigned	Category description	Source
28	Ensure that Environmental Quality Standards are available and adequate for all relevant River Basin Specific Pollutants.	9	governance	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF
29	Progress in the justification of exemptions by further substantiating the related assessments with additional data and information and by reducing the remaining degree of uncertainties. Take all necessary measures to bring down the number of exemptions as much as possible for the next cycle in order to ensure a timely achievement of the WFD objectives.	9	governance	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF
30	Consider preparing Drought Management Plans where appropriate, particularly in RBDs with local drought phenomena.	9	governance	EU Water Framework Directive: ANNEX to the Report from the Commission to the European Parliament and to the Council on the implementation of the Water Framework Directive (200/60/EC) and Floods Directive (2007/60/EC) (26 February 2019) https://eur-lex.europa.eu/resource.html?uri=cellar:bee2c9d9-39d2-11e9-8d04-01aa75ed71a1.0005.02/DOC_2&format=PDF

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No of policy recommendation	Recommendation	Category assigned	Category description	Source
31	The total area of NVZ has been increasing since 2012. However, there are still improvements to be made in some Member States in designating NVZs to include all areas draining into waters where they cause pollution as to ensure the effectiveness of the action programmes.	9	governance	EU Nitrates Directive: Report from the Commission to the Council and the European Parliament on the implementation of Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources based on Member State reports for the period 2012–2015. 4 May 2018. http://ec.europa.eu/environment/water/water-nitrates/pdf/nitrates_directive_implementation_report.pdf
32	In some Member States with the action programme applied throughout the whole territory, the measures need to be adequately adapted to different regional pressures and hotspots.	9	governance	EU Nitrates Directive: Report from the Commission to the Council and the European Parliament on the implementation of Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources based on Member State reports for the period 2012–2015. 4 May 2018. http://ec.europa.eu/environment/water/water-nitrates/pdf/nitrates_directive_implementation_report.pdf
33	Action programmes that allow for a more flexible approach at farm level can increase farmers' ownership and engagement.	9	governance	EU Nitrates Directive: Report from the Commission to the Council and the European Parliament on the implementation of Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources based on Member State reports for the period 2012–2015. 4 May 2018. http://ec.europa.eu/environment/water/water-nitrates/pdf/nitrates_directive_implementation_report.pdf

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from EU WATER FRAMEWORK DIRECTIVE AND THE NITRATES DIRECTIVE

No of policy recommendation	Recommendation	Category assigned	Category description	Source
34	This approach can however only bring results if accompanied by clear environmental objectives and targets coupled with effective advice and support to the farmers to select and implement the right measures, stricter enforcement mechanisms and accurate nutrient management planning.	9	governance	EU Nitrates Directive: Report from the Commission to the Council and the European Parliament on the implementation of Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources based on Member State reports for the period 2012–2015. 4 May 2018. http://ec.europa.eu/environment/water/water-nitrates/pdf/nitrates_directive_implementation_report.pdf
35	Establishment of Codes of Good Agricultural Practice to be implemented by farmers on a voluntary basis. Codes should include: measures limiting the periods when nitrogen fertilizers can be applied on land in order to target application to periods when crops require nitrogen and prevent nutrient losses to waters;	9	governance	EU Nitrates Directive: Report from the Commission to the Council and the European Parliament on the implementation of Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources based on Member State reports for the period 2012–2015. 4 May 2018. http://ec.europa.eu/environment/water/water-nitrates/pdf/nitrates_directive_implementation_report.pdf
36	measures limiting the conditions for fertilizer application (on steeply sloping ground, frozen or snow covered ground, near water courses, etc.) to prevent nitrate losses from leaching and run-off;	1	fertiliser (incl manure) application	EU Nitrates Directive: Report from the Commission to the Council and the European Parliament on the implementation of Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources based on Member State reports for the period 2012–2015. 4 May 2018. http://ec.europa.eu/environment/water/water-nitrates/pdf/nitrates_directive_implementation_report.pdf

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from EU WATER FRAMEWORK DIRECTIVE AND THE NITRATES DIRECTIVE

No of policy recommendation	Recommendation	Category assigned	Category description	Source
37	requirement for a minimum storage capacity for livestock manure; and	2	fertiliser (incl manure) storage and handling	EU Nitrates Directive: Report from the Commission to the Council and the European Parliament on the implementation of Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources based on Member State reports for the period 2012–2015. 4 May 2018. http://ec.europa.eu/environment/water/water-nitrates/pdf/nitrates_directive_implementation_report.pdf
38	crop rotations, soil winter cover, and catch crops to prevent nitrate leaching and run-off during wet seasons.	5	crops to cultivate	EU Nitrates Directive: Report from the Commission to the Council and the European Parliament on the implementation of Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources based on Member State reports for the period 2012–2015. 4 May 2018. http://ec.europa.eu/environment/water/water-nitrates/pdf/nitrates_directive_implementation_report.pdf
39	Establishment of action programmes to be implemented by farmers within NVZs on a compulsory basis.	9	governance	EU Nitrates Directive: Report from the Commission to the Council and the European Parliament on the implementation of Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources based on Member State reports for the period 2012–2015. 4 May 2018. http://ec.europa.eu/environment/water/water-nitrates/pdf/nitrates_directive_implementation_report.pdf

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from EU WATER FRAMEWORK DIRECTIVE AND THE NITRATES DIRECTIVE

No of policy recommendation	Recommendation	Category assigned	Category description	Source
40	Action programmes must include: measures already included in Codes of Good Agricultural Practice, which become mandatory in NVZs	9	governance	EU Nitrates Directive: Report from the Commission to the Council and the European Parliament on the implementation of Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources based on Member State reports for the period 2012–2015. 4 May 2018. http://ec.europa.eu/environment/water/water-nitrates/pdf/nitrates_directive_implementation_report.pdf
41	other measures, such as limitation of fertilizer application (mineral and organic), taking into account crop needs, all nitrogen inputs and soil nitrogen supply, maximum amount of livestock manure to be applied (corresponding to 170 kg nitrogen /hectare/year).	1	fertiliser (incl manure) application	EU Nitrates Directive: Report from the Commission to the Council and the European Parliament on the implementation of Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources based on Member State reports for the period 2012–2015. 4 May 2018. http://ec.europa.eu/environment/water/water-nitrates/pdf/nitrates_directive_implementation_report.pdf

