A co-created Blueprint to strengthen SPS interfaces in the marine domain

Cross Gov

The CrossGov Project

The Horizon Europe funded CrossGov project (Grant Agreement ID 101060958) aims to improve understanding of how coherence and cross-compliance of marine-related policies affect achieving the European Union Green Deal's goals. These goals include the protection of marine ecosystems and biodiversity, zero pollution and nature-based climate adaptation and mitigation.

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Glossary of terms

A few selected key definitions are reported here to help and provide the readers and target-users of this Blueprint with a full and clear understanding of what is presented and proposed. Some of these definitions come directly from **CrossGov 4.2** (CrossGov, 2025) and **CrossGov D1.4** (Barbanti et al., 2023).

Coherence Policy coherence refers to how well different policies work together. Coherence can be defined as the extent to which policies strengthen each other by promoting synergies or reducing conflicts between objectives and measures both in design and during implementation.

Cross-compliance refers to the concurrent achievement/realization of multiple Green Deal policies and their associated goals and targets.

The term **policy** is understood in a broad sense, referring to a set of objectives, rules and measures that provide guidance for solving a particular societal issue. In this Blueprint, a policy can encompass substantive documents such as white papers and strategies as well as specific laws and regulations, or directives.

A **policy area** refers to a substantive group of policies that has formed around societal or sectoral interests. Examples of policy areas are environmental protection, trade, transport, waste, or renewable energy.

A **policy cycle** consists of a series of policy phases that are carried out in series and with internal recursive processes in order to manage all aspects of a policy. Its main phases can be synthesised as: (i) policy design and formulation, that involves identifying problems, setting objectives, and developing possible policy solutions; (ii) policy implementation, where the selected policy is put into action through concrete measures, plans, and dedicated resources; (iii) policy evaluation and adaptation, which assesses the policy's outcomes and effectiveness, informing adjustments or redesign as needed.

Science-policy-society interfaces (SPSI) are defined as social processes which encompass relations between scientists and other actors in the policy process, and which allow for exchanges, co-evolution, and joint construction of knowledge with the aim of enriching decision-making (Van Den Hove, 2007).

A **Science-Policy-Society Ecosyste**m is defined as the set of actors, including the civil society, and connections through which scientific knowledge is acquired, synthesised, translated, presented for use, and applied in the policymaking process (adapted from Oliver, 2022).

Boundary organizations are formal institutions that operate at the interface between science and policy, facilitating collaboration and knowledge exchange. They aim to bridge the gap between researchers and decision-makers, enhancing the impact of scientific research on environmental policy and practice (Cvitanovic et al., 2018, Gluckman et al., 2021, Oliver et al., 2021, Wagner et al., 2023).

The **Building Blocks** are the main conceptual elements identified as central for the assessment of the functioning of SPSIs in the framework analysis developed and applied in the project (CrossGov D1.4 - Barbanti et al., 2023): data and knowledge, assessments, models of scientific policy advice and knowledge transfer mechanisms, permanent SPSI platforms, competence framework for researchers and policy-makers, funding and resources.

Practices and impacts are related to the outcomes of the assessment related to each of the *Building Blocks*, focusing on what type of knowledge is currently provided and used in the different implementation stages and on which role science plays in decision-making, policy-mapping and planning, and their related *impacts* on the policymaking process as well as on the coherence and cross-compliance (C&CC) of policies.

Needs refer to what is the type of science, knowledge, and interactions that we need for coherent and cross-compliant formulation and implementation of policies. They constitute the main aspects to be addressed, based on the *practices* and *impacts*.

Recommended actions build on the *needs* providing concrete actions to address these.
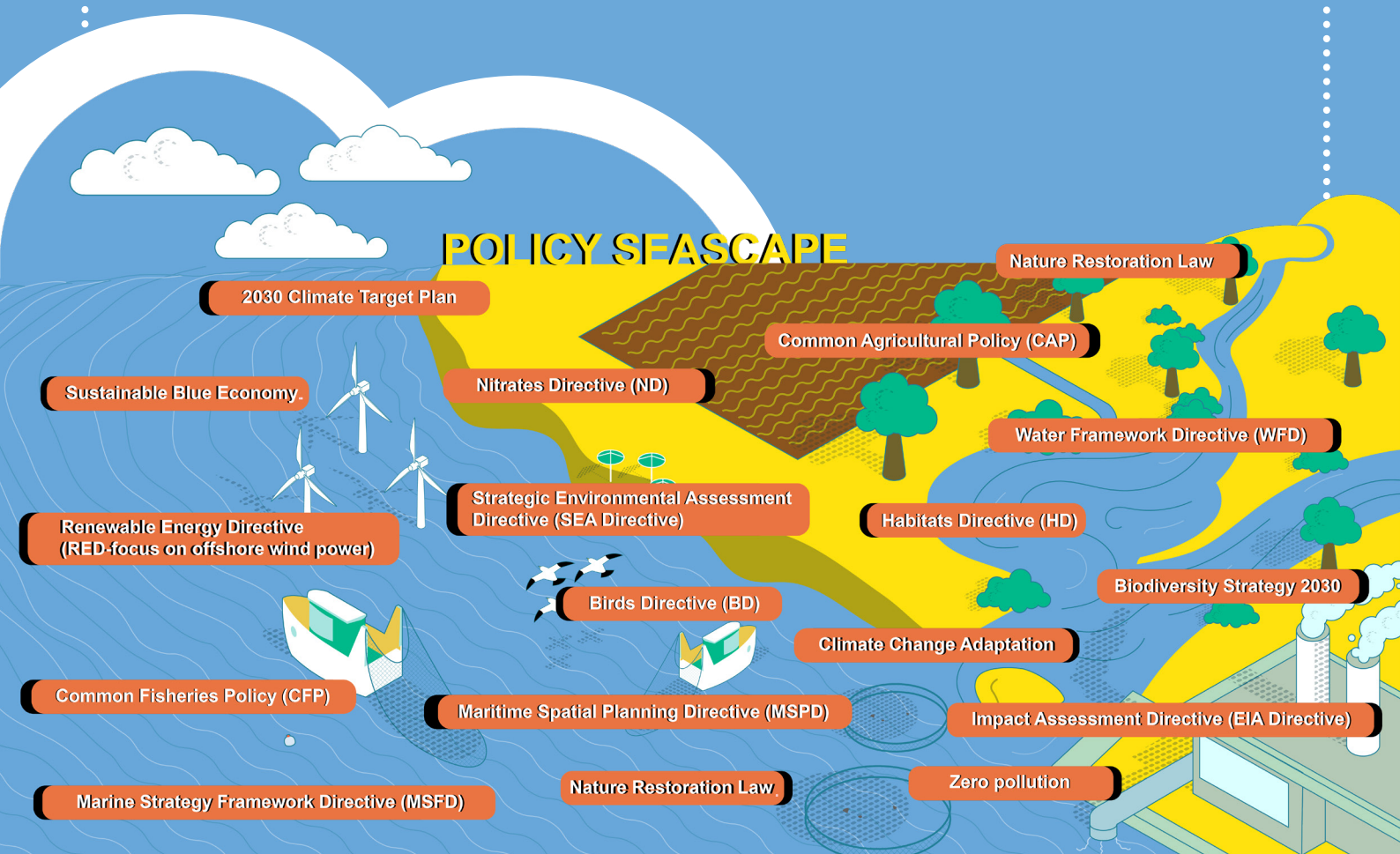
1.   Why this Blueprint

Evidence-informed policymaking refers to an approach to policymaking that aims at informing policy deliberations and decisions with the best available evidence (EC, 2023). In today's context of multifaceted policy challenges, effectively incorporating scientific knowledge into policymaking is essential. This approach not only addresses the intricacies of issues such as climate change and other wicked problems but also acknowledges the increasingly complex political landscape in which these decisions are made. Enhancing the role of science in policy processes can strengthen public trust in governmental capabilities, provide clearer explanations of policy decisions, combat misinformation, and foster greater public support and more effective implementation of policies (EC, 2022).

In the domain of marine governance, and with reference to the **European Green Deal (EGD)** (EC, 2019) we observe a complex and ambitious policy framework, calling for C&CC (Platjouw et al., 2023) of the numerous policies affecting and acting upon the marine environment (see Figure 1).

To reach this goal, also in consideration of the current creation of a single reference framework for the ocean (i.e. the upcoming Ocean Pact), there is a clear need for a **robust marine knowledge framework**, where knowledge is consolidated, extended, accessible and actively transferred to the decision-making process.

POLICY SEASCAPE

- Nature Restoration Law
- 2030 Climate Target Plan
- Common Agricultural Policy (CAP)
- Sustainable Blue Economy
- Nitrates Directive (ND)
- Water Framework Directive (WFD)
- Strategic Environmental Assessment Directive (SEA Directive)
- Habitats Directive (HD)
- Renewable Energy Directive (RED-focus on offshore wind power)
- Biodiversity Strategy 2030
- Birds Directive (BD)
- Climate Change Adaptation
- Common Fisheries Policy (CFP)
- Maritime Spatial Planning Directive (MSPD)
- Impact Assessment Directive (EIA Directive)
- Zero pollution
- Marine Strategy Framework Directive (MSFD)
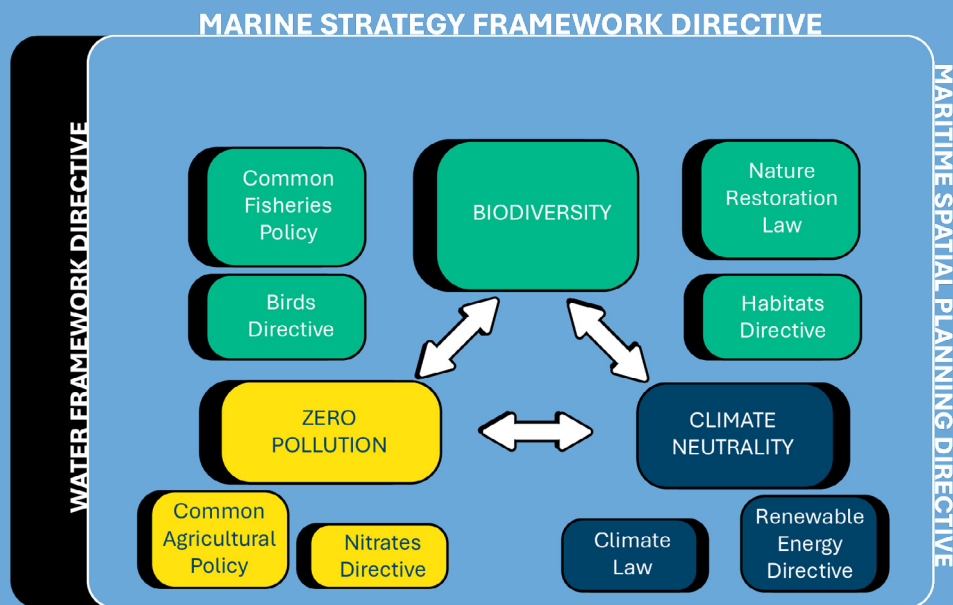- Nature Restoration Law

Figure 1. The European Green Deal interrelated challenges and the main policies connected to them in the marine domain. (After CrossGov D2.4).

Ocean governance relies on a strong knowledge base to define goals, set targets, and monitor environmental, social, and economic changes. Yet, the complexity of marine ecosystems and their links to climate change and land-based pollution create significant scientific uncertainties, hindering evidence-based decision-making. Knowledge is also fragmented across different actors, e.g. sectors operators, researchers, civil society groups and policymakers. Moreover, existing scientific understanding of the marine environment and governance remains largely dominated by natural scientists. Therefore, for the Oceans Pact to offer a clear and coordinated pathway to transform ocean governance — ensuring that policies and legislation are well-designed, effectively implemented, and fit-for-purpose to address current crises — the following critical aspects must be ensured: policy coherence and integration; governance capabilities; collaboration, shared motivation and trust; and *access to and sharing of knowledge*. (Van Leeuwen et al., 2025).

The role of Science-Policy-Society Interfaces (SPSIs) is critical with this regard, their efficient and effective functioning is pivotal to enhance their contribution to sound policy making and decision making. The aim of the CrossGov activities focused on Science-Policy-Society Interfaces in ocean governance has been to explore how well-functioning SPSIs can support informed and effective policy and decision-making, particularly by improving C&CC in selected marine policies related to the European Green Deal.

This Blueprint aims to provide a guide to analyze and improve the process of science-to-policy towards evidence-based policy making. It provides a conceptual structure to help develop this process, promoting a self-assessment focused on the "science-for-policy ecosystem" (EC, 2022). Furthermore, it includes the self-diagnosis and characterisation of key conceptual elements—hereafter *Building Blocks*. These include: data and knowledge, assessments, models of scientific advice and knowledge transfer, permanent SPSI platforms, competence frameworks for researchers and policy-makers, and the availability of funding and resources.

The Blueprint presents two sets of *recommended actions*: one with general relevance for marine policies related to the European Green Deal, and another tailored to specific sectors and policy areas. These actions aim to address the *needs* and overcome the barriers and issues identified in the assessment process.

The general focus of this Blueprint is on strengthening Science-Policy-Society Interfaces for evidence-informed policymaking in the marine domain. This is essential to achieving the EU Green Deal's goals, including marine ecosystem and biodiversity protection, zero pollution, and climate adaptation and mitigation through nature-based solutions. As such, the Blueprint is particularly relevant to specific target groups, which are presented in Figure 2 (and recalled again in Section 3.4 on *recommended actions*).

International level: international institutions.

EU level: European Commission DGs (e.g. MARE, ENV, RTD, AGRI, JRC), European agencies (e.g. European Environment Agency (EEA)).

Regional level: Regional Sea organizations (e.g. Regional Sea Conventions, Regional Fisheries Management Organizations (RFMOs)).

National level: national institutions and competent authorities for the addressed policies (e.g. WFD, MSFD, MSPD), national agencies, ministries for research and innovation.

Sub-national level: sub-national institutions (e.g. regional administrations, Basin District Authorities).

