



DRAFT BLUEPRINT FOR IDENTIFYING PROTECTION TARGETS FOR SPECIES & HABITATS



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D 6.27 - Draft blueprint for the process to identify a list of quantitative protection targets for species and habitats

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Introduction

This document contains the draft blueprint for setting quantitative ecological protection targets for marine spatial protection, nested within the larger blueprint for establishing a Protection Optimization Framework. These are presented jointly as they are integral parts of the same process and thus provide mutually necessary context.

The material here has been developed by the PROTECT BALTIC project across the first 18 months of the project (August 2023-February 2025), in close cooperation with the relevant end-users across the countries of the Baltic Sea. The role of PROTECT BALTIC with regard to the Framework is two-fold: 1) develop the framework and ensure that it is fit for purpose and as ecologically relevant as possible and 2) prepare the tools and knowledge base to implement the framework and track progress towards achieving the Goals and Vision of the Framework.

The Framework, including the process of setting targets, is designed to address the needs, challenges and barriers recognized by Baltic Sea countries. It will contribute towards achieving the Baltic Sea Action Plan actions B1 and B2 and the 2024 Baltic Sea Ministerial Meeting agreement. This agreement aims to establish and adopt shared goals, objectives and quantitative targets for spatial protection, which will be incorporated into an overarching protection framework for the Baltic Sea by 2028. The aim is to enhance the effectiveness of protection, reduce pressures, and support the implementation of the relevant BSAP actions, and international commitments such as the Kunming-Montreal Global Biodiversity Framework.

The project has now progressed to setting desired outcomes and establishing an approach for target setting. Subsequently, Sections 1-3 reflect the project's experiences and completed or ongoing work (see Annex II for the draft framework). In contrast, Section 4 presents the results of the project's scoping work and plans for next steps, and has subsequently not yet been included in the proof-of-concept in Annex 2. Specifically, Section 4.2 outlines the planned approach and blueprint for setting quantitative ecological targets. However, this may

need to be modified based on insights gained during the implementation of the Protection Optimization Framework.

The drafting of the framework is an iterative and highly cooperative process, with over 130 contributors spanning over 70 organisations and the information in this document has been jointly prepared by IC WG BioDiv 2-2023, EG MPA 3-2023, EG MPA 4-2024, IC PROTECT WP6Gov 1-2024, IC PROTECT WP6Gov 2-2024, IC EG MPA 5-2024, IC WG BioDiv 3-2024, IC PROTECT WP6Gov 3-2024, IC EG MPA 5-2024, IC WG BioDiv 4-2024, IC PROTECT WP6Gov 5-2024, IC PROTECT WP6Gov 6-2024 and IC PROTECT WP6Gov 7-2024.

The draft content of this document will be submitted to IC PROTECT WP6Gov 8-2025, IC PROTECT WP6Gov 9-2025, IC PROTECT WP6Gov 10-2025, and WG BioDiv 5-2025 in Spring 2025 for further discussion with the authorities and ministries in all the Baltic Sea countries.

1. Aim

The aim of this document is to present a draft blueprint for how to set sound, holistic, realistic and robust quantitative ecological protection targets, focusing on species and habitats.

For these targets to be sound, holistic, realistic and robust, they need to be anchored to, supported by, and nested within, a wider framework of protection efforts, from which they cannot be separated. Therefore, this document also presents a draft blueprint for the full process of establishing a Protection Optimization Framework. The aim is to, in addition to the concrete steps of setting quantitative ecological protection targets, outline the necessary steps for establishing the context and structure in which such targets should be set, providing a more realistic overview of the target-setting process.

As stated in the PROTECT BALTIC application, the aim is to advance the operationalization of the protection framework concept at the Baltic Sea level. Annex 2 details the progress so far, including the first three levels of the Baltic Sea Protection Optimization Framework, as approved by the EU Member States bordering the Baltic Sea, serving as an initial proof-of-concept.

2. Background

This document presents a draft blueprint for identifying protection targets and developing a broader protection framework. Such a framework is crucial for sustainable target-setting and ensures there is a system within which targets should be nested. The core of this process, under the Baltic Sea Protection Optimization Framework, is to minimize risk factors and enhance the ecological relevance of target-setting. This approach aims to improve the potential for targets to more directly contribute to securing benefits for biodiversity.

This document explores various types of targets that can be included in the proposed framework. However, its primary focus is on setting ecological quantitative targets.

The work has been carried out in the context of the Baltic Sea marine environment and has focused on improving protection efforts on a regional level, but the approach and many of the components presented here are fully scalable and replicable, both in other areas and in other sectors.

The protection framework and processes presented here have been jointly developed with representatives from all Baltic Sea countries, ranging from on-site marine protected area (MPA) managers, through national research institutions and agencies, to the national ministries responsible for marine environmental matters. For an overview of entities which have taken part in the development, see Annex 1.

The Baltic Sea Ministerial Meeting 2024 agreed to established shared goals, objectives, and quantitative targets for spatial protection, with a commitment to incorporating them into an overarching Baltic Sea protection framework by 2028. The aim is to enhance protection effectiveness, reduce environmental pressures, and support the implementation of relevant BSAP Actions and international commitments, including the Kunming-Montreal Global Biodiversity Framework.

In December 2024, the first set of Framework components, from the Vision to the individual Strategy components, were presented and approved at the political level within HELCOM (i.e. receiving endorsement from the ministries of all the Baltic Sea countries that are also EU Member States). This approval establishes the Framework as the foundation for future efforts to improve protection in the Baltic Sea region. An overview of the approved components can be found in Annex 2. This will now function as the basis for further work on establishing regionally agreed Outcomes and Targets, to eventually be supported by protection indicators.

3. Framework for setting environmental protection targets

Natural ecosystems, with all their functions and dynamics, are exceedingly complex, and marine ecosystems are no exception. When this is combined with anthropogenic factors such as the need for, and impact from, human activities affecting the sea, as well as the need for prioritization of actions to protect the environment, the uncertainties associated with decision-making for biodiversity increase significantly.

It is therefore crucial for target-setting to be part of a larger framework for guiding marine protection efforts because effective protection and sustainable management of marine ecosystems require a structured, integrated approach. A framework provides improved coherence, direction, and accountability, ensuring that target-setting is not done in isolation, but rather as part of a comprehensive strategy that maximizes the benefits of marine protection. Here are several key reasons why this integrated framework is essential.

Setting targets for protection is just one part of a broader protection and sustainability agenda. Without a larger framework, targets for marine protection might not align with overarching goals such as biodiversity protection, climate change mitigation, or, where they

do not conflict with protection goals, the sustainable use of marine resources. A guiding framework helps ensure that targets are not only ecologically relevant but also contribute to larger objectives, such as achieving regional, EU or global commitments such as the United Nations Sustainable Development Goals (SDGs) or the Global Biodiversity Framework (GBF) under the Convention on Biological Diversity (CBD). This alignment is crucial for ensuring that marine protection actions contribute to global conservation efforts.

Marine ecosystems are influenced by a wide range of human activities—fishing, shipping, tourism, coastal development, and energy production, among others. A standalone target for marine protection might overlook the interconnections between these sectors. A larger framework ensures that marine protection actions are coordinated across sectors, reducing the risk of conflicting policies and an established and clear framework can even facilitate collaboration between governments, local communities, industries, NGOs, and other stakeholders, allowing for a holistic approach to managing marine resources and resolving potential conflicts.

Setting targets for marine protection without a clear framework also risks leaving gaps in implementation where valid conditions are either overlooked or the link between components of the protection process are not identified. When done well, a framework helps avoid these pitfalls and can define not only what the targets are but how they can be achieved and how their achievement contributes to progress towards improved protection. It also helps to ensure that targets are not only aspirational but actionable. This structured approach increases the likelihood of successful implementation and long-term success.

In addition to being complex, marine ecosystems are highly dynamic, and the challenges they face are constantly evolving. A framework allows for adaptive management, where targets and actions can be revised and adjusted in a structured manner based on new knowledge, scientific information or advances in policy. This flexibility is critical for responding to emerging threats and changing environmental conditions. By incorporating feedback mechanisms into the framework, decision-makers can track progress, identify gaps, and refine strategies to ensure that marine protection remains effective over time.

Marine protection has the potential for, in addition to the core ecological benefits, providing societal, sociocultural and socioeconomic benefits. Nesting targets into a larger framework ensures that marine protection targets consider not only ecological benefits but also has the socioeconomic context in mind. By considering the needs of local communities, industries, and other stakeholders, a framework helps design protection that is both effective and equitable. This helps build stakeholder buy-in, reduces conflicts, and ensures that marine protection contributes to the well-being of people and ecosystems alike.

Marine protection requires significant financial and human resources, both of which are often limited. A broader protection framework helps guide the allocation of resources by identifying priority areas for protection based on ecological importance, vulnerability, and potential for

recovery. It also ensures that resources are allocated efficiently to areas where they will have the greatest impact, avoiding the dilution of efforts and maximizing the return on investment. This structured approach helps policymakers prioritize actions based on clear, jointly agreed criteria, optimizing resource use and achieving the greatest benefits for marine ecosystems.

Setting targets within a broader framework ensures that marine protection actions are not only well-defined but also measurable and transparent. By linking targets to clear indicators and outcomes, the framework makes it easier to track progress and hold responsible parties accountable. This level of transparency is vital for fostering trust among stakeholders, and it can also help build public support for protection efforts, as people can see tangible results from the efforts.

Marine ecosystems face long-term threats from a multitude of pressures, including persistent and interaction pressures e.g. climate change, pollution and resource extraction. By embedding efforts within a larger protection framework, long-term sustainability considerations can be integrated into marine protection planning. This helps to set realistic, yet ambitious, targets that account for current and future challenges, and ensures that marine protection efforts are not just temporary or reactive, but are part of a sustained, ongoing process of protection and adaptive management of human activities. This is essential for maintaining marine biodiversity and ecosystem health in the long term.

In conclusion, target-setting for marine protection must be part of a larger, integrated framework to ensure its effectiveness and sustainability. A protection framework provides structure, clarity and coordination, guiding actions in a way that aligns with broader protection and sustainability goals. The framework approach also makes key steps of the protection process more explicit, forcing end-users to carefully consider their choices in relation to their objectives. This approach facilitates adaptive management, optimizes benefits for biodiversity from protection, promotes collaboration, ensures resource efficiency, and informs society. Without this larger framework, marine protection efforts risk being fragmented, less effective, and ultimately unable to meet the ecological and socio-economic challenges facing the marine environment.

3.1 Steps to establish a Protection Framework

3.1.1 Conceptual process

This section outlines and elaborates on the steps that have been identified as being needed to establish a Protection Framework through the work in PROTECT BALTIC, and function as an initial set of blueprints. For a proof-of-concept example of these steps in action, see the actual Baltic Sea Protection Optimization Framework presented in Annex 2.

It is important to remember throughout the development process that the Protection Framework is a tool, not an aim in itself.

Identify end-users

For the work committed to developing a framework to yield the desired results, and to facilitate both its adoption and implementation, it needs to be developed jointly with the intended primary end users. Subsequently the first step is to identify an initial set of critical end users (those without whom the development and implementation of the framework risks failing), key end users (those who can contribute with invaluable input and/or expertise and/or will be associated with the practical implementation of some of the components of the framework) and wider audiences (who should be kept abreast of the plans and progress of the work but who might not be involved in the actual development work).

Map needs

Different end users have varying needs of a framework, and these needs must be mapped, thoroughly examined, and understood before development begins. These needs may relate to the framework's functionality and usability, or to broader needs that the framework can help to address, such as support for infrastructure, access to information, or tools for decision making and implementation e.g. assessments and analyses. Mapping these needs can reveal potential synergies or conflicts between different end users, and can help define the desired ultimate impact that the framework should help to achieve. The desired ultimate impact should guide the development of the framework (the framework being the tool, not the aim in itself). Additionally, it can guide decisions on how to prioritize and weigh different needs in relation to the framework.

Establish shared challenges and barriers

Once the needs across all critical and key end users have been mapped, they must be collated and analyzed to identify which challenges or barriers affect multiple end users. These insights can then guide and direct the development of the framework, showing what the framework should strive to address, ensuring it is fit for purpose and has the greatest potential to create positive, scalable impact.

Agree on a Theory of Change

The next step is to jointly agree with end users on what proximate (near future/mid-term) and ultimate (long term) outcomes and impacts the framework should strive to contribute to or achieve. These outcomes can be related to, or aligned with, already existing policies or be fully independent, depending on the situation. Agreeing on the desired proximate and ultimate impact can be done using an established methodology referred to as Theory of Change.

The Theory of Change is a methodology used for planning, participation, adaptive management, and evaluation to promote social change and should ideally rely on causal linkages. It is a comprehensive and systematic approach that describes and illustrates how and why a desired change is expected to occur in a specific context, i.e. how and why a

particular action is expected to lead to a specific outcome, using a detailed and logical framework. It can serve as a dynamic tool for articulating assumptions, clarifying the logic behind interventions, and creating a roadmap for evaluation and learning. It is particularly useful for complex interventions where multiple pathways may lead to achieving the desired change.

The key components and concepts of a Theory of Change are:

1. **Ultimate impact:** The long-term goal illustrating the ultimate, desired change or impact that the efforts aim to achieve, often reflecting higher-level societal or systemic change.
2. **Intermediate outcomes:** The steps or milestones that must be achieved along the way to reach the long-term aim and achieve the ultimate impact. They represent the changes that need to happen for the ultimate impact to be realized.
3. **Proximate outcomes:** The immediate changes or effects that should occur as a result of the efforts. They are often more tangible and easier to measure than intermediate outcomes or the ultimate impact.
4. **Activities and inputs:** This component outlines the strategies and specific actions, resources, and inputs required to implement the framework. Strategies include the actions or interventions employed, and inputs include the human, financial, and material resources needed.
5. **Assumptions:** The underlying beliefs and conditions that are considered to be true for the Theory of Change to work. They are important because they acknowledge uncertainties and potential risks associated with the theory (for more information, see the next section).
6. **Causal pathways:** This illustrates the logical sequence of events that links the activities, outputs, short-term outcomes, intermediate outcomes, and ultimately, the desired impact. It shows how each stage contributes to the next.
7. **Indicators:** Specific, measurable variables used to track progress and assess the extent to which outcomes are being achieved. They provide empirical evidence of change.
8. **Data sources and methods:** This outlines where and how data will be collected to measure the indicators. It may include surveys, interviews, observations, measurements, monitoring or data from existing sources.
9. **Feedback loops:** Mechanisms for incorporating learning and adapting activities based on ongoing monitoring and evaluation. They help in making adjustments to ensure the work remains effective.

- 10. Contextual factors:** External influences, such as political, economic, or cultural conditions, that may affect the frameworks implementation or outcomes, both to acknowledge these but also so that they can, where possible, be mitigated.

Identify and agree on assumptions underpinning the framework

Assumptions are the foundational beliefs, conditions, or ideas that inform decisions. Understanding the assumptions behind a Theory of Change, and by extension the framework, helps improve its design and implementation. If assumptions are clearly defined, end users can align their strategies, tools, and resources more effectively to achieve the desired impact of the framework.

Identifying assumptions before development of the framework commences helps to create a shared understanding among end users, as by identifying these assumptions end users can clarify the thinking behind a framework and ensure that the decisions made are based on sound reasoning. It helps everyone involved in the process to understand the logic driving the framework and clearly stating and scrutinizing the assumptions underpinning a framework also enhances its credibility. When end users and stakeholders understand the assumptions, they can assess whether the policy is grounded in realistic expectations.

However, if not properly identified and evaluated, these assumptions can lead to unintended consequences, inefficiencies, and even failure. If assumptions are not well-founded, the framework might be less effective, inefficient, or inappropriate. Assumptions often reflect biases or incomplete information, e.g. based on lack of knowledge or data. By critically examining them, end users can identify any biases that may shape the framework in ways that disproportionately benefit or disadvantage certain outcomes. Additionally, assumptions can reveal gaps in data or knowledge that need to be addressed to improve the framework's robustness. Identifying assumptions therefore allows for the evaluation of whether the framework is built on realistic, evidence-based premises.

In general frameworks often deal with complex and uncertain systems, such as the environment or social behaviour. By identifying assumptions, end users can better manage the risks associated with this uncertainty and better understand where trade-offs exist and how to balance competing priorities. It can help them understand where their framework, and the policy that accompanies it, may be vulnerable to unforeseen events or changing conditions, and to incorporate mechanisms for monitoring and adapting to those risks.

Assumptions also play a key role in evaluating the success or failure of a policy after implementation. Having clearly identified assumptions can help recognize possible foundational issues and adapt the framework if it is not resulting in the desired impact, i.e. if the assumptions underpinning the policy are not met, the results may diverge from expected outcomes. Identifying these assumptions upfront allows for a clearer tracking and evaluation of the framework, providing insights into whether the framework might need adjustment or revision.

There is also a temporal aspect to consider when scrutinising assumptions, as these can be based on current conditions or trends that may change over time. By critically evaluating the assumptions, end users can test and assess whether the framework is likely to remain effective under different conditions or future scenarios, even if certain conditions change. It can also help build flexibility into the framework and encourages development of a framework which can adapt to new information or changing circumstances.

Agree on minimum requirements and guiding principles

At its core, a regional protection framework requires coordinated, transboundary development and implementation by multiple actors, which may have different views on what the framework should look like and how it should be implemented. Establishing agreed minimum requirements and guiding principles is crucial for streamlining these efforts, ensuring that both the development and implementation processes are more effective and cohesive.

Minimum requirements and guiding principles also promote consistency and predictability, creating a stable foundation for regional cooperation, ensuring that all implementers can predict how others will act to address key issues, thereby helping implementers align their efforts and expectations. Establishing agreed minimum requirements also helps to foster trust and prevent misunderstandings, supporting closer long-term collaboration.

Sustainable environmental policies often require long-term commitment from all relevant implementers. Common principles help ensure that changes are made in a way that is consistent and gradual, promoting stability and avoiding abrupt shifts that could destabilize the implementation efforts.

Agree on a fit-for-purpose framework structure

Establishing a fit-for-purpose structure for an international policy framework such as a protection framework is important because having the right structure ensures that the framework is both effective and adaptable, and that it can handle the challenges and dynamics of the international policy landscape. A well-structured framework helps to identify key aspects that need to be included while striving to minimize unnecessary complexity and ensures that processes are streamlined to meet the desired goals and outcomes.

Environmental challenges which influence protection often evolve over time because nature, society and the knowledge landscape are dynamic. A fit-for-purpose structure allows the framework to be adapted, enabling flexibility to respond to changing circumstances. This adaptability is key to addressing issues that may shift in scope or urgency over the lifetime of a framework's implementation.

Ideally the framework structure should be both practical and actionable, ensuring that components found under each level of the framework follow similar approaches when it comes to e.g. abstraction, temporal scope or scale of implementation (see example of

possible framework components in Figure 1). It also allows for topical or thematic grouping of framework components, making complex information more accessible and should preferably enable nesting, with lower levels of the structure nested under, and linked to, higher levels. By focusing on creating systems, procedures, and accountability measures that are effective in real-world scenarios it can also help concretize and systematize needed actions.

What structure is most suitable for a given framework depends entirely on what the desired ultimate impact is of the work being formalized through the use of a framework. The work to establish a Theory of Change, as well as minimum requirements and shared principles can be useful to help guide the development of an appropriate structure. It is worth investing time in finding a suitable structure, as this often also helps to clarify and concretize future steps of the work. Figure 1 presented below is a highly simplified conceptual outline based on the final structure agreed for the Baltic Sea Protection Optimisation Framework. It is worth to note that while this example is hierarchical in nature, this is not necessarily a requirement for a framework to be effective.

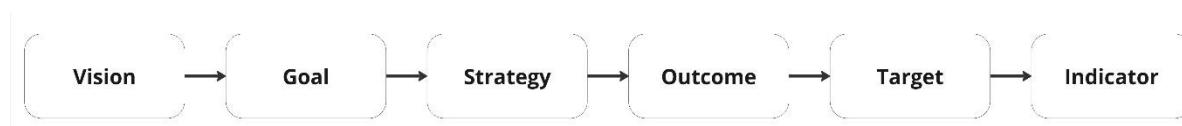


Figure 1. Example of possible protection framework components based on the work to establish a regional protection framework for the Baltic Sea. Note that the flow chart presented here represents only one component under each level of the framework, whereas in reality a framework is likely to contain multiple goals, strategies etc., grouped based on relevant themes or topics, as indicated in Figure 2 in the next section.

Populating the structure

Once a structure has been established, the next step is to populate it, i.e. defining what the different steps/levels in the framework should concretely contain and achieve once implemented (e.g. the vision, goals, strategies etc. of the framework, see Figure 2). Here the identified needs, gaps, barriers and the Theory of Change come back into the development process. Ideally these should be used to guide the populating of the framework, to ensure that the framework is both comprehensive and holistic, and that it functions as a fit-for-purpose tool.

Note that this step realistically requires significant time, iterative scoping and negotiation to ensure that the framework is functional and that the formulations are acceptable to end users. It is generally easier to begin by establishing the higher, more ambitious but less concrete, levels of the framework (e.g. the vision and goals in the example in Figure 1). Most hierarchical frameworks tend to increase the number of components, the more concrete the components become (see example in Figure 2).

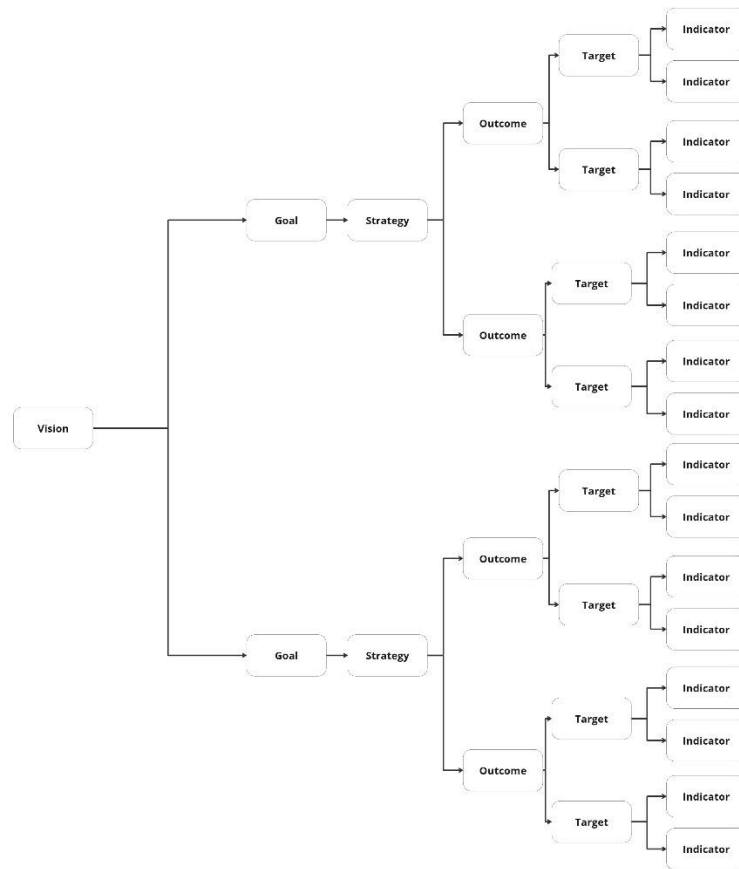


Figure 2. Example of a possible framework illustrating that the number of components often increase as the level of abstraction decreases.

Consider prerequisites needed to support and implement the Framework

When developing and populating the framework it is worth to simultaneously consider how it will eventually be implemented, and what support might be needed to achieve this. This can e.g. include the need for knowledge or expertise, platforms to support implementation, development of tools, new or modified methodologies, modelling, and/or infrastructure needs such as databases. By considering and addressing these aspects already during the development of the framework, the lag time between the adoption of the framework and commencing its implementation can be minimized.

4. Establishing protection targets as part of a Protection Framework

4.1. Background

Targets, especially those set on an international level, often inform policy and regulation and can be used to shape laws and agreements, as well as set legal requirements. As such, they

often have a significant impact on where resources are channeled and how they are used, usually at the expense of other potential actions and efforts.

Transformative change of spatial protection requires change across the entire spatial protection process, ranging from the planning and designation process, through adaptive management to holistic governance. There are significant differences, both inherent and customary, in how these different aspects (planning, designation, governance and management) of the spatial protection process work and function. While these differences have historically contributed to some of the gaps and barriers associated with spatial protection and these should be addressed to optimize protection efforts, the different aspects of the spatial protection process also have well established internal processes and ways of working. In the effort to not slow down spatial protection efforts by introducing more upheaval than necessary, it may be needed to consider and identify different types of targets for the different aspects of the spatial protection process.

Similarly, there is a need to identify not only what types of targets but also what categories of targets are needed, and how these fit with the Framework, how they interact and what inherent characteristics should be acknowledged for each of these categories.

In this section the types and categories of targets identified as relevant for the framework are briefly presented, to provide context for the more in-depth information on setting ecological targets, as well as to emphasize that there are multiple types of targets beyond the ecological targets, which are the main focus of section 4.2.

4.1.1 What are targets and why are they used?

In the context of this document, targets refer to specific, commonly agreed, quantitative or qualitative measurements that enable progress towards an agreed outcome, goal and vision to be tracked.

The main ideas behind the use of targets as a tool are as follows:

- **Prioritization:** Targets help guide efforts, prioritize actions and direct the use of resources. By setting targets organizations can focus their efforts on the most pressing challenges. The aim is that this focused approach ensures that limited resources, such as funding and human resources, are used effectively.
- **Tracking:** Targets enable monitoring and assessment of progress towards achieving desired outcomes. Without targets, it can be difficult to determine whether efforts are succeeding or failing. These targets allow for data collection, progress tracking, and course correction if necessary.
- **Accountability:** Through tracking progress, targets can be a tool for increasing accountability. When targets are set, they create a level of responsibility, ensuring that

actions are taken in a timely and transparent manner. This accountability is vital for building trust with the public and stakeholders.