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from HELCOM				
No of policy recommendation	Recommendation	Category assigned	Category description	Source
1	Sewage sludge or its products like other fertilizers should not be applied on soil if the phosphorus and nitrogen content in the soil is sufficient for crop cultivation.	1	fertiliser (incl manure) application	HELCOM official recommendations: http://www.helcom.fi/helcom-at-work/recommendations
2	To set a limit value for the content of cadmium in fertilizer applied in the Baltic Sea catchment area. This recommendation only should apply for fertilizers with a content of phosphorous more than 1%.	9	governance	HELCOM official recommendations: http://www.helcom.fi/helcom-at-work/recommendations
3	To monitor, calculate and report complete data sets on point and diffuse source nutrient loads, so the total loads entering the Baltic Sea can be estimated with reasonable accuracy bearing in mind the requirements of the HELCOM Baltic Sea Action Plan: - in developing targets for good ecological status; - in estimating future allowable nutrient inputs to the Baltic Sea and its sub-regions without jeopardize achieving the good ecological status. To support further division of total diffuse losses between different sources (e.g. agriculture, managed forests, natural background) as well as to estimate the retention rates nitrogen and phosphorus in the catchment.	16	monitoring system	HELCOM official recommendations: http://www.helcom.fi/helcom-at-work/recommendations
4	To monitor, calculate and report complete data sets on point and diffuse source nutrient loads, so the total loads entering the Baltic Sea can be estimated with reasonable accuracy bearing in mind the requirements of the HELCOM Baltic Sea Action Plan: - in developing targets for good ecological status; - in estimating future allowable nutrient inputs to the Baltic Sea and its sub-regions without jeopardize achieving the good ecological status. To support further division of total diffuse losses between different sources (e.g. agriculture, managed forests, natural background) as well as to estimate the retention rates nitrogen and phosphorus in the catchment.	9	governance	HELCOM official recommendations: http://www.helcom.fi/helcom-at-work/recommendations

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from HELCOM				
No of policy recommendation	Recommendation	Category assigned	Category description	Source
5	To monitor, calculate and report complete data sets on point and diffuse source nutrient loads, so the total loads entering the Baltic Sea can be estimated with reasonable accuracy bearing in mind the requirements of the HELCOM Baltic Sea Action Plan: - in developing targets for good ecological status; - in estimating future allowable nutrient inputs to the Baltic Sea and its sub-regions without jeopardize achieving the good ecological status. To support further division of total diffuse losses between different sources (e.g. agriculture, managed forests, natural background) as well as to estimate the retention rates nitrogen and phosphorus in the catchment.	17	methods, methodologies, tools	HELCOM official recommendations: http://www.helcom.fi/helcom-at-work/recommendations
6	A surplus of nitrogen in the manure should be avoided by adjusting the composition of the diet to the requirements of the individual animal.	17	methods, methodologies, tools	HELCOM official recommendations: http://www.helcom.fi/helcom-at-work/recommendations
7	A surplus of nitrogen in the manure should be avoided by adjusting the composition of the diet to the requirements of the individual animal.	3	content of fertilisers (incl manure)	HELCOM official recommendations: http://www.helcom.fi/helcom-at-work/recommendations
8	establishing a HELCOM Agricultural Environmental Forum (<i>accomplished by 2010, proposal year unknown</i>)	9	governance	Implementation of the BSAP 2018 http://www.helcom.fi/Lists/Publications/Implementation%20of%20the%20BSAP%202018.pdf
9	joint input on EU CAP Health Check (2008-2009)	9	governance	Implementation of the BSAP 2018 http://www.helcom.fi/Lists/Publications/Implementation%20of%20the%20BSAP%202018.pdf
10	to review and update part II of Annex III of the Helsinki Convention (<i>proposed in 2015</i>)	14	policy	Implementation of the BSAP 2018 http://www.helcom.fi/Lists/Publications/Implementation%20of%20the%20BSAP%202018.pdf
11	aiming for elimination of remaining Hot Spots under the HELCOM JCP (<i>the Ministerial Declaration (MD)</i>)	9	governance	Implementation of the BSAP 2018 http://www.helcom.fi/Lists/Publications/Implementation%20of%20the%20BSAP%202018.pdf

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from HELCOM				
No of policy recommendation	Recommendation	Category assigned	Category description	Source
	<i>committed to elimination of Hot Spots originates from 2013)</i>			
12	Implement and enforce the provisions of part 2 of Annex III of the 1992 Helsinki Convention	9	governance	Implementation of the BSAP 2018 http://www.helcom.fi/Lists/Publications/Implementation%20of%20the%20BSAP%202018.pdf
13	Measures to bring all installations for the intensive rearing of cattle, poultry and pigs as well as other agricultural activities in compliance with part 2, Annex III of the Helsinki Convention (<i>MD 2010, 2013</i>)	9	governance	Implementation of the BSAP 2018 http://www.helcom.fi/Lists/Publications/Implementation%20of%20the%20BSAP%202018.pdf
14	Apply as a minimum the updated EU's BREF document and Conclusions on BAT for intensive rearing of poultry and pigs, especially for the facilities located within areas critical to nutrient losses (<i>MD 2013</i>)	9	governance	Implementation of the BSAP 2018 http://www.helcom.fi/Lists/Publications/Implementation%20of%20the%20BSAP%202018.pdf
15	Revised palette of measures for reducing phosphorus and nitrogen losses from agriculture. Optional agro-environmental measures to be implemented through corresponding international and national instruments (<i>MD 2013</i>)	9	governance	Implementation of the BSAP 2018 http://www.helcom.fi/Lists/Publications/Implementation%20of%20the%20BSAP%202018.pdf
16	Establish national guidelines or standards for nutrient content in manure with the view to fully utilize nutrient content of manure in fertilization practices and to avoid overfertilization (<i>MD 2013</i>)	9	governance	Implementation of the BSAP 2018 http://www.helcom.fi/Lists/Publications/Implementation%20of%20the%20BSAP%202018.pdf
17	Agreement on national level on measures to reduce nutrient surplus in fertilization practices to reach nutrient balanced fertilization (<i>MD 2013</i>)	9	governance	Implementation of the BSAP 2018 http://www.helcom.fi/Lists/Publications/Implementation%20of%20the%20BSAP%202018.pdf
18	Promote and advance towards applying annual nutrient accounting at farm level, taking into account soil and climate conditions, in areas critical to nutrient losses as a first step and with an aim to apply it region-wise (<i>MD 2013</i>)	4	nutrients	Implementation of the BSAP 2018 http://www.helcom.fi/Lists/Publications/Implementation%20of%20the%20BSAP%202018.pdf