Multiple

Levels

non-governmental organizations (NGOs), civil society organizations (CSOs), policy advisory bodies, boundary organizations, research centers/institutes, universities, communication offices of institutions, institution responsible for the allocation of funding, sectors' representatives.
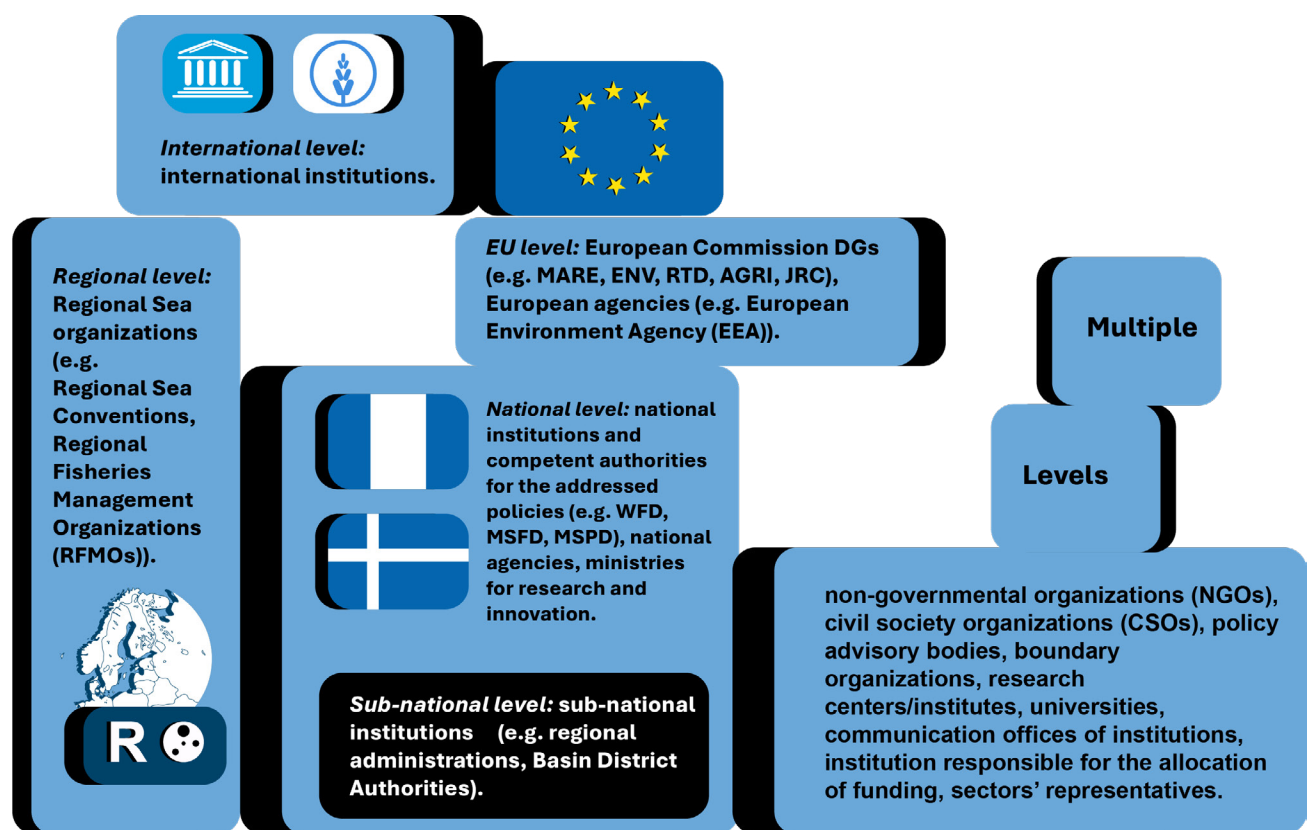
Figure 2. Main target-groups to which the Blueprint is directed, classified per level of governance (i.e. International, Regional, EU, National, Sub-national, Multiple levels).

2. The Science-Policy-Society framework and the role of Science-to-Policy Interfaces

Science-policy-society interfaces are defined as social processes which encompass relations between scientists and other actors involved in the policy cycle, and which allow for exchanges, co-evolution, and joint construction of knowledge with the aim of enriching decision-making (Van Den Hove, 2007). When optimal, SPSIs ensure sound policy formulation, implementation, and adaptation processes, and can deal with different challenges, such as incomplete knowledge, unpredictability, uncertainty, and ambiguity, thus improving coherence and cross-compliance in ocean governance. Science, in this framework, is also responsive to societal needs (including values and concerns), to public engagement, and to the role of society as provider of data, information, and knowledge.

In the CrossGov project we investigated: (i) the current contribution of SPSI to coherence and cross-compliance in policy formulation, policy implementation and decision-making; (ii) the way specific policy areas are affected by SPSI; (iii) the identification of key elements and mechanisms for effective SPSI, as well as the identification of main barriers and enabling factors.

To this aim, a **methodological framework** has been developed (see **CrossGov D1.4**), representing the guidance document for Science-Policy-Society Interfaces analysis in CrossGov research.

The proposed framework provides a **step-by-step operational procedure** for SPSI analysis, structured in 4 steps.

INCEPTION PHASE

Defining the policy and geographical scope of the analysis and identifying data and information sources	Defining the Science-Policy-Society system under analysis	Characterising the Building Blocks of SPSI to answer the research question	Synthesis: answering the research questions
Step 1	Step 2	Step 3	Step 4

The in-depth presentation of these steps is provided in the sections below (3.1-3-4) together with their application in the CrossGov project and their related outcomes. These can be taken as examples of the application of the framework, that can be applied to different policy contexts, areas and cycles depending on the aim of the self-assessment analysis. The goal of this Blueprint is to present the outcomes of the CossGov analysis to inspire and inform a self–assessment process based on the use of the SPSI framework tailored to specific needs and interests.

# 3. A step-wise process for effective evidence-informed policymaking

The sections below (3.1-3.4), recalling the four steps introduced in Section 2, present:
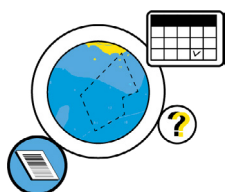
The definition of the scope (policy area, governance level, policy cycle stage and geographical scope) and main sources of information used in the application of the methodology (Section 3.1)

The analysis of the Science-Policy-Society Ecosystems, their main compartments and components and their mutual relations (Section 3.2)
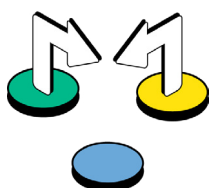
The characterizations of the *Building Blocks*, through the identification of *practices*, related *impacts* on the policy cycle and consequent *needs* to be addressed (Section 3.3)
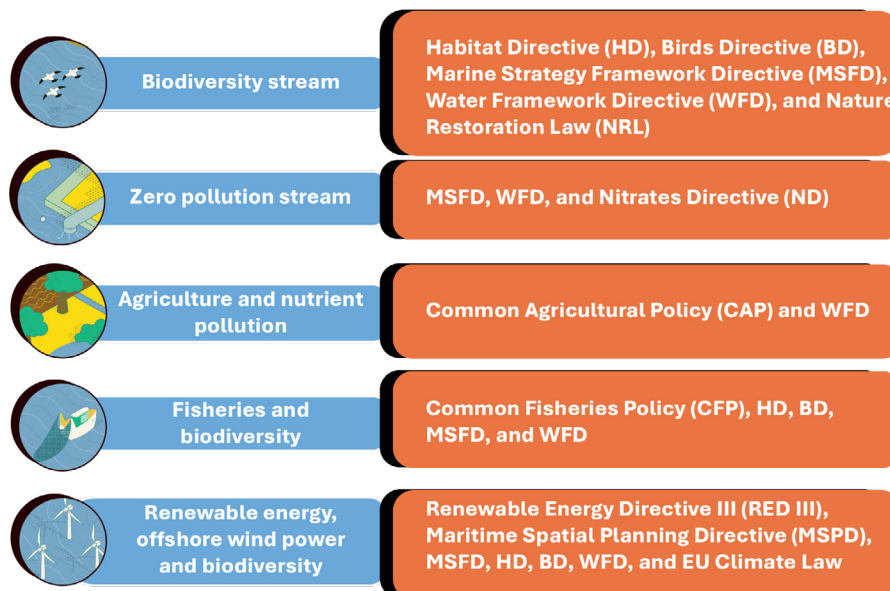
Based on all the steps above, the identification of *recommended actions* to improve the efficient and effective functioning of SPSI towards evidence-based policy making (Section 3.4)
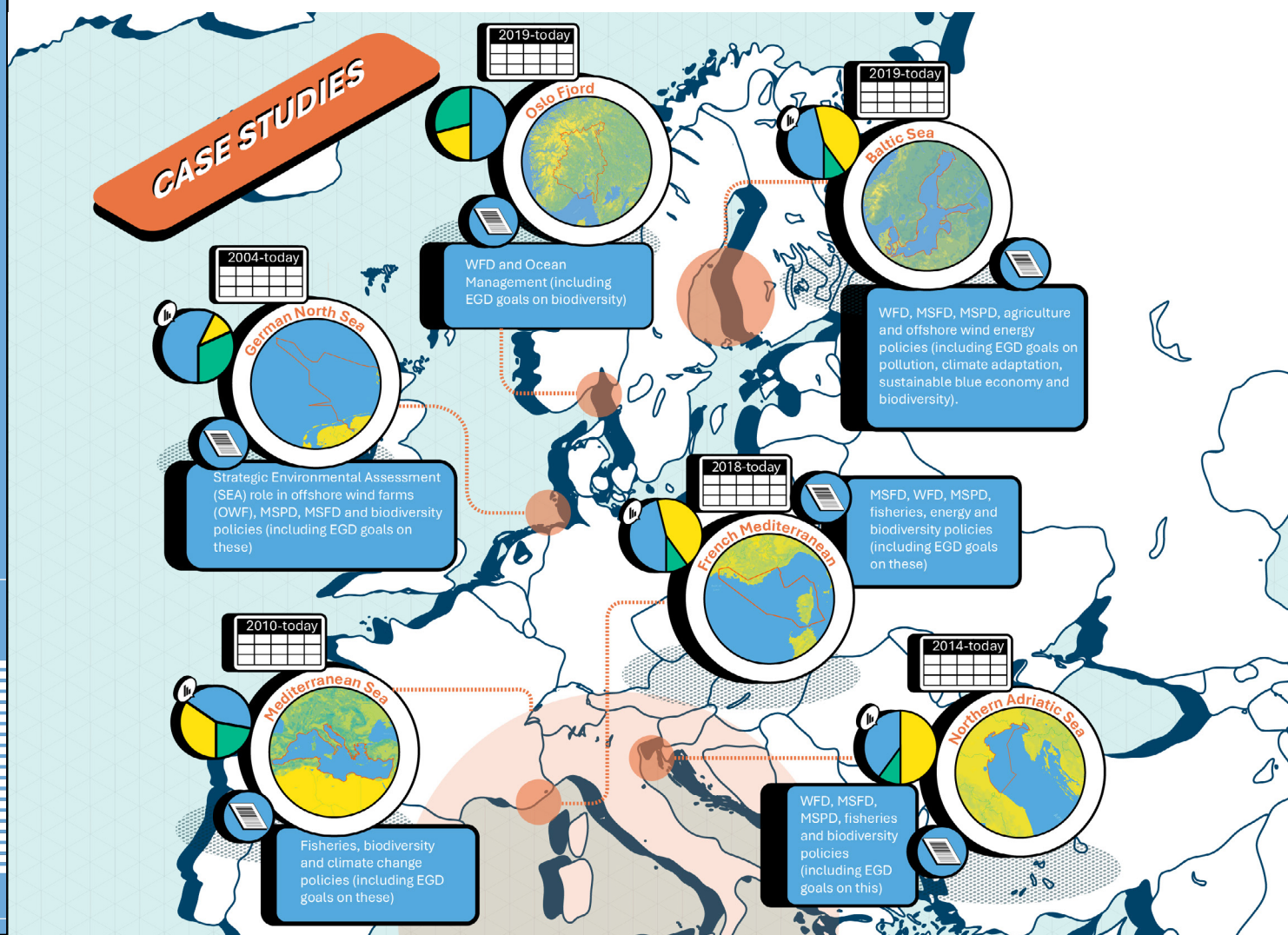
At the end of each section (3.1-3.4) a box provides insight on the lessons learned from the application of the methodology and the main takeaways to facilitate its application in other contexts.

3.1 Problem definition

The designed methodology, tailored for flexibility, enables its application to various policies, policy areas and phases of the policy cycle, accommodating the specificities and needs of the analysis. In particular, in the context of CrossGov the policies under analysis at the **formulation** stage (WP2) can be grouped in the following five policy clusters.

Biodiversity stream	Habitat Directive (HD), Birds Directive (BD), Marine Strategy Framework Directive (MSFD), Water Framework Directive (WFD), and Nature Restoration Law (NRL)
Zero pollution stream	MSFD, WFD, and Nitrates Directive (ND)
Agriculture and nutrient pollution	Common Agricultural Policy (CAP) and WFD
Fisheries and biodiversity	Common Fisheries Policy (CFP), HD, BD, MSFD, and WFD
Renewable energy, offshore wind power and biodiversity	Renewable Energy Directive III (RED III), Maritime Spatial Planning Directive (MSPD), MSFD, HD, BD, WFD, and EU Climate Law

The designed methology can be also applied to the **implementation** stage of assessed policies, e.g. through case studies. In the case of CrossGov, these were analysed (WP3) with a focus on the following specific geographical and policy scopes.

CASE STUDIES

Oslo Fjord — 2019-today
WFD and Ocean Management (including EGD goals on biodiversity)

Baltic Sea — 2019-today
WFD, MSFD, MSPD, agriculture and offshore wind energy policies (including EGD goals on pollution, climate adaptation, sustainable blue economy and biodiversity).