- **Innovation:** Setting targets can stimulate innovation in science, technology, and business practices. For instance, targets related to reducing greenhouse gas emissions or waste production can encourage the development of cleaner technologies, alternative energy sources, or sustainable agricultural practices.

- **Collaboration:** Targets, especially those set in a complex environment with interdependent components, promote (and often require) collaboration between various departments, sectors or stakeholders such as governments, NGOs, private sectors, and local communities, to collectively work towards a common goal.

- **Awareness and engagement:** Targets can be a tool for raising awareness, whether within an organization or with the general public. When targets are communicated effectively, they help people understand the importance of, and the need for, collective action and/or the prioritization and committing of resources to a given focus area.

- **High level commitments:** Many targets, irrespective of the sector they are set, are aligned with high level commitments, e.g. international agreements and frameworks. Setting organizational, national and regional targets that are aligned with higher level commitments helps to specify how an organization or country can concretize their contribution to meeting international commitments and enable the unique specificities of each entity to be taken into account.

4.1.2 Types of potential protection targets

While target-setting and tracking can be an important and impactful tool to drive progress and change, it also comes with significant risks (see Section 4.2.3). With this in mind, it is crucially important that targets are set appropriately, i.e. not set arbitrarily nor set in isolation. Subsequently, for targets to be beneficial they must be set in a holistic way, where different targets as a minimum do not contradict each other and ideally work synergistically. Targets should also be set in such a way that they contribute to achieving greater overarching outcomes and goals. To achieve this, targets need to be nested within a larger overarching framework and there may be a need to use multiple different types of targets within the same framework.

Quantitative targets

A quantitative target is a specific, measurable target set to track and achieve certain outcomes. It typically involves numerical values or figures, such as percentages or quotas, or performance metrics. Quantitative targets are often used to provide clear direction and measurable benchmarks for success. While quantitative targets are powerful tools for guiding progress and measuring success, they need to be balanced with a broader, more holistic approach to avoid potential pitfalls, some of which are illustrated below. For a more in-depth

perspective of benefits and risks specifically for quantitative ecological targets, see Sections 4.2.2 and 4.2.3, respectively.

Potential benefits associated with quantitative targets:

Clarity and focus: Provide clear, actionable focus that can help concentrate efforts on the desired outcomes.

Measurability and tracking: Allow progress to be tracked comparatively easily using measurable data, making it simple and quick to assess success or identify areas needing improvement. Regular tracking also makes it easier to evaluate performance, which can be crucial for decision-making, or adaptive adjustments to strategies or desired outcomes.

Motivation: Well-defined numerical targets can motivate implementers to work toward tangible outcomes.

Accountability: Quantifiable targets can help to hold implementers accountable for achieving the agreed desired outcomes.

Potential risks associated with setting quantitative targets:

Narrow focus: When the emphasis is placed solely on quantitative targets, other important but harder-to-quantify factors like quality, or well-being, may be overlooked.

Unintended consequences: Since quantitative targets are, by nature, specific, a strong focus on meeting quantitative targets might encourage efforts that prioritize targeted results over holistic perspectives and long-term sustainability of protection efforts. Unrealistic or overly ambitious quantitative targets can create undue pressure on implementers, slowing progress for other areas of action due to a lack of resources.

Misalignment: If the targets are not well-aligned with the broader goals and the desired outcomes, they may drive action that fails to contribute to the overall success of the protection efforts or may even be detrimental.

Qualitative targets

A qualitative target focuses on non-numeric, descriptive outcomes. Unlike quantitative targets, which are based on measurable data, qualitative targets deal with qualities, attributes, or characteristics that are important for achieving desired outcomes and the associated broader goals. These targets are often more subjective in nature and can be evaluated through feedback, observations, or assessments. While qualitative targets help focus on crucial non-measurable aspects of performance like growth, creativity, and relationships, they require careful management to avoid vagueness or misinterpretation and ensure alignment with overall goals. They can be highly effective for long-term success, but they also require a thoughtful and balanced approach to be truly impactful.

Potential benefits associated with qualitative targets:

Holistic focus: Allow focus to be placed on broader, intangible outcomes and goals that contribute to long-term success.

Flexibility: Are often more flexible and adaptable than quantitative targets. They can be adjusted to fit changing circumstances or evolving priorities.

Interaction dynamics: Can help foster improved interaction and buy-in by focusing on aspects such as communication, awareness raising and governance processes.

Improving non-quantifiable aspects: Help address important aspects that can't easily be measured with numbers, like social or societal changes and well-being.

Potential risks associated with qualitative targets:

Lack of clarity: Qualitative targets can be more ambiguous than quantitative ones, making them harder to define and assess. This can lead to confusion about what exactly needs to be achieved.

Difficulty in measurement: Since qualitative targets often include subjective aspects, it can be challenging to measure progress in an objective way. There's a risk of bias, as subjective assessments can be influenced by personal opinions or emotions, which may lead to inconsistent evaluations or difficulty in tracking success.

Varying interpretations: Different end users implementing the Framework may interpret qualitative targets in different ways, leading to a lack of uniformity in how the targets are pursued and achieved.

Direct targets

The ultimate aim of protection targets is the improved status of biodiversity. Direct targets are primarily quantitative in nature and defined by the fact that they should be able to illustrate a concrete causal link of the change in status of biodiversity due to the effect of a measure or action taken. Because they necessitate a causal link, direct targets exhibit high ecological relevance in their own right. An example could be a target of 80% of all seagrass meadows being in a healthy state, where the target is directly associated with the status of the species.

Direct targets share a lot of the potential benefits and risks with the quantitative target type outlined previously. Direct targets are often more challenging to achieve, as the causal links can require extensive information and knowledge to establish, and the targets can be influenced by multiple or cumulative activities and therefore require cross-sectoral and/or holistic efforts to be addressed.

Proxy targets

Proxy targets represent interim targets on the path towards a desired outcome but might not be directly ecologically relevant in and by themselves. Proxy targets should therefore ideally always be associated with one or several ecologically relevant, often direct, targets. An example of a proxy target is the target to protect 30% of the Baltic Sea. While the intention is for expanded spatial protection to yield an improved status for biodiversity, this improvement in status is not a direct consequence of the spatial expansion of protection. What defines whether the spatial expansion yields positive biodiversity results or not is the quality of management and type of measures that are associated with the protected areas i.e. 30% of well-managed MPAs with appropriate and ambitious measures are likely to yield positive results, whereas 30% of paper parks will not.

4.1.3 Categories of potential protection targets

Three main categories of targets have been identified as being relevant within the Protection Optimization Framework under PROTECT BALTIC:

- ecological targets;
- pressure-reduction targets; and
- governance targets.

Depending on the aim of a framework, or the region in which it is intended to be implemented, these can vary and be complemented with other categories as needed.

Ecological protection targets

Ecological protection targets should focus on concrete biodiversity and ecosystem benefits. These targets primarily address ecosystem components like habitats and species, while also considering factors such as ecosystem function and ecological resilience. Ideally, ecological protection targets should be driven by ecology and ecosystem benefits, limiting anthropogenic considerations like perceived importance or sentiment. That said, there are also anthropocentric ecological targets, specifically for ecosystem services. In these cases, it is important to have a strong understanding of the underlying ecology before setting targets, ensuring that the ecosystem service targets do not conflict with other ecological targets or cause unintended detrimental effects for the ecosystem as a whole. For a more in-depth view on ecological targets, see Section 4.2.

Pressure-reduction protection targets

Our activities on land and at sea exert pressures on the marine environment, which, to varying degrees, negatively impact the ecosystem. These impacts may have different focal points but accumulate and cascade throughout the ecosystem. Pressures can affect living organisms directly, influencing their occurrence, abundance or physiological status. Indirect impacts may also occur through species connections in the food web or by altering the habitats on which species depend. While some activities and pressures might seem insignificant when

considered individually, their cumulative impact can be substantial, particularly when multiple pressures occur in the same area of the sea or affect the same species.

To limit the negative impact of human activities to within the ecosystem's tolerance, we must understand both the independent and cumulative effects of these actions. This knowledge is essential for managing activities that are causing negative impacts. This is achieved by establishing well-founded, ecologically relevant pressure reduction targets and taking concrete measures to ensure these are met. In essence, a pressure reduction target aims to decrease the negative effects of human activities on the ecosystem, thereby minimizing or preventing further impact.

Governance protection targets

Governance structures and processes are the backbone of successful protection, as the most effective form of protection is focused on management of human activities. By setting clear governance targets, a framework can help establish a robust baseline for governance and, through this, help address gaps. This in turn allows for better accountability in the implementation of marine protection measures and can be essential for driving more effective protection.

Marine ecosystems often involve multiple stakeholders, including governments, local communities, industries, and conservation organizations or private landowners. Governance-related targets can help ensure that these stakeholders are adequately engaged in decision-making processes and that collaboration is structured. This might include targets for stakeholder consultation, participation, and conflict resolution mechanisms that promote collective action in marine protection.

Marine ecosystems are often governed by international conventions and agreements, such as the Regional Seas Conventions (of which HELCOM is one), the Convention on Biological Diversity or the United Nations Sustainable Development Goals. Governance-related targets help to ensure that national policies align with these international frameworks. By establishing clear targets, countries can better track their progress in fulfilling global marine conservation commitments.

Governance-related targets are foundational for ensuring that marine protection frameworks are not only developed but also effectively implemented and sustained in the long term. They provide the structure needed for accountability, collaboration, compliance, and adaptive management, all of which are essential for the successful conservation and management of marine environments. Ultimately, governance targets are intended to help create a stable, long-term governance framework that supports the protection of marine resources. Clear governance targets help ensure that management systems are robust enough to withstand political, social, and economic changes, allowing for consistent and continuous protection of marine ecosystems over time.

Relationship of the protection target categories to the Protection Framework

When identifying target categories, it is important to ensure that all the elements of the Framework for which targets are considered relevant are represented within the target categories.

To illustrate this, we use the three target categories presented above and elucidate their relationship with the goals and strategies defined for the Protection Optimization Framework for the Baltic Sea (see Annex 2). The three target categories presented above can be roughly divided across the three goals and strategies already incorporated into the Framework (see Figure 3), as follows:

- Governance targets -> Strategy 1;
- Ecological targets -> Strategy 2; and
- Pressure reduction targets -> Strategy 3.

There will be exceptions to this, particularly in relation to targets associated with building the knowledge basis (proposed to be associated with Governance targets), as these types of targets are needed across multiple strategies.

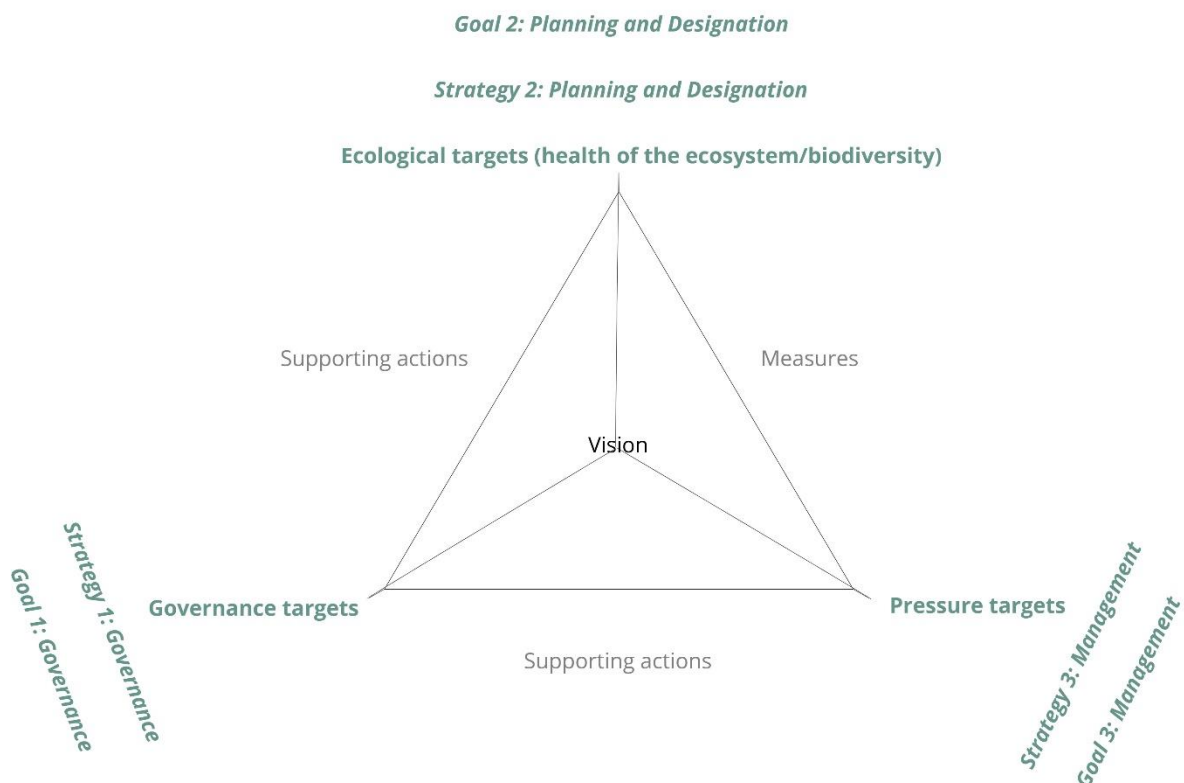


Figure 3: Conceptual illustration of the relationship between the three target categories identified as relevant for a Protection Framework, and the Goals and Strategies agreed under the Baltic Sea Protection Optimization Framework.

Inherent characteristics of the various categories of protection targets

Links between the different protection target categories

In addition to ensuring that there is a clear link between the components of the framework (e.g. goals and strategies) and the target categories, it is also vital to understand how the different protection target categories relate to each other. As while, for the practical purposes of developing the framework, the targets are presented as discrete groupings, they are all part of the overall framework and are often interdependent. Understanding the links also helps to manage and communicate realistic expectations regarding where we can expect to see change, as well as what kind of change is likely. A clear understanding of the relationship between the protection target categories can also be very helpful in the concrete work to implement the framework.

Subsequently, the link between ecological and pressure reduction targets has been identified as the introduction of measures (i.e. actions which are foreseen to have a concrete and direct effect on the environment) whereas the link between governance targets and ecological targets is primarily established through the introduction of supporting actions (i.e. actions which are key for progress, but which do not on their own translate directly into a change in the environment, e.g. assessments, tool development, improved knowledge basis, good governance procedures etc.). The same is true for the link between the pressure reduction targets and the governance targets where the link is established through supporting actions (see Figure 4).

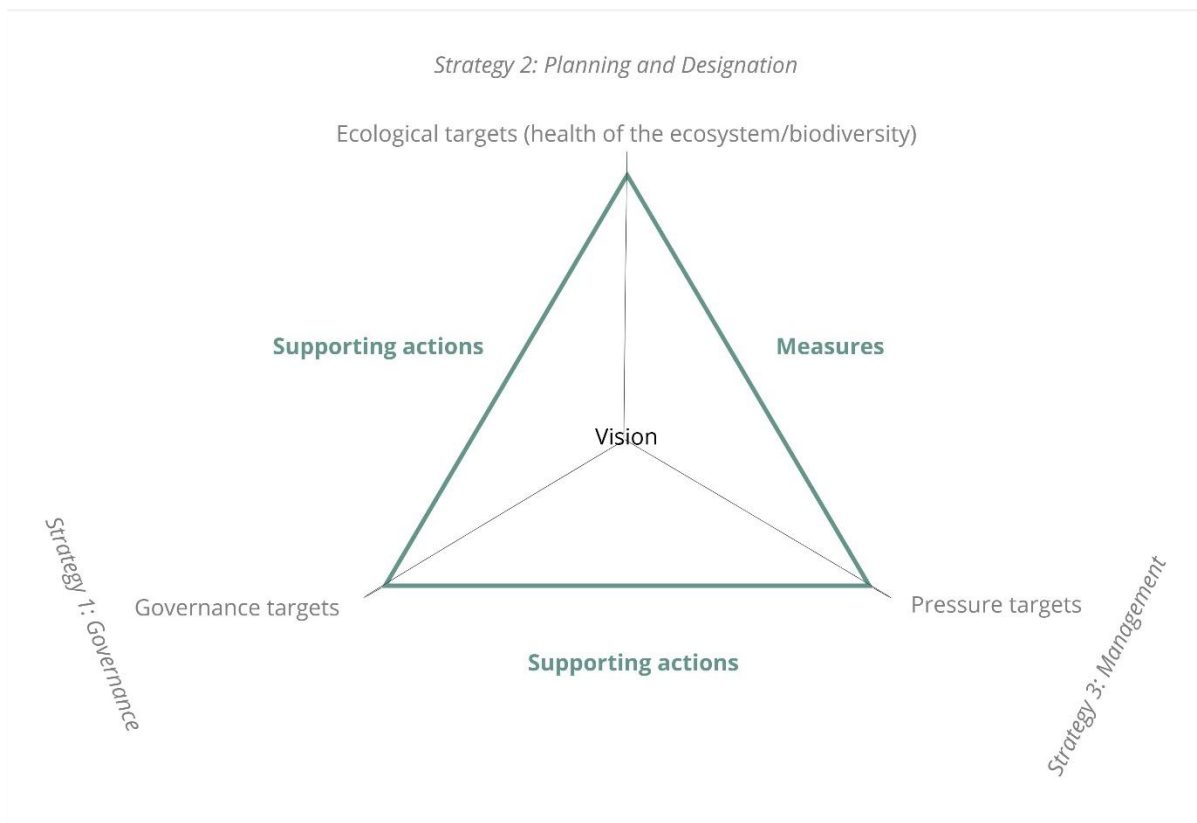


Figure 4. Conceptual overview of how the different protection target categories relate to each other through the different types of actions associated with achieving targets.

Strength of connection for the different target categories to benefits for biodiversity

Understanding the above outlined relationship between the different categories of protection targets allows us to better understand the effect of protection efforts on improving the status of the environment and provide biodiversity benefits, and how this is linked to the different target categories (Figure 5).

Ecological targets are considered to have the strongest connection to tracking and achieving positive biodiversity benefits from protection, i.e. for protection effort to concretely contribute to an improved situation for biodiversity and the ecosystem, as these directly follow changes in the ecosystem.

These are followed by pressure-reduction targets which track and help implement changes in pressures and human activities. Part of the Theory of Change underpinning protection efforts is that minimizing negative pressures from human activities translates into lower negative impact on biodiversity and achieving pressure-related targets is therefore expected to, by extension, translate into improved status for the ecosystem.

Governance targets are, in most cases, not directly linked to concrete environmental changes, however, they serve as enablers for many of the targets in the other two categories and are, therefore, no less important.

This should not be interpreted as a prioritization of importance of the various target categories but should be used to plan target setting and tracking in a way that is appropriate to the framework in question.

The aim of mapping the strength of the link between the different target categories and securing positive biodiversity benefits is to enable appropriate planning, target-setting and subsequent indicators, making the framework as applicable and realistic as possible.

Particular effort needs to be placed on identifying, in addition to management and spatial indicators, quantifiable indicators which capture changes in ecological status and have a sufficiently robust causal relationship with measures and ensure that these are supported with sufficient monitoring¹. This is only possible if there is a clear understanding of which targets are likely to result in concrete changes to the environment and can, therefore, be measured in such a way.

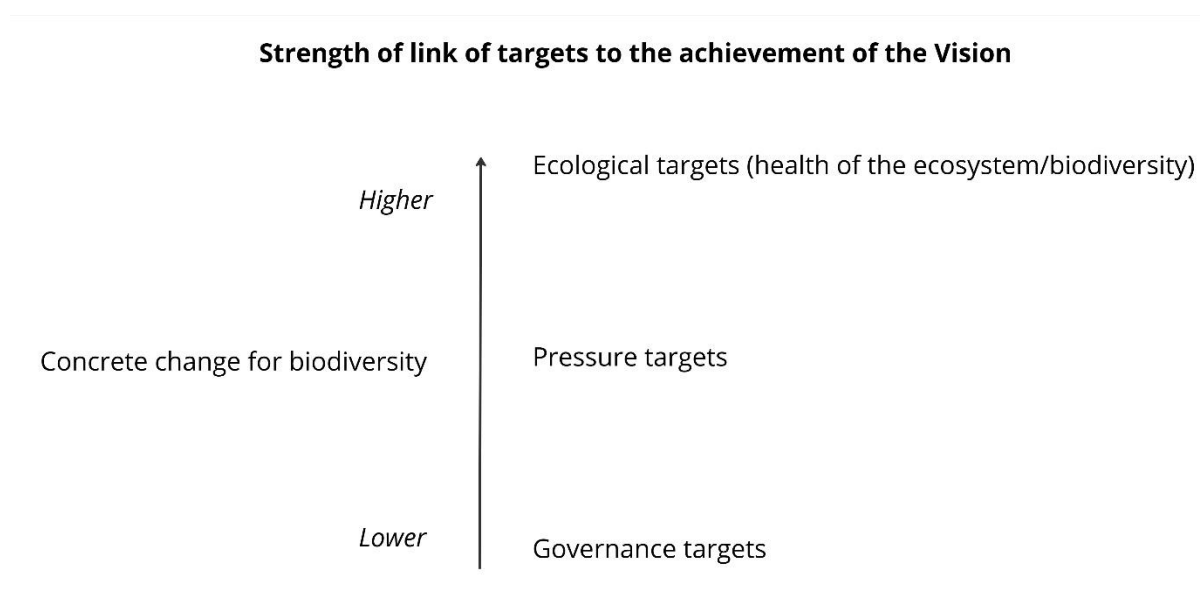


Figure 5. Strength of link of targets to the achievement of the Vision

Timeframe for seeing change

In addition to being associated with different expected results, as illustrated above, the different categories of targets are often associated with different timeframes for expected achievement (Table 1). Understanding this helps to set appropriate levels of expectation, and appropriate deadlines for targets and the associated indicators.

Ecological targets, where habitats, species etc. are often affected by multiple pressures and which can exhibit long recovery times, have the overall longest expected timeframe for

¹ Memo IC WG BioDiv 2-2023

achievement. Pressure reduction-targets are expected to have a medium timeframe for achievement as these targets react more directly to the implementation of measures, especially in relation to activities, but can exhibit time lags. The governance targets are expected to have the shortest timeframe for achievement, as many of these targets are linked directly to changes in governance or management processes and are not directly affected by ecological or physiochemical processes.

Table 1: Strength of link to benefits for biodiversity and timeframe of expected achievement for different types of targets

Type of target	Strength of link to benefits for biodiversity (1=weakest, 6=strongest)	Timeframe of expected achievement of targets
Proxy governance protection targets	1	Short
Direct governance protection targets	2	Short
Proxy pressure-reduction protection targets	3	Medium
Direct pressure-reduction protection targets	4	Medium
Proxy ecological protection targets	5	Long
Direct ecological protection targets	6	Long

4.2 Quantitative Ecological Protection Targets

4.2.1 Background

As illustrated in section 4.1, the ecological protection targets are those considered to have the strongest causal link to concrete changes in the environment, i.e. those that show if protection efforts are in fact having the desired effect on the ecosystem. In this section, we focus specifically on ecological protection targets, looking in more detail at what they are, their benefits and the risks that should be considered when embarking on identifying potential ecological protection targets, as well as provisional guidance for setting ecological targets and a suggested methodology.

Ecological protection targets are designed to guide protection and management efforts to ensure benefits for biodiversity and the resilience of natural systems in the face of human activities and environmental changes. By extension, these efforts can also concretely contribute to improved ecosystem service provisioning and human well-being, but the focus should be on improving the situation for ecosystems, habitats and species, and maintenance of improving ecosystem function and resilience.

Ecological protection targets can subsequently focus on various aspects of ecosystems, including but not limited to:

1. **Biodiversity:** Aiming to protect or increase the number of species, the number of individuals, genetic variety etc. within an ecosystem or restored habitat.
2. **Ecosystem functions:** Aiming to secure or restore the functions within an ecosystem and/or improve resilience.
3. **Ecosystem services:** Setting goals to protect the processes that ecosystems provide.
4. **Habitat restoration:** Targeting the rehabilitation or protection of degraded habitats to safeguard or restore ecosystem functions.
5. **Climate resilience:** Setting goals for ecosystems to adapt to or mitigate the impacts of climate change.

These targets can be part of local, national, or international environmental policies or agreements, such as the United Nations Sustainable Development Goals or the Convention on Biological Diversity. The success of these targets often relies on collaboration among governments, businesses, and local communities.

4.2.2 Benefits of establishing quantitative ecological protection targets

The majority of the identified benefits of setting targets are related to leveraging change through policy, tracking progress, reporting, prioritization, and communications, and less related to actually improving ecological status and securing benefits for biodiversity. That said, it is important to acknowledge that setting targets in an ecologically relevant way is a strategic avenue for introducing ecological relevance into policy making. Ecological protection targets can contribute to ensuring the long-term sustainability of the ecosystems. Sustainable development can only be achieved if ecological health is maintained, and by setting and meeting targets, societies can work towards a future where both nature and human populations thrive in harmony.

4.2.3 Risks associated with establishing quantitative ecological protection targets

There are multiple risks associated with setting ecological targets. These need to be both identified and acknowledged as part of the target-setting process to be able to realize the full potential of target-setting and avoid potential detrimental effects that can come with setting the targets.

There is a juxtaposition in working to set targets, which in most instances are perceived as being static, for an ecosystem which is highly dynamic and complex. Ideally ecological protection targets should be set within the realities of the marine environment, or they risk not being appropriate, as they are either set wrong from the start or because the situation has changed since the target was set. These risks include, but are not limited to, challenges

associated with the variability, dynamics and complexity of the ecosystem; spatial scale and ecological relevance of the targets; time lags; and issues related to implementing actions to support achieving said targets. In this section, we will present some of the risks identified as part of the work on setting ecological protection targets in the PROTECT BALTIC project, so that relevant risks can be accounted for in the target-setting process. Many of these risks are, at their core, driven by a lack of data, or a lack of knowledge and/or understanding about the intricate dynamics of ecosystem interactions. If properly accounted for, the risks can be minimized.