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from HELCOM				
No of policy recommendation	Recommendation	Category assigned	Category description	Source
19	Tailoring phosphorus fertilization to the specific soil properties is the key for more efficient plant production and reducing emissions to the Baltic Sea.	1	fertiliser (incl manure) application	Overview of nutrient recycling in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Overview%20of%20nutrient%20recycling%20in%20the%20Baltic%20Sea%20countries.pdf
20	Fertilizers made of recycled nutrients must meet the nutrient needs of the plants and be suited for existing machinery for easy adoption.	1	fertiliser (incl manure) application	Overview of nutrient recycling in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Overview%20of%20nutrient%20recycling%20in%20the%20Baltic%20Sea%20countries.pdf
21	There is a need for new innovations and technologies for nutrient recycling which can thereby create new business opportunities.	4	nutrients	Overview of nutrient recycling in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Overview%20of%20nutrient%20recycling%20in%20the%20Baltic%20Sea%20countries.pdf
22	New innovative logistics are needed to connect those with excess nutrients with those, who can use them. The solutions are information intensive and based on digital systems.	4	nutrients	Overview of nutrient recycling in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Overview%20of%20nutrient%20recycling%20in%20the%20Baltic%20Sea%20countries.pdf
23	Precise knowledge of the nutrient needs of different plants is the starting point. Tailor-made fertilizer products offer great potential for yield improvements. Precision equipment for spreading the fertilizer, based on crop and soil needs in various parts of the parcels, will improve nutrient use efficiency and reduce nutrient leaching to the waterways	1	fertiliser (incl manure) application	Overview of nutrient recycling in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Overview%20of%20nutrient%20recycling%20in%20the%20Baltic%20Sea%20countries.pdf
24	Part of the excess nutrients can be caught with catch crops.	5	crops to cultivate	Overview of nutrient recycling in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Overview%20of%20nutrient%20recycling%20in%20the%20Baltic%20Sea%20countries.pdf

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from HELCOM				
No of policy recommendation	Recommendation	Category assigned	Category description	Source
25	Plant cover during wintertime will also prevent nutrient loss through erosion.	5	crops to cultivate	Overview of nutrient recycling in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Overview%20of%20nutrient%20recycling%20in%20the%20Baltic%20Sea%20countries.pdf
26	Reduction of food waste is also an important measure in nutrient recycling. Consumers and producers can be better connected to reduce the length of the food chain, by making the consumers aware of the production systems and valuing the food more, thus preventing waste.	7	awareness raising	Overview of nutrient recycling in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Overview%20of%20nutrient%20recycling%20in%20the%20Baltic%20Sea%20countries.pdf
27	Changes of the legal background have to be considered as a long term approach in order to implement a comprehensive nutrient bookkeeping system.	15	regulations	Status of nutrient bookkeeping in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Status%20of%20nutrient%20bookkeeping%20in%20the%20Baltic%20Sea%20countries.pdf
28	Promotion and support of voluntary nutrient accounting could be achieved with help of intensified rural extension services and stronger focus on nutrient accounting in advisory services.	6	extension/advisory services	Status of nutrient bookkeeping in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Status%20of%20nutrient%20bookkeeping%20in%20the%20Baltic%20Sea%20countries.pdf
29	Lack of knowledge or awareness might be the reason for nutrient emissions. Possibilities to increase the awareness are for example materials for teachers or information events.	7	awareness raising	Status of nutrient bookkeeping in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Status%20of%20nutrient%20bookkeeping%20in%20the%20Baltic%20Sea%20countries.pdf
30	Feasible regulations to restrict nutrient application might lead to reduced emissions and reduce economic disadvantages of more sustainable practices.	15	regulations	Status of nutrient bookkeeping in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Status%20of%20nutrient%20bookkeeping%20in%20the%20Baltic%20Sea%20countries.pdf
31	Lack of reliable data: knowledge gaps could be closed by focused research after the main questions have been specified. Up-to-date standard values would also increase the trust of the applicators to the obtained results and thus	10	data	Status of nutrient bookkeeping in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Status%20of%20nutrient%20bookkeeping%20in%20the%20Baltic%20Sea%20countries.pdf

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from HELCOM				
No of policy recommendation	Recommendation	Category assigned	Category description	Source
	support further distribution of nutrient accounting in practice.			
32	Lack of reliable data: knowledge gaps could be closed by focused research after the main questions have been specified. Up-to-date standard values would also increase the trust of the appliers to the obtained results and thus support further distribution of nutrient accounting in practice.	13	research	Status of nutrient bookkeeping in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Status%20of%20nutrient%20bookkeeping%20in%20the%20Baltic%20Sea%20countries.pdf
33	More data is also required looking at site specific or regional target values for nutrient surpluses in sustainable agriculture. Specific target values enable the farmer to evaluate the results of his field balances according to their actual environmental impact.	10	data	Status of nutrient bookkeeping in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Status%20of%20nutrient%20bookkeeping%20in%20the%20Baltic%20Sea%20countries.pdf
34	To conduct further research (on aquiring better data) as efficiently as possible, intensive cooperation to clarify responsibilities and to join already existing results is required.	13	research	Status of nutrient bookkeeping in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Status%20of%20nutrient%20bookkeeping%20in%20the%20Baltic%20Sea%20countries.pdf
35	To conduct further research (on aquiring better data) as efficiently as possible, intensive cooperation to clarify responsibilities and to join already existing results is required.	10	data	Status of nutrient bookkeeping in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Status%20of%20nutrient%20bookkeeping%20in%20the%20Baltic%20Sea%20countries.pdf
36	Interdisciplinary approaches are required and thereby a high level of cooperation is essential to develop sustainable measures.	17	methods, methodologies, tools	Status of nutrient bookkeeping in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Status%20of%20nutrient%20bookkeeping%20in%20the%20Baltic%20Sea%20countries.pdf
37	Increasing awareness of the problem and thus willingness to change the current situation is therefore a vital step towards successful cooperation.	7	awareness raising	Status of nutrient bookkeeping in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Status%20of%20nutrient%20bookkeeping%20in%20the%20Baltic%20Sea%20countries.pdf