German North Sea — 2004-today
Strategic Environmental Assessment (SEA) role in offshore wind farms (OWF), MSPD, MSFD and biodiversity policies (including EGD goals on these)

French Mediterranean — 2018-today
MSFD, WFD, MSPD, fisheries, energy and biodiversity policies (including EGD goals on these)

Mediterranean Sea — 2010-today
Fisheries, biodiversity and climate change policies (including EGD goals on these)

Northern Adriatic Sea — 2014-today
WFD, MSFD, MSPD, fisheries and biodiversity policies (including EGD goals on this)

In general, it is advisable to develop a well-structured process, tailored on the specificities of the intended analysis, with a broad vision and based on various information sources (including co-creation). **Information sources** that can be used for the desk analysis include: relevant policies, legislation, plans; websites of relevant administrations, agencies, organisations and NGOs (operating at the various governance levels); websites and deliverables of relevant national and EU projects; reports and scientific publications in general. It is advisable to complement the desk analysis with stakeholder and expert consultation, e.g. in the form of semi-structured interviews and focus groups. This step is essential to integrate and validate the results of the desk-based analysis and co-define recommendations and proposals for action.

So What?

Lessons learned on Problem and Scope Definition

Given the wide scope of SPS interfaces, a critical first step to start the self-assessment process is to define the scope of the analysis, specifying:

- Which are the most important questions to be addressed in the analysis;

- Which is the geographical scope of the analysis, from local to national to sea basin or EU-level;

- Which is the time frame of the analysis (linked to the policies analysed);

- Which are the policies under analysis and which stages of the policy process need particular attention, from policy design and formulation to policy implementation, evaluation and adaptation;

- Based on the above points, which are the most important sources of information: documentation and input from stakeholders, as an important role as source of information and results validation through the process should be attributed to co-creation.

This is a fundamental initial step to define the goals and set the boundaries of the analysis we intend to undertake.

3.2 Analysis of the Science-for-Policy Ecosystem

A **Science-Policy-Society Ecosystem** is defined as the set of actors, including the civil society, and connections through which scientific knowledge is acquired, synthesised, translated, presented for use, and applied in the policymaking process (adapted from Oliver, 2022).

The main compartments that compose the Science-for-Policy ecosystems can be observed in Figure 3, which differentiates (Shepherd, 2014) among "*push forces*" (Research & Evaluation Funders, Evidence Generators and Evidence Pumps), "*pull forces*" (actors involved in the main stages of the policy cycle, i.e. Policy Design & Formulation, Policy Implementation, Policy Evaluation & Adaptation) and hybrid forces that can act both as *evidence generators* and *evidence users* (Civil Society actors and Business actors).
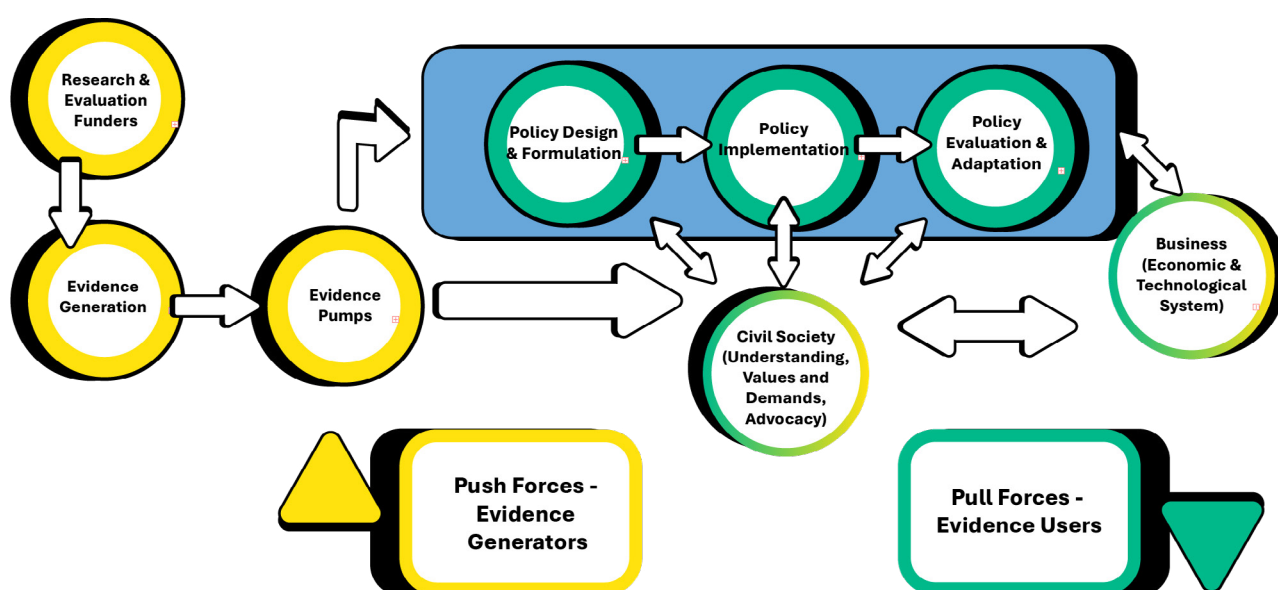

Figure 3. Schematic overview of components of Science-for-Policy Ecosystem and their connections.

Among the main components of the SPS ecosystem, **Research & evaluation funders** are potentially transformative within the ecosystem (Oliver, 2022). They incentivize researchers, through offering policy relevant funding, e.g. through challenge-led calls and dedicated research funding for research into evidence production and use. They also promote dedicated research and knowledge exchange funding for research into impact and processes of evidence use in policy. They offer training and development of capacity and capability in research, and support engagement activities. They also support "intermediaries" actors, such as NGOs and associations. Each funding organization and actor has of course specific reference frameworks and spatial and sectoral interests. For instance, concerning the Ecosystems analysed in Cross-Gov, we can find here international organisations funding (e.g. HELCOM, MedFund), the European Commission funding schemes and programs (e.g. Horizon Europe, European Regional Development Fund, Multiannual Financial Framework), national and sub-national authorities (e.g. ministries, local governments and municipalities), but also research organizations and private sectors' funders and donors (operating at the EU, regional, national and sub-national levels).

There is a quite wide range of subjects acting as **Evidence generators**. Three main categories, with different missions and characteristics in terms of knowledge and evidence offered in our analysis are: research organisations and academia; environmental agencies and other similar

(governmental) bodies and public authorities; other actors ranging from privates to NGOs to civil society and the private sector (e.g. concerning impact assessments).

Interestingly, what we found is that these actors can also act as *Evidence pumps*, as they may provide data and knowledge (generic or specific), advice and/or advocacy. Evidence pumps are responsible for distributing the knowledge generated by research entities to policymakers, industry stakeholders, and the public. They have a crucial role as complex policy problems require extensive connections and trusted relationships among scientists and policymakers to ensure multi-disciplinary advice and coherent policies (EC, 2022). They ensure that information flows effectively between research and practical applications, enhancing transparency, credibility, and legitimacy in the policy-making process. As part of a collaborative system, they provide actionable knowledge and potentially influence what the decision-makers consider relevant. In our findings, this group includes environmental agencies (e.g. Office français de la biodiversité (OFB) in France or Sistema nazionale protezione ambiente (SNPA) in Italy), academic and research institutions acting as boundary organizations, and professional associations, but also international organisations, e.g. with important relevance at the EU and sea-basin scale (e.g. the various DGs of the European Commission, HELCOM, EEA, UNEP/MAP). These subjects can act more as "intermediaries", through synthesis, training, networking and convening, and through being trusted and credible sources of advice and evidence for policy-makers (Oliver, 2022).

Policy-makers are the main actors in the *Policy design & formulation* compartment. The key ones relevant for our analysis are governmental entities at all levels of governance, from sub-national, to national, regional, EU and international. These actors have an important role in policy design and formulation, as they define policies containing all relevant boundary conditions and policy targets, while considering stakeholders' inputs.

The key players in the *Policy implementation* compartment are the EU Commission, included here as it monitors and evaluate the implementation of the different policies, and the national and regional administrations responsible for policies implementation, with the involvement of other public authorities on specific sectors / topics. In addition, environmental agencies, research organisations and universities are also directly involved in the implementation process (mainly in planning and monitoring activities). The continuity with their role of evidence generators and evidence pumps has the potential to bring substantial added value to the Ecosystem and to reinforce the capabilities within the administrations and authorities to assess and absorb evidence of different kinds.

Actors involved in the *Policy evaluation & adaptation* phase are usually the sum of the actors already involved in the previous two phases of the policy cycle. All actors involved in the three phases of the policy cycle, from formulation to implementation and evaluation have a key role as "pull" forces for evidence generators and evidence pumps.

The *business sector*, defined here as the *Economic & Technological System*, is part of the "Society" included in the SPS Ecosystem. There is a large number of actors involved, where some of the main categories in our findings are for instance large enterprises, small-medium enterprises, Trade Unions, sectors' associations (e.g. on fisheries, agriculture and off-shore wind energy). They potentially drive economic growth and technological advancements.

Finally, *civil society* actors (e.g. NGOs, associations, community groups, and advocacy organizations) usually aim at promoting sustainable practices, ensuring community voices are

heard in planning processes, and holding stakeholders accountable to environmental and social standards. Therefore, they can ensure that evidence informs decision-makers via a democratic, discursive and inclusive process, where strengths and weaknesses of different types of knowledge are offered and discussed (Oliver, 2022).

Both business sector and civil society actors may have a role as "pull" forces for evidence generators and evidence pumps, and as "push" forces, being themselves evidence generators and evidence pumps.
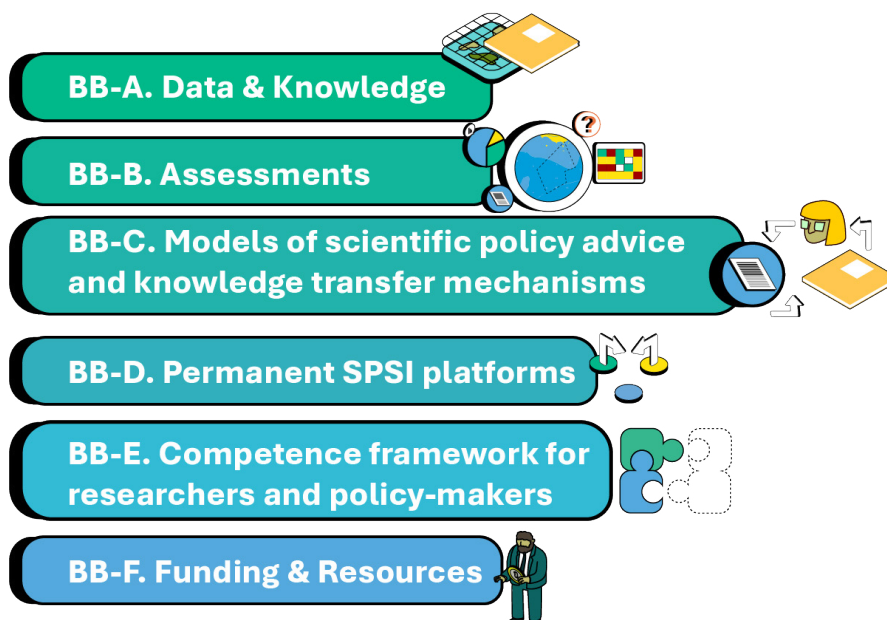
So What?

Lessons learned on Science-Policy-Society Ecosystem analysis

The analysis of the SPS Ecosystem facilitates the identification of essential organisations and actions, enabling the exploration of how the actors interact and collaborate, what objectives are pursued (in the policy cycle), how these objectives can be evaluated, and what adjustments or support mechanisms may be necessary to enhance the achievement of these outcomes (Oliver, 2022).

This is a fundamental step to acknoweldge all actors and components of the system of interest in the analysis, while also investigating their (collaborative) relations and connections in order to assess their functioning and highlight the strengths and weaknesses (these aspects are recalled in Section 3.3 and 3.4).

3.3 Analysis of SPSI Building Blocks

At the core of the analytical framework and the operational procedure to analyse SPSIs are the six **Building Blocks (BBs)**, that have been identified as the main constituent elements of SPSI that are potentially relevant to Green Deal-related marine legislation and policies.

BB-A. Data & Knowledge

BB-B. Assessments

BB-C. Models of scientific policy advice and knowledge transfer mechanisms

BB-D. Permanent SPSI platforms

BB-E. Competence framework for researchers and policy-makers

BB-F. Funding & Resources

This section introduces the *Building Blocks*, together with the *practices* identified through the analysis carried out in the project, their related *impacts* on evidence-based policy making, as well as the *needs* to be addressed to move towards coherent and cross-compliant policy formulation and implementation and a more efficient and effective science-to-policy process.

Box 1

BB-A - Data & knowledge

Data form the foundation of a knowledge system capable of informing wise decision-making and practical actions (Oliver et al., 2021). Yet, science, policy, and society engage with data differently. Researchers produce data to understand natural systems, while policymakers often seek information that enables timely, consensus-based decisions (Böcher and Krott, 2016). At the same time, societal use of data is shaped by cultural and contextual factors. These differences are further complicated by uncertainty, ethical concerns, and the challenges of integrating diverse knowledge types (Breuer et al., 2019; Brugnach et al., 2007). Effective responses to sustainability issues require interdisciplinary integration (Stafford-Smith et al., 2017), robust data interpretation (Sokolowska et al., 2019), and co-production of knowledge among science, policy, and society (Cvitanovic et al., 2015).

Despite advancements in knowledge production and data collection, the **availability and accessibility of data** remain uneven across policies and specific policy areas. Challenges such as data incompleteness (e.g. the lack of field-specific information on nutrients to mitigate eutrophication caused by agriculture, as found in the Finnish Archipelago case), privacy concerns, and variations in granularity (e.g. in the off-shore wind energy (OWE) sector, as emerged in the

German North Sea case), spatial scale (e.g. national, regional, Hydrographic District levels), and temporal scope (e.g. timelines of policies might be misaligned) affect the usability of data for policy assessments. While decision-making increasingly relies on the best available knowledge, persistent limitations in data development and access may still hinder the formulation of well-informed policies. For instance, CFP and MSPD are based on and require comprehensive scientific evidence. While the MSFD is regarded to have advanced knowledge production, scientific data and knowledge still need to be improved to determine GES under the MSFD (**Cross-Gov D2.2**).