Working with uncertainty

Ecosystems are not static. They are constantly changing over time due to internal processes (e.g. succession, disturbance) and external pressures (e.g. climate change, human activities). Uncertainty is subsequently introduced in ecological protection target-setting both through ecosystem dynamics and ecosystem variability. Ecosystems are complex, and there is always some degree of uncertainty in how they will respond to changes, or to management interventions.

When setting quantitative ecological targets for protection, it is therefore essential to account for ecosystem dynamics and ecosystem variability because both factors have significant implications for a) how ecosystems respond to protection efforts and b) how those efforts are measured. Setting quantitative targets without accounting for these dynamics can lead to unrealistic or unsustainable goals.

An in-depth understanding of the ecological processes that drive ecosystem dynamics and variability in a given area is important when setting quantitative ecological targets and quantitative targets should allow for flexibility and be based on a range of possible outcomes.

Incorporating dynamics and variability into quantitative ecological targets helps to ensure that these targets are realistic, effective, and adaptive. By recognizing the complexity and variability of ecosystems, protection efforts can be better designed to maintain long-term ecological integrity and respond to unforeseen changes. Furthermore, by acknowledging these dynamics and uncertainties, decision makers can work to avoid rigid, overly simplistic targets that might otherwise fail to account for the full range of natural processes and future uncertainties. Ultimately, setting ecologically relevant quantitative protection targets requires a deep understanding of ecosystems, a commitment to long-term thinking, and the ability to adapt to new knowledge and changing conditions.

Variability

Temporal variability

Ecosystems naturally undergo fluctuations due to factors like climate cycles, disease outbreaks, seasonal changes or population dynamics. For example, species populations may fluctuate significantly over time due to predation, migration, or reproductive cycles. If a

quantitative target is set based solely on a specific snapshot in time, it may overlook these natural cycles, leading to a misinterpretation of ecosystem health.

Temporal variability can be cyclical (seasons, breeding cycles), short term (stochastic events) or long term (evolution and adaptation over time, climate change).

Spatial variability

Ecosystems operate at various scales—local, regional, and global—and each scale may have different ecological requirements and vulnerabilities. Setting targets without considering these variations can lead to over-simplified or ineffective actions. For instance, the ecological needs of a species in one region may differ significantly from those in another region, even within the same habitat type. These spatial differences need to be accounted for to ensure that targets are locally/regionally relevant and address ecosystem functions and species protection needs at the appropriate scale.

Environmental variability

Marine ecosystems often exhibit a high degree of variability due to environmental factors such as temperature, precipitation, and nutrient availability. Setting rigid quantitative targets without considering this variability can result in targets that are difficult or impossible to achieve across the full range of conditions.

Ecosystems also vary in their capacity to absorb disturbances or changes, i.e. in their resilience and adaptability. For instance, some ecosystems may be more resilient to climate change, while others may be more sensitive. Targets should reflect this variability and take into account the ecosystem's adaptive capacity. For example, targets might need to consider not only current conditions but also potential shifts in biodiversity composition or resilience under future climate scenarios.

Ecosystem dynamics and complexity

Succession and recovery

Ecosystems go through natural stages of development or recovery (e.g. from early successional stages to mature forests). A target that is too focused on a snapshot in time (e.g. a specific species composition or habitat structure) may overlook these natural transitions. A well-designed target should consider the potential trajectory of ecological change over time.

Disturbance regimes and seasonal changes

Ecosystems are dynamic and change over time due to natural processes (e.g. succession, disturbance regimes) and human impacts (e.g. climate change, land-use changes). These changes occur on different temporal scales, which can make it challenging to set targets that are aligned with the long-term ecological processes.

Many ecosystems rely on periodic disturbances, some of which are driven by seasonal changes (e.g. the scraping of ice to provide bare surfaces for recolonization) to maintain their

structure and function. If these disturbances or seasonal changes are not factored into targets, they may not reflect the true ecological needs of the system.

Thresholds and non-linear responses

Many ecosystems have thresholds, or “tipping points,” beyond which they may shift to a new state. Ecosystems often exhibit non-linear responses to changes in factors like disturbance regimes, pollution, or species introductions. Setting targets for ecosystems without understanding their resilience to pressures could push them beyond their tipping points, where recovery becomes unlikely and ecosystem services or functions may be lost or drastically altered once a threshold is crossed. Setting targets without considering these thresholds could in the worst-case lead to irreversible damage.

Quantitative targets should therefore consider not only the current state of the ecosystem but also the potential for sudden, non-linear shifts and understanding these limits is crucial for setting realistic and meaningful ecological targets.

Trophic interactions and feedback loops

Ecological interactions (e.g. predator-prey, etc.) often operate in complex feedback loops that drive system function. A focus on a single species or component without considering these interactions could miss the broader ecological context, resulting in targets that are either too narrow or too broad to be effective.

Ensuring ecological relevance of targets

Accounting for ecological relevance when setting ecological targets presents several challenges due to the complexity and interconnected nature of ecosystems. These challenges arise from both the intrinsic characteristics of ecosystems and the difficulties in accurately assessing and predicting their responses to interventions.

Ecosystems consist of numerous species, habitats, and processes that interact in complex ways. These interactions can be hard to predict, making it difficult to set targets that reflect the full ecological picture. For example, focusing solely on a single species population (e.g. a keystone species) without considering its role in broader ecosystem processes might overlook important factors like habitat quality, species interactions, or ecosystem function. The web of interdependencies within ecosystems can lead to unintended consequences if ecological relevance isn't adequately considered.

Ecological relevance involves understanding the true ecological needs and functions of ecosystems. Ecosystems are complex, with many interdependent components (species, habitats, processes). By ignoring the ecological relevance, the intricacies of these relationships might be overlooked when setting targets. Simplification may result in targets that appear to improve the ecosystem on the surface but fail to address underlying ecological processes that sustain long-term stability. Discounting this when setting targets can lead to

targets that are disconnected from what ecosystems require for long-term health and resilience.

Accounting for time-lag

Changes in the ecosystem and ecological processes often take time to manifest, and the full effects of interventions or changes may not be seen immediately. These lags can create a disconnect between actions taken and their observable outcomes, making it challenging to assess the effectiveness of measures in real time. Ecological systems, especially complex ones, might take years, decades, or even centuries to respond fully to changes (such as climate change, or protection efforts). Short-term targets, and associated indicators, may be insufficient to capture the actual change, or its direction.

Many ecological targets might focus on short-term improvements (e.g. increasing species numbers or restoring habitats), but the full effects of actions might only become evident after decades. Failing to account for these temporal dynamics can result in targets that do not adequately support long-term ecosystem health and resilience. As actions intended to restore or protect an ecosystem might not show their true effect until much later, which means managers may either overcompensate or based on early or incomplete data. Slow responses to management actions can also risk that decision-makers might abandon or reverse actions, potentially leading to worse ecological outcomes in the long run.

In addition to ecosystem recovery taking a long time, while the system is recovering the dynamic nature of the ecosystem and the pressures on it can result in sliding baselines, whereby the original target towards which action has been taken is no longer appropriate as the circumstances have changed.

In summary, time lags mean that ecological targets set without accounting for the delayed nature of ecosystem responses can lead to ineffective management, misguided policies, or even unintended harm to ecosystems. Therefore, setting realistic and flexible targets with awareness of potential delays is crucial for sustainable management.

Knowledge and data limitations

There is often limited or incomplete knowledge of the full range of ecological processes at play in a given ecosystem. Our understanding of species interactions, ecosystem services, and long-term ecological changes as outlined above is still evolving. Inaccurate or incomplete knowledge can result in targets that do not fully capture ecological relevance, potentially leading to ineffective or harmful interventions.

Sufficiently measuring and monitoring the ecological conditions that are relevant to target-setting is a major challenge. Many ecological aspects, such as diversity, habitat quality, and ecosystem function, are difficult to quantify and require extensive data collection and monitoring. The lack of reliable, long-term ecological data can hinder the ability to set evidence-based targets. Additionally, the measurement of success itself (e.g. how to measure

ecosystem resilience or species interactions) can be subjective and vary depending on the context and goals. Subsequently, setting ecological targets is often done in the absence of sufficient available data for at least some of the relevant parameters, which introduces additional uncertainty into the target-setting process. The ecological models used to set targets are often based on incomplete data and assumptions, leading to uncertainties in predicted outcomes.

Targets should acknowledge this uncertainty and incorporate adaptive management strategies to adjust as new information becomes available. Given the inherent uncertainty in predicting future ecosystem states, quantitative targets should be seen as evolving benchmarks that can be modified over time based on new data or changes in ecosystem conditions.

Implementation

While this is not a part of the quantitative ecological protection targets setting process per se, it is worth noting that implementing actions to achieve ecological targets can present a variety of challenges that stem from ecological, social, economic, and logistical factors. These, by extension, might impact the applicability of targets, even if they do not affect the scientific basis on which the targets are set. These challenges can hinder the effectiveness of protection and restoration efforts and complicate the process of meeting both targets and goals.

One of the most significant barriers to implementing ecological actions is recognized as the availability of resources, particularly funding and human resources. Ecological restoration, protection, and management activities often require financial investment, long-term commitment, and a skilled workforce. In many cases, there is insufficient funding, particularly for large-scale or long-term projects, or the resources may be misallocated. Additionally, limited financial support can make it challenging to implement necessary monitoring, research, or adaptive management strategies.

Political support, effective policy frameworks and governance structures are critical for successful implementation. In many regions, there is a lack of coordination between different levels of government, agencies, or sectors, and the political landscape can change with short notice (e.g. through shifts based on election results) or over the long term as societal needs or pressure shifts. This can lead to conflicting policies or regulations that hinder efforts to achieve ecological targets. Moreover, political will and public support can vary, making it difficult to secure the necessary legal backing or to ensure that policies are implemented consistently over time.

Ecological restoration and protection efforts frequently face opposition or resistance from stakeholders whose interests may conflict with ecological targets. Balancing these competing interests and ensuring sufficient buy-in from relevant stakeholders is crucial for successful implementation.

Achieving ecological targets often requires long-term commitment and patience. Actions might need to be sustained over many years or decades, and changes in political leadership, funding priorities, or public opinion can disrupt progress. Planning for long-term sustainability is essential to ensuring that actions remain effective beyond initial implementation.

Monitoring progress and evaluating the effectiveness of measures is essential for adaptive management, but it presents challenges. Effective monitoring often requires long-term data collection, which may not be feasible due to resource constraints. Additionally, measuring the progress towards, and rate of, achievement of ecological targets can be difficult, particularly for complex or multifaceted targets such as biodiversity protection, ecosystem resilience, or ecological status. Without robust monitoring and evaluation, it's difficult to adjust strategies and targets in response to unexpected outcomes or to determine whether actions are having the desired effect.

4.3.4 Guiding principles of setting ecological protection targets in the Baltic Sea

The core objective of establishing guiding principles and a process for setting ecological protection targets under the Baltic Sea Protection Optimization Framework is to minimize the aforementioned risk factors and enhance the ecological relevance of target setting, thereby improving the potential for targets to directly benefit biodiversity.

Below we present the initial guidance for setting quantitative protection targets as collated in PROTECT BALTIC. Note that while all the guidance presented here is relevant for setting quantitative protection targets, the general guidance and the drafting guidance are also relevant for the other protection target categories (i.e. pressure-reduction targets and governance targets).

General guidance for setting targets under a protection framework (also applicable to ecological targets):

- Targets under the framework should ideally meet the criteria of being results oriented, measurable, time limited, specific, and practical.
- For the targets to be result oriented and practical, there are likely to be cases where the timeframe of the target goes beyond that of the associated goal.
- Targets should focus on the desired result, rather than the process or mode of reaching it, thus allowing different approaches across countries which lead to the same results.
- All targets should concretely contribute to achieving the vision of the framework, so that targets are not set arbitrarily.
- Where the strategy components focus on site-specific aspects, the regional targets will need to focus on collating and aggregating site level information to track regional progress.

- Targets with a more direct link with a change in the environment should be prioritized where possible.
- The methodology and/or rationale underpinning a target should always be documented and publicly available to provide context for a given target.
- A process, timeframe and/or caveats for reviewing and amending targets should be established.
- A way of tracking progress towards targets should be presented and preferably established together with the development of the targets.

Concrete guidance for protection target drafting:

- Baltic Sea subdivisions should be used provisionally, as illustrated in Annex 3, until experts determine the most suitable ecological subdivisions. These subdivisions should be delineated based on parameters which play a key role in species and habitat distribution, e.g. salinity, and their borders should be aligned with the borders of the already established HELCOM assessment units.
- An established baseline (e.g. current situation or a business as usual (BAU) scenario) to measure against does not need to be included in the target text, but there shouldn't be targets under the framework for which no baseline can be established.
- A target year or a time period should be set during which progress should be measured.
- Where established targets suitable for the Baltic Sea already exist under EU or global frameworks, they should be used either directly or with modifications to fit the Baltic Sea context. This ensures alignment with existing policies.
- A quantitative element towards which progress is measured should be set (e.g. a percentage or a numerical target). Example: 'By 2030, 30% of the Baltic Sea is protected' or 'Within the next 10 years, the number of areas in which enforcement is in place should be X%/should increase by X%'

Guidance specifically for setting quantitative ecological targets under a protection framework

- Comprehensively map the risks and cross-check draft targets against these to ensure that the risks have been either addressed or accounted for in the quantitative target setting process.
- Effort should be placed on identifying targets which cover several ecosystem components and/or several desired outcomes, e.g. setting targets at habitat level which indirectly covers several species and functions. This should be done to make implementing and tracking targets as applicable as possible.
- Quantitative ecological targets should only be established when there is a high certainty that they are correct. Where it is not possible to set quantitative targets with a high degree of certainty, qualitative targets can be established instead.

- To support planning and expectation management, quantitative ecological protection targets should be divided into proxy targets (i.e. targets which indicate or reflect e.g. the level or scope of protection efforts, but not the subsequent change in biodiversity and the ecosystem), and direct targets (i.e. targets that measure a concrete change in the status of biodiversity and the ecosystem).
- Direct quantitative ecological protection targets should be able to illustrate a concrete link of the change in state to measures/protection efforts.
- High quality ecological targets should be as directly related to providing benefits to biodiversity as possible (e.g. the target should focus on the improvement of the status of the species/habitat, rather than measuring a proxy such as proportion of species being protected).
- Proxy-targets can be included where these represent interim-targets on the path towards the ecological target and should subsequently always be associated with an ecologically relevant target.
- Quantitative ecological targets should clearly illustrate what direct and indirect activities and pressures are affecting the species/habitat and recognize at what spatial scale and governance level these might be addressed, so as to set expectation levels for timelines for achievement (and needed measures) realistically.
- Quantitative ecological targets that aim to track the effect of marine protection should be focused on elements that can actually be affected by measures within a site, or which can be linked to the introduction of measures across sites. (Note that this also applies to pressure reduction targets).
- Data availability for quantitative target setting should be used when prioritizing what components to initiate quantitative target setting for. This should, however, be done in a pragmatic way, so as to not overlook species of key importance but for which there is not a lot of data (e.g. threatened or naturally rare species).
- Where possible, existing monitoring should be linked to qualitative ecological targets to facilitate tracking progress through the use of indicators.
- Strive to limit the work on establishing targets to where they provide the most ecological/biodiversity benefit, to improve the functionality of the framework and its eventual implementation.

4.3.5 Proposed process for establishing quantitative ecological protection targets in the Baltic Sea

Define your units, i.e. what type of ecological units are you planning to use when establish targets and why.

As part of PROTECT BALTIC, the EU Member States around the Baltic Sea have collated, discussed and agreed on a definition of what constitutes the components of the ecosystem (referred to as ecosystem components or ECs) that should form the foundation for protection,

and subsequently the work within the project (see Figure 6). The full list of ecosystem components for the Baltic Sea will be provided as Deliverable 6.1 of PROTECT BALTIC in August 2026.

The agreed definition separates the components of the ecosystem from ecological processes such as ecosystem function, and from anthropocentric concepts such as perceived importance, focusing solely on those building blocks of the ecosystem that are targeted by protection: physical habitats, species, and a combination of the two: habitats.

In other words, for the purposes of the ecosystem component list a habitat is defined as the combination of the conglomerate of species associated with a certain physical habitat, which in turn is a combination of predictor variables (e.g. the combination of salinity and substrate). To enhance the ecological relevance of the delimitation of habitats for the ecosystem component list, sessile species, which in and by themselves either create a habitat for or tie other species to a given habitat, were separated out and are subsequently cross-referenced with the physical habitats to create the category “habitat”. The resulting habitats can then be cross-referenced to mobile species which are often associated with a larger variety of physical habitats.

This definition was agreed as it represents a list that is comprehensive enough to:

- a) be as ecologically relevant as possible (i.e. reflect the situation in the Baltic as closely as possible);
- b) not be influenced by anthropogenic bias (i.e. include all species/habitats, irrespective of their perceived importance);
- c) enable a wide set of use cases both within and outside the projects work (i.e. develop once, use many times);
- d) enable dynamic use (i.e. use a nested approach that enables a user to choose a subset of components best suited for their needs); and
- e) remain relevant over time.

In addition, to make the list practically applicable across the use-cases identified in the previous section, the components included on the list need to:

- have a defined spatial distribution at each level; and
- have a defined temporal distribution (where relevant).

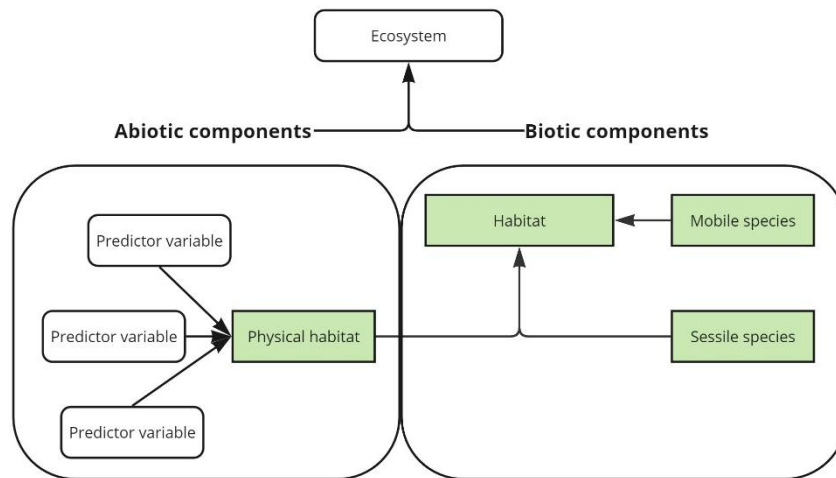


Figure 6. Conceptual overview of the logic behind the delineation of ecosystem components (represented in green) included on the ecosystem components list.

Using the ecosystem component list, PROTECT BALTIC is preparing a large amount of modelled species distribution information. The plan is to explore using this information for data-driven habitat and community classification and, using cluster analysis, identify commonly co-occurring species, i.e. communities. When these communities are spatially mapped, they are combined with abiotic information such as substrate, thereby forming the habitats.

The intention is to use habitats as the primary unit for target setting for the Baltic Sea, to keep the number of targets that need setting (relatively) low, while ensuring that targets are as holistic and comprehensive as possible. The assumption is that by securing benefits for, and improved status of, habitats, its constituent components and community are also protected as each habitat and community consists of multiple species.

But for this to be a functional way forward, and ensure that the Framework provides holistic protection, we need to understand what species are associated with what habitat, which species may be associated with multiple habitats and which species might be highly associated with only one or a few habitats. The use of multivariate cluster analysis has been proposed as a way of providing this information and improving the ecological relevance of using habitats as the main unit for target setting.

Species with highly similar or overlapping distributions indicate shared environmental requirements, biotic requirements, or dispersal barriers, or direct interactions between species (e.g. mutualism or predation). Conversely, dissimilar distributions indicate differences in those processes instead (e.g. low vs high salinity requirements or competitive exclusion). Classifying species into communities based on their distribution, therefore, reflects a combination of processes—like the hierarchical filters of community assembly theory—that have led to recurrent patterns of associations or disassociations across geographic space.

Investigating these patterns and processes is key to understanding biodiversity patterns and species coexistence. In other words, by decomposing species into relatively homogeneous subsets, with shared geographic distributions, the project hopes to make the spatial structure of species communities and their driving processes apparent. Multivariate methods can reduce the inherent complexity of biogeographical data, and their strength lies in their ability to generate statistically derived species groupings, with within- and between-cluster variances that are quantifiable and testable. Importantly, clusters are quantitatively derived and easily reproducible, while the methodological framework promotes transparency and peer scrutiny of the methods and results².

This type of analysis, as an extension of already existing habitat classification schemes like EUNIS and HELCOM HUB, enables a more ecologically and management-relevant perspective of habitats to be taken, where the majority of the associated community is accounted for, as opposed to focusing on dominant species only. This, in turn, enables extended analyses such as looking at representation of ecosystem function across habitats, and more comprehensive ecosystem services analysis, which can also be relevant to consider when setting quantitative ecological targets.

It is acknowledged that in a cluster analysis there are likely to be species which do not show a strong link to any cluster, something that is expected e.g. for highly mobile species with wide ranges. Such species need to be reviewed and considered separately, as some of them might e.g. have known life-history connections to identified clusters (aka habitats) which are not captured as part of the analysis but still relevant. In such cases, these species would be vicariously included in the habitat targets. Other species may have no direct link to any of the identified habitats and in these cases the species may warrant a species-specific target to be set.

As the Baltic Sea represents a highly dynamic and variable environment with a strong salinity gradient it is likely that there will be significant differences in communities across the region which may warrant the use of subdivisions of the Baltic Sea when reviewing the results of the analysis, and when embarking on the target-setting process. While the need for using subdivision remains open, a plan on how to divide and delineate the areas is already in place.

Define what quantified ecological targets you plan to use and why

Spatial aspects

MPAs are inherently a form of spatial measure, or more specifically a way of grouping together a number of spatially distinct measures which all aim to contribute towards

² Pang *et al.* The clustering of spatially associated species unravels patterns in tropical tree species distributions [Ecosphere](https://doi.org/10.1002/ecs2.4589) First published: 29 June 2023 <https://doi.org/10.1002/ecs2.4589>).

achieving the same ultimate impact: securing benefits for biodiversity and the ecosystem. With this in mind, the setting of targets to try to capture progress towards, and achievement of, said positive impacts on biodiversity also need to include a spatial component.

Therefore, the intention is for the quantitative ecological protection targets to be developed under PROTECT BALTIC to represent the percentual quantity of a given habitat as the quantitative element.

In addition to establishing that the quantified ecological targets need to be spatial, they also should be set at an ecologically relevant spatial scale. Establishing targets at an appropriate spatial scale enhances their relevance and robustness. For the purposes of the Baltic Sea Protection Optimization Framework, the targets will be set at the scale of the full distributional extent (i.e. extent of occurrence) in the Baltic Sea for a given habitat and tracking progress for levels of protection will be done at the level of the full Baltic Sea MPA network. With the proposed methodology it should, however, be possible to indicate how individual areas contribute to achieving the targets.

Direct quantitative ecological protection targets

In the process to establish the framework and the proposed blueprint for setting quantitative ecological targets presented in this document, it has repeatedly been emphasized, both by end users and partners, that the targets primary focus needs to be on actual improvement of the situation and status of biodiversity and ecosystems (see Section 4.1.3 on direct vs proxy targets), as opposed to implementation of actions.

With that in mind the quantitative ecological targets need to focus on the percentage of a certain habitat that is either in good status, or showing a positive trend, which is similar to the approach used under Article 17 reporting for the EU Habitats Directive, and the targets outlined in the EU Biodiversity Strategy and the EU Nature Restoration Regulation, but done using Baltic Sea-level data-driven community and habitat analysis and specific target setting for habitats on a holistic basis.

Inspired by different directives and studies and the approach used in Sweden, four options for protection targets are defined (see also Table 2):

1. **None of the habitat is considered to require improvement in status, occurrence or function.**
2. **1-20% of the habitat is considered to require improvement in status, occurrence or function.**
3. **21-40% of the habitat is considered to require improvement in status, occurrence or function.**
4. **41-100% of the habitat is considered to require improvement in status, occurrence or function.**

Table 2. The proposed defined direct quantitative ecological target intervals based on the need for status improvement (see Define a system for assigning draft quantitative ecological targets).

E: Direct quantitative ecological protection target	
Weighted average <2	0
Weighted average 2-2.8	1-20%
Weighted average 2.9-3.4	21-40%
Weighted average >3.4	41% or more

Proxy quantitative ecological protection targets

However, as indicated in Section 4.3.2 on potential risks associated with setting quantitative ecological targets, there can be significant time lags between sufficient measures being put in place and seeing signs of recovery or improved status. As recommended in the guiding principles, proxy targets can be set when they are associated with direct targets. It is proposed that amount, and possibly level, of protection could be used as proxy targets, to help track the action being taken to secure benefits for biodiversity.

Using the precautionary principle (as agreed under the Baltic Sea Protection Optimization Framework), it is recommended that the quantitative ecological protection proxy target—specifically, the percentage of a given habitat included in the MPA network—be set at a predefined level (e.g. 10%) higher than the direct target identified for that habitat. This accounts for the fact that inclusion in a protected area does not automatically lead to improved status or benefits for the biodiversity associated with the habitat, particularly if the habitat is not explicitly recognized as a protection objective within that area.