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from HELCOM				
No of policy recommendation	Recommendation	Category assigned	Category description	Source
38	There is a need for comparable results to find the balance between consideration of regional conditions and common standard values as well as methodology.	17	methods, methodologies, tools	Status of nutrient bookkeeping in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Status%20of%20nutrient%20bookkeeping%20in%20the%20Baltic%20Sea%20countries.pdf
39	Harmonization of standard values is an important step to take. Standard values for manure excretion, nutrient contents in manure and nutrient uptake of crops are especially urgent to determine or to upgrade.	9	governance	Status of nutrient bookkeeping in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Status%20of%20nutrient%20bookkeeping%20in%20the%20Baltic%20Sea%20countries.pdf
40	Harmonization of standard values is an important step to take. Standard values for manure excretion, nutrient contents in manure and nutrient uptake of crops are especially urgent to determine or to upgrade.	17	methods, methodologies, tools	Status of nutrient bookkeeping in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Status%20of%20nutrient%20bookkeeping%20in%20the%20Baltic%20Sea%20countries.pdf
41	The development of concepts for monitoring on farm level and the calculation of regional balances could help to identify hot spots of nutrient surplus and thus indicate urgent need for further actions.	16	monitoring system	Status of nutrient bookkeeping in the Baltic Sea countries http://www.helcom.fi/Lists/Publications/Status%20of%20nutrient%20bookkeeping%20in%20the%20Baltic%20Sea%20countries.pdf
42	For all the processed animal/poultry manure to be used as an organic fertilizer	1	fertiliser (incl manure) application	BASE project final report http://www.helcom.fi/Lists/Publications/BASE%20Final%20Report%20-%20implementation%20of%20BSAP%20in%20Russia.pdf
43	Using subsidies to agricultural producers as tool of state economic support. Subsidies would be used to compensate a portion of expenditures on organic fertilizer.	8	financing (incl AE support system) and costs	BASE project final report http://www.helcom.fi/Lists/Publications/BASE%20Final%20Report%20-%20implementation%20of%20BSAP%20in%20Russia.pdf
44	Most farms need to upgrade the materials they use and modernise technical facilities for animal/poultry manure handling taking into account the best 'region specific' practices.	2	fertiliser (incl manure) storage and handling	BASE project final report http://www.helcom.fi/Lists/Publications/BASE%20Final%20Report%20-%20implementation%20of%20BSAP%20in%20Russia.pdf

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from HELCOM				
No of policy recommendation	Recommendation	Category assigned	Category description	Source
45	Improve data collection concerning the actual nutrient load from point sources in Russian catchment, concerning river Neva and its tributaries	10	data	BASE project final report http://www.helcom.fi/Lists/Publications/BASE%20Final%20Report%20-%20implementation%20of%20BSAP%20in%20Russia.pdf
46	Elaborate a monthly monitoring scheme on total nutrient concentrations of the water bodies in Kaliningrad region	16	monitoring system	BASE project final report http://www.helcom.fi/Lists/Publications/BASE%20Final%20Report%20-%20implementation%20of%20BSAP%20in%20Russia.pdf
47	Ensure that the awareness and involvement of the general public is maintained on the necessary actions to restore the good environmental status of the Baltic Sea	7	awareness raising	BASE project final report http://www.helcom.fi/Lists/Publications/BASE%20Final%20Report%20-%20implementation%20of%20BSAP%20in%20Russia.pdf
48	For bedding (solid) animal/poultry manure – the preparation of solid organic fertilizers (composts) using moisture absorbing materials (peat, straw, wood waste, etc.).	2	fertiliser (incl manure) storage and handling	Final report: Preparation of long-term Manure Management Plan for Kaliningrad Region http://www.helcom.fi/Lists/Publications/Manure%20Management%20Plan%20for%20Kaliningrad%20Region_BASE%20final%20report%202014.pdf
49	For semi-liquid and liquid manure and manure effluents – long-term storage or separation into solid and liquid fractions with subsequent composting of the solid fraction and the long-term storage of the liquid fraction.	2	fertiliser (incl manure) storage and handling	Final report: Preparation of long-term Manure Management Plan for Kaliningrad Region http://www.helcom.fi/Lists/Publications/Manure%20Management%20Plan%20for%20Kaliningrad%20Region_BASE%20final%20report%202014.pdf
50	As an exception, when an agricultural enterprise has absolutely no land for manure application, one possible option is an integrated treatment of the liquid fraction to reach the discharge standard onto the filtration fields.	1	fertiliser (incl manure) application	Final report: Preparation of long-term Manure Management Plan for Kaliningrad Region http://www.helcom.fi/Lists/Publications/Manure%20Management%20Plan%20for%20Kaliningrad%20Region_BASE%20final%20report%202014.pdf

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from HELCOM				
No of policy recommendation	Recommendation	Category assigned	Category description	Source
51	To produce organic fertilizers with enhanced properties from poultry manure, bio-fermentation technology in chamber- or drum-type bioreactors may be used.	1	fertiliser (incl manure) application	Final report: Preparation of long-term Manure Management Plan for Kaliningrad Region http://www.helcom.fi/Lists/Publications/Manure%20Management%20Plan%20for%20Kaliningrad%20Region_BASE%20final%20report%202014.pdf

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from BONUS PROJECTS					
No of policy recommendation	Recommendation	Category assigned	Category description	BONUS project	Source
1	New sectors (besides wastewater and agricultural sectors) need to be included and synergies identified to find win-win solutions to address multiple issues (incl nutrient enrichment and climate change). That means rethinking boundaries of issue areas.	14	policy	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2019
2	To upscale local results to BSR level policy implications	9	governance	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2020
3	Further needs to be done to ensure true inclusive and participatory process to encompass locally prioritized issues and measures - that would decrease the threat of decision-making being distorted by power asymmetries.	9	governance	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2021