Efforts to create **comprehensive and aggregated databases** have improved data transparency, yet **knowledge gaps** persist. For instance, knowledge gaps on long-term effects and cumulative *impacts* of OWE on biodiversity emerged as a critical issue impacting both policy formulation (**CrossGov D2.2**) and implementation (German North Sea case). Other examples concern, e.g. improved fish stock assessments (Mediterranean Sea case study), the use of nature-based solutions (NBSs) at the land-sea interface, restoration priorities and means, non-indigenous species (NIS), sediment loads from rivers (all examples emerged from the North Adriatic case study analysis). Although acknowledging these gaps enhances policy transparency, unresolved uncertainties can introduce scientific ambiguity, potentially limiting the effectiveness of policymaking.

Data integration across policies, sectors, and stakeholders has been widely promoted, but structural challenges persist (e.g. often data on land and sea are not well interconnected and used together to support decision making, e.g. as emerged from the Oslo Fjord case study). Despite many data bases and knowledge platforms have been created at various levels (EU, Regional Seas, national, sub-national) for the needs of various policies, their interoperability is poor (in particular when considering the needs of data integration across the land-sea interface). **Fragmentation** across databases and geoportals, discrepancies between environmental and socio-economic data, and inconsistencies in spatial and temporal scales continue to impede the fully integrated management of marine resources. These barriers, in turn, affect policy coherence and the successful implementation of cross-sectoral strategies.

These *practices* make it critical to consider the following *needs*:

NEEDS

- Data and knowledge should be timely available and accessible across policies, through standardized data sharing protocols, including clear guidelines on data granularity, accessibility, and confidentiality.

- For decision and policy making processes to be transparent, inclusive and effective, knowledge gaps and uncertainties also need to be considered explicitly and adaptively, while accounting for the source of information and the specifics of it.

- Highlighting and considering interlinkages across sectors, across societal actors, across disciplines, and among different geographical levels is a factor of success in environmental sciences and a booster for policy coherence.

BB-B - Assessments

Box 2
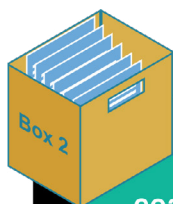
Monitoring and research are essential to understand how marine and coastal systems respond to cumulative stressors, and whether management actions are effective (UNEP & IOC-UNESCO, 2009). Environmental assessments synthesize this knowledge for decision-making and, when repeated over time, support adaptive management that responds to changing conditions (Oliver, 2022). These processes often involve diverse actors and institutional arrangements, creating spaces for knowledge exchange, validation, and joint learning (Cash et al., 2003; Edenhofer and Kowarsch, 2015; Zeigermann, 2021; Strand, 2022). When embedded in inclusive and iterative governance frameworks, assessments can foster legitimacy and informed action (Wagner et al., 2023).

Assessments play a crucial role in evidence-based policymaking, as they are generally regarded as **relevant**, **legitimate**, and **credible**. For instance, relevance can be observed in the role of impact assessments on which EU legislation and national implementation usually rely on and are directly informed by. Moreover, credibility, provided by the involvement of teams of experts (e.g. research institutions and environmental/government agencies) together with the responsible authorities, emerged as a recurrent practice in the analysed case studies. Legitimacy is given by the comprehensive public participation process sometimes mandated in the assessments. However, persistent challenges such as data gaps (e.g. in the fisheries sector), limited transparency (e.g. in the off-shore wind energy sector), lack of specific expertise and resource constraints (e.g. as emerged in the North Adriatic Sea case) may affect the assessments' effectiveness.

While these assessments help identify policy complementarities and conflicts (e.g. SEAs and EIAs assessments), the prevalence of **siloed approaches** continues to hinder cross-policy and cross-sectoral integration. For instance, at the land-sea interface, a scarce integration between WFD and directives, with related planning, at sea (e.g. MSFD and MSPD), e.g. due to temporal and spatial misalignments, differences in indicators, scarce collaboration of authorities, can cause a mis-integrated management (e.g. as emerged in the Oslo Fjord case). Failing to fully consider interactions between policies and sectors may lead to misleading conclusions and weaken policy coherence.

Moreover, while most of the information (both data and knowledge) originates from public administrations or bodies, **key data and knowledge providers**—both public and private operators—are often actively involved in the assessment process. Nevertheless, civil society participation is typically confined to mandatory public consultation processes, which may not allow for meaningful engagement. Limited engagement can hinder not only the processes of building consensus and informing decisions but also the integration of valuable sector-specific knowledge, ultimately affecting the quality and inclusiveness of the decision-making process. In this sense, local cooperation networks, associations and NGOs assume a relevant role as intermediaries for the gathering and transmission of knowledge from society (e.g. as exemplified by the Finnish Archipelago case).

Therefore, the following **needs** should be tackled:

NEEDS

● Assessments should be transparent, relevant, legitimate, credible and made available.

● Assessments should recognize a wide array of contributors as knowledge providers, to be identified through a dedicated process.

● Assessments should include and integrate all the relevant different sectors, discipline and elements that should be considered depending on the specifities of the policy process. This regards, in particular, economic and social conditions affecting and depending on policy-making.

● There should be a closer link between assessments and policy and management processes, also taking into consideration their impacts on larger spatial domains, including transboundary impacts.

● When relevant, assessments should include and analyse foresight/future scenarios, including climate change and socio-economic aspects, as a support to decision-making.

Box 3
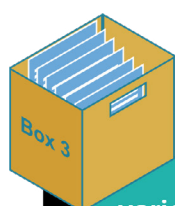
BB-C - Models of scientific policy advice and knowledge transfer mechanisms

Science-policy-society interfaces have been conceptualised through various models (Koetz et al., 2012). Linear approaches describe a one-way flow of objective knowledge from scientists to policymakers, grounded in the idea of "speaking truth to power" (Gluckman et al., 2021). In contrast, collaborative models promote iterative, multi-directional exchanges among scientists, decision-makers, and societal actors, acknowledging the interplay between knowledge, values, and power (Sokolovska et al., 2019; Strand, 2022; United Nations DESA, 2021). These participatory approaches enhance inclusivity and legitimacy by integrating diverse forms of knowledge and fostering joint deliberation (Cvitanovic et al., 2015). Central to their functioning are knowledge transfer mechanisms: formal or informal tools that mediate the flow and usability of science in decision-making (Böcher and Krott, 2014; EC, 2022; Wagner et al., 2023). When well-designed, such mechanisms increase the credibility and relevance of evidence, helping bridge institutional gaps and overcome cognitive and structural barriers (Oliver et al., 2021; Maas et al., 2022; Kettle et al., 2017; Oliver et al., 2022).

Collaborative models of knowledge transfer are widely adopted across the analysed policy domains, integrating knowledge production directly into the policymaking process. However, challenges remain, particularly concerning the continuity of knowledge transfer and the meaningful inclusion of society in co-production processes. Moreover, sometimes there is a weak

link between knowledge production and actual implementation, as research outcomes and projects' results are not adequately translated into practical tools (**CrossGov D2.2**). Despite these gaps, institutional frameworks generally try to facilitate the translation of knowledge into actionable policy and scientific outputs, fostering more informed decision-making.

Scientific policy advice and knowledge transfer mechanisms are typically **well-institutionalized and effective** in supporting policymaking (as emerged recurrently in the analysed cases). Their formalization enhances the relevance, legitimacy, and credibility of research in policy processes. However, their effectiveness can be hindered by factors such as insufficient political will or trust of actors involved (e.g. Finnish Archipelago case), funding constraints, limited stakeholder engagement, and weak enforcement mechanisms (e.g. Mediterranean case). Furthermore, these mechanisms often operate within the boundaries of specific policies, limiting their capacity to foster coherence and cross-compliance across different policy areas.

Consequently, these are the *needs* identified:

NEEDS

- The models of scientific policy advice and knowledge transfer mechanisms should be based on collaboration and communication among actors involved (despite when linear models are more suitable). Respecting case-by-case settings and constraints, clearly move towards fully collaborative models.

- The models of scientific policy advice and knowledge transfer mechanisms should impact positively the relevance, legitimacy and credibility of research to support policy making. But this should be made evident and possibly objective (e.g. use the 15 indicators proposed by Wagner et al., 2023).

- Improving SPS governance. Principles: institutional design needs to consider and manage "biases" and disagreement on both scientists' and policymakers' sides, as well as uncertainty in the science of complex problems (i.e. using a post-normal science approach: "normal science may have little to offer when facts are uncertain, values are in dispute, stakes are high, and decisions are urgent" (Funtowics & Ravetz, 1993)).

- Implementing SPS governance. Operational: clear rules and procedures should be established to apply the models of scientific policy advice and knowledge transfer mechanisms. Rules and procedures are in place, but sometimes they fail or remain too policy-specific.

- More robust and less fragmented science-for-policy ecosystems in Member States and the EU should be developed.

BB-D - Permanent SPSI platforms

Box 4
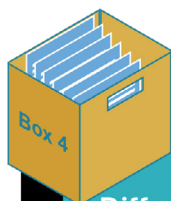
Knowledge transfer mechanisms often use permanent SPSI platforms. Different types of platforms have been established to deal with the challenges related to sustainability. They can take the form, for instance, of expert panels, Communities of Practice, SPSI networks, research outreach associations, co-developed web platforms, etc. They play a key role in increasing science-policy-society cooperation through coordination and engagement of different communities, by integrating science and knowledge into policy and public action (Cvitanovic et al., 2018; Hrabansky & Pesche, 2016). Their effectiveness lies in enabling sustained engagement, knowledge co-production, and cross-sectoral coordination (Gustafsson & Lidskog, 2018; EC, 2022). When well-designed, they contribute to more inclusive and adaptive governance processes (Wagner et al., 2023).

SPSI platforms play a crucial role in facilitating knowledge transfer, with numerous platforms operating across different policy areas, each characterized by specific features. Examples include the EU MSP platform, WFD and MSFD technical groups at the EU level, working groups within the Barcelona Convention and GFCM at the Mediterranean (regional) level, but also technical committees and/or advisory bodies (often involving research institutions and government agencies) supporting the competent authorities of the various policies at the national level. Their roles consist of technical and scientific support and advice and knowledge transfer, while promoting engagement and dialogue among actors and parties, disseminating information and raising awareness, giving voice to all players for transparent and balanced decisions.

While these platforms contribute positively to policymaking by supporting knowledge dissemination, they face **challenges** related to the continuity of their activities and their capacity to address interlinkages across sectors, societal actors, disciplines, and geographical scales. Their often-sectoral focus and limited long-term continuity may constrain their ability to enhance policy coherence and promote broad stakeholder participation (e.g. North Sea case study). Nevertheless, SPSI platforms remain active and effective throughout all stages of the policy cycle, including assessment, planning, implementation of management measures, monitoring, and performance evaluation.

Therefore, it is critical to address the following *needs*:

● Promote (or reinforce where already available) SPSI platforms that play a role in contributing to knowledge transfer in a continuous and inclusive way, in particular promoting interlinkages across sectors, across societal actors, across disciplines, and among different geographical levels and ensuring their impact.

● Where relevant, set up and reinforce boundary organisations in knowledge translation and cross-sectoral collaboration. We refer to boundary organization as formal institutions that operate at the interface between science and policy, facilitating collaboration and knowledge exchange. They aim to bridge the gap between researchers and decision-makers, enhancing the impact of scientific research on environmental policy and practice (Cvitanovic et al., 2018, Gluckman et al., 2021, Oliver et al., 2021, Wagner et al., 2023).

BB-E - Competence framework for researchers and policy-makers

Box 5
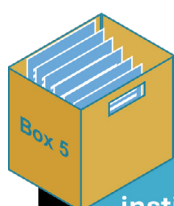
Effective SPSIs depend on diverse capacities—technical, scientific, institutional, and relational—across all actors involved. Capacity building enhances the ability to navigate complex interlinkages, manage diverse values and trade-offs, and reduce information fragmentation (Hrabanski & Pesche, 2016; Schwendinger et al., 2022). It plays a crucial role throughout the policy cycle, supporting both access to and effective use of knowledge, while fostering stakeholder engagement and co-production (Topp et al., 2018; EC, 2022; Wagner et al., 2023). Targeted capacity efforts are also essential to build trust and ensure long-term learning in dynamic, multi-actor environments (Blythe & Cvitanovic, 2020; Maas et al., 2022; Penca et al., 2024).

Awareness of the need for *interdisciplinary competence frameworks* to enhance research and policymaking effectiveness is increasing. However, existing frameworks still exhibit gaps, particularly in their completeness and the integration of diverse skills and expertise. For instance, these gaps may concern communication and synthesis skills, particularly in translating complex scientific information into actionable policy recommendations, but also better development of stakeholder mapping and consultation activities and finally economic skills and expertise, as well as the development of new technologies for data analysis and monitoring. While efforts are being made to develop more comprehensive frameworks (i.e. integrating interdisciplinary approaches and systemic expertise essential for effective policymaking, e.g. as emerged in the German North Sea case), these persistent limitations may hinder their full potential in supporting well-informed and efficient policymaking (e.g. concerning off-shore wind energy *impacts* on biodiversity, the lack of deep knowledge of specific issues may result in little

interest in broader perspectives and simplistic approaches – **CrossGov D2.2**).

Capacity-building initiatives aimed at improving expertise are available to some extent, yet the competence of actors involved in policy design and implementation remains sometimes inadequate. Deficiencies in deep knowledge of specific issues, relevant skills, and the necessary attitude persist. While such initiatives contribute to strengthening interdisciplinary and systemic expertise, knowledge often remains compartmentalized in silos. The prevalence of sector-specific specialization can limit collaboration among policymakers and practitioners, restricting the integration of diverse perspectives and ultimately affecting the coherence of policy implementation.