Inspired by different directives and studies and the approach used in Sweden, four options for protection targets are defined (see also Table 3):

1. **10% or less:** In principle, at least 10% protection of each nested target is required for establishing a representative MPA Network. In some cases, where the nested target is widely spread, is in very good health, and has lower biological value, it might need less than 10%.
2. **30% protection:** In cases where the habitat is less widely spread and in fair condition, it might be necessary to protect at least 30%, in particular if it has higher biological value. Note that most habitats will require a protection of 30% rather than 10%.
3. **50% protection:** Protecting 50% may be required for endangered habitats that have high biological value.
4. **80% protection or more:** A protection level of 80% or more can be required in the case of highly endangered habitats or habitats which are key for the life history of highly endangered species, or habitats that have particularly high biological value.

Table 3. The proposed defined intervals for setting proxy quantitative ecological target for protection based on the need for status improvement (see Direct quantitative ecological protection target and define a system for assigning draft quantitative ecological targets).

F: Proxy quantitative ecological protection target	
Weighted average <2	10% or less
Weighted average 2-2.8	30%
Weighted average 2.9-3.4	50%
Weighted average >3.4	80% or more

Aligning with existing targets

When setting targets to align with existing legislation and priorities, the following should be considered: For habitats where legally binding quantitative ecological targets already exist for Baltic Sea countries, these targets represent the minimum threshold under the Protection Optimization Framework. However, if analysis and data within the Framework indicate that a more ambitious target is necessary for effective protection, such a target may be adopted. This approach ensures alignment with existing initiatives while allowing for the establishment of more ecologically relevant targets when sufficient information is available.

Defining a system for assigning draft quantitative ecological protection targets

The assumption is that different habitats require different levels of improvement and/or protection. Thus, a specific target is set for each relevant habitat, based on predefined comparable criteria.

As an initial proposal, three criteria have been suggested: current occurrence, status, and biological value, following a similar approach developed and tested in Sweden (SwAM 2021). To operationalize these criteria, a matrix is used to help score the habitats and weigh the different criteria (see Table 4).

The criteria are applied using three simple rules of thumb that complement each other:

1. The more of the habitat which occurs in a particular region, the smaller the proportion that needs to be protected (column A: Current Occurrence).

2. The better the status of the habitat is estimated to be, and the better the trend, the smaller the proportion that needs to be protected (column B: Conservation Status).

3. The higher the biodiversity of the habitat (e.g. the more species that live in or depend on the habitat), the more important it is to ecosystem functioning, and thus the bigger the proportion that needs to be protected. Similarly, the more important the habitat is for species of special concern (e.g. a critical habitat for a part of the life cycle of a red listed species), the bigger the proportion of the habitat that needs to be protected (column C: Biological Value).

Note that a final decision on what to include under biological value has not been taken, nor on the number and type of criteria to be included, and the project is working to define this.

It is, however, recognized that these rules of thumb are not necessarily all of equal importance, both overall and for individual habitats. To address this, different weighting (shown in the row Criterion Weight in Table 1) can be implemented. The weighted average (WA, column D) that results from the ratings combined with their weight translates into a suggested direct target (Table 1, column E) and a proxy target in the form of the amount of the habitat that should be included in the MPA network (Table 2, column F).

Table 4. A conceptual representation of the matrix for assigning draft quantitative ecological protection targets, including a mock-up for an imaginary habitat.

	A: Current occurrence	B: Status	C: Biological value	
	1: Very high (very common)	1: Very good (doing very well)	1: low	
	2: High (common)	2: Good (within natural range of variation)	2: medium	
	3: Medium (rare)	3: Fair (near threatened or vulnerable)	3: high	
	4: Low (very rare)	4: Poor (endangered or critically endangered)	4: very high	D: Weighted average (WA)
Habitat X	2	3	4	3.3 (=21-40% of the habitat requires improvement, which equals min. 50% protection)
Criterion weight for habitat	1	1	2	

Set draft quantitative ecological protection targets

Draft percentage targets are then assigned to each identified habitat based on the relative importance of each component.

Review draft quantitative ecological protection targets

The rules of thumb presented above are useful for identifying possible targets in a marine region, but they only provide an initial target, or a range for the direct targets. However, there are several other factors that could play into the decision on the final quantified target. These factors are best determined by regional experts, who are familiar with the situation in the area. Therefore, while the general setting of targets using the blueprint is comparatively straightforward, it might vary depending on area and habitat.

The use of the tool produces a suggested target, which then needs to be reviewed, interpreted and adjusted depending on the specifics of the habitat. This is proposed to be done by presenting the draft percentages, as well as the underlying scoring and logic, for review by national experts and then discussion at (subdivision) workshops. The review and workshops would be aimed at experts external to the project and which possess expertise on the habitats and/or subdivision in question. Experts taking part in the review and the workshops would be invited to adjust, upgrade/downgrade the scoring/percentage target by X units within a previously agreed scale based on e.g. if they functionally overlap with some of the other habitats or if there is sufficient replication with other habitats to ensure that the community components have sufficient protection.

Present targets for approval and adoption

Once the final targets have been agreed and the rationale documented, targets are collated and presented for political approval, in the case of the Baltic Sea Protection Optimization Framework at the level of Heads of Delegation, i.e. the relevant ministries in the countries around the Baltic Sea. Following their approval, they are then presented for adoption by the Helsinki Commission and included as part of the Framework.

Regular review and revision of targets

To integrate adaptive management principles into the target-setting, to address several of the risks identified in Section 4.2.3 as associated with setting quantitative ecological protection targets, and in line with the guiding principles laid down for target-setting under the Baltic Sea Protection Optimization Framework, it is proposed that the targets be regularly reviewed and, as needed, revised.

The interval of review is still open and might differ depending on the type of target. It is, however, strongly recommended that targets be revised only if the revision a) represents a more precautionary approach or b) there is ecological evidence for a change.

4.3.6 Potential tools which can be used to set and/or track the protection targets in the Baltic Sea

As outlined in the blueprint presented here, a key aspect of enhancing the implementation potential and applicability of protection targets is to concomitantly ensure that feasible approaches for tracking progress are developed, and that the necessary infrastructure is in

place alongside the development of the targets. Under the Baltic Sea Protection Optimization Framework, many protection targets will be linked to indicators, with the target serving as the threshold value. Ongoing work in the project aims to ensure that both the infrastructure and tools for tracking progress, as well as the implementation of the Framework itself, are ready for when the Framework is presented for final adoption.

Tools which could be used to track progress towards reaching protection targets in the Baltic Sea, including but not limited to quantitative ecological protection targets, include the following:

- The new MPA database and Baltic Sea MPA portal, including results of the ecological modelling.
- Sufficiency of measures analysis results.
- Cost-effectiveness analysis.
- Management effectiveness analysis (and/or components thereof).
- Spatial activities, pressures and impact tool.

Annex 1: List of Co-creators of the Baltic Sea Protection Optimization Framework by February 2025

Aarhus University
Åbo Akademi University
Administration of Lithuania Minor Protected Areas
Aktiivs
ASCOBANS Secretariat
Baltic Environmental Forum Latvia
Baltic Sea Advisory Council (BSAC)
BioConsult GmbH & Co KG
BUND
BUND Friends of the Earth Germany
Chief Inspectorate for Environmental Protection
Coalition Clean Baltic
Consultant for Federal Agency for Nature Conservation Germany
Consultant to BfN
County Administrative Board Kalmar
County Administrative Board Västerbotten
County Administrative Board of Västra Götaland
Cruise Lines International Association (CLIA)
Curonian Spit National Park administration
Danish Environmental Protection Agency
Danish Environmental Protection Agency
Danish Ministry of Environment
Danmarks Naturfredningsforening
Environmental Board of Estonia
Estonian Marine Institute, University of Tartu
Estonian Ministry for the Climate
Estonian Ministry of Climate
Estonian Ministry of the Environment
European Boating Industry
European Commission
Federal Agency for Nature Conservation (BfN)
Federal Maritime and Hydrographic Agency
Finnish Environment institute (SYKE)
Finnish Ministry for the Environment
Gdynia Maritime University, Maritime Institute
General Directorate for Environmental Protection Poland
German Environmental Agency (Umweltbundesamt)
Government of Åland

HELCOM
Helmholtz Institute for Functional Marine Biodiversity at the University of Oldenburg (HIFMB)
International Council for Exploration of the Sea (ICES)
ITAW
Jade University of Applied Sciences
John Nurminen Foundation (JNF)
Klaipėda University, Lithuania
Latvian Institute of Aquatic Ecology
Latvian Ministry of Environmental Protection and Regional Development
Leibniz Institute for Baltic Sea Research Warnemuende
Maritime Office in Gdynia
Maritime Office in Szczecin
Meereezologie Consultants
Metsähallitus Parks and Wildlife Finland
Ministry of Agriculture and Forestry
Ministry of Smart Administration and Regional Development of the Republic of Latvia
Nature Conservation Agency of Latvia
OSPAR
Regionale Directorate for Environmental Protection in Szczecin
Sintef
State Department of Agriculture, Environment and Rural Areas (LfU)
State Service for Protected Areas under the Ministry of Environment Lithuania
Swedish Agency for Water and Marine Management
Swedish Defence Research Agency
Swedish University of Agricultural Sciences (SLU)
Technical University of Denmark
The Fisheries Department Ministry of Agriculture and Rural Development
The Pew Charitable Trusts
University of Gdańsk
University of Southern Denmark
VSTT
World Wide Fund for Nature (WWF Finland)
WWF Poland

Annex 2 The Baltic Sea Protection Optimization Frameworks: proof of concept

Introduction: The Baltic Sea Spatial Protection Optimization Framework, why and what?

The planet is facing an unprecedented triple planetary crisis: climate change, pollution, and biodiversity loss (IPBES 2019). At the regional level, all three of these threats pose clear and immediate dangers to the Baltic Sea and its ecosystems. Nutrient and hazardous substance pollution are the most widespread and impactful pressures in the Baltic Sea (HELCOM 2023), with extensive documentation on their negative effects. The impacts of climate change are already evident in changes to physiochemical parameters, biodiversity, and society, with the region warming faster than the global average (HELCOM 2024). The latest State of the Baltic Sea assessments reveal poor biodiversity status across the entire region and at all levels of the food web (HELCOM 2023). The need for whole-scale transformative change to reverse these trends has never been more pressing in the history of the Baltic Sea. Transformative change, supported by the Protection Optimization Framework, is essential for maintaining ecosystem function and ensuring the continued provisioning of services to society (CBD 2022a). The urgency of addressing the multiple pressures on the Baltic Sea marine environment calls for a dual approach: introducing new measures to limit the impact of human activities while strengthening existing measures to enhance their effectiveness.

By their nature, environmental challenges often transcend political, legal and other anthropogenic boundaries, making them difficult for individual countries to solve alone. Regional Seas Conventions (RSCs), such as HELCOM, provide well-established platforms for transboundary cooperation on the marine environment, operating under a framework that is well aligned with the relevant goals and objectives of both EU and global commitments.

Marine protected areas (MPAs) have been recognized by entities such as the Convention on Biological Diversity and the EU Green Deal as vital tools in combatting the triple planetary crisis. Globally, MPAs have been proven to protect biodiversity, mitigate climate change, safeguard the provision of essential ecosystem services, build and ensure resilience, and support local economies. The Baltic Sea was the first region in the world to achieve the Aichi Target for 10% spatial protection, as early as 2010, and its current coverage of approximately 17% is well above the global average of around 8% for marine areas. That said, many of these areas are not actively managed, and it has taken almost 30 years for the Baltic Sea to reach its current level of spatial coverage (~17%). To meet the EU Biodiversity Strategy target, countries will need to protect an additional ~13% of the Baltic Sea, in just six years. The ultimate goal of these protection efforts is not merely to meet a specific percentage target, but to strengthen biodiversity to the point where biodiversity loss is reversed, and ecosystem functions are fully restored.

Spatial protection must consider not only what happens within the designated areas but also the surrounding environment, as well as both societal and ecological aspects to effectively strengthen biodiversity. To fully capitalize on the added value of increased spatial protection and optimize the benefits from both existing and new areas, they should be strategically designated based on what is being protected, for what purpose, in what way, and where. Ideally, all efforts should be carried out at an ecologically relevant scale, supported by functional governance, effective and efficient measures, adaptive management, and fit-for-purpose monitoring. Without effective policy and management on a broad scale, MPAs can only serve as isolated islands of protection in a larger sea of degradation, limiting their benefits and yielding sub-optimal returns on already committed resources and efforts.

The framework and necessary prerequisites for this type of strategic decision-making on spatial protection have been lacking at the Baltic Sea level. While governance bodies and institutions with the necessary mandates and aspirations for marine protection already exist, the challenge lies in the implementation and the spatial scope at which protection efforts of the marine environment are currently done. Most existing entities focus only on a subset of the marine area (local or national), which leads to fragmentation. This hinders the current network from reaching its full potential and securing optimal positive biodiversity outcomes from existing protection measures. Past experiences have shown that a lack of regional coordination results in limited progress and sub-optimal development. To unlock the full potential of the network, a regime shift in how marine protection is approached is needed, including improved interaction and collaboration between actors across the region. However, for this to be possible, several fundamental gaps need to be addressed.

The pre-requisite information, tools, capacity and frameworks to operationalize the optimization of spatial protection at the network level in the Baltic Sea are not yet available in a usable format. Known barriers include:

- **Incomplete knowledge base for decision making and designation**, such as gaps in the distribution of biodiversity across the Baltic Sea, understanding the role of biodiversity in increasing resilience, supply of ecosystem services, ecosystem function, and the effects of pressures and human activities on biodiversity.
- **Governance gaps**, including a too-narrow scope of protection, lack of strict protection measures, inconsistent or missing identification of natural values, and unclear protection objectives and targets. Inconsistent legislation and differing interpretations further complicate governance.
- **Absence of a concrete network approach** and gaps in the coherence of the existing MPA network.

- **Insufficient use of adaptive management**, including limited capacity of managers, lack of or ineffective management plans, inadequate measures, weak enforcement, lack of compliance assurance, and insufficient monitoring.
- **Lack of progress tracking** and inadequate measurement of success across the protection cycle.

This Baltic Sea Protection Optimization Framework aims to enable the necessary transformative change and, together with the improved knowledge base and tools being developed to enable implementation of the framework, holistically address the gaps outlined above on a regional level. It responds to the need for a systematic approach to these challenges on a Baltic-wide scale, ensuring comparability and compatibility across countries and, by extension, improving the ecological relevance of the results and the consequent national implementation. The Framework is designed to support the HELCOM Contracting Parties in their efforts to strategically improve and expand the spatial protection network in the Baltic Sea, securing genuine positive biodiversity outcomes and ultimately realizing the full potential of the Baltic Sea MPA network.

A Baltic Sea Spatial Protection Optimization Framework, jointly developed by the Baltic Sea countries who are also EU Member States, helps to plan, govern, manage and monitor the Baltic Sea network of marine protected areas (MPAs) in an ecologically relevant way. The Framework can provide the infrastructure, support and capacity for the countries around the Baltic Sea to take a transboundary approach to strategically extend the network of MPAs but also support the streamlining of governance and hasten the transition to fully adaptive management of MPAs across the network, thus optimizing the network to ensure it reaches its full potential.

The framework takes a holistic approach to improving the MPA network, addressing governance, designation, and management challenges simultaneously and comprehensively. This is combined with an ecosystem-based approach where biodiversity aspects (including ecosystem services) and pressures at ecologically relevant scales are considered to maximize positive impact. By addressing the entire MPA network across the region, the framework incorporates aspects that are often insufficiently addressed in existing protection efforts, such as biodiversity hotspots, ecosystem services, ecosystem function, and connectivity, all within a systemic and coherent approach.

The Framework represents the first time a region has come together to try to jointly develop a transparent, data-driven, science-based, step-by-step approach for identifying goals, strategies, desired outcomes, and targets for protection and restoration. It aims to provide clear direction on what to protect, how much, and where, to achieve the goals and vision. Additionally, it seeks to develop a shared approach for implementation—specifically, how to best protect and restore to reach the shared goals—all based on the latest scientific knowledge. The knowledge base and tools developed to support the framework then

translate this into concrete action by identifying where to implement measures to optimize protection and restoration, essentially providing a blueprint for where to protect, for what reasons, and how, at ecologically relevant spatial and temporal scales.

Establishing this Framework, along with the infrastructure needed to support it, boosts the likelihood that future expansions of the network will genuinely enhance the effectiveness, efficiency, and benefits of both existing and future protection measures. In turn, this maximizes the potential to secure positive biodiversity outcomes.

The Framework has been drafted to align with and contribute to the Sustainable Development Goals (SDGs) (UN 2016) (e.g. SDGs 10 and 12-15), the Global Biodiversity Framework (CBD 2022b) and its Targets (e.g. Targets 1-4, 8, 9, 11, 14, 20-23) and the EU Biodiversity Strategy (EC 2020).

The drafting of the Framework is an iterative and highly cooperative process, and the information in this document has been jointly prepared by IC WG BioDiv 2-2023, EG MPA 3-2023, EG MPA 4-2024, IC PROTECT WP6Gov 1-2024, IC PROTECT WP6Gov 2-2024, IC EG MPA 5-2024, IC WG BioDiv 3-2024, IC PROTECT WP6Gov 3-2024, IC EG MPA 5-2024, IC WG BioDiv 4-2024, IC PROTECT WP6Gov 5-2024, IC PROTECT WP6Gov 6-2024 and IC PROTECT WP6Gov 7-2024.

Framework development

Identified end users

An initial scoping was done together with representatives of the national Ministries of Environment (or equivalent) and the national agencies across the Baltic Sea countries regarding who the primary end users of the Protection Framework, or the components or tools thereof, would be.

The conclusions were as follows:

Critical end users:

- Policy makers at national and international level.
- National environmental authorities and agencies.

Key end users:

- MPA managers.
- Scientific and research community.
- EU and regional bodies.

Broader audiences:

- Environmental NGOs.
- Resource users and industry.
- International organizations (other than HELCOM).

This was further elaborated in Deliverable 10.1 [Exploitation and Sustainability Guide](#) prepared by the project.

Mapped needs

In the interim 2019-2021, HELCOM hosted 37 meetings dedicated to identifying gaps and possible solutions to biodiversity and protection-related issues in the Baltic Sea, including a Baltic Sea-wide stakeholder conference in 2020. This process has also included the possibility for stakeholders to propose measures and actions, and dedicated open workshops to review the planned actions and identify gaps.

Throughout this process it became apparent that in relation to biodiversity, and especially to protection, there is a high level of commonality across the countries when it comes to the needs, which can be translated into challenges and barriers which are blocking progress across the region (see the next section for detailed information on the identified shared challenges and barriers). This commonality ranges from implementation challenges faced by area-level managers all the way to high-level policy and governance. The main high-level needs were identified as planning and designation of new areas for spatial protection, governance, management of spatial protection and the need to move towards a network level approach for spatial protection, to enhance the ecological relevance of protection actions. It was repeatedly highlighted by the countries that many of these barriers, even should there be the possibility for each country to address them individually, need to be addressed on a Baltic wide scale to ensure comparability and compatibility across countries and, by extension, improved ecological relevance of the results and the consequent national implementation.

Establish shared challenges and barriers

Challenges and barriers to sound design and planning of marine protected areas

Barriers to expanding spatial distribution of MPAs

It has taken the region almost 30 years to achieve the current level of spatial coverage, and to reach the global, EU and Baltic Sea target the countries will have to come together and protect approximately the same amount, ~13% of the Baltic Sea area in just 5 years. This in itself poses a challenge. However, these areas should be placed where they enhance the existing network and optimize the possibility to secure positive biodiversity outcomes.

Fully capitalizing on the added value contributed by the increase in coverage of spatial protection required by the Baltic Sea Action Plan, EU Biodiversity Strategy and the Global Biodiversity Framework thus calls for the designation to be done in a strategic, ecologically relevant way. Yet the pre-requisite information and framework to do this are not currently available in a format which allows for their application for spatial protection.

Inconsistent use, or lack, of identified nature values, protection objectives and targets

The EU Biodiversity Strategy states the need to clearly identify the natural values for which the area is protected and the necessary protection objectives for those natural values. While identifying protection objectives and targets is important on an area basis, it also has relevance on a network scale, to better recognize ecosystem protection features at an ecologically relevant, often transboundary, level. To ensure this more strategic approach and secure protection benefits, a biogeographical region-wide common understanding and MPA optimization framework urgently needs to be developed and agreed.

Lack of a concrete network approach

A single MPA can protect species and habitats within its borders, whereas a network of MPAs can extend this protection to cover wider areas, such as a sub basin or an entire regional sea and also stands a better chance of safeguarding ecosystem function (through replication, representation and connectivity). A network protects the ecological interconnectedness between and within ecosystems and strengthens the resilience, provided that the network is strategically and effectively designed and managed. The realization of such a network implies a consistent approach to design, management, monitoring and evaluation and requires transboundary cooperation and an understanding of how individual MPAs can support each other across the network. Despite the central importance of adopting an ecologically relevant network-level approach, the infrastructure, data and supporting information needed to enable strategic planning and management on a regional level is fragmented or, in some cases, almost entirely lacking.

Gaps in coherence of the MPA network

The network-wide protection presented above is referred to as ecological coherence. Coherence (e.g. connectivity, representativity, adequacy and replication of the features across the areas) of the network is essential to consider the design of MPA networks and their assessments. Since 2010, regular Baltic Sea assessments, performed jointly by all countries bordering the Baltic Sea under the auspice of HELCOM, have shown that the MPA network in the Baltic Sea does not fulfil all requirements for a coherent network, specifically with respect to adequacy and connectivity, and this needs to be addressed for the network to reach its potential.

Incomplete understanding of the effect of pressures and human activities on biodiversity

Human activities cause pressures on the marine environment, which in turn threaten achieving protection objectives and targets for biodiversity. The Baltic Sea is one of the most highly utilized seas on the planet, and at a given time any area is under several pressures, stemming from multiple human activities. If each of the pressures is considered individually, they may appear to be at sustainable levels. However, when summed together, their total impact may be considerable and might represent impact that is more complex than only being additive. The incomplete understanding of pressures, their type, spatial distribution and effect on biodiversity, their causal link to underlying human activities as well as the varied

approaches to managing human activities across the network brings about sub-optimal results and jeopardizes the security of positive biodiversity outcomes.

Too narrow scope of protection

Historically, MPAs are mostly focused on protecting single species or habitats, rather than considering the diversity of species within an area, whole ecosystems, ecological processes, and interactions. To secure the full potential of an area, and an MPA network, MPAs need to function as holistic tools for protection, expanding their focus on individual species or habitats to protecting communities, ecosystems and their functions. This gap in implementation and approach to both designation and management is a major barrier to realising the potential of individual MPAs, and by extension, the network.

Lack of strict protection

The Baltic Sea Action Plan and the EU Biodiversity Strategy both require expanding the coverage of strictly protected areas to 10% by adding or enlarging existing areas or designating zones within these which are under strict protection. Strictly protected areas, as identified by IUCN categories 1a, 1b and, in some cases, category 2 and in line with the EU guidance on strict protection (EC 2022), are nearly absent in the Baltic Sea, despite their considerable importance for marine biodiversity. The designation of new strict protection needs to be done in a strategic, ecologically relevant way to gain full benefits from these protection measures.

Gaps and barriers to enabling good governance of marine protected areas

No common terminology for protection

Common language refers to concepts, including actual words and phrases, which are commonly understood by a group of people striving for the same ultimate outcome. It assures that all parties to a process understand expectations and thus minimizes misunderstandings. It strengthens consistency throughout a process, improving cohesiveness and reliability in outputs. A lack of common language in relation to protection, both within and across countries in the Baltic, was highlighted as a barrier to transboundary cooperation as well as detrimental to the credibility of protection efforts and communication with stakeholders and the public. A commonly agreed, openly available understanding of common protection terminology, in line with global, EU and regional policies, is needed to start moving towards a more cohesive approach to protection.

No shared conceptual framework for protection

A protection framework is a cohesive set of agreed goals, strategies, outcomes and targets, and the tools, infrastructure, guidelines and manuals associated with them, within which one may structure the planning, governance and management of protection action. A shared framework provides countries, at various levels of planning and implementation of protection, with orientation and commitment to a shared vision. It drives systematic practice development and establishes a culture of quality and compatibility across borders and

sectors. A framework is purposefully reductive and thus allows authorities and managers to focus on a prioritized subset of topics. There is a need for an agreed transboundary shared conceptual framework, not in place in the Baltic Sea region, to move towards a strategic network approach and to improve transboundary governance. Additionally, improved data, infrastructure and improved modelling capacity to underpin such a conceptual framework are urgently needed.

Differing and inconsistent legislation and interpretations

Protection owes much of its success and vitality to its legal empowerment and support, and modern national and EU environmental legislation has affected, and continues to affect, protection in three main ways. First, it gives legal incentives and approval for biodiversity preservation. Second, it affirms the goals of protection and influences the public to value protection. Third, it provides an environment that requires and sustains research, management and monitoring.

Findings from countries monitoring and reporting data as well as in-depth case studies across the EU confirmed the importance of having strong underlying environmental legislation and coherent governance, supported by adequate funding and the engagement of key stakeholders, in reaching genuine improvements in habitats.

The legislative landscape dictates which marine species and habitats the MPA can be designated for and thus impacts management decisions, with gaps or time lags in the updating of legislation and directives resulting in gaps in protection efforts and measures. For example, marine habitats and species which are not recognized in Annexes I and II of the Habitats Directive are significantly less well-protected than other habitats and certain ecological processes and functions which support critical life stages of marine species. Further, implementation of environmental legislation is hampered, and authorities continue to face challenges posed both by internalising EU legislation and by limitations of national legislation. These barriers have been highlighted to include limited personnel and/or capacity to utilize national and EU legislation to support the protection efforts, as well as concrete gaps in legislation itself. An insufficient understanding of the differing approaches for how EU directives have been translated into national legislation across the region has also been identified as a barrier to transboundary cooperation and management.