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from BONUS PROJECTS

No of policy recommendation	Recommendation	Category assigned	Category description	BONUS project	Source
4	Systems understanding needs to be promoted instead of focusing one issue at a time. That includes improving coordination between sectoral policies.	9	governance	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2022
5	Better use of interactive data visualization and visualization tools can facilitate exploration of complex data and be useful in participatory work between different groups.	17	methods, methodologies, tools	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2023
6	Harmonization of minimal standards for good agricultural practice could help increase the effectiveness of nutrient management in the BSR.	9	governance	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2024
7	Less prescriptive approach to implementation should be adopted, which would increase the effectiveness of measures.	9	governance	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2025
8	There is potential for out-come based payments for ecosystem services and collaborative approaches to produce multiple ecosystem benefits.	8	financing (incl AE support system) and costs	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2026
9	To adopt a non-prescriptive, cross-sectoral approach to increase measure effectiveness and multiple benefit provision.	14	policy	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2027

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from BONUS PROJECTS

No of policy recommendation	Recommendation	Category assigned	Category description	BONUS project	Source
10	To adopt a performance-based approach to increase measure effectiveness and multiple benefit provision.	8	financing (incl AE support system) and costs	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2028
11	To support transnational and cross-sectoral collaboration to pool funding for common issues.	9	governance	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2029
12	To coordinate testing and exchange of good practice, new concepts, result-based measures and multiple benefit assessment methods.	9	governance	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2030
13	To harmonize monitoring networks	16	monitoring system	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2031
14	To facilitate good practices exchange	9	governance	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2032
15	To recognise different historical and environmental pre-conditions in evaluations	17	methods, methodologies, tools	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2033

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from BONUS PROJECTS

No of policy recommendation	Recommendation	Category assigned	Category description	BONUS project	Source
16	To adapt BSR strategic objectives and priorities based on on-going cross-sectoral planning and stakeholder co-inquiry processes and monitoring/evaluation	9	governance	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2034
17	To coordinate sectoral policies and recognise multiple policy objectives and ecosystem service benefits.	9	governance	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2035
18	To coordinate joint planning and funding of programmes for river basin and catchment-based management.	9	governance	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2036
19	To implement spatially targeted agri-environmental measures based on soil type, nutrient retention capacity and topographic characteristics.	9	governance	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2037
20	To ensure continuous, effective operation of environmental monitoring systems and impact modelling of nutrient management measures.	16	monitoring system	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2038
21	To adapt national objectives and priorities based on on-going cross-sectoral planning and stakeholder co-inquiry processes and monitoring/evaluation outcomes.	14	policy	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2039

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from BONUS PROJECTS

No of policy recommendation	Recommendation	Category assigned	Category description	BONUS project	Source
22	To deliver multiple benefits with landscape and river basin based programmes of measures.	9	governance	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2040
23	To diversify stakeholder co-inquiry processes in nutrient governance ensuring representation of different local interests.	9	governance	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2041
24	To provide training to farmers, facilitators of stakeholder co-inquiry processes and coordinators of collective schemes.	6	extension/advisory services	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2042
25	To account for spatial differences resulting from local historical and environmental preconditions.	17	methods, methodologies, tools	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2043
26	To adapt implemented policy measures based on on-going local stakeholder co-inquiry processes and monitoring/evaluation outcomes.	9	governance	BONUS MIRACLE	Neil Powell: <i>Innovative governance approaches and policy instruments for the Baltic Sea Region</i> , presentation delivered at WATERDRIVE Baltic Regional Conference and Kick-off, Riga March 26-27 2044
27	More emphasis to be paid to farmers' incentives for participation in the AESs (agri-environmental schemes): e.g. payments, but also other characteristics of contracts (contract length, flexibility, availability of length for adoptions rates)	8	financing (incl AE support system) and costs	BONUS GO4BALTIC	Berit Hasler et al. (manuscript draft) <i>Farmers' preferences for nutrient and climate related agri-environmental schemes - a cross country comparison</i>

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from BONUS PROJECTS

No of policy recommendation	Recommendation	Category assigned	Category description	BONUS project	Source
28	Shorter contract length is preferred by the farmers and incentivises them to participate in the AESs. Lengthier contracts would also generally require higher subsidies to the farmers.	8	financing (incl AE support system) and costs	BONUS GO4BALTIC	Berit Hasler et al. (manuscript draft) <i>Farmers' preferences for nutrient and climate related agri-environmental schemes - a cross country comparison</i>
29	Flexibility of the contract is important for farmers, as allows them to adjust their choice of contract to changing conditions.	8	financing (incl AE support system) and costs	BONUS GO4BALTIC	Berit Hasler et al. (manuscript draft) <i>Farmers' preferences for nutrient and climate related agri-environmental schemes - a cross country comparison</i>
30	Payback requirement of previously received subsidies in case of immediate termination of contract will increase farmers' willingness to accept to participate in AESs.	8	financing (incl AE support system) and costs	BONUS GO4BALTIC	Berit Hasler et al. (manuscript draft) <i>Farmers' preferences for nutrient and climate related agri-environmental schemes - a cross country comparison</i>
31	Offering advisory assistance for the farmers (from independent agricultural advisors) serves as an incentive by reducing paper work/transaction costs.	6	extension/advisory services	BONUS GO4BALTIC	Berit Hasler et al. (manuscript draft) <i>Farmers' preferences for nutrient and climate related agri-environmental schemes - a cross country comparison</i>
32	Further comparative assessments of farmers' preferences are useful for further development of CAP and AES at EU level.	10	data	BONUS GO4BALTIC	Berit Hasler et al. (manuscript draft) <i>Farmers' preferences for nutrient and climate related agri-environmental schemes - a cross country comparison</i>
33	Contracts should be differentiated across farm types (e.g pig and cattle farms, animal and crop farms) - has potential to increase cost-efficiency of AES, by reducing the average payment to the farmers. Benefits for farmers with lower WTA: attracting them with lower compensation levels than with uniform payments. Benefits for farmers with higher WTA: enabling higher compensation levels for them.	8	financing (incl AE support system) and costs	BONUS GO4BALTIC	Berit Hasler et al. (manuscript draft) <i>Farmers' preferences for nutrient and climate related agri-environmental schemes - a cross country comparison</i>
34	To adopt over-national thinking in nutrient policies in the BSR, to address issues of cost-efficiency and fairness of country-specific allocation of cost-burden.	7	awareness raising	BONUS GO4BALTIC	Markku Ollikainen et al., (manuscript draft) <i>Towards a Baltic Sea Socio-Economic Action Plan</i>