Overall, this calls for concrete actions on the following *needs*:

NEEDS

- Individual competences of actors (e.g. subject-specific knowledge, skills, attitudes) should be adequate for SPS, targeting in particular inter- and trans-disciplinarity.

- Capacity-building activities focused on SPS should be developed and made available and inclusive. They should aim at increasing overall and systemic expertise as weel as expertise tailored to specific knowledge needs.

- Concerning research policies and recognition to scientists for SPS work, there should be more direct interest of Knowledge Generator actors in SPS processes and outputs, becoming also Evidence Pumps and/or being able to play an active role in collaborative SPS models (here reference is made to the compartments of the SPS Ecosystem as presented in Section 3.2). Research policy should promote connections between policymaking and scientific communities.

BB-F - Funding & resources

Box 6
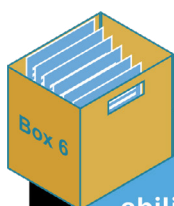
Effective SPSIs depends on several factors, including funding and availability of infrastructures and human resources. Funding and resources affect multiple dimensions of SPSI, including the two-ways interactions typical of collaborative models, knowledge generation processes, appropriate acquisition and use of information for policymaking, knowledge transfer mechanisms and SPSI platforms (Dale et al., 2019; Oliver et al., 2021).

A variety of drivers and funding mechanisms are available, ranging from private to public schemes at the various levels of governance, e.g. provided by institutions and other public entities. In some cases, cross-sectoral funding schemes are available with some supporting cross-policy financing schemes, which play a role in integrating policy objectives and promoting coherence. For instance, considering EU funding schemes, we can refer to EMFAF and the Mission Restore our Ocean and Waters under Horizon Europe, that are beneficial for integrating objectives of different policy streams.

However, the **availability of essential resources**—including human capital, infrastructure, services, and communication tools—often is insufficient to support effective policy implementation. Together with the lack of funding, another issue is the uneven distribution (e.g. among sectors) or disparities in the availability of resources between cooperating actors (e.g. between the Western Mediterranean and the South and East Mediterranean). The inadequacy of financial resources, whether in terms of amount, continuity, or allocation, can limit concrete progress, communication and coordination and undermine the overall effectiveness of policymaking.

Therefore, there is a clear *need* to act upon:

NEEDS

- **Type of funding.** A mixed set of drivers (e.g. demand driven, supply driven, or proceeding from competitive funding schemes) and type of funding (e.g. from national to EU/international, from public to private) is advisable.

- **Lack of funding.** The amount, continuity, allocation (e.g., human resources, infrastructures, services, communication) of resources should be adequate.

Box 7
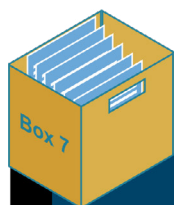
Cross-cutting elements

The functioning of SPS interfaces is not exclusively limited to the aspects covered by the BBs introduced and presented above. In particular, in our analysis we identified some additional cross-cutting elements with relevance for the sharing of best practices and the importance of structuring and conducting a continuous assessment of the SPSI processes performance.

Not all actors involved in SPS interfaces are aware of **parallel processes or best practices** developed by other organisations and Ecosystems. Moreover, such information is rarely shared or made accessible to the broader public. Enhancing the exchange of knowledge and good practices among organisations would promote mutual learning and could have a positive impact on various policymaking processes, while also increasing awareness of the importance of well-functioning SPS interfaces.

In addition, a **systemic approach** to identifying the main barriers affecting Ecosystem performance is rarely in place. This can lead to a fragmented understanding and incomplete assessments, ultimately limiting the capacity to inform policymaking effectively. It is therefore crucial to recognise both the strengths and weaknesses of the Ecosystem, in order to address the key obstacles to its efficient and effective functioning in support of evidence-based policymaking.

Therefore, there is a ***need*** to support:

NEEDS

- The creation and maintenance of a "Repository of SPSI Best Practices and science-for-policy ecosystems", with an inter-institutional focus (e.g. how the work of different organisations is related to various policies and therefore other organsations). See JRC Knowledge Exchange Platform (KEP).

- The continuative adoption of a self-evaluation of SPSI processes in policy formulation and implementation and science-for-policy ecosystems should become become a routine and should be possibly follow shared guidelines (possibly coming from or endorsed by the EC). Using a set of indicators, a list of questions (e.g. Strand, 2022) or a step-wise analysis of evidence-informed policy processes (EC, 2023. Better regulation toolbox).

So What?

Lessons learned on Building Blocks analysis

The final result of well-functioning SPSIs that are efficient and effective in informing evidence-based policymaking, depends on all these BBs, that constitute the main elements to be assessed. At the same time, each BB can be more or less important depending on the systems, policies and phases of the policy cycles on which the analysis is conducted. Nevertheless, in a structured and long-term vision, all these aspects are relevant and important. This calls for a coordinated approach, able to consider all these aspects, that is something that was considered also in the formulation of recommendations in Section 3.4.

Practices and *needs* were co-analysed with the experts engaged in the focus group to co-develop a set of general and specific recommendations, that, without the aim of being exhaustive, are suggested as concrete actions to tackle the identified *needs*. The first one (Section 3.4.1) lists actions (14) that have relevance in **general** for European Green Deal related marine policies. The second one (Section 3.4.2) presents actions (18) that are focused on **specific** sectors (i.e. offshore wind energy, agriculture and fisheries) and/or policies (i.e. WFD, MSFD, MSPD).

For each recommendation, this Blueprint provides (i) a **code** for its identification, (ii) a short **title**, (iii) the **target user**(s), (iv) the **level of readiness for implementation** (i.e. low, medium, high), (v) the **policy stage** of the cycle that could mostly benefit from the action (i.e. formulation, implementation, evaluation & adaptation), (vi) a **description** (containing explanations and examples and links to the *needs* that are potentially addressed by the action), including the relevance of the action to enhance **coherence** across policies and **cross-compliance** towards reaching European Green Deal objectives.

Target users   **Readiness for implementation**   **Phase of the policy cycle**
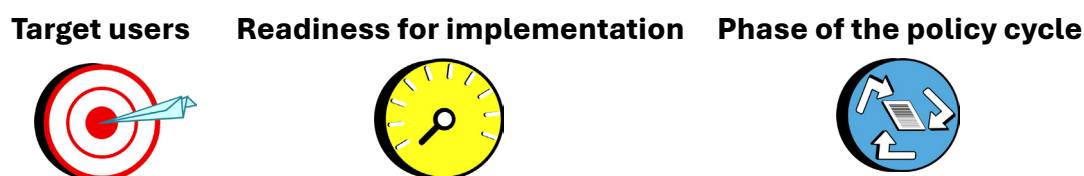
3.4.1 Recommended actions that have relevance in general for EGD related marine policies

Figure 4 provides a schematic representation of the 14 actions that have relevance in general for European Green Deal related marine policies. These recommendations are introduced here and better presented in the sections below grouped per *Building Block* for which they are mainly relevant.
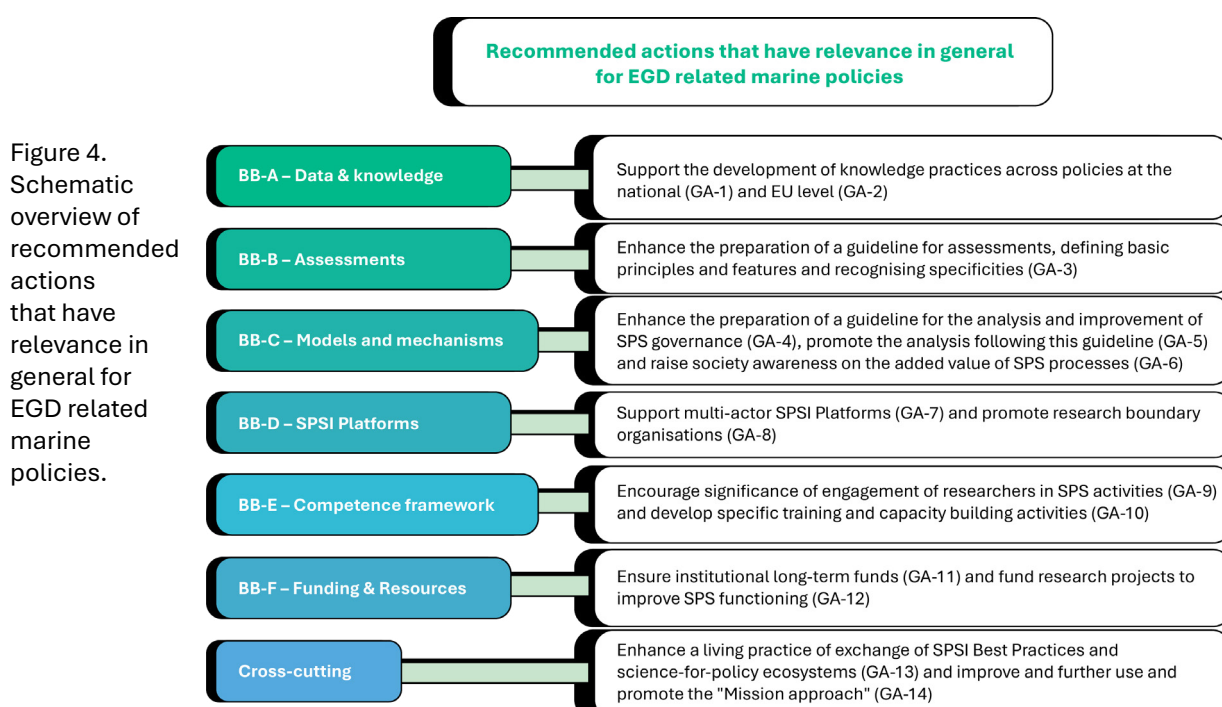
Figure 4. Schematic overview of recommended actions that have relevance in general for EGD related marine policies.

Recommended actions that have relevance in general for EGD related marine policies

BB-A – Data & knowledge: Support the development of knowledge practices across policies at the national (GA-1) and EU level (GA-2)

BB-B – Assessments: Enhance the preparation of a guideline for assessments, defining basic principles and features and recognising specificities (GA-3)

BB-C – Models and mechanisms: Enhance the preparation of a guideline for the analysis and improvement of SPS governance (GA-4), promote the analysis following this guideline (GA-5) and raise society awareness on the added value of SPS processes (GA-6)

BB-D – SPSI Platforms: Support multi-actor SPSI Platforms (GA-7) and promote research boundary organisations (GA-8)

BB-E – Competence framework: Encourage significance of engagement of researchers in SPS activities (GA-9) and develop specific training and capacity building activities (GA-10)

BB-F – Funding & Resources: Ensure institutional long-term funds (GA-11) and fund research projects to improve SPS functioning (GA-12)

Cross-cutting: Enhance a living practice of exchange of SPSI Best Practices and science-for-policy ecosystems (GA-13) and improve and further use and promote the "Mission approach" (GA-14)

BB-A – Data & knowledge

[GA-1] Support the development of a national knowledge practice across policies, e.g. in the form of a knowledge catalogue

National institutions and relevant national/sub-national agencies (e.g. Sistema Nazionale Protezione Ambiente - SNPA in Italy)

Medium

Implementation

The aim of this action would be to support the **sharing and continuously updating** of data-gathering and ensuring the **availability of best knowledge** with the participation of the various ministries involved in the policy formulation and implementation. It would be necessary to identify an entity/institution responsible for its management; for instance, in the case of Italy this could be ISPRA (the Institute for Environmental Protection and Research), that is, among other tasks, already managing the two systems of the data collected under the implementation of WFD and MSFD.

This is a necessary, despite often not sufficient, preparatory action aimed at creating a **catalogue of metadata** to answer the *needs* for timely available and accessible data, taking into account the knowledge gaps as well as the interlinkages across policies, actors, sectors and geographical scales (with an interdisciplinary approach), when possible and relevant.

This should be, depending on the policy data specificities, **open access to all**, not only the administrations. Lastly, this action should capitalize those services that are already available, trying to avoid adding extra burden to the actors involved.

Cross-policy availability and access to multidisciplinary metadata enhances data sharing and standardization, reducing policy fragmentation and enhance policy coherence. Additionally, these are key elements that can contribute cross-compliance with EGD goals.

[GA-2] Support the streamlining of the knowledge practice at the EU level across policies, e.g. in the form of a knowledge catalogue

European Commission DGs, including JRC, European Agencies (EEA)

High

Implementation

The aim of this action would be to support the **sharing and continuously updating** of data-gathering and ensuring the **availability of best knowledge** with the participation of the various DGs involved in their formulation and implementation. It would be necessary to identify an entity/institution responsible for its management (e.g. the Joint Research Centre, given the pivotal role it often already has in this sense).

This is a necessary, despite often not sufficient, preparatory action aimed at creating a **catalogue of metadata** to answer the *needs* for timely available and accessible data, taking into account the knowledge gaps as well as the interlinkages across policies, actors, sectors and geographical scales, when possible and relevant.

This should be, depending on the policy data specificities, **open access to all**, not only the administrations. Lastly, this action should capitalise those services that are already available (e.g. **EMODnet** and similar). Here the aim is to avoid adding extra burden to the actors involved. For example, the proposed action could, among others, serve the purpose of the recently created interservice group working on marine data, led by DG MARE and involving other DGs (e.g. DG ENV).

The recommended action fosters data integration across DGs and related policies, supporting EGD targets through improved access to harmonized data.

BB-B – Assessments

[GA-3] Enhance the preparation of a guideline for assessments (at the various governance levels), defining basic principles and features and recognising specificities

European Commission DGs, Regional sea organisations (e.g. Regional Sea Conventions, RFMOs), National and Sub-national institutions (e.g. Regional administrations, Basin District Authorities)

High

Implementation

Despite assessments are being conducted for different reasons and in various contexts that may vary significantly one from the other and call for specific approaches based on the needs of each case. **«General» non-prescriptive guidelines** would be useful to bring up and underline all relevant and cross-cutting elements, that ensure the credibility, legitimacy and relevance of the assessments. Certainly, these guidelines would have to consider and make sure not to overlap with the **relevant elements already provided** by the multiple guidelines already present (e.g. on monitoring and reporting for MSFD, on SEA and EBA for MSPD, on the various classifications under WFD).