Challenges and barriers to effective management of marine protected areas

Much of the success of MPAs relies on management actions, the type of restrictions and efficient enforcement, yet these are often insufficiently implemented. Where they are in place, a substantial amount of management action in MPAs target the management of terrestrial natural values only and/or are limited to a comparatively small number of species.

Management capacity

Managers across the Baltic Sea MPA network often face similar challenges and recognize that management efforts in one protected area can directly affect the effectiveness of another.

Yet there currently exists little transboundary infrastructure or regional level capacity building to address this.

Insufficient use of adaptive management

IPBES defines adaptive management as a systematic process for continually improving management policies and practices by learning from the outcomes of previously employed policies and practices. While the concept and framework of adaptive management are known, it has not been extensively implemented and several of the steps identified as vital to the process suffer from a lack of resources, capacity, guidance or data.

Lack of, or ineffective, management plans

To ensure effective protection of the marine environment, MPAs must have comprehensive and effective management plans or similar instruments implemented. However, an analysis from 2019 indicates that for the marine area of the Baltic Sea, only 7% is covered by a management plan, less than half of the spatial extent of the network. Easily accessible support for the drafting of management plans is urgently needed to ensure appropriate setting of protection objectives, clear management structures and inclusion of marine values.

Unconstructive stakeholder engagement

Stakeholder engagement has long been recognized as a core element of successful MPA design, planning and management. The benefits of stakeholder collaboration are well founded: increased transparency and accountability, better decision-making, enhanced social equity and justice, improved public/private sector relationships and creation of durable solutions to complex environmental challenges. However, managers in the Baltic Sea MPA Managers' Network (MPA MANET) have highlighted a lack of capacity, training as well as adequate guidance and support in relation to stakeholder engagement, something which would significantly facilitate their work and ultimately improve the effectiveness of management efforts.

Insufficient measures

To have a concrete impact, management plans and similar instruments must translate into protection or restoration measures to manage harmful human activities, both those occurring inside and outside of the MPA. The activities, and the resulting pressures, need to be described and understood in sufficient detail to enable effective planning and regulation to ensure compliance with the protection goals and objectives. Currently, there are significant gaps in the overview of pressures and their effect on different types of protection features in the region as well as approaches for tackling both direct and indirect pressures. In addition, there is no overview of what measures are included in the management efforts for the Baltic Sea MPA network, giving little opportunity for managers and authorities to learn from each other's experiences and identify best practices, nor opportunity to realistically consider or implement cross-area or even transboundary management.

Insufficient enforcement and lack of compliance

For management plans and subsequent measures to be effective, compliance through enforcement needs to be ensured. A significant part of successful protection outcomes relies on efficient enforcement, which is often insufficient or entirely lacking in Baltic Sea MPAs. This is often due to factors associated with the lack of, or inadequate, legislative framework to implement and enforce measures for MPAs, a lack of resources or the lack of appropriate division of responsibility across authorities.

Lack of follow up and inadequate measuring the level of success

Monitoring, evaluation, and assessment provide an objective basis for determining measures of success and to guide the proper implementation of actions under the umbrella of adaptive management. To comprehensively assess the progress towards set objectives and targets, two types of monitoring and assessment need to be conducted.

The first relates to the level of implementation of the agreed measures. According to the IUCN-WCPA, monitoring of MPAs should be standardized across an MPA network and include monitoring stations both inside and outside the MPAs. Currently, most MPAs in the Baltic Sea have no or only very limited monitoring of habitats and species, as well as of pressures and activities, and such monitoring is often done inconsistently both in time and space. There is no regional overview of monitoring taking place inside MPAs, nor how such monitoring should be considered in relation to monitoring taking place outside of the area. It is therefore impossible to follow up on the effect of MPA-related measures or the effectiveness of management of MPAs in the Baltic Sea region. This, in turn, is a major barrier to implementing adaptive management.

The second is related to the actual effects these measures have on the marine environment. Management effectiveness assessments measure the extent to which all the necessary systems and processes are taking place in protected areas and identify areas for improvement. A possible methodology for network-level analysis of management effectiveness was developed and tested under the EU co-financed HELCOM ACTION project but a full analysis of the Baltic Sea network has never taken place.

Agreed Theory of Change

The Theory of Change for Baltic Sea spatial protection, as co-created with the authorities and ministries of the Baltic Sea countries under the umbrella of the PROTECT BALTIC project and approved by HELCOM Heads of Delegation, focuses on enabling sufficient spatial protection and restoration of the marine environment to ultimately secure positive biodiversity outcomes, maintain ecosystem function, and secure the production of ecosystems services, enabling sustainable use both in the short and long term (Figure A1)³.

³ IC WG BioDiv 2-2023

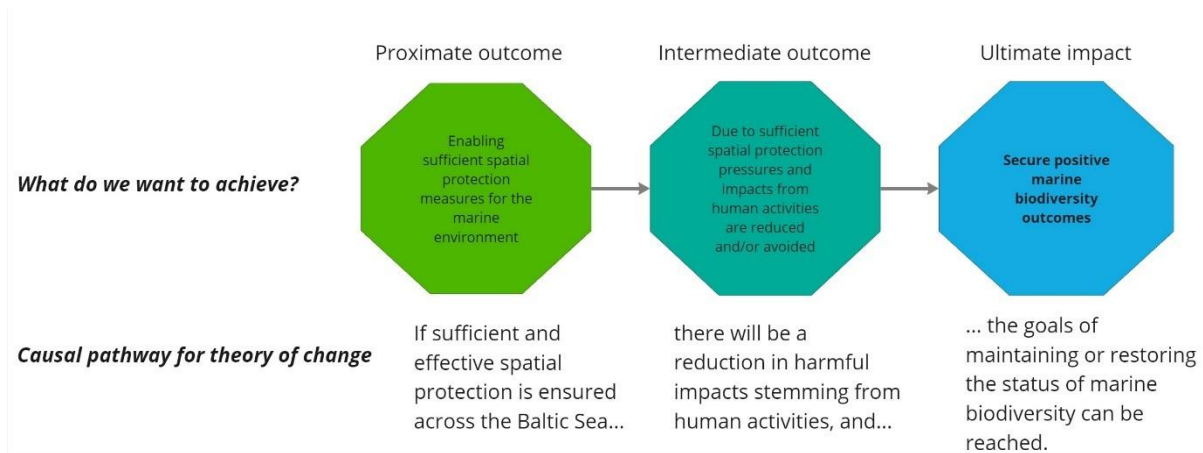


Figure A1. Theory of Change and causal pathways for Baltic Sea spatial protection. Reaching the proximate outcome would translate into a reduction in harmful activities and ultimately result in securing positive biodiversity outcomes.

This was further developed to identify what a common understanding of what the proximate outcome (Enabling sufficient spatial protection measures) actually entails (Figure A2). This was done to help guide the Framework development and make sure that it functions as a comprehensive and fit for purpose tool in the efforts to achieve the intermediate outcome and the ultimate impact. The agreement was to build on the IUCN Green List definition of good protected area management and ensure that as many as possible of the challenges and barriers identified in the previous section are addressed.

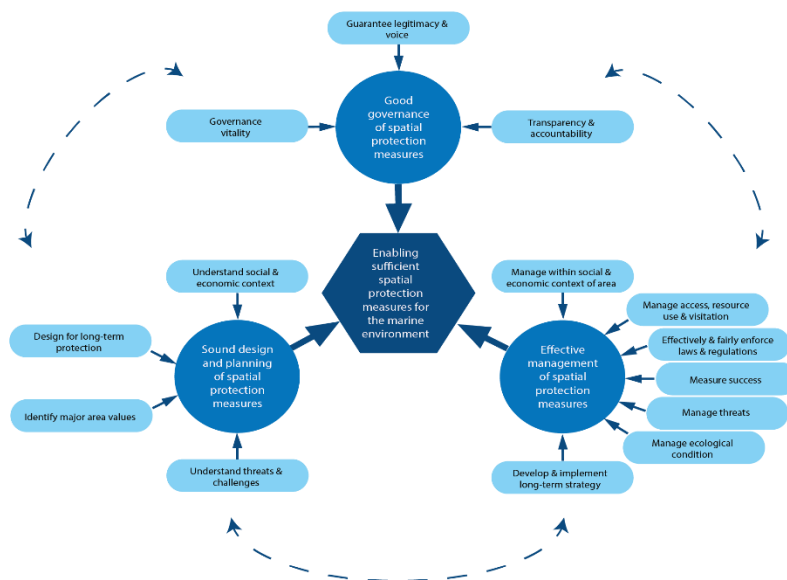


Figure A2. Conceptual overview of the components included in the definition of what is needed to achieve the proximate outcome of enabling sufficient spatial protection measures for the marine environment. The components address all the barriers and challenges identified in the previous section, to varying degrees.

Identified and agreed assumptions underpinning the framework

The following assumptions underpin the content and structure of the framework for Baltic Sea spatial protection optimization⁴:

1. Humans are intrinsically part of the ecosystem and are utterly dependent on the ecosystem for survival, including through ecosystem services.
2. The natural environment is exceedingly complex and dynamic in nature.
3. The natural environment does not recognize anthropogenic borders or delineations.
4. Human activities exert pressures on the environment.
5. Anthropogenic pressures can be both direct and indirect in their effect on the environment.
6. Anthropogenic pressures impact the environment causing a change in ecosystem state.
7. A change in the state of an ecosystem component can have cascading effects within the ecosystem, impacting ecosystem components, their function and the associated ecosystem services.
8. A subsequent change in the state of the environment has socio-economic effects.
9. To improve the state of ecosystem components, human activities need to be managed so that their impact is within the tolerance of the ecosystem.
10. To effectively manage human activities and limit impact on the ecosystem, sufficient data and knowledge is needed to support decision-making processes.
11. Availability of biological, ecological, societal and economic data differs across any given area.
12. Species, biotope and habitat information from data-rich areas can be transposed to other areas with similar environmental conditions with acceptable confidence using modelling.
13. Direct anthropogenic pressures are suitable for *in situ* or localized management while indirect pressures need alternative forms of management.
14. When pressures are removed, the ecosystem, given time, can recover to find a new dynamic equilibrium.
15. When properly implemented, spatial protection represents an effective set of measures to manage human activities and limit pressures for the benefit of biodiversity.
16. When properly implemented, passive and active habitat and species restoration measures can significantly speed up the recovery and long-term maintenance of ecosystem function.
17. The benefit to the ecosystem of a cohesive and coherent set of measures, e.g. measures implemented as part of a network of mutually supportive MPAs, is significantly greater than the contribution of individual measures.
18. Protection and restoration measures are mutually supportive, synergistic and, in many cases, a combination of the two are a pre-requisite to securing the objectives for each, respectively.

⁴ IC WG BioDiv 2-2023, IC HOD 6-2024

19. The aim of protection and restoration is to enable the processes of the ecosystem and its components to develop naturally, not to strive to maintain an artificial, prescriptive, equilibrium.
20. Both the use of spatial protection, such as MPAs, and restoration have significant potential beyond the current implementation.
21. Implementation of measures requires resources. Resources are limited. To maximize positive biodiversity and ecosystem outcomes and the feasibility of implementation, measures need to be both ecologically and resource effective and efficient.
22. The full potential efficiency and effectiveness of measures can be secured only if measures are implemented in a strategic way, i.e. at the ecologically appropriate scale, based on sound knowledge and with the support of, and within, the appropriate societal, socio-economic and governance context.
23. Reaching positive ecosystem outcomes draws on holistic consideration of socio-economic aspects, including the distribution of human activities and the resulting pressures, possible conflicts of interest, as well as resource limitations.
24. A strategic approach to planning, governing and managing protection measures and restoration, implemented at an ecologically relevant scale, is a pre-requisite for optimizing the benefits for the ecosystem and ensuring a return on investment for both current and future resource use.

Agreed minimum requirements and guiding principles

Efforts have been made to ensure that the goals, strategies, outcomes and targets for Baltic Sea spatial protection align as closely as possible with international standards and agreements as possible, while still being relevant in the Baltic Sea context. To achieve this, much of the formulation and rationale has been harvested and, where needed, modified, from sources such as CBD decisions, IUCN documentation (including the IUCN Green List), IPBES, the EU Biodiversity Strategy, and the 2021 Baltic Sea Action Plan. References are being introduced into this document to illustrate the provenance of the components of the framework.

As co-created with the ministries and agencies in the Baltic Sea countries, the following were agreed as guiding principles underpinning the Framework as a whole, as well as its implementation:

Precautionary approach: The Contracting Parties shall apply the precautionary approach, i.e. take preventive measures when there is reason to assume that activities or pressures, directly or indirectly, may create harm to a site, or the natural values or ecosystem components therein, even when there is no conclusive evidence of a causal relationship between the activity and/or pressure and their alleged effects (HELCOM 1992, modified so as to target spatial protection specifically).

Ecosystem approach principle: The ecosystem approach is based on the principle of application of appropriate scientific methodologies focused on levels of biological organization. The ecosystem approach is based upon the hierarchical nature of biological

diversity characterized by the interaction and integration of genes, species and ecosystems, which encompass the essential structure, processes, functions and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of many ecosystems. The ecosystem approach should be undertaken at the appropriate spatial and temporal scales (CBD 2000). The ecosystem approach is translated into practice through the use of ecosystem-based management of human activities (see below).

Ecosystem-based management of human activities: Ecosystem-based management (EBM) is the translation of the ecosystem approach into practice, in accordance with the 12 principles of the ecosystem approach as agreed by the CBD^{Error! Bookmark not defined.}. It is the process by which biological, social, and economic factors are integrated into a comprehensive strategy aimed at protecting and enhancing sustainability, diversity and productivity of natural resources. The ecosystem is considered the fundament for social and economic development. EBM emphasizes the protection of ecosystem structure, functioning and key processes; is place-based in focusing on a specific ecosystem and the range of activities affecting it; explicitly accounts for the interconnectedness among systems, such as between air, land and sea; and integrates ecological, social, economic and institutional perspectives, recognizing their strong interdependences.

EBM is a process that aims to link the conservation of marine resources with an integrated management of different human maritime activities. This approach helps to reduce the cumulative impacts on the environment caused by multiple human activities. EBM is a key tool for sustainable management by balancing between economic, environmental, social and other interests in spatial allocations, by managing specific uses and coherently integrating sectoral planning, and by applying the ecosystem approach. When balancing interests and allocating uses in space and time, long-term and sustainable management should have priority (HELCOM VASAB).

Spatial protection is an important tool in a larger context of EBM of human activities in the Baltic Sea.

Use of best available information available and informed decision making: The best available information should be acquired and be the main driver guiding the decision-making process, to ensure fully informed decisions are possible, thereby limiting uncertainties and enhancing the effectiveness and efficiency of protection efforts.

The dynamic nature of the ecosystem and protection efforts: Protection efforts should recognize and work with the dynamic nature of the ecosystem, i.e. the ecosystem is a dynamic complex continuously changing over time, which is what ensures the resilience and health of the system. The aim of protection should be to let ecosystem processes and components develop naturally, rather than maintaining an artificial and prescriptive equilibrium.

Adaptive approach: An adaptive approach to governance and management is a structured, iterative process of robust decision making in the face of uncertainty, with an aim to reducing uncertainty over time through system monitoring. In this way, decision making simultaneously meets one or more goals or outcomes and, either passively or actively, accrues information needed to improve future decision making (Holling 1978). The long-term maintenance and use of the framework should apply an adaptive approach whereby targets and outcomes within the protection framework will be regularly revisited to ensure the framework remains current and effective in achieving the vision for protection.

Agreed framework structure

The terms “*vision*”, “*goals*”, “*outcome*” and “*target*” all refer to the desired result of a process, but each has a distinct meaning. Setting and using quantitative targets, clear outcomes and defined goals increases the likelihood of success when undertaking spatial protection. When properly planned, these definitions of various levels of desired results can be nested, each specifying a distinct aspect of the process rather than overlapping. When nested, the goals, outcomes, and targets can track progress toward achieving the outcomes and goals using associated indicators, working synergistically to provide different levels of concretization and detail to guide success.

To improve the chances of reaching the desired results and to concretize the necessary steps, a clear “*strategy*” for implementation must be directly linked to the nested results.

In simple terms, the purpose of establishing a nested vision, goals, strategies, outcomes, targets, and indicators is to clearly define and answer the key questions: why, how and what?

The following were jointly identified as needed components of the Framework and were defined and agreed as outlined below and in Figure A3. Both the components and the definitions were developed together with the Baltic Sea country administration and policy makers, and subsequently approved by HELCOM Heads of Delegation in December 2024.

Vision

- What is the overall aim? The description of the desired state or ultimate condition. A complete vision may include a description of the biodiversity of the site, a map of the project area, and a summary vision statement. A good vision statement meets the criteria of being *relatively general, visionary, and brief*. (Adapted from *Open Standards for the Practice of Conservation 2020* (hereafter referred to as *Conservation Standards 2020*)).

Goal

- Why are we doing this? A broad formal statement which is aspirational, yet achievable, outlining the desired result toward which effort is directed. This can

include detailing the desired impact of protection efforts, such as the desired future status. A goal is generally long-term and does not describe the methods used to achieve the desired result. A good goal is *linked to strategies and outcomes, impact-oriented, measurable, time-limited, and specific*. (Adapted from Conservation Standards 2020).

Strategy

- How will we do it? A set of actions with a common focus that work together to achieve specific goals and targets by addressing key intervention points, integrating opportunities, and limiting constraints. A good strategy is *linked, focused, feasible, and appropriate*. (Adapted from Conservation Standards 2020).

Outcome

- What change are we trying to achieve? The desired result of the actions or activities within a protection strategy. This could be represented by the desired future level of threat, human activity or opportunity factor. Outcomes are necessary components in achieving the overall protection goal. (Adapted from Conservation Standards 2020).

Target

- The specific measurement that is desired to be achieved. Targets should be quantifiable and measurable, providing direction for upcoming work and defining when an outcome has been reached. A good target is *results oriented, measurable, time-limited, specific, and practical*. If the work is well conceptualized and designed, achieving a target should lead to the fulfilment of the associated outcomes, goals, and ultimately the vision identified in the protection framework. (Adapted and further developed from the IUCN lexicon).

Indicator

- A measurement of a given variable or a measurable entity related to a specific information need. An indicator is used to assess progress toward the target, delivering an outcome under a goal. Using agreed targets as thresholds for the desired status, indicators should provide clear, real-world ways to track progress repeatedly and allow implementers to modify actions and improve efficiency as needed. A good indicator should be *measurable, precise, consistent, and sensitive*. Each indicator should include a performance threshold. Thresholds can be established in many ways, including values taken from scientific literature, comparisons with past measurements, ecological modelling, values set by legislation or regulation and/or expert consensus. In all cases, the reasons for selecting the threshold should be documented. If scientific information to establish thresholds is lacking or inadequate, general ecological concepts, comparisons to other similar systems, or well-informed expert opinion can be used to determine a 'credible first iteration' of the thresholds. In practice, in a well-designed nested system, agreed targets often form the basis for

measuring performance, i.e. the thresholds for the indicators. (*Adapted from Conservation Standards 2020 and IUCN*). In the context of the Baltic Sea Protection Optimization Framework, the indicators will be referred to as protection indicators.

Table A1: Brief checklist for how to separate vision, goals, outcomes, and targets

	Vision	Goals	Outcomes	Targets
Alignment and order	The vision represents the overall aim towards which all subsequent endeavours should contribute.	The goal is the final result of one or multiple endeavours, often targeting a defined theme.	Outcomes are specific results that help to achieve a goal and the ultimate vision.	Targets provide a baseline against which to measure progress.
Scope	The vision represents the ultimate combined aim of the associated goals and their desired outcomes.	Goals represent what you want to achieve, i.e. why you are taking action.	Outcomes represent specific results needed to achieve a goal.	Targets are your specific, desired, quantifiable results which drive the achievement of the outcomes or indicate when an outcome can be considered achieved.
Specificity	General	Broader than the outcome	More specific and precise	Quantifiable
Tangibility	Not directly measurable	Does not have to be measurable	Measurable through the use of associated targets	Measurable through the use of indicators
Timeframe	Longer timeframe	Longer timeframe	Medium timeframe	Shorter timeframe
Language	Ambitious and aspirational	Conceptual and aspirational	Concrete and practical	Specific

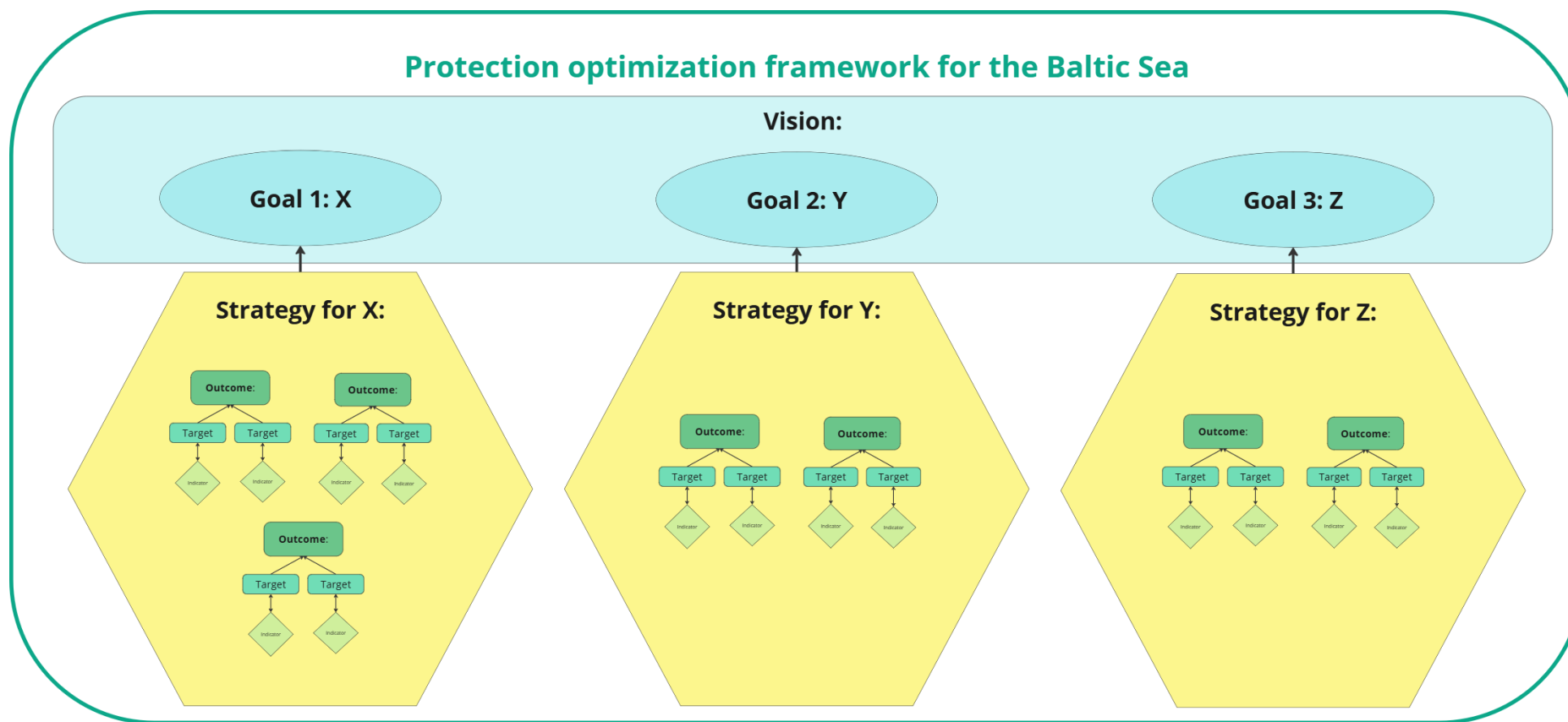


Figure A3. Conceptual relationship between the various levels of vision, goal, strategy, outcome, target and indicator for protection in the Baltic Sea.

Identified enabling factors in the case of the Baltic Sea

It is important to recognize what enabling factors laid the foundation for the work, and approval of the Baltic Sea Protection Optimization Framework, to provide as realistic a picture as possible for other regions or organizations who may wish to explore the establishment of a framework for their own area.

The Baltic Sea has a long history of close transboundary cooperation when tackling environmental issues. In 1974, despite the challenges presented by the Cold War, the countries surrounding the Baltic Sea came together and signed the Convention for the Protection of the Baltic Sea Environment, and subsequently established the Helsinki Commission (HELCOM) and the HELCOM Secretariat to support regional cooperation in the implementation of the Convention. Over the following 50 years, the cooperation and the use of HELCOM as an established platform for tackling transboundary issues, has expanded significantly. This means that the call for the Framework originated with the countries, i.e. the end users, securing initial political support. It also means that there has been a dedicated and established structure for cooperation and co-creation, one with significant reach both horizontally and vertically across all the countries in the region (see Figure A4).