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from BONUS PROJECTS

No of policy recommendation	Recommendation	Category assigned	Category description	BONUS project	Source
35	To take into account heterogeneity of the polluters by increasing the socio-economic design of nutrient policies.	14	policy	BONUS GO4BALTIC	Markku Ollikainen et al., (manuscript draft) <i>Towards a Baltic Sea Socio-Economic Action Plan</i>
36	To make use of new innovative policies, e.g. environmental benefit indexes, tendering systems or trading and compensation mechanisms.	14	policy	BONUS GO4BALTIC	Markku Ollikainen et al., (manuscript draft) <i>Towards a Baltic Sea Socio-Economic Action Plan</i>
37	Both the EU's Urban Waste Water Directive and HELCOM recommendations should be scaled up accordingly to current abatement possibilities and costs in waste water treatment plants (WWTPs) to promote cost-effective abatement of nutrients.	14	policy	BONUS GO4BALTIC	Markku Ollikainen et al., (manuscript draft) <i>Towards a Baltic Sea Socio-Economic Action Plan</i>
38	To promote abatement of nutrients in WWTPs (waste water treatment plants) and industrial point sources. For WWTPs, it would be justified to require to abate at least 95% of phosphorus and close to 90% of nitrogen.	4	nutrients	BONUS GO4BALTIC	Markku Ollikainen et al., (manuscript draft) <i>Towards a Baltic Sea Socio-Economic Action Plan</i>
39	Policies should not rely on command and control instruments only, but create better incentives to extend abatement beyond conventionally known abatement technologies. For instance, economic incentives should be also in place to find new and innovative ways to treat waste water (e.g. extracting phosphorus from sewage water for new products and using the abatement process and sludge to produce energy).	14	policy	BONUS GO4BALTIC	Markku Ollikainen et al., (manuscript draft) <i>Towards a Baltic Sea Socio-Economic Action Plan</i>
40	To develop a data-base for improving water policies towards industrial point sources, as currently there is little literature on the topic.	10	data	BONUS GO4BALTIC	Markku Ollikainen et al., (manuscript draft) <i>Towards a Baltic Sea Socio-Economic Action Plan</i>
41	To shift towards performance-based schemes (drawing on modelled impacts of input choices on loads) to promote environmental effectiveness, guarantee higher return to public funds and promote best measures in each location.	8	financing (incl AE support system) and costs	BONUS GO4BALTIC	Markku Ollikainen et al., (manuscript draft) <i>Towards a Baltic Sea Socio-Economic Action Plan</i>

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from BONUS PROJECTS

No of policy recommendation	Recommendation	Category assigned	Category description	BONUS project	Source
42	To shift from flat-rate (cost-based) subsidies to incentive-based instruments	8	financing (incl AE support system) and costs	BONUS GO4BALTIC	Markku Ollikainen et al., (manuscript draft) <i>Towards a Baltic Sea Socio-Economic Action Plan</i>
43	To increase environmental targeting (result-based measures) by introducing environmental benefit indexes (indices?) (EBI), which assess environmental performance of the chosen measures. As an example, in Finland, an EBI focusing on reduction of phosphorus loads was composed of following 3 components: soil phosphorus content, slopes of fields and distance to water ways.	8	financing (incl AE support system) and costs	BONUS GO4BALTIC	Markku Ollikainen et al., (manuscript draft) <i>Towards a Baltic Sea Socio-Economic Action Plan</i>
44	To change the currently rigid EU regulation to facilitate modern, incentive-based and outcome oriented agri-environmental policy instruments in the CAP post 2020, instead of the current measure-based approach.	8	financing (incl AE support system) and costs	BONUS GO4BALTIC	Markku Ollikainen et al., (manuscript draft) <i>Towards a Baltic Sea Socio-Economic Action Plan</i>
45	To increase investment in manure storage to reduce manure leakage cost-efficiently. Policies also have to adapt to the rapid increase in the size of livestock farms.	2	fertiliser (incl manure) storage and handling	BONUS GO4BALTIC	Markku Ollikainen et al., (manuscript draft) <i>Towards a Baltic Sea Socio-Economic Action Plan</i>
46	To regulate tighter livestock production and the processing manure in order to obtain new technological solutions and business opportunities.	9	governance	BONUS GO4BALTIC	Markku Ollikainen et al., (manuscript draft) <i>Towards a Baltic Sea Socio-Economic Action Plan</i>
47	To promote industrial scale treatment of manure in the food processing sector. That could be for instance defining the upper limit on phosphorus fertilization (and thereby manure spreading per hectare).	1	fertiliser (incl manure) application	BONUS GO4BALTIC	Markku Ollikainen et al., (manuscript draft) <i>Towards a Baltic Sea Socio-Economic Action Plan</i>
48	Short-term measures to reduce phosphorus leakage could be gypsum or structural liming.	1	fertiliser (incl manure) application	BONUS GO4BALTIC	Markku Ollikainen et al., (manuscript draft) <i>Towards a Baltic Sea Socio-Economic Action Plan</i>

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No of policy recommendation	Recommendation	Category assigned	Category description	BONUS project	Source
49	A tax on mineral fertilizers would make it more profitable to use manure on more distant fields (despite the cost of transport).	14	policy	BONUS GO4BALTIC	Markku Ollikainen et al., (manuscript draft) <i>Towards a Baltic Sea Socio-Economic Action Plan</i>
50	When introducing the climate policies to agriculture, it must be in full coherence with water quality targets requiring novel performance-based types of instruments for agriculture.	14	policy	BONUS GO4BALTIC	Markku Ollikainen et al., (manuscript draft) <i>Towards a Baltic Sea Socio-Economic Action Plan</i>
51	To directly link innovation policy to water policies in agriculture by tighter regulation and use of market-based instruments.	14	policy	BONUS GO4BALTIC	Markku Ollikainen et al., (manuscript draft) <i>Towards a Baltic Sea Socio-Economic Action Plan</i>
52	To directly link innovation policy to water policies in agriculture by tighter regulation and use of market-based instruments.	8	financing (incl AE support system) and costs	BONUS GO4BALTIC	Markku Ollikainen et al., (manuscript draft) <i>Towards a Baltic Sea Socio-Economic Action Plan</i>
53	To promote pursuing nutrient neutrality by creating transparent and clear systems for nutrient compensations.	4	nutrients	BONUS GO4BALTIC	Markku Ollikainen et al., (manuscript draft) <i>Towards a Baltic Sea Socio-Economic Action Plan</i>
54	To ensure that the regulation is keeping pace not only with the structural change and the challenges, but also with new innovations that help to mitigate nutrient loading (such as nutrient offsets).	4	nutrients	BONUS GO4BALTIC	Markku Ollikainen et al., (manuscript draft) <i>Towards a Baltic Sea Socio-Economic Action Plan</i>
55	To acknowledge the role of the coastal filter in relation to the BSAP, particularly the large nitrogen removal that occurs in coastal lagoons. The improved understanding of nutrient removal in coastal areas can be used to assess the consequences of HELCOM nutrient reduction scheme.	4	nutrients	BONUS COCOA	BONUS COCOA project final report https://www.bonusportal.org/files/6045/BONUS_COCOA_final_report.pdf
56	Strong engagement in policy discussions on geoengineering approaches to mitigate coastal hypoxia.	14	policy	BONUS COCOA	BONUS COCOA project final report https://www.bonusportal.org/files/6045/BONUS_COCOA_final_report.pdf