Moreover, such a guideline could offer examples of **cross-policies assessments** for inspiration/guide, with an **interdisciplinary approach**. It could, for example, include indications on transparency, how to consider the coastal/marine ecosystem in its integrity at the interface between land and sea, how to structure a process to identify all the relevant knowledge providers, how to take into account those elements that are more often disregarded such as the socio-economic ones. This has also the potential to improve EGD consideration in assessments, therefore boosting cross-compliance towards its goals.

These guidelines would need to be different at the national, regional (Sea Basin) and EU level, considering the specificities of the governance level.

BB-C – Models and mechanisms

[GA-4] Enhance the preparation of a guideline on how to analyse, evaluate and improve SPS governance

International institutions, European Commission (DG RTD and JRC in particular), National institutions, policy advisory bodies and research institutes, in their role of boundary organisations, operating at the international/regional/national levels

High

Evaluation & Adaptation

This guideline would make reference to **principles and operational aspects**, e.g. rules, procedures, actors and indicators.

In order to move towards a better SPS Ecosystem and more collaborative approaches of knowledge transfer mechanisms, it is necessary to define principles and methods, with a focus on all the **crucial elements that characterise the Ecosystem and its functioning**, e.g. the actors involved, the level of collaboration and communication among them, but also the individual needed competences to enhance their collaboration etc. The Ecosystem and consequent analysis could be multi-policy/policy-specific/policy stage specific. Each of these, even if based on the same general principles, can then focus on specific aspects.
By strengthening governance structures for SPS interfaces, this guideline has the potential to promote cross-sector collaboration and evidence-based decision-making aligned with EGD goals.

Of course, depending on the level of governance, it is important to ensure the integration/streamline of such guidelines with **available initiatives**, e.g. UNEP/MAP work on SPS at the regional sea level and JRC and DG RTD work on evidence-based policy making at the EU level.

There are many avaialble examples in the literature, e.g. suggesting potential performance indicators, such as the effectiveness factors of SPSI by Wagner et al. 2022. Building on this, the self-assessment tool provided by the CrossGov project in its methodology and its application could potentially be of inspiration in this sense.

[GA-5] **Promote a continuous analysis of SPS Ecosystems, using the dedicated guidelines, to identify strengths and weaknesses and actions to improve evidence-based policymaking**

International institutions, European Commission (DG RTD in particular), National institutions, policy advisory bodies and research institutes, in their role of boundary organisations, operating at the international/regional/national levels

Low

Evaluation & Adaptation

This is the **operationalisation of the action above** (GA-4), through which we are suggesting to implement and follow the guideline in a structured way, planning this analysis of the SPS Ecosystem in a continuous cycle as part of the process and functioning of the Ecosystem itself and using its outcomes to practically reduce its weaknesses and improve its efficiency.
This constitutes one of the key actions the Blueprint is recommending: **the self-assessment and self-diagnosis of the SPS Ecosystem and its functioning**.

This recommended analysis of the SPS Ecosystem facilitates its continuous improvement, enhancing the responsiveness of evidence-based policymaking processes, potentially contributing to cyclically improved C&CC of policies. Moreover, this assessment would provide the opportunity to monitor and enhance collaborative model processes (as anticipated in Section 3.3 with reference to BB-C).

What we envisage here is a **recurring effort involving both EU-level and national actors** responsible for various policy areas or specific policies. In addition, more targeted analyses may be triggered by particular phases of policy formulation or implementation (e.g. a new/the update of an MSP plan or of a River Basin Management Plan), or even by specific interests or perspectives—such as those stemming from the research community or civil society organisations (e.g. NGOs).

[GA-6] **Support actions to raise societies' awareness of the added value of incorporating scientific knowledge into the design, development and deployment of public policies**

Research centres/institutes, Communication offices of institutions, NGOs and CSOs

High

Implementation

This specific action concern **communication and awareness** raising and is part of the necessary mechanisms to promote collaborative SPS processes. Moreover, this is linked to the need for more interest and recognition of SPS processes and functioning (linked to GA-9).

This recommended action can be developed in a form of dissemination, e.g. through projects working on the analysis of SPS Ecosystems or contributing to their functioning, but also in a

form of engagement, in which society is involved in the Ecosystem itself, e.g. as knowledge provider through stakeholder engagement mechanisms. This action has the potential to strengthen the legitimacy and transparency of the process, while also ensuring that relatively neglected types of knowledge (such as socio-economic perspectives) are taken into consideration.

We are here suggesting a **mix between a top-down and bottom-up approach**, including and addressing research centres/institutes and communication offices of responsible institutions on the one hand, but also NGOs and CSOs on the other, as these can have an important role in this regards, particularly when engaging in scientific projects and initiatives.
This action has the potential to increases public support for science-based policies, fostering a culture of evidence-informed policymaking processes and enhancing legitimacy of all EGD-related policies. These are important elements to support C&CC of policies.

BB-D – SPSI Platforms

[GA-7] Support stable multi-actor platforms at various spatial scales (i.e. national, basin/sub-basin, EU) dedicated or at least contributing to SPS processes across-policies

European Commission, National institutions, Regional Sea organisations (e.g. Regional Sea Conventions)

High

Implementation

These multi-actor platforms could establish **multiple-way communication channels** to enrich the dialogue between the scientific communities, the public policymakers in various policy domains, and the civil society. Some good examples are available, e.g. multi-actor projects such as **EmpowerU**s, as well as the **International Panel for Ocean Sustainability (IPOS)** currently under development, the EU Mission Ocean platforms, the **Blue Parks Community**, the EU Water Strategies, the **Community of Practice on Maritime Spatial Planning in the Mediterranean (MED-MSP-CoP)** and many others. Here, funding programmes have a key role in actively and specifically promoting SPS platforms and ensuring their stability and continuity. A crucial action to be undertaken here is the **extension of the scope of existing platforms** to reach and involve communities that have not been (sufficiently) involved in the policymaking process related to marine policies up to now, e.g. coastal communities. The platforms, from international to national to local, may contribute to all aspects of C&CC, since they can (and are already) facilitating the use of knowledge across policies, across governance levels and toward cross-compliant results. They encourage multi-stakeholder dialogue, integrating diverse perspectives into policymaking.

[GA-8] **Promote specifically research boundary organisations.**

🎯 **European Commission, National institutions**

🌡️ **High**

🔄 **Implementation**

This action would mainly consists of **reinforcing the existing boundary organisations and their coordination** (and setting up new organisations when needed), recognising their key role in knowledge translation and cross-sectoral collaboration. Boundary organisations can strengthen knowledge translation between science and policy, fostering interdisciplinary collaboration critical for integrated, coherent and cross-compliant EGD-related policies implementation.

This action is strictly related to the aforementioned analysis of the SPS Ecosystem (**GA-5**) and related outcomes, that will define more precisely the needs to be addressed by the boundary organisations through their role and mandate.

BB-E – Competence framework

[GA-9] **Encourage significance of engagement of researchers into science-for-policy activities**

🎯 **Research centres/institutes, Universities, JRC**

🌡️ **Medium**

🔄 **All phases**

This action, related to the research environment, is a suggested way to address the need for **more recognition to scientists for SPS work** (linked to **GA-6**). More specifically, this shift of the role of actors from solely knowledge generators towards evidence pumps and to a more **active role in the collaborative SPS models**, needs to be supported by a research policy that actively promotes connections between policymaking and scientific communities, e.g. by favouring and recognizing this connection in the evaluation systems, but also by providing dedicated funding allocation mechanisms and offering capacity building activities.

This action aligns academic/research systems with policy *needs*, encouraging and concretely supporting research that directly contributes to evidence-based C&CC policymaking.

A co-created Blueprint to strengthen SPS interfaces in the marine domain

[GA-10] **Organise specific training and capacity building initiatives to improve the competence framework of policy makers and of scientists**

European Commission (JRC, DG RTD), National institutions and Regional Sea organisations, Research centres/institutes, Universities

Medium

All phases

This action is the product of a **mutual need of scientists/researchers and policymakers/ authorities for understanding and (co-)managing the same policymaking processes**. These activities should be based on specific analysis of the policymaking authorities' needs for scientific and evidence-based knowledge as well as the researchers' and innovators' needs for understanding the policymaking process. Once again, these training and capacity building actions should be based on the specificities (area and/or policy specific) of the Ecosystem at hand, but some general recommended principles should be taken into consideration. Concerning individual competences, focus should be placed on targeting **inter- and transdisciplinary knowledge and skills**, e.g. enhancing the recognition and relevance of social sciences next to the natural ones, while enhancing **collaborative forms of attitudes**, e.g. through communication skills. Concerning capacity building activities, these should be inclusive and aimed at increasing overall and systemic expertise or can be tailored to particular knowledge needs.

In order to capitalise on what is already available, capacity-building activities should be organised in connection with ongoing processes, e.g. scientific projects contributing to this.

BB-F – Funding & Resources

[GA-11] **Ensure more institutional long-term funds (not project-related) to SPS actors**

European, International and National institution responsible for the allocation of funding

Low

All phases

This action is fundamental for the realisation of many of the others that are part of this list. Here, with actors we refer to **all the categories that are part of the SPS Ecosystem**, from the knowledge producers, to the knowledge pumps but also knowledge users, civil society and business actors. Most of the institutional funds will mainly interest the administrations, agencies and research institutions, but it is important to make sure that funds are available to support the role of all actors involved in the development of evidence-based policymaking for a consistent progress towards EGD objectives.

Of course, it has to be taken in consideration that these funds will also need to respond to sudden challenges that arise as needs, and have perhaps not been foreseen before.

[GA-12] Fund research projects to improve the functioning of SPSIs across-policies and, more in general, promote knowledge valorisation and the value of the Science for Policy concept

European Commission (DG RTD), National ministries for research and innovation, private sectors, CSOs, NGOs

High

All phases

Investing in research projects that strengthen SPSIs is essential to improve policy coherence and promote the Science for Policy concept (linked to **GA-6** and **GA-9**). This aligns with the Council of the European Union's conclusions from December 8, 2023, which emphasize the importance of **integrating R&I outcomes into EU policymaking**. **Horizon Europe** plays a key role in this context by supporting evidence-based policies and fostering innovative solutions to global issues, while the next Multiannual Financial Framework can allocate specific resources on this recommendation. Promoting knowledge valorisation ensures that research outcomes are translated into practical policies, enhancing the effectiveness of EU actions. Policymakers are encouraged to fund projects that bridge research and policy, contributing to more transparent, inclusive, and informed governance.

In order to do so, we recommend supporting inclusive and diverse partnerships, to involve actors such as private sectors, CSOs and NGOs, that can have a clear role in bridging science and policy.

Cross-cutting

[GA-13] Enhance a living practice of exchange of SPSI Best Practices and Science-for-Policy Ecosystems

European Commission (JRC), Regional Sea organisations

Medium

Evaluation & Adaptation

The aim of this action is to support an **active exchange and learning**. This can be done through the creation and maintenance of a «Repository of SPSI Best Practices and **science-for-policy ecosystems**», to map the existing practices of knowledge valorisation in policymaking, also with an inter-institutional focus (e.g. how the work of different organisations is related to various policies and therefore other organisations).
Establishing a **repository of SPSI best practices and science-for-policy ecosystems** would

enhance knowledge sharing and promote more coherent, evidence-based policymaking. This repository should map existing practices of knowledge valorisation across institutions, highlighting how different organizations contribute to various policies and interact with one another. Notably, this is strongly linked to the assessment suggested in **GA-5**.

This initiative would build on and strengthen ongoing efforts by the European Commission and the Joint Research Centre, such as the **Knowledge Exchange Platform**. By providing a structured, accessible repository, it would facilitate collaboration across institutions, improve policy alignment, and encourage the adoption of innovative, science-based solutions throughout the EU policymaking process.

[GA-14] Improve and further use and promote the «Mission approach» (e.g. Mission Ocean) already existing to provide more digested results and recommendations from R&I projects for evidence-based policymaking

European Commission (DG RTD)

High

All phases

Expanding the use of the Mission approach can significantly enhance the **translation of R&I outcomes into actionable policy recommendations**. To this aim, there is a need to simplify and streamline complex governance structures, also to enhance and support more bottom-up experimentation in science and technology. It is important to avoid adding bureaucratic burden to the Mission system. This way, by focusing on clear, goal-oriented frameworks like Mission Ocean, this approach can simplify complex scientific results, making them more accessible and relevant for policymakers.

The Mission approach itself should lead to the development of concrete actions that ensure knowledge capitalization and transfer into policy processes—whether the focus is on pollution, restoration, or climate. In this regard, the ongoing work of the EEA on the creation of a monitoring framework to monitor the impact of the EU Mission on achievement of EUGD objectives is particularly relevant.

This strategy aligns with the EU's broader efforts to foster evidence-based policymaking and tackle cross-sectoral challenges through targeted, results-driven initiatives. Promoting the Mission approach ensures that R&I projects deliver practical, digestible insights that directly inform policy decisions, improving the coherence and impact of EU policies across different sectors.