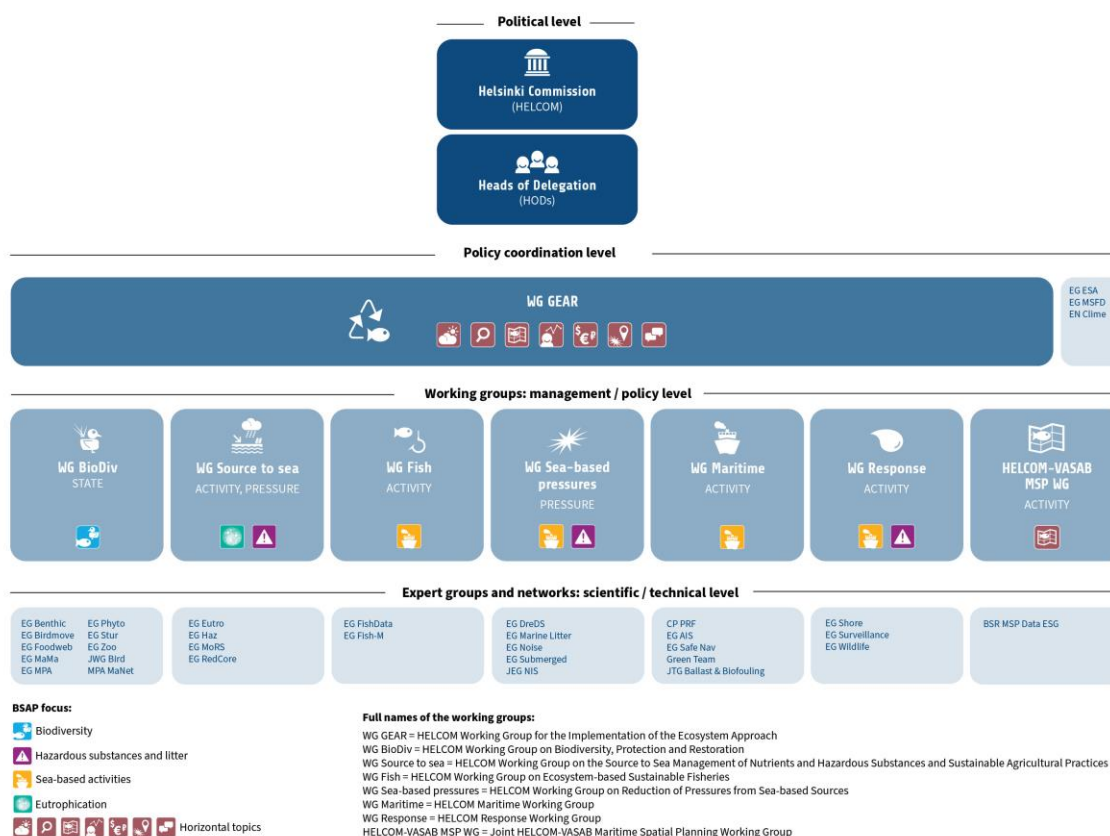


Figure A4. The structure of HELCOM, presenting both the horizontal (topical and thematic) and the vertical (scientific/technical to political) reach.

The existence, and mandate, of the HELCOM Secretariat, its role working and navigating in the interface between science and policy and its relationship with the research institutions, national agencies and ministries across the region has also been a key component in enabling the work on the framework. This facilitated finding the right partners and contributors at the right stages of the work, ensured communication with and guidance from end users throughout the development process and that end products can be presented for regional level approval and adoption, limiting the time lag and gap between development and implementation. The work being coordinated at the HELCOM Secretariat also ensures that momentum is maintained as there are dedicated personnel resources available to progress the work, which might prove more challenging in a different setup.

Lastly, a major enabling factor in the development of the Framework is the availability of dedicated funding, which in turn secured the personnel resources, time and expertise needed to embark on the development process. The work was collated under PROTECT BALTIC, a large scale, five-year project and was awarded funding by the EU under Horizon Europe. Without dedicated resources it would not be possible to work so holistically and comprehensively to address the identified gaps and challenges and would therefore limit the usability of the Framework.

Baltic Sea Spatial Protection Optimization Framework

Vision for protection in the Baltic Sea

The vision for Baltic Sea protection presents the desired collective endpoint of protection efforts (Figure A5). It has a long time-horizon and is general in nature, drafted to meet the criteria of being *general*, *visionary*, and *brief*.

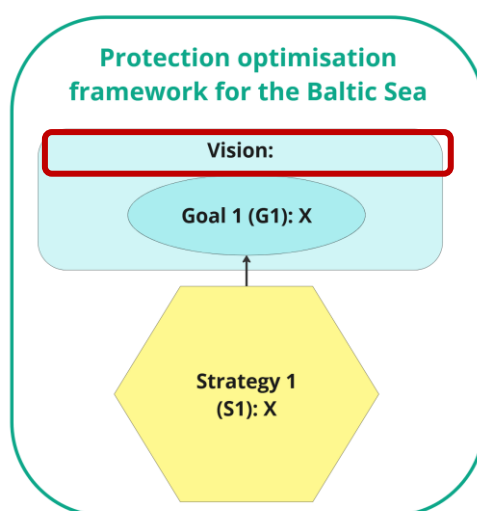


Figure A5. Placement of the vision within the Baltic Sea Protection Optimization Framework (simplified conceptual illustration of the framework). For a full-scale overview of the framework, see Figure A3.

Vision for Baltic Sea protection:

The Baltic Sea protection efforts result in concrete positive biodiversity outcomes across national boundaries, verifiably contributing to a healthy and resilient Baltic Sea with diverse ecosystems, functioning in balance, now and for future generations.⁵

⁵ [HELCOM \(2021\) Baltic Sea Action Plan](#)

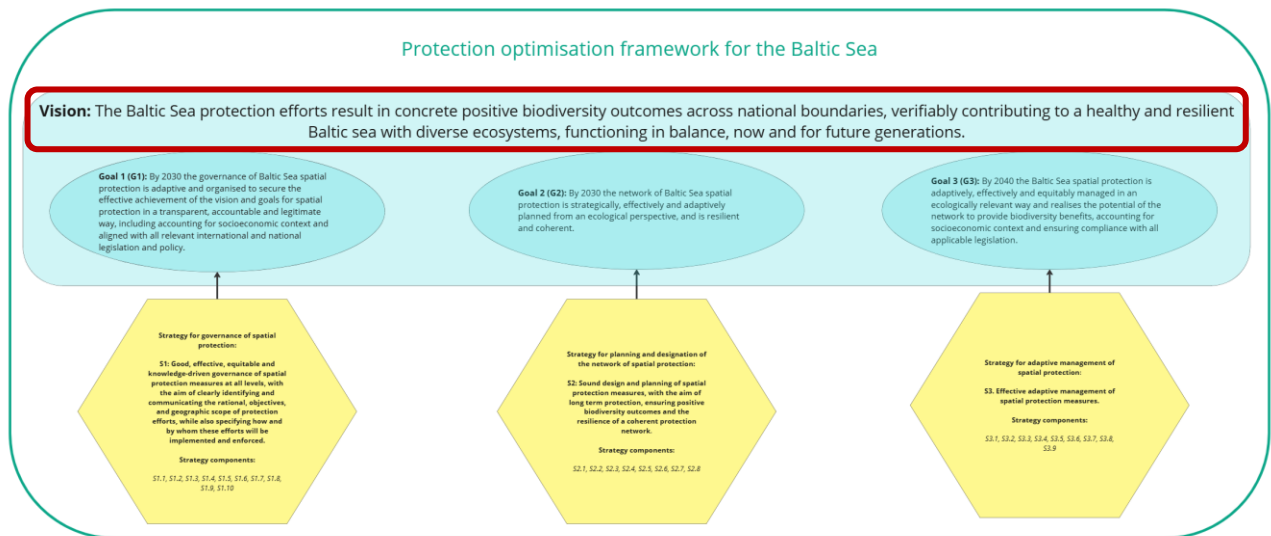


Figure A6. Placement of the Vision within the Baltic Sea Protection Optimization Framework (in red). For a full-scale overview of the framework, see Figure 3.

Rationale and context for the vision for Baltic Sea protection:

The vision has been designed to closely align with the biodiversity segment of the Baltic Sea Action Plan (BSAP), while focusing on the role of protection in achieving the more general BSAP vision and goals.

Goals for protection in the Baltic Sea

The goals for Baltic Sea protection represent the concrete components needed to achieve the vision presented above. Developed to be aspirational yet achievable, these goals define the desired results towards which effort is directed. They focus on outcomes, not the methods for achieving them. A good goal is *impact oriented, measurable, time-limited, and specific*. To ensure a holistic approach, goals cover all three main components of spatial protection – governance, designation, and management (Figure A7).

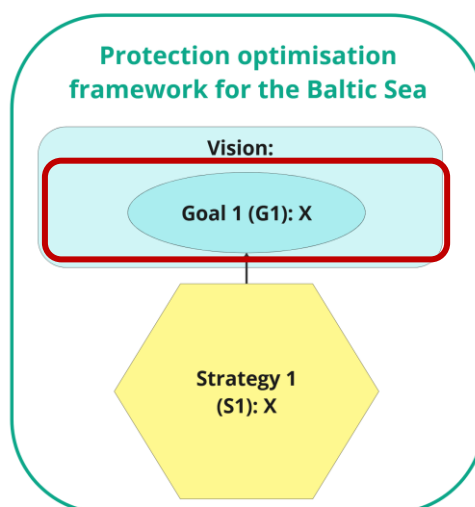


Figure A7. Placement of the goals within the Baltic Sea Protection Optimization Framework (simplified conceptual illustration of the framework). For a full-scale overview of the framework, see Figure A3.

Goal for Baltic Sea governance of spatial protection (G1):

G1. By 2030, the governance of Baltic Sea spatial protection is adaptive and organized to secure the effective achievement of the vision and goals for spatial protection in a transparent, accountable and legitimate way, including accounting for socio-economic context and aligned with international and national legislation and policy.

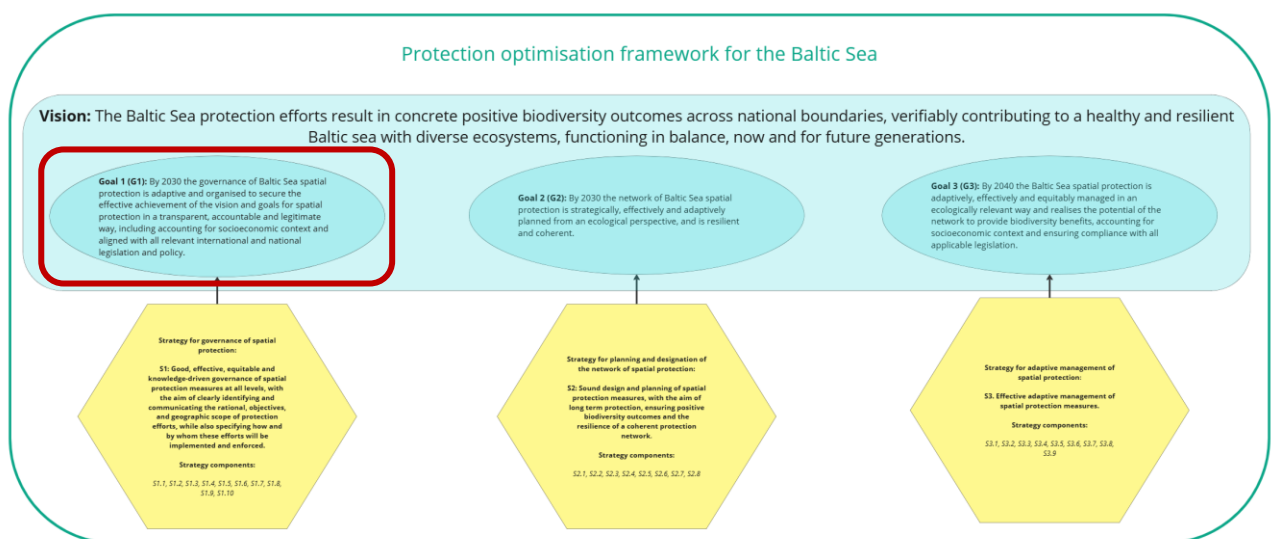


Figure A8. Placement of Goal 1 (Governance) within the Baltic Sea Protection Optimization Framework (in red). For a full-scale overview of the framework, see Figure A3.

Rationale and context for the goal for Baltic Sea governance of spatial protection:

Governance concerns the processes and institutions that guide decision making. It sets the 'rules of the game' that determine who can participate in decision making, what knowledge should be drawn on, how a protected area integrates into the broader landscape and land use, and who has a legitimate role in the management of a protected area. Not all stakeholders and rightsholders have equal opportunities and capacities to participate or influence decisions. Therefore, governance of protected areas must ensure that decision-making processes seek to balance inequities in power and resources, including efforts to achieve gender equity.

As described by the IUCN (Borrini-Feyerabend et al. 2013), governance is concerned with:

- Who decides on the management objectives and measures for a spatial protection site, how to pursue them, and with what means?
- How are those decisions made?

- Who holds power, authority and responsibility in decision-making?
- Who should be held accountable for the outcomes?

Practically, governance arrangements can vary greatly depending on the local context, but they can be defined as one of four types, also defined by IUCN:

- Type A: governance by government
- Type B: shared governance
- Type C: private governance
- Type D: governance by indigenous peoples and local communities

IUCN has defined five broad principles for good governance of protected areas (elsewhere described as equitable management or equitable governance):

- Legitimacy and voice
- Direction
- Performance
- Accountability
- Fairness and rights

These principles should be applied according to a regional and local context, although some relate to human rights for which international standards are progressively written into law.

GBF Target 14 recognizes the importance of integrating biodiversity and its values into policies, regulations, planning and development processes, at all levels of government and across all sectors, particularly those with significant impacts on biodiversity. It calls for progressively aligning all relevant public and private activities, as well as fiscal and financial flows, with the goals and targets (CBD 2022j).

Transformative change is facilitated by innovative governance approaches that incorporate existing approaches, such as integrative, inclusive, informed and adaptive governance. While such approaches have been extensively practised and studied separately, it is increasingly recognized that together, they can contribute to transformative change (IPBES 2019).

Adaptability of governance

Adaptability is considered an aspect of resilience in a broader perspective. In this case, it is focused on ensuring the resilience of governance processes and is closely linked to vitality (see below). Adaptive governance should instil a learning culture into all aspects of the governance processes and draw on multiple types of knowledge (scientific, experiential, local and traditional) where relevant. Ecosystems and social systems change over time; a learning culture will enable governance to adapt to changing circumstances (IUCN & WCPA 2017).

Incorporating social factors into MPA governance encourages adaptive governance frameworks that can respond to changing social and environmental conditions. This flexibility is vital for addressing emerging challenges, such as climate change (CBD 2022d) and shifting economic pressures, ensuring that management strategies remain relevant and effective (Folke et al. 2005).

Governance arrangements should create an environment that enables adaptive capacity, allowing for effective responses to emerging events, new knowledge, monitoring results and ongoing learning. Adaptive governance should also facilitate action despite uncertainties about future environmental changes, supporting iterative learning in site planning and management. This encourages a culture of experimentation and risk-taking. Governance structures play a key role in determining whether and how evaluation and lessons learned from site monitoring programmes are integrated into ongoing planning and management efforts. A solid foundation of adaptive governance ensures that a site can monitor, measure, and demonstrate progress towards achieving both nature protection and social goals and objectives, even in the face of changing circumstances.

Legitimacy

There should be clearly defined, legitimate, equitable and functional governance arrangements, where the interests of civil society, rightsholders and stakeholders, are fairly represented and addressed, including those related to the establishment or designation of a site. All spatial protection sites in the Baltic Sea should be legally established in accordance with relevant international agreements, as well as national and applicable regional legislation. The legal status of sites is clearly defined (IUCN & WCPA 2017).

Transparency and accountability

Governance arrangements and decision-making processes associated with Baltic Sea spatial protection should be transparent and appropriately communicated, and responsibilities for implementation clearly defined (IUCN & WCPA 2017). Governance and decision making are open to scrutiny by all stakeholders, with information presented in appropriate formats and the reasoning behind decisions evident. There is an appropriate, accessible process to identify, hear and resolve complaints, disputes, or grievances related to the governance or management of the site.

Social and economic context in governance

The governance processes of a site should clearly demonstrate that the social and economic context of the area is taken into account and the interests of rightsholders and stakeholders, are appropriately engaged. The social and economic aspects and distribution of outcomes need to be recognized and resolved in a way which secures the maintenance of the site's natural values, ecosystem components and their associated ecosystem services (CBD 2022a), as well as cultural values.

Legislation

Governance should account for all relevant legislation, national and international. Where needed, to ensure that the desired outcome for a site is achieved, governance should put in place measures, e.g. prohibitions and restriction on certain activities to prevent undesirable impacts on the site. The broader governance system must have the capacity and the will to support enforcement of these controls through legal or customary means with appropriate sanctions applied to offenders. The application and enforcement of laws, regulations and measures must be fairly enforced and not favour particular individuals or groups. The laws, regulations and measures applied to a site need to be clearly communicated to stakeholders and any changes to these restrictions should be made known to affected stakeholders before they are enforced.

Governance vitality

Governance vitality is taking decisions in timely, well-connected, adaptable, wise, creative and empowering ways and is ensured through jointly and dynamically implementing several of the above components, e.g. planning and decision making related to spatial protection should draw on the best available knowledge of the social and ecological context of the site, using an adaptive approach that anticipates, learns from and responds to change in its decision making (IUCN & WCPA 2017). By extension, adaptive management is made possible through governance vitality.

Goal for the planning and designation of the network of Baltic Sea spatial protection (G2):

G2. By 2030, the network of Baltic Sea spatial protection is strategically, effectively and adaptively planned from an ecological perspective, and is resilient and coherent.

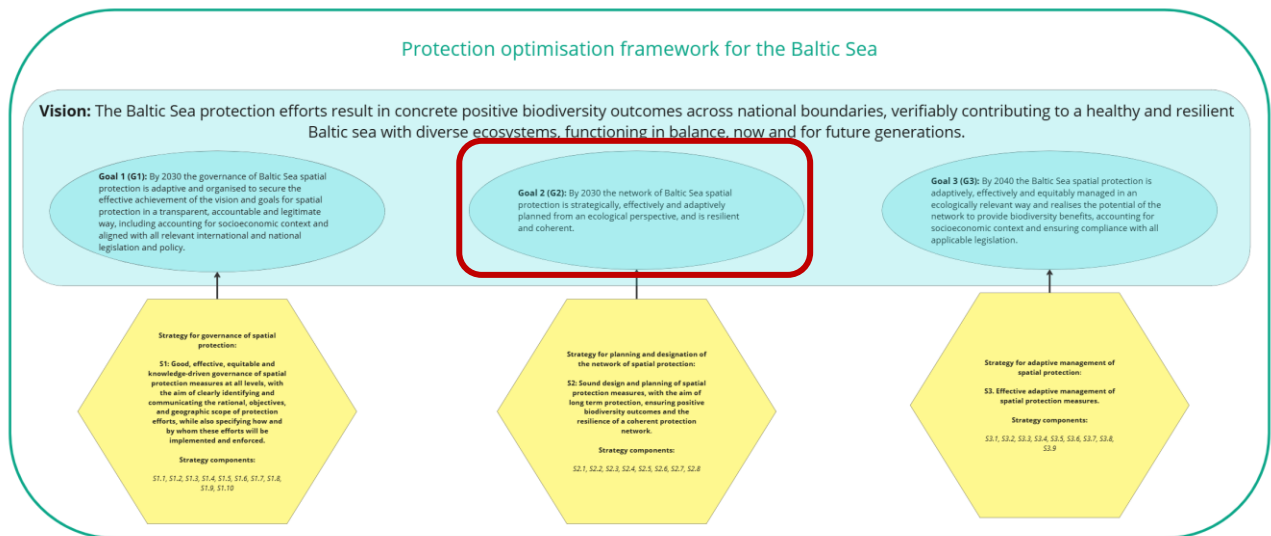


Figure A9. Placement of Goal 2 (Planning and Designation) within the Baltic Sea Protection Optimization Framework (in red). For a full-scale overview of the framework, see Figure A3.

Rationale and context for the goal for planning and designation of the network of Baltic Sea spatial protection:

The goal for planning and designation of the network of Baltic Sea spatial protection aims to ensure that the characteristics of the network, and the individual sites it consists of, will support the long-term protection of natural values and associated ecosystem services (CBD 2022a). The strategy components underpinning this goal aim to ensure consistency with the IUCN protected area categories and a robust understanding of both the natural, societal, socio-economic and socio-cultural values within the Baltic Sea spatial protection network.

Goal 2 is also central to ensuring that the designation of 30% of the Baltic Sea under spatial protection (CBD 2022c and HELCOM 2021), with one-third strictly protected (CBD 2022c), is done in a strategic way. Strategic planning and designation are key to reaching the full potential of protection efforts. The goal, and the strategy which underpins it, further strive to ensure that those who are planning areas have sufficient and appropriate information to maintain site values over time, address threats to these values, and adapt to the impact of climate change (CBD 2022d) among other global change factors. The entities planning and designating the sites should consider the current social and economic context of the sites, and planning should enhance social and economic benefits, where this is consistent with the protection objectives of the sites. Effective and strategic planning of spatial protection sites, as well as their subsequent management, requires the natural values, associated socio-cultural values, and ecosystem service values (CBD 2022a) to be clearly identified.

Only those sites where the main objective is to protect nature can be considered protected areas. This can include sites with other goals and objectives as well, at the same level, but in the case of conflicts, nature protection will be the priority. IUCN (Hockings et al. 2006)

recognizes design and planning of a protected site as a key component of achieving positive biodiversity outcomes and provides the following definition: the site has been designed in such a way that it can maintain values over time:

- (i) The ecological and physical attributes of the site that mean that the integrity of natural values can be maintained.
- (ii) The way in which the site fits within a social and cultural context to minimize negative and promote positive interactions with surrounding communities and stakeholders.

Coherence

Ecological coherence refers to the way a site and its natural values interact with, and support, the wider environment. This includes maintaining the processes, functions and structures of the intended protected values across their natural range.

On the level of an MPA network, it refers to how the network, or parts thereof, functions synergistically, such that the individual protected sites benefit from each other. When well-planned and well-managed as a network, a collection of sites can deliver more benefits than unconnected individual MPAs can provide on their own (IUCN-WCPA 2008, UNEP-WCMC 2008, and Catchpole 2012).

Coherence is most commonly evaluated by assessing ecologically and biologically important areas, representativity, connectivity, and replication (CBD 2008) as well as adequacy.

Additionally, an ecologically coherent network of MPAs may, through its design, increase resilience to changing conditions (OSPAR 2006).

If connectivity with other sites or habitats is critical to the maintenance of the site values, or critical to achieving the agreed goals and outcomes for protection in the Baltic Sea, then the connectivity across and between sites should be ensured through network level planning. Individual sites should be planned and later managed (see Goal 3 for management of spatial protection), so that they are integrated within the wider landscape and/or seascape and the Baltic Sea-wide MPA network. This may occur, for example, through the use of, and active cooperation within, a national or regional protection framework in the planning and designation process, through managing threats in collaboration with surrounding areas, communities and user groups (see Goal 3 for management of spatial protection), or through international collaboration and agreements, where relevant. Sites should be planned so that they contribute to an ecologically representative and well-connected system of protected areas.

Ecological resilience

Resilience is defined as the capacity of a system to absorb disturbance and still retain essentially the same structure, feedback, function, and identity. Resilience is often measured by the level of disturbance that an ecosystem can undergo without crossing a threshold to a situation with different structure or outputs. Resilience depends on factors such as ecological dynamics as well as the organizational and institutional capacity to understand, manage, and respond to these dynamics (IPBES 2024).

Adaptability of planning processes

Adaptability is considered an aspect of resilience in a broader perspective. It is, in the case of Goal 2 of the framework, focused on the resilience of the planning processes (as opposed to the ecological resilience presented above) with adaptability being the capacity of humans in a system to learn and adjust their responses to changing external drivers and internal processes, and thereby continue development along an agreed current trajectory⁶ (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017).

Identifying values

Natural values and the associated ecosystem components of a site and, depending on the site's management category and/or measures and context, the associated ecosystem service values, must be identified and considered in the planning and designation process. Natural values in this context always refers to biodiversity, at genetic, species and ecosystem level, as well as to ecological and ecosystem function, and can also refer to geodiversity. Site values are defined as the intrinsic natural values outlined above, as well as the associated anthropocentric ecosystem service values found in the site, a subset of which the site is intended to conserve, maintain or enhance. In the case of conflict between the different types of site values, nature values should be the priority of protection efforts (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017 and CBD 2022a).

Planning and designing for long-term protection

The design of sites within their landscape/seascape context (i.e. size, viability, connectivity, context in the landscape) should be sufficient to protect and maintain the natural values identified. The choice, design and location of the site should consider the network context (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017).

Understanding threats

The identification of threats should include all current and potential activities, and the pressures and impacts that they give rise to, including climate change effects (CBD 2022d), to the site's natural and associated cultural, social and economic values. Threat analysis should identify activities that may be incompatible with the site's protected status, applying the

⁶ As defined by the [IUCN CEM Social-Ecological Resilience and Transformation Thematic Group](#)

precautionary approach (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017).

Threats should be identified in collaboration with stakeholders and experts, should be understood in detail and at an accuracy relevant to management. Threats should be documented using the regionally agreed threat taxonomy. Threats/challenges should be identified comprehensively enough, and at a level of detail, to provide the basis for measures to address the identified threats. It should be emphasized that this requirement does not necessarily exclude the continuation of activities that are compatible with the site's objectives as well as with the overall protection efforts on the network level.

Understanding social and economic context

The establishment and management of a protected area may have positive and/or negative impacts on rightsholders, stakeholders and the local or wider community, depending on the prevailing social and economic context. Over time, the type of impact may change, as conflicts are resolved, new conflicts arise or when governance is adapted. The current social and economic context of the site should be sufficiently well documented and understood to be considered in ongoing planning and management to optimize positive impacts and to minimize negative impacts where possible (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017 and CBD 2022h).

This includes an understanding of the social and economic characteristics of the region, previous uses of the site and the impact of spatial protection on:

- socio-cultural values (including but not limited to: 'sense of place'; spiritual and religious; heritage, historical, and recreational values);
- access (increased or decreased) for rightsholders, stakeholders and the public; and
- economic activity in the surrounding area.

Goal for management of Baltic Sea spatial protection (G3):

G3. By 2040, the Baltic Sea spatial protection is adaptively, effectively and equitably managed in an ecologically relevant way and realizes the potential of the network to provide biodiversity benefits, accounting for socio-economic context and ensuring compliance with all applicable legislation.