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No of policy recommendation	Recommendation	Category assigned	Category description	BONUS project	Source
57	Instead of applying traditional uniform regulations to reduction of nutrients in groundwater, spatially differentiated regulations with measures targeted towards areas where natural retention of nutrients is low should be applied.	15	regulations	BONUS SOILS2SEA	BONUS SOILS2SEA project final report https://www.bonusportal.org/files/6171/BONUS_SOILS2SEA_final_report.pdf
58	Utilising all local information and finding locally designed and optimised solutions is necessary instead of applying traditional uniform regulations.	9	governance	BONUS SOILS2SEA	BONUS SOILS2SEA project final report https://www.bonusportal.org/files/6171/BONUS_SOILS2SEA_final_report.pdf
59	New innovative approaches (like spatially differentiated regulations) should be still implemented in due respect with regional governance structures and socio-cultural traditions.	9	governance	BONUS SOILS2SEA	BONUS SOILS2SEA project final report https://www.bonusportal.org/files/6171/BONUS_SOILS2SEA_final_report.pdf
60	Co-governance approach should be adopted, which shifts a large amount of responsibility (of fulfilling reduction commitments) to local farmers or to catchment councils. That includes designing and implementing mitigation measures (placing of wetlands, change of land-use etc), collaborating among farmers within the catchment, monitoring of measures and loadings.	9	governance	BONUS SOILS2SEA	BONUS SOILS2SEA Deliverable No 6.5 - Policy Brief http://soils2sea.eu/xpdf/d6_5-bonus-soils2ea-policy-brief.pdf
61	New innovative governance regimes with active involvement of key stakeholders need to be implemented.	9	governance	BONUS SOILS2SEA	BONUS SOILS2SEA Deliverable No 6.5 - Policy Brief http://soils2sea.eu/xpdf/d6_5-bonus-soils2ea-policy-brief.pdf
62	To obtain full benefits of a spatially differentiated approach, besides data at a catchment level, which is acquired with reasonable clarity, more reliable information at a local (field/stream) scale is needed.	10	data	BONUS SOILS2SEA	BONUS SOILS2SEA Deliverable No 6.5 - Policy Brief http://soils2sea.eu/xpdf/d6_5-bonus-soils2ea-policy-brief.pdf
63	To ensure a finer spatial resolution on hydrogeological, soil physical and vegetation properties at a local (field and stream) level, citizens should be encouraged to contribute to data collection and data made freely accessible with the opportunity to integrate and monitor data from different sources.	10	data	BONUS SOILS2SEA	BONUS SOILS2SEA Deliverable No 6.5 - Policy Brief http://soils2sea.eu/xpdf/d6_5-bonus-soils2ea-policy-brief.pdf

WATERDRIVE: recommendations in agriculture-related water policy and research: Annex 2 to Deliverable O4.1 - recommendations from BONUS PROJECTS

No of policy recommendation	Recommendation	Category assigned	Category description	BONUS project	Source
64	Latest finding on climate change impact on the BSR have to be taken into account for policy documents, for instance fully considered and integrated in the updates of WFD and HELCOM Baltic sea action plan.	11	climate change considerations	BONUS SOILS2SEA	BONUS SOILS2SEA Deliverable No 6.5 - Policy Brief http://soils2sea.eu/xpdf/d6_5-bonus-soils2ea-policy-brief.pdf
65	Cost-efficiency of measures could be improved by more accurate predictions of reduction/retention in the different compartments of the flow path, and also including delayed effects of mitigation measures due to long solute travel times in groundwater. Mitigation measures should planned and monitored with these lag-times in mind.	8	financing (incl AE support system) and costs	BONUS SOILS2SEA	BONUS SOILS2SEA Deliverable No 6.5 - Policy Brief http://soils2sea.eu/xpdf/d6_5-bonus-soils2ea-policy-brief.pdf
66	While determining which measures to choose to reduce nutrient loads (e.g growing catch crops or restoring wetlands), a long-year (30 year) perspective needs to be taken. Choosing an approach truly resilient to future climate and land use changes will be truly cost-effective.	14	policy	BONUS SOILS2SEA	BONUS SOILS2SEA Deliverable No 6.5 - Policy Brief http://soils2sea.eu/xpdf/d6_5-bonus-soils2ea-policy-brief.pdf
67	Exploring further how eco-technologies can potentially turn carbon and nutrient from environmental problems into societal benefits.	13	research	BONUS RETURN	BONUS RETURN Deliverable No: D.1.5 – Publishable Summary of First Periodic Report 2017-2018 https://www.bonusportal.org/files/6270/BONUS_RETURN_1st_year_report.pdf
68	To mainstream the idea of circular economy across society and governance structures.	7	awareness raising	BONUS RETURN	BONUS RETURN Deliverable No: D.2.5 – Report on current policy instruments and governance structures in BSR https://www.bonusreturn.eu/wp-content/uploads/2019/03/BONUSRETURN_D.2.5_Report_on_current_policy_instruments_and_governance_structures_in_BSR.pdf