3.4.2 Recommended actions that have relevance for specific sectors (i.e. offshore wind energy, agriculture and fisheries) or policies (i.e. WFD, MSFD, MSPD)

Figure 5 and 6 display the 18 actions that are focused on specific sectors (i.e. offshore wind energy, agriculture and fisheries) and policies (i.e. WFD, MSFD, MSPD). These were the selected sectors and policies as they are the ones on which the project has been mainly focused on.
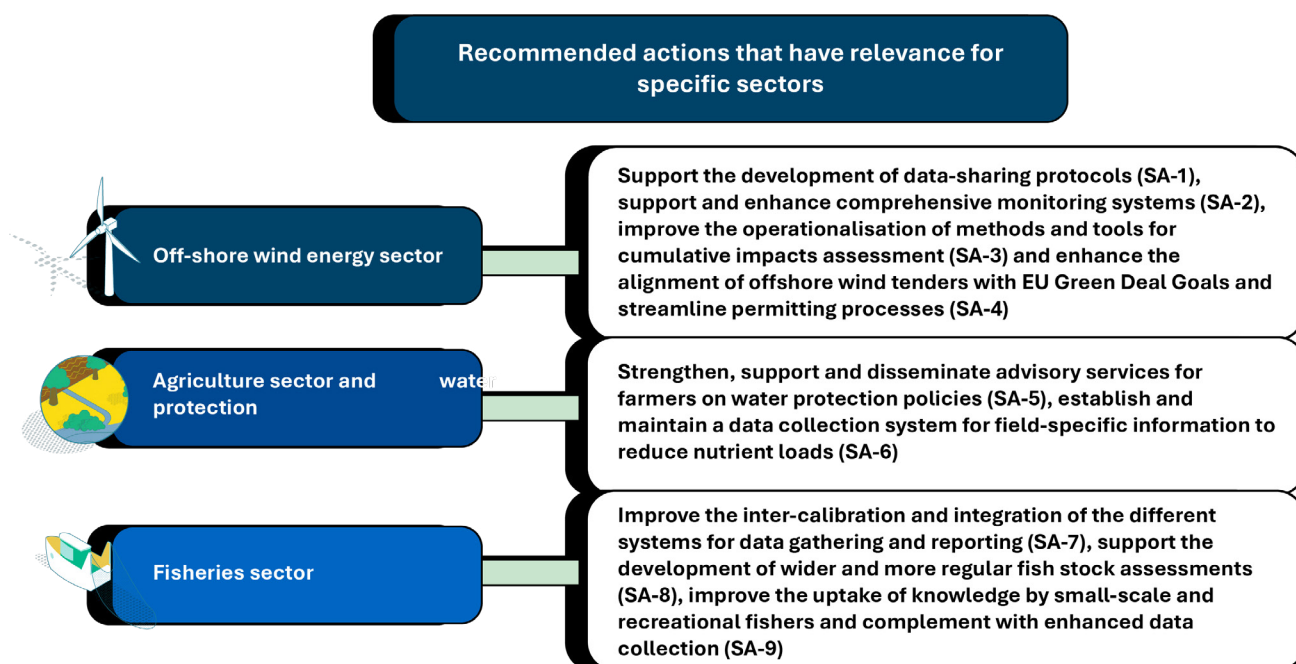

Recommended actions that have relevance for specific sectors

Off-shore wind energy sector — Support the development of data-sharing protocols (SA-1), support and enhance comprehensive monitoring systems (SA-2), improve the operationalisation of methods and tools for cumulative impacts assessment (SA-3) and enhance the alignment of offshore wind tenders with EU Green Deal Goals and streamline permitting processes (SA-4)

Agriculture sector and water protection — Strengthen, support and disseminate advisory services for farmers on water protection policies (SA-5), establish and maintain a data collection system for field-specific information to reduce nutrient loads (SA-6)

Fisheries sector — Improve the inter-calibration and integration of the different systems for data gathering and reporting (SA-7), support the development of wider and more regular fish stock assessments (SA-8), improve the uptake of knowledge by small-scale and recreational fishers and complement with enhanced data collection (SA-9)

Figure 5. Schematic overview of *recommended actions* that have relevance for specific sectors.

Recommended actions that have relevance for specific policies
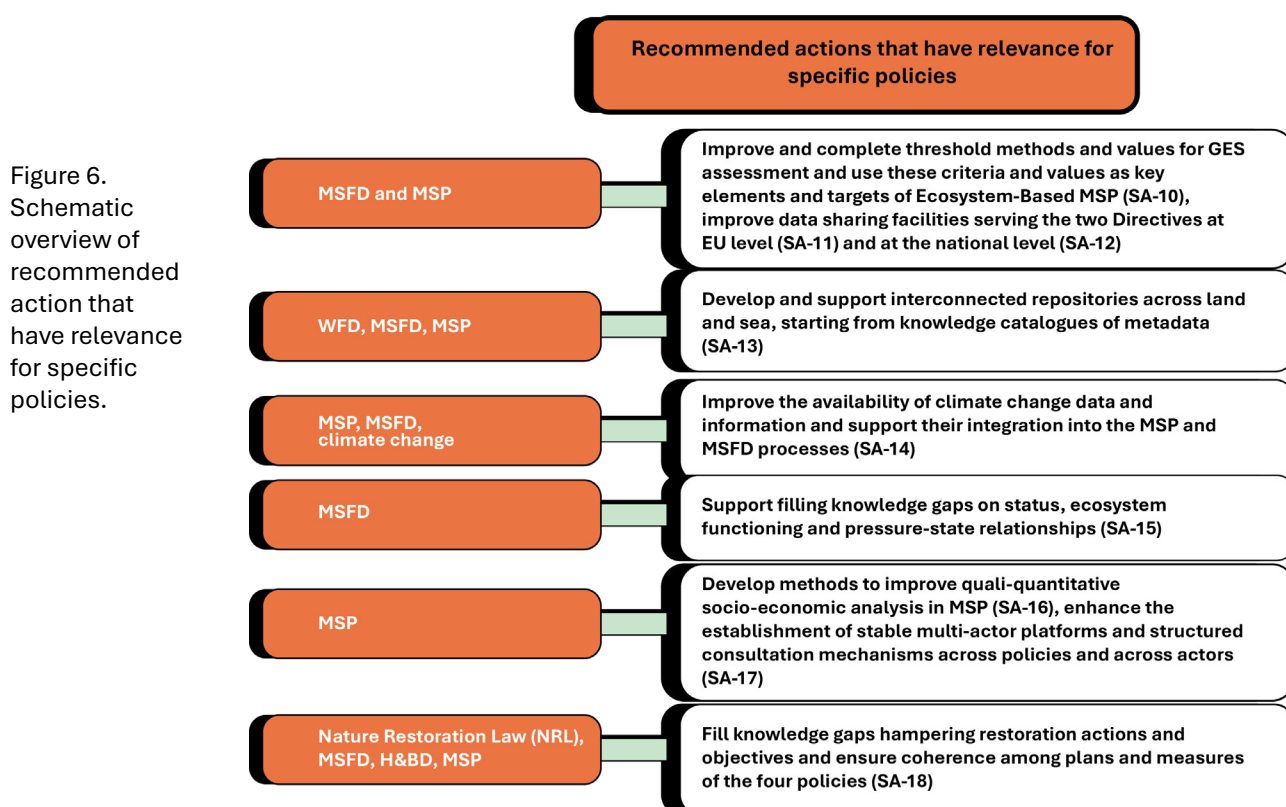
Figure 6. Schematic overview of recommended action that have relevance for specific policies.

MSFD and MSP — Improve and complete threshold methods and values for GES assessment and use these criteria and values as key elements and targets of Ecosystem-Based MSP (SA-10), improve data sharing facilities serving the two Directives at EU level (SA-11) and at the national level (SA-12)

WFD, MSFD, MSP — Develop and support interconnected repositories across land and sea, starting from knowledge catalogues of metadata (SA-13)

MSP, MSFD, climate change — Improve the availability of climate change data and information and support their integration into the MSP and MSFD processes (SA-14)

MSFD — Support filling knowledge gaps on status, ecosystem functioning and pressure-state relationships (SA-15)

MSP — Develop methods to improve quali-quantitative socio-economic analysis in MSP (SA-16), enhance the establishment of stable multi-actor platforms and structured consultation mechanisms across policies and across actors (SA-17)

Nature Restoration Law (NRL), MSFD, H&BD, MSP — Fill knowledge gaps hampering restoration actions and objectives and ensure coherence among plans and measures of the four policies (SA-18)

A co-created Blueprint to strengthen SPS interfaces in the marine domain

Off-shore wind energy-OWE sector

[SA-1] Support the development of data-sharing protocols for the offshore wind energy sector

National institutions, Sector's representatives, Research centres/institutes, Universities

High

All phases

Co-developed protocols should include **clear guidelines on data granularity, treatment of uncertainties, data accessibility and confidentiality**. They should help remove the barriers related to proprietary data restrictions and facilitate the exchange and sharing of data – collected through different monitoring mechanisms - between private operators, public institutions and researchers. This process is expected to provide multiple benefits in terms of improved science-based support for licensing, design, operation, decommissioning, impact assessment and mitigation (on biodiversity and other maritime sectors) of offshore wind farms.

A useful source of information is provided by the **Review of Biodiversity data and needs and monitoring protocols for the Offshore Wind Energy Sector in the Baltic Sea and North Sea** (by Renewables Grid Initiatives).

Standardizing data-sharing can promote interoperability and coherence across sectors for evidence-based policymaking, through better licensing, impact assessments, and mitigation, facilitating the reaching of EGD goals too.

[SA-2] Support and enhance comprehensive monitoring systems for offshore wind energy installations

Sector's representatives, National Institutions, International, Regional Institutions

High

Implementation

Offshore wind energy installations, in particular new ones, should be equipped with strengthened monitoring systems properly designed to enable **comprehensive environmental monitoring** (of all phases) and the **evaluation of cumulative impacts**. In line with the previous recommendation, monitored data should be made accessible to public users. Next to National Institutions and sector's representatives, International and Regional Institutions can also play an important role in supporting an international exchange on practice or even alignment at international/regional scale.

Finally, providing consistent data for adaptive management, linking environmental protection with renewable energy policies supports coherence between policies and cross-compliance towards EGD objectives.

[SA-3] Improve the operationalisation of methods and tools for cumulative impacts assessment of offshore wind energy

National Institutions, Research centres/institutes, Universities, NGOs, Sector's representatives

Medium

Implementation

Cumulative impacts and combined effects assessments of offshore wind energy are tools to reach C&CC, by **integrating ecological targets and all impacts on other sea uses**. These should be monitored and modelled over time, along the full life cycle (e.g. construction, operation, and decommissioning) of offshore wind installations, and considering all elements of such installations (e.g. turbines, anchorage systems, connecting cables, landing infrastructures, etc.). The assessment should consider multiple ecological targets (pelagic and benthic, fixed and mobile, etc.) as well as negative implications for other sea uses. It should also approach different scale and granularity, from the single turbine, to the entire farm and system of different farms.

A good source of information in this sense, is provided by the updated **Guidance document on wind energy developments and EU nature legislation**.

[SA-4] Enhance the alignment of offshore wind tenders with EU Green Deal Goals and streamline permitting processes

National Institutions

Medium

Implementation

National authorities should support the **integration of non-price criteria in national offshore wind tenders**, prioritizing EU Green Deal objectives such as climate neutrality and biodiversity protection. Additionally, they should streamline **permitting processes to mandate data sharing among companies**, fostering innovation and efficiency in the sector.
Some guidelines and practices by some countries are provided in the **Position paper on non-price criteria in auctions by WindEurope**.

This recommendation enhances coherence among marine policies by integrating climate and biodiversity objectives directly into offshore wind tenders, aligning them with the European Green Deal. By supporting non-price criteria and streamlining permitting with mandatory data sharing, it fosters cross-compliance between energy, environmental, and spatial planning policies, ensuring sustainable and efficient use of marine space.

Agriculture sector and water protection

[SA-5] Strengthen, support and disseminate advisory services for farmers on water protection policies

European Commission (DG AGRI), National and Sub-national institutions (e.g. Regional administrations, Basin District Authorities), Sector's representatives

High

Formulation, Implementation

Co-develop or enhance advisory services for farmers, providing **clear, actionable guidelines to maximize water protection benefits** (e.g. through more multi-actor projects, but also the creation or improvement of networks, such as the **European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI)**, now part of the CAP Network). Ensure information is condensed into accessible formats and promote early involvement of practitioners in policy formulation and implementation. This fosters trust and highlights the positive impacts of sustainable practices on agricultural productivity.

At the same time, being this service co-developed by farmers, it is expected to also favour the **dialogue with practitioners** to better understand barriers and practical challenges they experience and which kind of support is needed to overcome these.

This action is recommended specifically to support coherence between the agricultural sector and water protection policies. It bridges agricultural practices with water protection, promoting integrated management.

[SA-6] Establish and maintain a data collection system for field-specific information to reduce nutrient loads (a nutrient information database)

National and Sub-national institutions (e.g. Regional administrations, Basin District Authorities), Sector's representatives

High

Implementation

With the collaboration of farmers, important information on field-specific nutrients, cultivation, and yield data can be gathered in a **nutrient data repository to target more effectively agricultural water protection measures**. This is linked to the problem of mis-integration between water protection and agricultural policies and this could be a way to better integrate and support cross-policy information and foster C&CC.

[SA-7] Improve the inter-calibration and integration of the different systems for data gathering and reporting under various policies directly and indirectly related to fisheries

European Commission, Regional Sea organisations, Research centres/institutes, Universities

Low

Implementation

Existing inter-calibration and integration initiatives (e.g. in the Mediterranean, IMAP with MSFD reporting, GFCM with CFP, GFCM with IMAP) should be strengthened, while new ones should be promoted, to improve data and knowledge coherence on fisheries at the sea-basin and sub-sea-basin level. This implies **alignment of approaches and methodologies for data gathering and processing, quantity and quality of collected data, timing, spatial and temporal scales**, etc. The inter-calibration and integration of the different systems of data-gathering and reporting can foster the coherence among the policies related to the sector.

[SA-8] Support the development of wider and more regular fish stock assessments

European Commission, Regional Sea organisations, National institutions

High

Implementation

This should imply conducting **multi-species and ecosystem-based assessments** in addition to single species ones, in line with the requirement to focus on the ecosystem as a whole coming from MSFD and GES approaches. Indeed, Improving fish stock assessments can impact positively the other policies informed by these (e.g. MSFD).

Increasing the **frequency and scope of fish stock assessments** will enable tackling significant knowledge gaps, particularly in regions like the Mediterranean, where data coverage remains insufficient for many commercial species. This could foster higher coherence in the scientific basis of fisheries-related policy implementation.

Additionally, it would beneficial to efficiently incorporate **local fishers knowledge**, when available, and explore the potentialities of **new technologies**, e.g. fishers' tagging and e-DNA analyses.