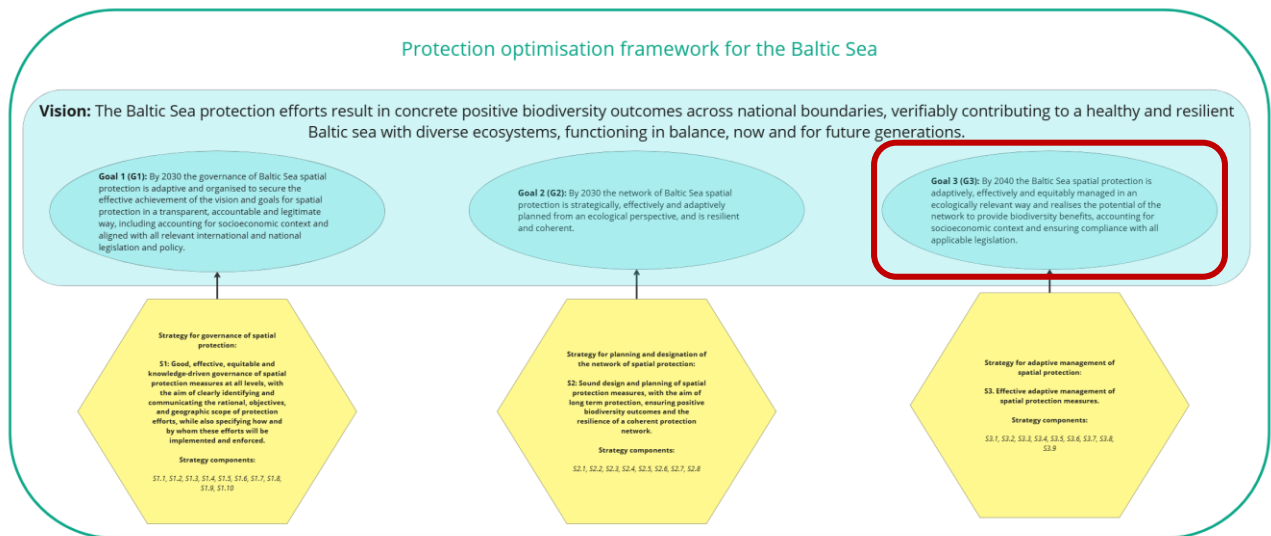


Figure A10. Placement of Goal 3 (Management) within the Baltic Sea Protection Optimization Framework (in red). For a full-scale overview of the framework, see Figure 3.

Rationale and context for the goal for management of Baltic Sea spatial protection:

GBF Target 1 requires that all areas are under participatory, integrated and biodiversity inclusive spatial planning and/or effective management processes addressing sea-use change, with the aim to bring the loss of areas of high biodiversity importance, including ecosystems of high ecological integrity, close to zero by 2030, while respecting the rights of indigenous peoples and local communities (CBD 2022e).

The IUCN (Hockings et al. 2006) defines effective management systems and processes as: *whether the management planning systems, resources and processes implemented at the site are sufficient and in accordance with accepted and effective management approaches, given the environmental, social and socio-cultural context of the site and projected future climate change*. The IUCN further defines the desired outcomes of protection management and/or measures as *whether the network or site enhances/maintains its values, most critically its natural values, and achieves its goals and objectives over time*.

The strategy components underpinning this goal aims to ensure that management and measures are consistent with the IUCN protected area categories and are based on a robust understanding of the natural and socio-cultural values of the Baltic Sea spatial protection network. They further strive to ensure that those implementing management and/or measures have sufficient and appropriate information to maintain site values over time, address threats to these values, and adapt to the impact of climate change (CBD 2022d), among other global change factors.

Managing for the long term

To ensure long-term outcomes, protection measures for a site should be integrated within the wider seascape (CBD 2022c). This may be done, for example, through active participation within a national or regional protection strategy or in collaboration with marine spatial plans, through managing threats in collaboration with surrounding sites, communities and user groups or through international collaboration and agreements, where relevant (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017).

Management and/or measures for a site should have a long-term strategy associated with them that provides a clear explanation of the overall goals and outcomes of management and/or measures (explicitly including the protection of the area's values and achievement of possible social, societal and economic goals and objectives) as well as the expected outcomes of protection (explicitly including the protection measures of the area's values and achievement of possible social, societal and economic goals and objectives). This should be reflected in up-to-date documentation, including strategies and measures appropriate and sufficient to achieve the planned goals and objectives for the site. The documentation should:

- Provide clear and appropriate directions for measures: Strategies and measures specified are appropriate and sufficient to achieve the planned goals and objectives for the area.
- Demonstrate adequate capacity to manage effectively: management and/or measures to achieve goals and objectives in the long-term are supported by adequate financial and human resources, adequate staff competency, capacity development and training; appropriate access to equipment and adequate infrastructure; and measures are in place to deal with critical shortfalls (see section on Management capacity for further examples).

Operational planning documentation, e.g. an MPA Management Plan or similar, should also be provided, supported by evidence showing that the plan is being implemented as described. Documentation should demonstrate that measures address both short-term goals and objectives, and that also longer-term threats have been considered such as climate change projections for the region (see below) (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017).

Management and/or measures should consider the long-term implications of climate change, and other global change factors, and identify strategies to guide management of these values in the context of future change. The implications of climate change on the natural and/or socio-cultural values of the site should be considered and documented, particularly in relation to the goals and objectives for these values. Climate-ready goals and objectives should provide a solid foundation for all elements of site planning, governance and management into the future. This requires that trends and changes in conditions are monitored over time, requiring management and governance to communicate with key constituents about the implications of these changes on site values and to integrate information into adaptive

governance, management and planning (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017). Best practices for setting protection goals and objectives in the context of climate change can be found in the HELCOM Spatial Protection Management Guideline (under development).

Sites with good financial and human resource systems will have a much higher chance of being effectively managed and achieving biodiversity benefits. Management actions here encompass planning, implementation, stakeholder engagement, communication, infrastructure, research, monitoring and evaluation.

Management capacity

Adequate capacity to manage effectively can address issues such as the following (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017):

- Management staff has the appropriate skills and knowledge, as well as the mandate, to implement the work.
- Adequate equipment and infrastructure appropriate to the context of the site is available and accessible as appropriate implement measures.
- Equipment and infrastructure are well-maintained and replaced when needed.
- The site has enough appropriately trained staff with adequate competences, appropriately deployed to implement all aspects of its management and/or measures.
- Staff are supported, respected, and staff development, employment and working conditions, health, safety and welfare are given a high priority by the relevant authority.
- Mechanisms are in place to partner with other institutions that can provide institutional support.
- The organization responsible for implementing and overseeing measures makes effective use of resources, working in a structured and strategic way with defined goals, established systems and standards, and means for monitoring and improving performance.
- Mechanisms are in place for securing funds, preparing and managing budgets, and ensuring costs.
- Effective and efficient financial management of the site.

Managing natural values, site values and condition

A successful spatial protection site must always identify the natural values for protections and the relevant ecosystem components, and depending on the management category and

context, the associated ecosystem functions (CBD 2022c) as well as ecosystem service values (CBD 2022a) should also be identified. Natural in this context always refers to biodiversity, at genetic, species and ecosystem level, and can also refer to geodiversity, landform and broader natural values (see also Goal for the planning and designation of the network of Baltic Sea spatial protection where the identification of the ecosystem components and natural values of a site is included) (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017).

A site should clearly demonstrate that ecosystem components and functions are being managed to maintain the site's natural values with associated ecosystem services and socio-cultural values (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017).

Protection efforts should, as a minimum, include measures necessary to restore and/or maintain these natural values and the ecosystem components associated with them at each site. Effective management of ecological conditions is enhanced by use of an ecosystem-based approach to the management of human activities (see Fundamental principles underpinning the framework and its implementation and CBD 2000). This refers to measures directly restoring or maintaining ecological condition and does not refer to the management of threats, which is handled in the next section.

In cases where the protection of the site's site values is dependent on actions or conditions outside the site's own management control, the manner through which such actions or conditions would nonetheless be achieved or maintained will require explanation in the documentation.

Where a site value is a species population, the site should contain habitats that are of sufficient quality and size, or the site needs to be connected to other suitable sites with the habitat, to conserve the species in the long term.

Managing threats

Threats should be actively and effectively responded to, so that their impact is not compromising the maintenance of a site's natural values or the achievement of the site or networks goals and outcomes (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017).

Management should respond to existing and potential threats if their significance may grow over time. Threats originally impacting the area should be identified before its designation. Management documentation should demonstrate that there are measures in place to contain or reduce the impacts of these threats on site values. These measures such be sufficient to ensure that the goals and objectives of management can be achieved. Evidence may include data on the extent and severity of threats and on threat reduction over time (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017).

Protection management and measures in a social, societal and economic context

Management should strive to enhance the social, societal and economic benefits of a site, where this is consistent with the vision, goals and outcomes for protection of the site and the spatial protection network, i.e. it does not damage or conflict with the site values or its role in supporting the values of other sites. Social, societal and economic benefits may include improved access, economic stimulus for local communities, opportunities for recreation, tourism, employment, education and scientific research. The type and magnitude of social, societal and economic benefits provided by any given site will vary widely depending on e.g. the activities permitted, the relative isolation, and the level of resourcing of site management. The role in providing education, awareness, outreach and instilling the value of nature to people (local and visitors) should also be considered both for the network and the individual sites (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017).

Enforcing legislation and measures as part of site management

Measures for a site can include prohibitions on certain activities and conditions applied to permitted activities. These should be effectively enforced if they are to prevent undesirable impacts on the site. Actors responsible for overseeing the implementation of the measures must have adequate capacity to detect and report potential infringements. This can be done through patrol and surveillance, which needs to include the capacity to prevent or prosecute offences (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017).

Managing access, resource use and visitation

Activities within a site should be compatible with, and support the achievement of, the site's protection goals and associated outcomes, meet the needs of users, and be properly regulated. When tourism is permitted, visitor management needs to be compatible with and support the achievement of the site's protection goals and objectives (IUCN and World Commission on Protected Areas (WCPA) 2017 and CBD 2022c).

Approved activities may include sustainable harvesting of natural resources where permitted by law and in accordance with any restrictions and guidelines contained in a site's management plan and/or measures documentation. It would also include approved scientific research and other activities regulated by permit (IUCN and World Commission on Protected Areas (WCPA) 2017 and CBD 2022f).

Visitor services and facilities at a site should meet standards of design, environmental sustainability and safety and are appropriate to the character, values and use of a site. Interpretive, educational and information services for visitors should meet appropriate visitor needs and support management. The tourism industry within the site is managed to support the achievement of the sites and the networks goals and objectives (IUCN and World Commission on Protected Areas (WCPA) 2017).

Tracking effectiveness and supporting adaptive management

Each site value identified for a site or network should be assessed against a performance threshold as the basis for determining success of protection measures in relation to the associated value. Thresholds will rarely be absolute and may be refined as knowledge improves. There should be an explicit process for revising thresholds as new information is received. However, thresholds should not be arbitrarily changed to accommodate changes in management/measures performance (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017).

Tracking effectiveness and progress is a key component of adaptive management. Monitoring, evaluation/assessment, and adaptive learning provide an objective basis for determining the effectiveness of measures in achieving positive biodiversity outcomes and optimizing the benefits of both individual areas and the spatial protection network as a whole. Monitoring and assessment programmes should be capable of providing data, and/or information on:

- Whether each of the site's values are being successfully protected.
- Location, extent and severity of threats.
- Achievement of the goals and objectives of a site and the network.

As appropriate, thresholds may be determined by changes in natural values over a specified time period compared to those anticipated without the protection measures.

Strategies for protection in the Baltic Sea

A strategy has been drafted for each goal under the framework. The strategies consist of an overarching element and a number of more precise strategic components. The strategies and their components function as a tool to concretize a set of actions that work together to achieve the three goals outlined under the framework (Figure A11). The components of the strategies have been elaborated to ensure that all recognized key intervention points have been included. The aim has been to ensure that each strategy meets the criteria of being *linked, focused, feasible, and appropriate*.

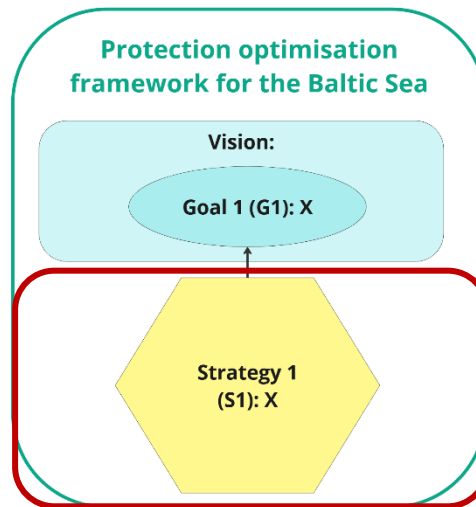


Figure A11. Placement of the Strategies within the Baltic Sea Protection Optimization Framework (simplified conceptual illustration of the framework). For a full-scale overview of the framework, see Figure A3A.

Strategy for governance of spatial protection (S1):

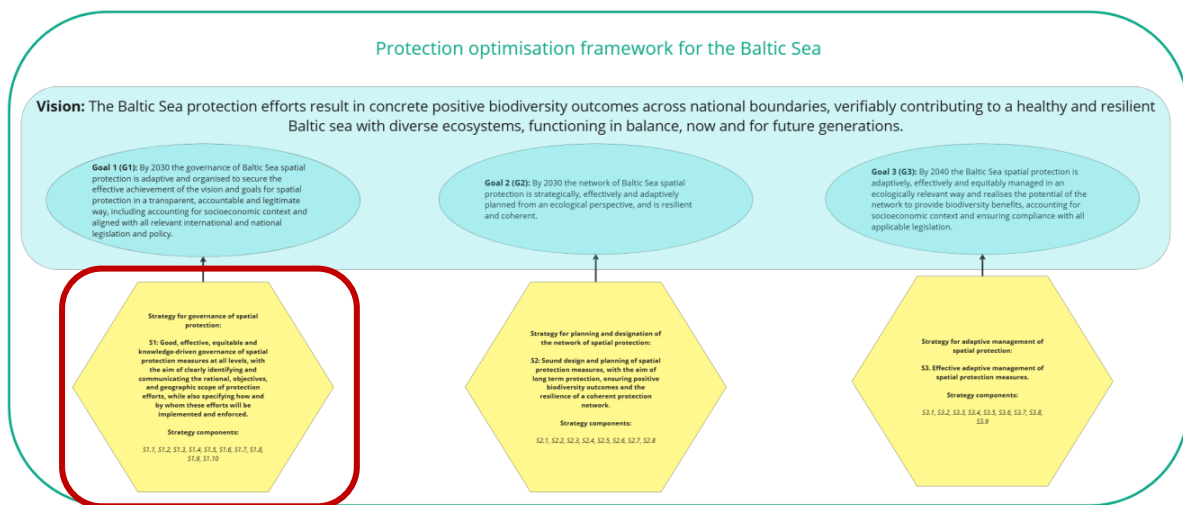


Figure A12. Placement of Strategy 1 (Governance) within the Baltic Sea Protection Optimization Framework (in red). For a full-scale overview of the framework, see Figure A3 and for more information and elaboration on the components of the Strategy, see further down in this section.

Strategy 1 (S1): Good, effective, equitable and knowledge-driven governance of spatial protection measures at all levels, with the aim of clearly identifying and communicating the rationale, objectives, and geographic scope of protection efforts, while also specifying how and by whom these efforts will be implemented and enforced:

- *S1.1 Enable and ensure governance vitality at all levels, including governance by government, by private individuals and organizations, by indigenous peoples and/or*

local communities as well as shared governance by various rightsholders and stakeholders together (Borrini-Feyerabend et al. 2013):

Governance and decision-making processes draw on the best available knowledge of the social and ecological context of the site, using an adaptive framework that anticipates, learns from, and responds to change and which draws on multiple knowledge sources, where these are available. Procedures are in place to ensure that results from monitoring, evaluation and consultation are used to inform management and planning processes including the establishment of goals and objectives. The site has, where relevant, considered historical changes and future projections in social, ecological and climate conditions (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017 and CBD 2022d).

Governance vitality ensures that decision-making processes are responsive, inclusive, and adaptive. Vital governance structures can facilitate timely and informed decisions that are crucial for effective management of MPAs, particularly in the face of emerging challenges such as climate change.

A dynamic and vital governance framework allows for adjustments based on monitoring and evaluation and enhances the resilience of MPAs by enabling adaptive practices that respond to ecological and social changes. This adaptability is critical for maintaining the ecological integrity and functionality of protected areas, allowing them to withstand and recover from disturbances (Armitage et al. 2008). Governance vitality is also key to ensuring that resources are allocated efficiently and effectively. A robust governance framework can identify priority areas for investment, ensuring that limited funds are directed toward the most critical protection needs.

- *S1.2 Ensure transparency in the governance process by clearly defining the decision-making process, the rationale for the decisions made and making all documentation relevant for stakeholders available in an accessible manner and timely manner, including accounting for language barriers:*

Governance and decision making are open to scrutiny by all relevant stakeholders, with information presented in appropriate formats and in good time, and the reasoning behind decisions evident. Collaboration and information flow between different levels of governance is clear and the information on these workflows is accessible (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017).

Transparency fosters trust among stakeholders. When decision-making processes are open and information is readily available, stakeholders are more likely to feel that their voices are heard, and that governance is legitimate. This trust is vital for ensuring community support and compliance with MPA regulations. When stakeholders

understand the rationale behind management decisions and see transparent reporting on the outcomes of protection measures, they are also more likely to comply with regulations. This understanding fosters a sense of ownership and stewardship among local communities, leading to better conservation outcomes.

- *S1.3 Ensure that there is a clear structure in place defining what entity at what level, and who, is accountable for what under the different decisions being made, as well as for their implementation. Ensure that there is a clear, fair, and just process for addressing accountability, at relevant levels of enforcement:*

Responsibilities for decision making and implementation are clear, including an appropriate, readily accessible process to identify, hear and resolve complaints, disputes, or grievances related to the governance or management of the site (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017).

Clear governance structures help to hold decision makers accountable for their actions and decisions, or the lack thereof. When governance processes are open to scrutiny, it becomes more difficult for maladministration, corruption, or mismanagement to occur. This accountability is essential for maintaining public trust and ensuring that resources are used effectively in the governance and management of MPAs. Accountability fosters trust and when governance processes are transparent and decision makers are held accountable for their actions, stakeholders are more likely to perceive the governance system as credible. This trust is essential for garnering support for MPA initiatives and ensuring compliance with regulations.

- *S1.4 Guarantee legitimacy by ensuring that governance, management and implementation of measures support the protection objectives and target of the area, and are in line with relevant national and international laws, regulations, directives and objectives, while ensuring an inclusive process*^{Error! Bookmark not defined.}

There are clearly defined, legitimate, equitable, and functional governance arrangements, in which the interests of civil society, rightsholders and relevant stakeholders, are fairly represented and addressed, including those relating to the establishment or designation of the site (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017). Relevant national and international laws, regulations, directives, and objectives are being implemented.

When stakeholders perceive governance processes as legitimate, they are more likely to comply with regulations and actively engage in stewardship activities.

- *S1.5 Ensure that decision-making processes are based on best available information, and ensure that the function and resilience of the ecosystem remains the core principle underpinning governance and management decisions (modified from CBD 2022g, CBD 2022j and HELCOM 1992):*

Ensure that the best available data, information and knowledge, is accessible to, and used by, decision makers, practitioners and the public to guide effective and equitable governance, integrated and participatory management of biodiversity, and to strengthen communication, awareness raising, education, monitoring, research and knowledge management (CBD 2022g).

Due diligence has been exercised in collating and considering information, available to guide and substantiate decisions, including consideration of information from multiple sources and across the local to global scale. Goals, objectives, and targets for sites are established to ensure holistic, effective and efficient protection of the site's natural values, its ecosystem functions and resilience as the main priority. This does not necessarily preclude human activities or use in the site, where these do not conflict with the protection goals, objective, and targets for the site. In cases where there are interests conflicting with the protection goals and objectives of a site, protection interests prevail. Biodiversity mainstreaming seeks to ensure that the multiple biodiversity values are duly considered in decision and policymaking of private and public actors, across governments, economic sectors, and society more broadly. Integrating and reflecting the contribution of biodiversity and the ecosystem services it provides in relevant strategies, policies, programmes, and reporting systems is an important element in ensuring that the diverse values of biodiversity and the opportunities derived from its conservation and sustainable use are recognized and reflected in decision making (CBD 2022j).

The use of high-quality, relevant data also ensures that decision makers can make informed choices about protection strategies and management practices. Informed by the best available information, governance strategies can then be tailored to effectively protect biodiversity and maintain ecosystem functions. Knowledge of species distribution, interactions, habitat requirements, ecological thresholds and potential risks helps decision makers create MPAs that support the resilience of marine ecosystems, ensuring they can withstand environmental changes. Accurate and comprehensive information also enables decision makers to identify and prioritize critical areas for protection and interventions effectively. Use of best available information is also a key component of adaptive governance and management, allowing for ongoing adjustments to existing strategies based on new data and changing conditions. This responsiveness is essential in the face of uncertainties, such as climate change and shifting marine populations (Walters & Holling 1990).

- *S1.6 Ensure governance structures support transboundary protection efforts:*

Planning and decision making takes a holistic approach and recognizes relevant conditions, issues, and goals beyond the individual site, at national and regional scale, which may impact the protected area and the network.

A transboundary governance framework facilitates cooperation and equitable resource management, reducing conflicts over resource use, and a transboundary governance approach allows countries to collaboratively address threats through joint response strategies. Such collective action has a higher likelihood of enhancing resilience and improve the overall health of marine ecosystems. In addition, transboundary governance supports the development and implementation of international agreements and frameworks for marine protection. These agreements can provide a legal and institutional basis for cooperative management efforts, ensuring that conservation objectives are met across jurisdictions (Young 2002).

- *S1.7 Guarantee consistent and fair enforcement of the rule of law to ensure compliance and the protection of rights operations* (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017 and CBD 2022k):

Ensure the full, equitable, inclusive, effective and gender-responsive access to justice and information for relevant rightsholders and stakeholders. Transparent and accessible governance processes are in place to ensure that relevant laws, regulations, and restrictions are fairly and effectively applied in all aspects of protected area operations (modified from IUCN and World Commission on Protected Areas (WCPA) 2017 and CBD 2022k).

Fair enforcement of laws and regulations is critical for maintaining social equity and ensuring that all stakeholders are treated justly. When enforcement is perceived as biased or unjust, it can lead to conflicts and undermine community support for MPAs. Implementing regulations fairly helps to build a sense of shared responsibility and accountability among all users of marine resources.

- *S1.8 Guarantee an inclusive and balanced voice throughout the relevant levels and stages of the governance process for those stakeholders who are impacted by the decisions being made* (Modified from CBD 2022c, CBD 2022k, IUCN and World Commission on Protected Areas (WCPA) 2017, Hollings 1978):

Ensure the full, equitable, inclusive, effective and gender-responsive representation and participation in decision-making related to protection by relevant rightsholders and stakeholders, i.e. they are recognized and engaged effectively by management, and their interests are fairly and fully considered (CBD 2022k, IUCN and World Commission on Protected Areas (WCPA) 2017).

The social benefits of the area are recognized, promoted and maintained or, where such maintenance is incompatible with the maintenance of the area's natural values, any restrictions are designed and implemented in consultation with, and preferably following the free, prior and informed consent of rightsholders and stakeholders (World Commission on Protected Areas (WCPA) 2017)

Inclusive governance structures can help mitigate conflicts with and among stakeholders by providing a platform for dialogue and negotiation. When all relevant voices are considered, it reduces the likelihood of misunderstandings and grievances, fostering collaborative solutions to challenges. Inclusive governance processes also promote equity by ensuring that marginalized and underrepresented groups have a voice in decision making. This focus on social justice is essential for addressing power imbalances and ensuring that conservation efforts do not disproportionately burden vulnerable communities. An equitable approach enhances the social sustainability of MPAs.

- *S1.9 Understand direct and indirect economic context* (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017):

The economic context of the site, including the positive and negative economic impacts of the way it is managed, is understood, and reflected in the site goals and objectives. The economic benefits of the area are recognized, promoted and maintained where these do not conflict with the natural values, goals and objectives of the site or, where such maintenance is incompatible with the maintenance of the area's natural values, any restrictions are designed and implemented in consultation with, and preferably following the free, prior and informed consent of rightsholders and stakeholders. Decision making draws on the best available knowledge of the social and ecological context of the site, using an adaptive approach which anticipates, learns from, and responds to changing situations (IUCN and World Commission on Protected Areas (WCPA) 2017).

Understanding the economic context helps quantify the value of ecosystem services provided by MPAs (Leehard et al. 2015). This economic valuation of ecosystem services enables the biodiversity values provided by MPAs to be enclosed to the surrounding economic context and considerations. This valuation is useful for justifying investments in MPAs and for communicating their benefits to stakeholders and policymakers. It can also aid in the design of financing mechanisms to support MPA management, opening for alternative and/or complementary funds to be used (EC 2018).

Recognizing the economic context allows policymakers to make informed decisions that balance protection goals with economic interests. Understanding the economic activities that occur in and around MPAs also helps decision makers evaluate the trade-offs involved and to design regulations that minimize negative impacts while maximizing benefits.

- *S1.10 Understand social and societal context, including both possible positive and negative well-being impacts, on a local and regional scale*^{Error! Bookmark not defined.}

The socio-cultural context of the site, including the positive and negative societal impacts of the decision related to it, is understood, and reflected in site management goals and objectives. Planning and management draw on the best available knowledge of the social

and ecological context of the site, using an adaptive management framework that anticipates, learns from, and responds to change in its decision making (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017).