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No of policy recommendation	Recommendation	Category assigned	Category description	BONUS project	Source
69	To continue efforts to simplify the legal framework for reused phosphorus (P) products and establish a fair P price.	15	regulations	BONUS RETURN	BONUS RETURN Deliverable No: D.2.5 – Report on current policy instruments and governance structures in BSR https://www.bonusreturn.eu/wp-content/uploads/2019/03/BONUSRETURN_D.2.5_Report_on_current_policy_instruments_and_governance_structures_in_BSR.pdf
70	To ensure more sustainable practices for P reuse outside of larger cities, such as in farms, and establish adequate decentralised systems.	4	nutrients	BONUS RETURN	BONUS RETURN Deliverable No: D.2.5 – Report on current policy instruments and governance structures in BSR https://www.bonusreturn.eu/wp-content/uploads/2019/03/BONUSRETURN_D.2.5_Report_on_current_policy_instruments_and_governance_structures_in_BSR.pdf
71	To promote new business models with increased collaboration between waste water treatment plants (sources of reused P), fertilizer companies (potential clients for reused P) and farmers (potential end-users of recycled P) in order to towards circular P economy.	14	policy	BONUS RETURN	BONUS RETURN Deliverable No: D.2.5 – Report on current policy instruments and governance structures in BSR https://www.bonusreturn.eu/wp-content/uploads/2019/03/BONUSRETURN_D.2.5_Report_on_current_policy_instruments_and_governance_structures_in_BSR.pdf
72	To promote new business models with increased collaboration between waste water treatment plants (sources of reused P), fertilizer companies (potential clients for reused P) and farmers (potential end-users of recycled P) in order to towards circular P economy.	7	awareness raising	BONUS RETURN	BONUS RETURN Deliverable No: D.2.5 – Report on current policy instruments and governance structures in BSR https://www.bonusreturn.eu/wp-content/uploads/2019/03/BONUSRETURN_D.2.5_Report_on_current_policy_instruments_and_governance_structures_in_BSR.pdf

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No of policy recommendation	Recommendation	Category assigned	Category description	BONUS project	Source
73	To investigate changing farm structures to better understand the role that small and medium farms (besides only the big farms) can play for reusing P sources.	17	methods, methodologies, tools	BONUS RETURN	BONUS RETURN Deliverable No: D.2.5 – Report on current policy instruments and governance structures in BSR https://www.bonusreturn.eu/wp-content/uploads/2019/03/BONUSRETURNND.2.5_Report_on_current_policy_instruments_and_governance_structures_in_BSR.pdf
74	When municipalities buy services and products from entrepreneurs, sustainable solutions that ensure circularity should be given focus.	9	governance	BONUS RETURN	BONUS RETURN Deliverable No: D.2.5 – Report on current policy instruments and governance structures in BSR https://www.bonusreturn.eu/wp-content/uploads/2019/03/BONUSRETURNND.2.5_Report_on_current_policy_instruments_and_governance_structures_in_BSR.pdf
75	Further develop virtual decision support tools (DST) to assist ecosystem-based management of the Baltic Sea and analyse current & anticipated future needs in order to propose further development.	17	methods, methodologies, tools	BONUS DESTONY	BONUS DESTONY project information https://www.syke.fi/en-US/Research_Development/Research_and_development_projects/Projects/BONUS_DESTONY
76	Evaluating history and performance of existing nutrient policy instruments in the BSR and beyond and exploring future policy instruments with documented potentials.	17	methods, methodologies, tools	BONUS TOOLS2SEA	Mikael Skou Andersen BONUS TOOLS2SEA Policy tools for Baltic Sea nutrient management, presentation delivered in Copenhagen 5/11/2018 https://pure.au.dk/portal/files/135743504/BONUS_TOOLS2SEA_communityday_ANDERSEN.pdf
77	Taking into account better costs, benefits and co-benefits of nutrient policy.	8	financing (incl AE support system) and costs	BONUS TOOLS2SEA	Mikael Skou Andersen BONUS TOOLS2SEA Policy tools for Baltic Sea nutrient management, presentation delivered in Copenhagen 5/11/2018 https://pure.au.dk/portal/files/135743504/B

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No of policy recommendation	Recommendation	Category assigned	Category description	BONUS project	Source
					ONUS_TOOLS2SEA_communityday_ANDERSEN.pdf
78	To put more effort into making the production of algal biomass cost-efficient. That can be done by integrating algal cultivation system design with the delivery of multiple products (e.g fertilizers, high-value products, biofuel) and services (e.g nutrient harvesting from wastewaters) and by internalizing social and environmental benefits of algae cultivation and its biomass.	8	financing (incl AE support system) and costs	BONUS MICROALGAE	BONUS MICROALGAE Final Report https://www.bonusportal.org/files/5806/BONUS_MICROALGAE_final_report.pdf
79	Wider use of microalgae could be enhanced by supporting research on cost-efficient industrialization of algae production following the wastewater based algae-to-fuel approach, conducting market surveys about potential products and by creating markets for new products.	13	research	BONUS MICROALGAE	BONUS MICROALGAE Final Report https://www.bonusportal.org/files/5806/BONUS_MICROALGAE_final_report.pdf
80	Increasing public awareness about the aforementioned algae products and accompanied environmental services.	7	awareness raising	BONUS MICROALGAE	BONUS MICROALGAE Final Report https://www.bonusportal.org/files/5806/BONUS_MICROALGAE_final_report.pdf
81	Direct use of farmyard manure and sewage sludge will yield a contamination with antibiotics which is comparable to that of digestates (as all types of organic waste analysed were contaminated with antibiotics). Thus, digestion of organic wastes in biogas plants is thus no measure to reduce antibiotic contaminations. Also, digestates need to be evaluated critically with respect to the possible formation of antimicrobial resistance in soil.	4	nutrients	BONUS PROMISE	BONUS PROMISE Final Report https://www.bonusportal.org/files/5700/BONUS_PROMISE_final_report.pdf

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No of policy recommendation	Recommendation	Category assigned	Category description	BONUS project	Source
82	Routines for handling and storage of manure and sewage are extremely important to minimize the risk for recontamination of the end-products of digestion with pathogens.	2	fertiliser (incl manure) storage and handling	BONUS PROMISE	BONUS PROMISE Final Report https://www.bonusportal.org/files/5700/BONUS_PROMISE_final_report.pdf
83	Critical evaluation of the methods for better knowledge on sustainable use of P is needed, and thereby better understanding of the necessary actions to reduce the P leaching potential to surface waters	17	methods, methodologies, tools	BONUS PROMISE	BONUS PROMISE Final Report https://www.bonusportal.org/files/5700/BONUS_PROMISE_final_report.pdf