[SA-9] Improve the uptake of knowledge by small-scale and recreational fishers and complement with enhanced data collection

Regional Sea organisations, National and sub-national institutions, NGOs, Sector's representatives

Medium

Implementation

The lack of information on small-scale and recreational fisheries is reported as a common gap in the implementation of several policies (e.g. MSP), in various geographic (e.g. Mediterranean Sea) contexts. Filling this gap, through **improved data collection and targeted assessment**, is essential to provide the scientific basis for the coherent management of these sectors. This action relies on the engagement of small-scale fisheries operators and recreational fishermen, to improve data gathering, co-define suitable measures, and share evidence about the benefits produced by science-based management of these activities.

Recommended actions on specific policies (i.e. WFD, MSFD, MSPD)

[SA-10] On MSFD and MSP: Improve and complete threshold methods and values for GES assessment. Use these criteria and values as key elements and targets of Ecosystem-Based MSP

European Commission (DG ENV, DG RTD, DG MARE), National institutions (Competent Authorities for MSFD)

Medium

Formulation, Implementation

To date, a number of threshold values have been set for different descriptor criteria through EU-level and regional or sub-regional cooperation (EC, 2024). Nevertheless, as also reported in the **recent evaluation of MSFD** in the wider policy context of the European Green Deal (EC, 2025) and as the ongoing work of the Working Group on Data, Information and Knowledge Exchange (WG DIKE) shows, there is a need to **improve and complete the definition of the criteria**, including the criteria elements and, where appropriate, the threshold values, to be used for the assessment of the extent to which good environmental status is being achieved in the marine waters of each region or sub-region and for the eleven qualitative descriptors listed in Annex I to the Directive. These criteria and values shall be then used as key elements and targets of Ecosystem-Based MSP.

[SA-11] On MSFD and MSP: Improve data sharing facilities serving the two Directives at EU level (e.g. the connection between EMODnet (in particular Human Activities) as the reference EU geoportal for MSP and MSFD Wise-Marine)

European Commission (DG ENV, DG MARE)

Medium

Implementation, Evaluation & Adaptation

The two Directives are strictly correlated considering that **both require data on ecosystem components, human activities and the consequent pressures affecting the marine environment**. Considering the need to improve their coherence (e.g. objectives, spatial and temporal coherence, common glossaries and vocabularies, measures), actions on data management/exchange are key in most phases of the implementation of the two policies (i.e. from assessment to measures to monitoring and adaptation). A **shared data strategy** is particularly important in situations where MSP and MSFD are handled by different institutions (Technical Expert Group (TEG) on Data for MSP, TG DATA for MSFD). The availability of shared or coordinated repositories will facilitate the coherent implementation and adaptation of the two policies. In this regard, the ongoing discussions on this aspect of strategic data management for policy support involving EEA, DG ENV, DG MARE and JRC to come up with operational solutions, are particularly relevant.

[SA-12] On MSFD and MSP: Improve data sharing facilities serving the two Directives at country level

National institutions (Competent Authorities for MSFD and MSPD)

Medium

Implementation, Evaluation & Adaptation

Same as above, but at the national level. This is a crucial element as in many countries, there is a **separation and only partially coordinated management** between the repositories that support the two directives.

[SA-13] On WFD, MSFD, MSP: Develop and support interconnected repositories across land and sea, starting from knowledge catalogues of metadata

National institutions (Competent Authorities for WFD, MSFD and MSPD), Sub-national institutions (e.g. Regional administrations, Basin District Authorities), Regional Sea Organisations

Low

Implementation

Develop and support interconnected repositories across land and sea, starting from knowledge catalogues of metadata. This recommended action is connected to the more general actions on building **knowledge catalogues across policies**, and it focuses on the **land-sea nexus**, in order to consider and address the coastal ecosystem comprehensively and in an integrated manner. As highlighted in several case studies and examples, the coherent implementation of WFD, MSFD and MSFD still faces a partial disconnection between the available information (on environmental components and ecosystems, on human activities and pressures, on socio-economics). Moreover, this is not only relevant at the sub-national and national levels, but also at the sea basin scale (e.g. MSP working group under UNEP/MAP). This may severely affect the effectiveness of the management measures triggered by these Directives. Relevant current initiatives worth mentioning here are the **Digital Twin of the Ocean** and **GreenData4All Initiative**, with their aim of providing comprehensive data platforms integrating fresh water and marine data.

[SA-14] On MSP, MSFD and climate change: Improve the availability of climate change data and information (past trends, projections, vulnerability, impacts, etc.) and support their integration into the MSP and MSFD processes

Regional institutions, National institutions (Competent Authorities for MSFD and MSPD), Research centres/institutes and Universities, Boundary organisations

Medium

Implementation

The research on climate change past trends, future projections, vulnerability and expected impacts on the marine ecosystem and maritime sectors has significantly progressed. A wide and articulated knowledge is available, although **important gaps persist**, particularly when looking at differences among biogeography regions. **Research should address these gaps**, e.g. understanding climate change implications for all vulnerable marine habitats and species (also considering that several of them are not systematically monitored), studying the direct and indirect effects on all maritime sectors, and further understanding the effects of both changes in extreme events (frequency and intensity) and longer-term variations of climatic and oceanographic conditions. Cumulative and cascading effects also need further investigation. At the same time, it is important to distinguish climate change effects from those induced by other

anthropogenic pressures, in particular those at the local level which might be more practically and efficiently addressed by MSP and MSFD. Long-term ecosystem changes (not or only indirectly influenced by human activities) could also make it necessary to adjust GES thresholds accordingly. **Science-to-policy mechanisms should enable the proper transfer** of the available information on climate change into MSP and MSFD processes, transforming such information into actionable knowledge (e.g. for the planning process or the identification of MSP and MFD measures) and communicating the related level of uncertainty. A relevant example in this regard is the OSPAR Working Group on Ocean Climate and Ocean Acidification (WG COCOA).

[SA-15] On MSFD: Support filling knowledge gaps on status, ecosystem functioning and pressure-state relationships

🎯 **Research centres/institutes, Universities, JRC**

🕐 **Medium**

🔄 **Evaluation & Adaptation**

Knowledge gaps and uncertainties can seriously compromise the **objectives of MSFD**. As underlined in the EC assessment on MSFD implementation (EC, 2020), this triggers a number of important **research needs**: 1) many habitats and species groups are not systematically monitored and high mobile species are not well covered; 2) the understanding of how whole ecosystems functions is still very low, in particular in deep sea areas; 3) a more precise understanding and determination of the pressure levels that clearly equate to acceptable levels of environmental impact on state elements is needed for a number of marine pressures, as well as the integrated assessment of cumulative effects; 4) better quantifiable determinations of GES, based on specific scientific indicators, are needed, as more quantitative reference conditions, particularly for benthic habitats.

These aspects are also touched upon in the **Marine Messages II** (by EEA).
Filling these gaps for the specific purposes of MSFD can be very relevant also for other policies that are applying and implementing an ecosystem-based approach to marine management. In particular H&BD and MSPD.

[SA-16] On MSP: Develop methods to improve quali-quantitative socio-economic analysis in MSP

🎯 **European Commission (DG MARE), National institutions (Competent Authorities for MSPD), Research centres/institutes, Universities, JRC**

🕐 **Low**

🔄 **Evaluation & Adaptation**

The socio-economic relevance of MSP for coastal and non-coastal communities is well recognised but poorly quantified. Similarly, quali-quantitative socio-economic analyses are rarely applied while developing MSP plans and evaluating alternative options and scenarios. This is mainly due to a number of **limitations in the existing methodologies and on the availability of data** (e.g. market and non-market values, direct and indirect benefits and costs, number

and diversity of sea uses, spatially explicit socioeconomic data, marine and terrestrial components) (Technical Expert Group (TEG) on Data for MSP).

[SA-17] On MSP: Enhance the establishment of stable multi-actor platforms and structured consultation mechanisms across policies and across actors, to provide transdisciplinary knowledge to the monitoring and adaptation of the MSP Plans

Regional Sea organisations, National and sub-national institutions, NGOs, Sector's representatives

Medium

Evaluation & Adaptation

This action responds mainly to the identified *needs* on BB-C (Knowledge Transfer Models & Mechanisms) and is connected to GA-4 and GA-5. MSP is particularly sensitive to these *needs* and to actions that respond to them, considering its nature, objectives and typical implementation processes. MSP needs transdisciplinary knowledge continuously provided and needs to be harmonised and promote **harmonisation among marine and maritime policies**. These stable multi-actor platforms can be at national level, supporting the monitoring and adaptation of national plans, and at sea basin levels, focusing more on sharing knowledge, promote coherence among national plans and promote shared approaches to typical transboundary topics in MSP. **Examples** and practices are existing and evolving in the different countries, depending on the state of play of MSP and on country-specific governance arrangements, while stable sea basin MSP working groups and Community of Practices are being established (e.g. MED-MSP-CoP, UNEP/MAP MSP WG). This action is also quite crucial to implement collaborative models of decision-making, including the civil society, in MSP. Specific capacity building activities may be required to ensure common knowledge and understanding (e.g. GA-10).

[SA-18] On Nature Restoration Law (NRL), MSFD, H&BD, MSP: Fill knowledge gaps hampering restoration actions and objectives and ensure coherence among plans and measures of the four policies

National Institutions (Competent Authorities for NRL, MSFD, H&BD, MSPD), Sub-national institutions

Medium

All phases

NRL obligations, namely to improve areas of marine habitat types that are not in good condition, re-establish marine habitat types in areas where they no longer occur, restore areas of habitats of specific marine species and non-deterioration of habitat restored or already in good condition, require to build up a **solid scientific knowledge base upon which to determine their restoration needs**. In the case of marine habitats Member States must ensure their condition is known for 50% of the total area covered by these habitats by 2030, and for all areas by 2040, with the exception of soft sediments not deeper than 1000m (i.e. Group 7) for which more time is given. While using the available and newly acquired knowledge, it is required to integrate the respective planning processes and to coordinate between relevant authorities. In

particular, **MSP can sustain NRL obligations in different forms**: i) incorporating restoration targets directly into spatial zoning decisions, ii) implementing passive restoration through spatial measures to reduce pressures from sea uses on target habitats; iii) identifying and prioritizing areas that require restoration; iv) minimizing conflicts between restoration goals and other maritime activities; enhancing cooperation across marine regions.

This action requires a deep and comprehensive knowledge of the Science-for-Policy Ecosystem that oversees these policies and of their mechanisms of functioning (e.g. **GA-5**).

So What?

Lessons learned on the identification of Recommended Actions

The Blueprint includes a portfolio of recommended actions derived from the anlyses conducted as part of CrossGov and which hold general relevance beyond the scope of the project itself. This portfolio can support the analyses identified through the self-assessment process we recommend, of course calibrated on the basis of the specific outcomes of each individual analysis.

4.   Conclusions

In today's context of increasingly complex policy issues, effectively incorporating **scientific knowledge into policymaking** is more important than ever. This approach not only addresses pressing global challenges like climate change but also reflects the intricate political landscape in which decisions are made. Complex legal and institutional frameworks with fragmented responsibilities cause the fragmentation of knowledge across sectors, making it difficult to fully understand such a complex system as the maritime domain. Leveraging science in policy processes can enhance public confidence in government institutions, improve communication around policy decisions, combat misinformation, and strengthen both the acceptance and implementation of those decisions (EC, 2022).

There is broad recognition of this need and growing interest and investment in **science-for-policy initiatives** in ocean governance across EU institutions and Member States highlighting strong political momentum. The ongoing discussions around the development of the **Ocean Pact** remarks the importance of a robust marine knowledge framework to support a coherent, sustainable ocean management.

Yet, to ensure that SPSIs can contribute to sound policy-making and decision-making, including enhanced **C&CC of selected and Green Deal-related marine policies** in an efficient and effective way, this Blueprint underlines the need to focus on and address the following critical aspects:

- On the *SPS Ecosystem*. It is critical to be aware and acknowledge the components of the SPS Ecosystems and the relations that encompass between them in the production, systemisation and transfer of knowledge towards evidence-based policymaking. This is the **first step to allow the assessment of the Ecosystem and its functioning**, to investigate its good practices and identify weaknesses to be addressed. A key weakness often observed is the lack of structured and continuous communication mechanisms among science, policy and society. An interdisciplinary approach and the co-production and co-interpretation of knowledge are essential and should begin at the very outset of policy formulation—not merely at the implementation stage. **A two-way science-policy dialogue** is needed, where policy-makers ask the right questions and scientists are informed from the start about the objectives and needs of the policy process to ensure relevant and high-quality data and knowledge are produced.

- On the *inputs* to the Ecosystem. It is important to ensure that inputs in the Ecosystem are strong and stable. This is related to the need to ensure that the competence framework of actors involved in the knowledge production and application in the various policymaking stages is adequate and that the process is supported by continuative and adequate funding and resources.

- On the *methods* of the Ecosystem. The Ecosystem should be based on **robust collaborative models that enhance the co-production of policies**. Here, particular attention should be given to the enhancement of the role of boundary organisation in their role of "knowledge brokers" and SPSI platforms to enrich the dialogue between policymakers, scientists and civil society, especially across policies.

On the **outputs** of the Ecosystem. Attention here should be driven on the importance to ensure that the outputs (i.e. data, knowledge and assessments) are not only **transparent**, **legitimate and credible**, but also made **available** for all actors involved in the policymaking stages at the various governance levels, also and especially across policies.

Many of these aspects are well-known and numerous tools/instruments/initiatives are already available to tackle them. Here, priority should be given to the practical **implementation** of these, enhancing the **capitalization** of the efforts already present recognizing their value in the functioning of SPSIs towards evidence-based policymaking.

It is in this context that this Blueprint aims at presenting and enhancing a **self-assessment guideline** to perform a continuous diagnosis of the strengths and weaknesses of the Ecosystems under analysis, while also identifying some main aspects (**needs** and **recommended actions**) to be tackled to improve the efficiency and efficacy of SPSI in the marine governance domain towards evidence-based policy and decision-making.

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