Social dynamics can influence the potential for conflicts over access and resource use within and around MPAs. Incorporating social considerations in MPA governance, among other things, promotes equity and social justice by ensuring that marginalized and vulnerable groups have a voice in decision-making processes. Addressing power imbalances and ensuring fair representation leads to more equitable outcomes, enhancing the overall legitimacy and effectiveness of marine protection efforts. Understanding the social context fosters community engagement and support for MPAs and understanding these dynamics helps identify potential conflicts and trade-offs, allowing for the development of management strategies that minimize negative impacts while maximizing benefits for communities. By understanding the societal context, governance frameworks can be designed to address power imbalances and facilitate dialogue among stakeholders. This approach enhances the ability to resolve disputes and build consensus on management decisions. When governance processes consider local values, needs and priorities, communities are more likely to feel a sense of ownership over the MPA, leading to increased compliance with regulations and active participation in protection initiatives.

Strategy for the planning and designation of the network of spatial protection (S2)

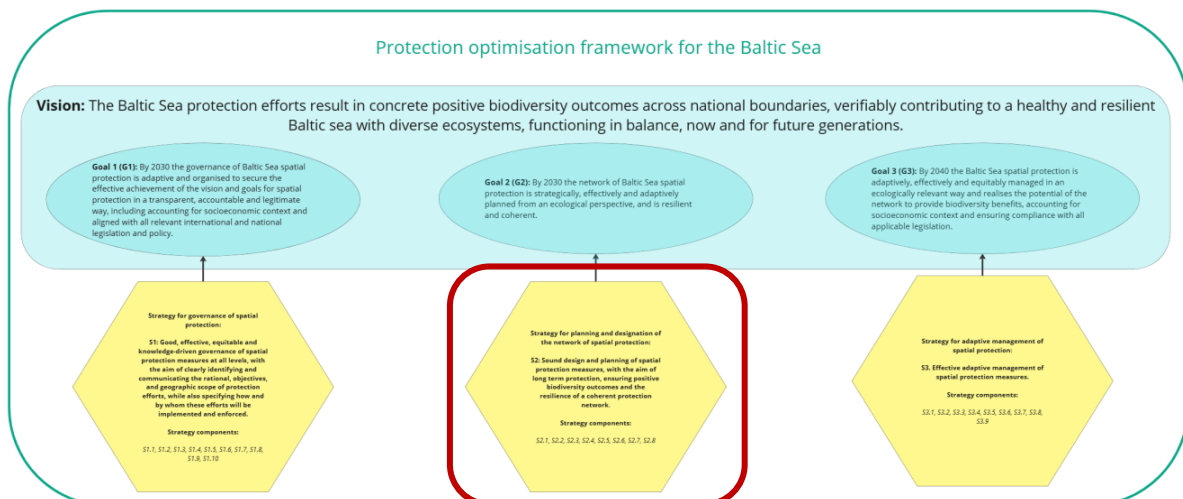


Figure A13. Placement of Strategy 2 (Planning and Designation) within the Baltic Sea Protection Optimization Framework (in red). For a full-scale overview of the framework, see Figure A3 and for more information and elaboration on the components of the Strategy, see further down in this section.

Strategy 2 (S2): Strategy for planning and designation of the network of spatial protection: Sound design and planning of spatial protection measures, with the aim of long-term

protection, ensuring positive biodiversity outcomes and the resilience of a coherent protection network:

- *S2.1 Ensure that the network is based on sites which are ecologically adequate and viable:*

The sites should be of sufficient size, it should be possible to regulate threats and pressures against the natural values with protection measures and these should be sufficient to ensure the ecological viability and integrity of the natural values for which they were designated. Adequacy and viability will depend on size; shape; buffers; persistence of features; threats; surrounding environment (context); physical constraints; scale of features/processes; spillover/compactness (CBD 2008 Annex 2).

Ecological adequacy refers to the ability of a site to protect a representative sample of the biodiversity within its boundaries. To conserve species and habitats effectively, MPAs must be large enough and encompass a variety of habitats that support diverse marine life. This diversity enhances ecosystem resilience and stability, making it more likely that species can thrive and adapt to environmental changes.

- *S2.2 Ensure that sited within the network are planned and designated so that the network provides sufficient replication of ecosystem components, functions, and services across sites:*

Replication of ecological features and natural values means that more than one site contains examples of naturally occurring species, habitats, and ecological processes in the given biogeographic area (CBD 2008 Annex 2).

Replication of similar habitats across different MPAs increases the resilience of marine ecosystems to environmental pressures. If one area is impacted by a disturbance, others can maintain biodiversity and ecosystem functions, providing a buffer against localized threats. This redundancy helps ensure that essential species and ecological processes are preserved.

- *S2.3 Ensure that the network is ecologically representative (CBD 2022c):*

Ecological representativity is considered to be achieved in a network when it is geographically well-distributed, consists of areas representing the different biogeographical subdivisions of the sea which reasonably reflect the full range of ecosystems, including the biotic and abiotic habitat diversity of those marine ecosystems and the regions marine ecosystem components are included in relevant proportion (CBD 2008 Annex 2).

Ecological representativeness ensures that a variety of habitats and species are protected within the MPA network. By including diverse ecosystems, the network can safeguard the full spectrum of marine biodiversity which is essential for maintaining ecosystem functions and services.

- *S2.4 Ensure that natural and site values are identified and understood, and that the network is planned and designated to focus on areas of special ecological and biodiversity importance (CBD 2022c, CBD 2008 Annex 1):*

Natural values in this context always refers to biodiversity, at genetic, species and ecosystem level, as well as to ecological and ecosystem function, and can also refer to geodiversity. Site values are defined as the intrinsic natural values, as well as associated anthropocentric ecosystem service values, found in the site, a subset of which the site is intended to conserve, maintain or enhance. Natural and sites values for a potential protected area should be identified and understood. Consideration has been given to identifying how these values complement and or enhance the protected area network (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017).

Values of importance include (CBD 2008 Annex 1):

- Biodiversity
 - Life history stages
 - Threatened species and habitats
 - Vulnerable, fragile, sensitive, or slow recovery species and habitats
 - Unique or rare species and habitats
 - Natural environment
 - Ecological function
 - Ecosystem services
 - Enhancing resilience
- *S2.5 Ensure that sites are planned prioritising and maximising ecosystem service provision, where this is compatible with the natural values of the site (CBD 2022a):*

Sites are planned and designated to enhance the potential for provisioning of ecosystem services, while ensuring the recovery and/or normal development, and natural dynamics, of the ecosystem at the site.

Ecosystem services encompass the benefits that humans derive from healthy marine ecosystems, including provisioning, regulating, and cultural services. Recognizing these services helps to articulate the economic and socio-cultural value of marine resources, providing a compelling rationale for the establishment and maintenance of MPAs. Ecosystem services also play a vital role in climate change adaptation. Healthy marine ecosystems provide essential services that can help buffer communities against climate impacts and by incorporating these services into MPA planning and management,

decision makers can enhance the adaptive capacity of both ecosystems and human communities.

- *S2.6 Ensure that the network is well connected (CBD 2022c):*

Sites are planned and located in a way which enhances both their own and the network's connectivity.

Connectivity implies the unimpeded movement of species and the flow of natural processes (UNEP CMS 2020) and is an essential feature of nature. It is necessary for the functionality of ecosystems, underpinning key ecological processes and features such as maintenance of genetic diversity, flow of energy and organisms, hydrological processes, nutrient cycling, seed dispersal and disease resistance across habitats and spatial scales. It is key for the survival of wild animals and plant species and is crucial to ensuring their migration (IPBES 2022). Movement might be daily, seasonal, small, or large scale, or dependent on life history traits (the need for different habitats at different life stages) and allow for the transfer of genetic material between populations (gene flow). Connectivity in the design of a protection network allows for linkages whereby protected sites benefit from larval and/or species exchanges, and functional linkages from other network sites. In a connected network, individual sites benefit one another.

- *S2.7 Ensure that the sites and network are designated to secure long-term protection (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017):*

The design of the site in its landscape/seascape context supports long-term maintenance of the site values.

- *S2.8 Ensure that threats & challenges are understood (modified from CBD 2022e and IUCN and World Commission on Protected Areas (WCPA) 2017):*

Threats and challenges to site values are described and understood in sufficient detail to enable effective planning and management to address them.

Strategy for adaptive management of spatial protection (S3):

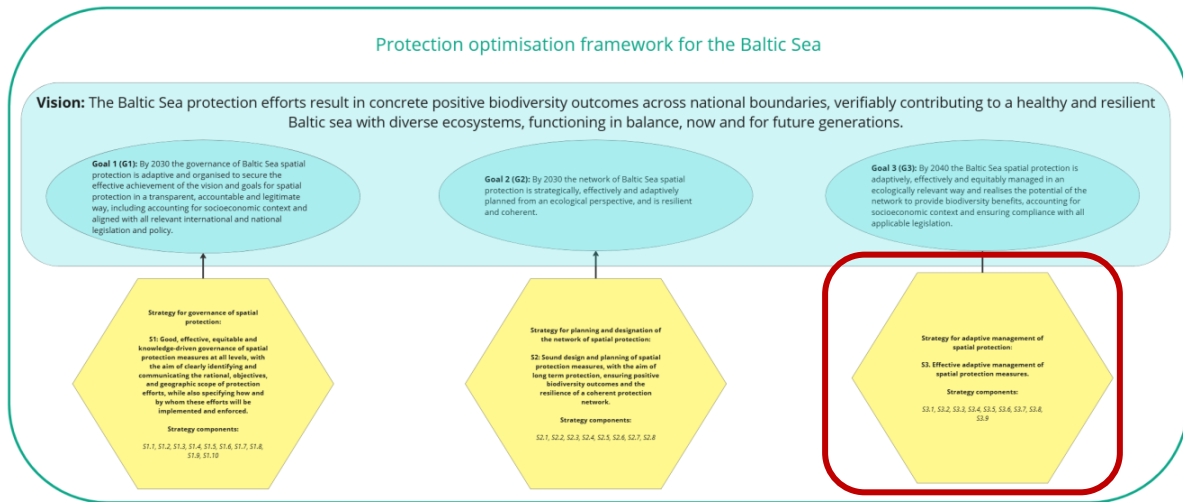


Figure A14. Placement of Strategy 3 (Management) within the Baltic Sea Protection Optimization Framework (in red). For a full-scale overview of the framework, see Figure A3 and for more information and elaboration on the components of the Strategy, see further down in this section.

- *S3.1 Include the management efforts, financing, and measures in a long-term strategy for the site, including both ecological, social, societal, economic and climate change considerations (modified from IUCN and World Commission on Protected Areas (WCPA) 2017 and CBD 2022e):*

Each site has a long-term strategy that provides a clear explanation of the overall goals and objectives of management (explicitly including the protection of the area's values and achievement of its social and economic goals and objectives). This is reflected in an up-to-date management plan or its functional equivalent, which:

- Provides clear and appropriate management directions: Strategies and actions specified in plans, policies and procedures are appropriate and sufficient to achieve the planned goals and objectives for the area.
- Demonstrates adequate capacity to manage effectively: Key strategies and associated activities to achieve goals and objectives in the long term are supported by adequate financial and human resources, adequate staff competency, capacity development and training; appropriate access to equipment and adequate infrastructure; and measures are in place to deal with critical shortfalls.

Marine ecosystems often operate on time scales that extend beyond human lifetimes, meaning that short-term management actions may not capture the long-term trends and changes in ecosystem dynamics. A long-term perspective allows for the monitoring and understanding of ecological processes, recovery times, and the overall health of

marine habitats, ensuring that management strategies support sustainability and resilience. The impacts of climate change are often gradual and require sustained monitoring and adaptive management approaches. A long-term perspective helps managers anticipate future changes, allowing them to implement proactive measures that enhance the resilience of marine ecosystems and support biodiversity protection.

Marine conservation often faces pressures from short-term political and economic interests that prioritize immediate gains over long-term sustainability. By adopting a long-term perspective MPA management can advocate for policies and practices that prioritize the health of marine ecosystems and the communities that depend on them, helping to resist the pull of short-term decision making.

Long-term management also allows for the assessment of the cumulative benefits of MPAs over time. While immediate outcomes can be visible shortly after establishment, the full ecological, social, and economic benefits may take years or even decades to materialize. A long-term perspective facilitates the evaluation of these benefits, strengthening the case for continued investment in MPAs.

A long-term approach fosters the development of institutional capacity and community engagement. Over time, ongoing involvement and education can build trust and strengthen relationships between stakeholders, leading to more effective governance and increased support for MPAs. This sustained engagement is vital for addressing challenges and ensuring the long-term success of conservation efforts.

- *S3.2 Ensure that management efforts and measures for the site considers and enhances positive transboundary biodiversity effects of protection:*

In the drafting and approval of management and measures for a site, the effect of these measures on the neighbouring sites and the overall MPA network have been considered, documented and, in cases where management and/or measures which are considered to contribute with positive synergistic biodiversity effects have not been included, rationale for the decisions is provided.

Marine ecosystems often span national boundaries, and species do not adhere to political borders. A transboundary approach to MPA management recognizes these ecological connections, allowing for more comprehensive management that can address threats across jurisdictions. This is particularly important for migratory and/or mobile species, such as fish and marine mammals, which require coordinated management efforts. Marine environments are also subject to multiple pressures from human activities such as pollution and climate change which transcend borders and jurisdictions. A transboundary approach allows for the assessment and management of these cumulative impacts more effectively than isolated efforts, leading to more robust protection strategies. MPA management often has a direct and/or indirect effect on

shared resources and natural values the benefits of which extend beyond the area itself. Collaborative management can prevent over-exploitation and promote sustainable use, benefitting communities on both sides of the boundary. This type of cooperation can also enhance food security and economic resilience.

Transboundary collaboration also fosters capacity building and knowledge sharing among countries. By learning from each other's successes and challenges, countries can implement best practices and improve their conservation strategies. This exchange of information can enhance the overall effectiveness of marine protection efforts. Many international agreements, such as the Convention on Biological Diversity (CBD) and the United Nations Convention on the Law of the Sea (UNCLOS), advocate for cooperative approaches to marine conservation. A transboundary perspective aligns with these legal frameworks, enhancing compliance and coordination among nations.

- *S3.3 Ensure that a site's measures are sufficient, effective, and cost-efficient, in improving and/or adaptively maintaining the site's values, its resilience and its ecological functions, considering both short and long-term effects:*

Using the precautionary principle, the management and/or measures to be implemented are estimated to be both sufficient and effective in reaching the sites protection objectives and improving biodiversity, resilience, and ecological function. The rationale, including cost-efficiency, for establishing management and/or measures is documented.

Sufficient and effective protection measures contribute to the long-term sustainability of marine ecosystems, enhancing their resilience to stressors such as climate change, pollution, and human use. Cost-efficiency in MPA management is essential for ensuring that limited resources are used effectively. By evaluating the cost-effectiveness of various protection measures, decisions can prioritize actions that yield the greatest ecological benefits per resource spent. This is particularly important in contexts where funding is limited and competing interests exist.

- *S3.4 Ensure that both current and foreseen future pressures and threats directly affecting the site are avoided or sufficiently addressed so that the cumulative impacts of pressures and threats to a site do not jeopardize the site values (CBD 2022e, CBD 2022h):*

When permitted, activities within the area that involve direct access to resources are compatible with and support the achievement of the area's protection goals and objectives, meet the needs of users, and are properly regulated. When permitted, activities within the area that involve direct access to resources are compatible with and support the achievement of the area's protection goals and objectives, meet the needs of users, and are properly regulated. When permitted, tourism and visitor management

are compatible with and support the achievement of the area's protection goals and objectives. Threats are being actively and effectively responded to, so that their impact is not compromising the maintenance of site values or the achievement of the area's goals and objectives (Modified from IUCN and World Commission on Protected Areas (WCPA) 2017).

Cumulative impacts refer to the combined effects of multiple pressures on marine ecosystems. Recognizing these interactions is essential for assessing overall ecosystem health. Failing to address cumulative impacts can lead to misinterpretations of the health and resilience of marine environments, as individual pressures may not fully reflect their synergistic effects (Halpern et al. 2008). By addressing these impacts, managers can help enhance the resilience of marine environments, allowing them to better withstand and recover from disturbances, whether natural or anthropogenic.

- *S3.5 Ensure that relevant laws and regulations are adequately translated into measures, and that these measures are implemented, as well as being effectively and fairly enforced:*

Relevant laws, regulations and restrictions are fairly and effectively applied in all aspects of the protected area management and operations.

Clear translation of laws into actionable measures is essential for establishing a legal framework that protects marine natural values. When regulations are well-defined and implemented, they provide a basis for enforcing protection measures, helping to prevent illegal or unsustainable activities. Effective enforcement ensures compliance and contributes to the overall health of marine ecosystems.

- *S3.6 Monitor trends in human activities, pressures, and values of the site, as well as the effect of management and measures on these:*

Sufficient and regular monitoring is in place in the site, covering activities, pressures, and ecological state parameters. Monitoring and assessment programmes can provide data on:

- Whether each of the site's values is being successfully protected;
- Level and intensity of threats; and
- Achievement of goals and objectives.

As appropriate, thresholds may be determined by changes in values over a specified time compared to those anticipated without the protected and conserved area.

Monitoring, evaluation, and learning provide an objective basis for determining measures of success. Monitoring allows managers to assess the ecological health of marine ecosystems within MPAs and assess the level of compliance with MPA

regulations. By tracking human activities managers can identify areas where enforcement may be lacking. This information is vital for ensuring that regulations are being followed and for implementing effective enforcement strategies. By tracking key protection-related indicators, managers can evaluate the effectiveness of protection measures and identify any changes or trends over time. This information is essential for understanding the impact of conservation efforts and guiding future management decisions.

- *S3.7 Regularly review the management and measures of the site against established site-specific objectives, and adapt as needed:*

There is an established process for how management plans and/or measures are to be reviewed and updated, including established timelines appropriate to the situation for the site. When a review is executed, it follows good governance approaches (see Goal 1 and Strategy 1).

Iterative updates facilitate continuous monitoring of MPA performance against established goals. This ensures that management actions are effective and allows for timely adjustments if goals are not being met. Marine ecosystems are dynamic and influenced by a variety of factors. An adaptive management approach where management and measures are regularly reviewed allows for the continual learning and adjustment of management strategies based on new scientific data and changing environmental conditions. Among these are climate change impacts, to which MPAs must be responsive and resilient (CBD 2022d). Regular updates enable managers to adapt strategies to emerging threats such as ocean acidification and habitat shifts.

MPAs also need to account for the interconnectedness of marine ecosystems. Iterative updates facilitate a holistic view that considers ecological, social, and economic factors, leading to more comprehensive and effective management. Regular reviews allow for stakeholder input and the incorporation of local knowledge, which enhances community buy-in and support for management measures. This is critical for the success of MPAs, as local communities often have valuable insights and vested interests^{Error! Bookmark not defined.}.

In addition to ecological and management-related changes, marine policies, and regulations (which underpin management efforts) also evolve. Iterative reviews ensure that management plans remain compliant with national and international laws and standards, such as the Convention on Biological Diversity (CBD). The Global Biodiversity Framework under the CBD also has a strong focus on adaptive management and iterative processes to enhance the effectiveness of biodiversity conservation efforts (e.g. Target 1 and Target 3). This includes commitments to regularly assess and update management strategies for MPAs considering emerging threats and opportunities.

- *S3.8 Consider the social and societal context in the management of the site:*

Management can clearly demonstrate that the social and societal benefits of the area are recognized and, where not in conflict with the protection objectives of the site, are being maintained. Management can clearly demonstrate that rightsholders and stakeholders are recognized and engaged effectively by management, and their interests are fairly and fully considered (IUCN and World Commission on Protected Areas (WCPA) 2017 and CBD 2022a).

Effective MPA management relies heavily on the support and participation of local communities. When social contexts, such as cultural values and local livelihoods, are considered, communities are more likely to engage in and support conservation efforts. Understanding the social context can also help identify potential conflicts between conservation goals and local livelihoods. Addressing these issues proactively through dialogue and negotiation can reduce tensions and foster collaboration. This is particularly important in areas where communities rely on marine resources for their livelihoods.

Incorporating local ecological knowledge can enhance MPA management by providing insights into traditional practices and biodiversity patterns that may not be captured through scientific research alone. This integration can lead to more adaptive and resilient management strategies that reflect the realities of the ecosystem and the community.

- *S3.9 Consider the economic context in the management of the site:*

Management can clearly demonstrate that the economic benefits of the area are recognized and, where not in conflict with the protection objectives of the site, are being maintained. Where such maintenance is incompatible with the maintenance of the area's natural values, restrictions are designed and implemented in consultation with, and preferably following the free, prior and informed consent of rightsholders and stakeholders (IUCN and World Commission on Protected Areas (WCPA) 2017).

Ensuring that the management and use of wild species is sustainable by extension ensures provisioning of social, economic and environmental benefits for people (CBD 2022i). Effective MPA management should account for the economic activities of local communities that rely on marine resources. By integrating sustainable practices, such as eco-tourism or sustainable fisheries, MPAs can provide alternative livelihoods that align with conservation goals. For instance, successful eco-tourism initiatives can generate income while promoting conservation awareness, creating a win-win scenario for both the environment and the local economy.

Recognizing the economic value of ecosystem services provided by healthy marine environments, and the role MPAs play in securing such services, is a key aspect of

marine protection. Healthy ecosystems contribute significantly to fisheries, coastal protection, and carbon sequestration, amongst others. Quantifying these benefits through economic valuation can enhance stakeholder support for conservation measures, as it illustrates the long-term financial benefits of preserving marine biodiversity (Constanza et al. 2014).

When local communities understand the economic benefits of MPAs, they are more likely to comply with regulations. Incorporating economic considerations into MPA management can also lead to greater resilience against external shocks, such as climate change or market fluctuations. By diversifying income sources through sustainable practices, communities can better withstand economic downturns. This resilience is particularly important in coastal regions where reliance on a single industry, such as fishing, can lead to vulnerability.

Visualization of the vision, goals and strategies of the Baltic Sea Protection Optimization Framework

Version 1 November 2024

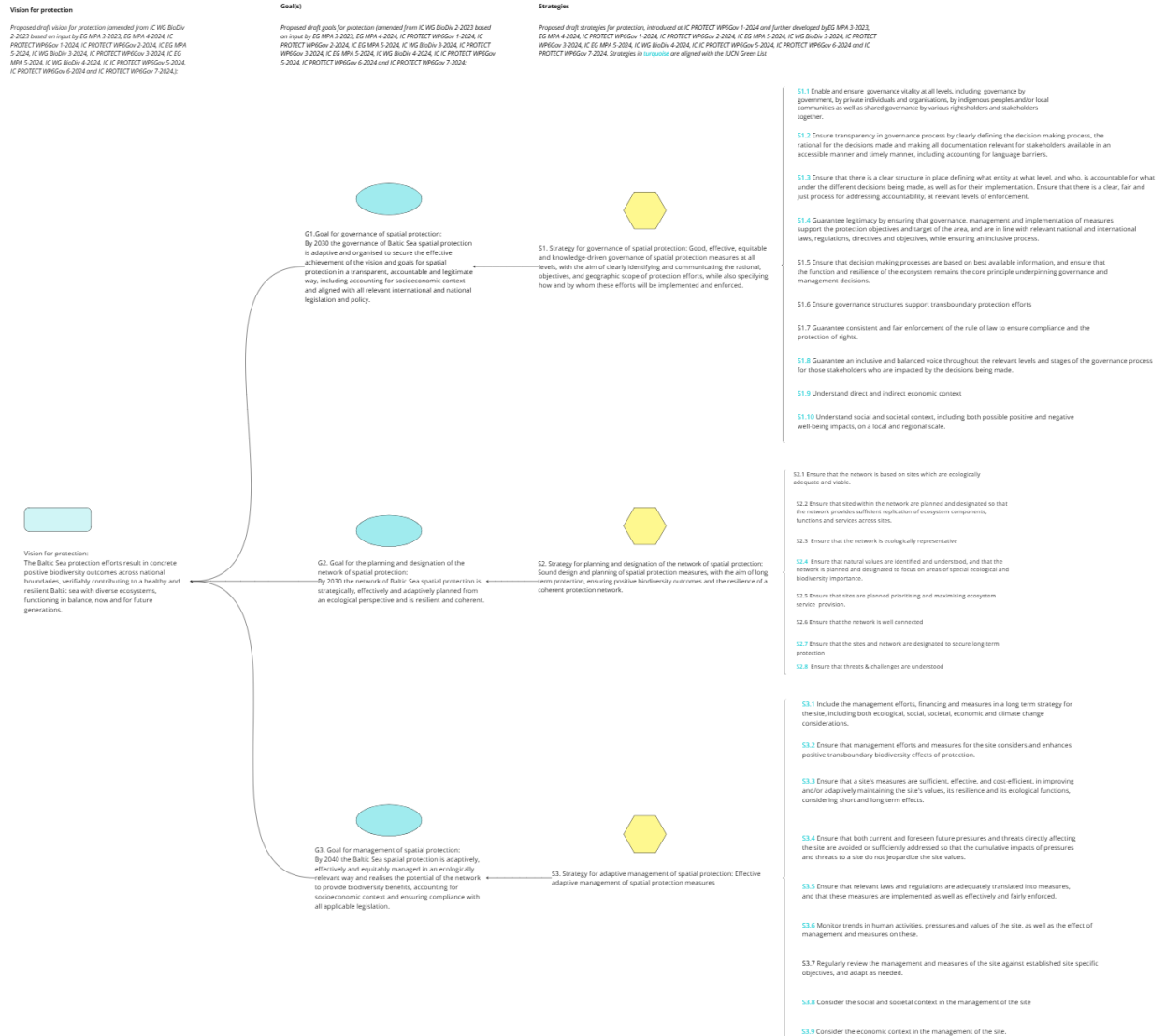


Figure A14. Alternative outline of the linkages across the vision, goals and strategies for protection in the Baltic Sea, as defined under the Baltic Sea Spatial Protection Optimization Framework.

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