MEETING DOCUMENT

Wadden Sea Board (WSB 47)

20 November 2025
Hamburg, Germany

Common Wadden Sea Secretariat

Agenda Item:	**5.2 Enhance Sustainability of Human Uses and foster Transformative Change (paras 17-37)**
Subject:	**TG-CM progress report**
Document No.:	WSB 47/5.2
Date:	6 November 2025
Submitted by:	**TG-CM and CWSS**

This progress report by the Trilateral Task Group Coordination and Management (TG-CM) provides an update on the preparation of a trilateral workshop in 2026 to support the national processes related to the implementation of the EU Nature Restoration Regulation (1). It also contains (2) the draft Trilateral Strategy on Renewable Energy Infrastructure, (3) the updated draft Swimway Vision and Action Programme and (4) the proposal to extend the period of validity of the Seal Management Plan.

Proposal: The meeting is invited to:

1) **note** the information.
2) **adopt** the trilateral Strategy on Renewable Energy Infrastructure, to be referenced with a link in the MCD 15 text when it is released for stakeholder consultation.
3) **adopt** the Swimway Vision and Action Programme, to be referenced with a link in the MCD 15 text when it is released for stakeholder consultation.
4) **approve** the proposal to extend the period of validity of the Seal Management Plan.

TG-CM progress report

1. Trilateral workshop on Nature Restoration Planning regarding the Wadden Sea Ecosystem

At WSB 44 and 45, TG-CM was tasked to support national implementation of the Nature Restoration Regulation (NRR) by building on the trilateral knowledge and fostering expert exchange for ecosystem restoration. Recent consultations produced recommendations, now forwarded to national bodies. A trilateral workshop is planned for 24 March 2026 in Hamburg, funded by €15,000 for logistics and preparation.

Workshop Objectives:

- Highlight the Wadden Sea's relevance and obligations under the NRR
- Share knowledge on existing restoration efforts and identify ecological priorities
- Identify synergies, gaps, and opportunities for coordinated trilateral action, aiming for the highest possible denominator
- Exchange on national approaches concerning the preparation of national restoration plans and formulate a common contribution from the TWSC to the three national Nature Restoration plans

The outcomes are intended to position the Wadden Sea as a flagship in the EU restoration agenda.

Synergy Project:
The EU TSI project, launched in September 2025, can directly support the workshop's objectives and knowledge exchange for the national restoration plans by providing an environmental monitoring approach that strengthens habitat and species conservation and guides wetland restoration along the migratory flyway.

Proposal: The WSB is invited to **note** the information and agree on the implementation of this workshop.

2. Draft Trilateral Strategy on Renewable Energy Infrastructure

Following World Heritage Committee requests (Decisions 46 COM 7B.51, 47 COM 7B.22), the TG-CM *ad hoc* WG-RE drafted a joint strategy for onshore/offshore renewable energy. This strategy aims to support energy transition while safeguarding the Outstanding Universal Value (OUV) of the Wadden Sea, in compliance with existing legislation and political frameworks (Annex 1).

Key Measures:

- Encourage coherent policies, aligned with EU and international legal frameworks.
- Strengthen trilateral spatial planning to minimise environmental impact.
- Apply full, coordinated impact assessments (including cumulative and heritage impacts).
- Advance innovation, monitoring, and adaptive management.
- Promote trilateral mitigation, compensation, and restoration measures.
- Foster cooperation among authorities, stakeholders, and sectors.

The strategy reinforces commitment to a nature-compatible energy transition, requiring cross-border collaboration rooted in responsibility and innovation.

Proposal: The WSB is invited to **adopt** the trilateral Strategy on Renewable Energy Infrastructure, to be referenced with a link in the MCD 15 text when it is released for stakeholder consultation.

3. Draft updated Swimway Vision and Action Programme

Originally launched at the 2018 Leeuwarden Declaration and extended to 2026, the Swimway Vision is now being renewed for 2026–2032. It remains the umbrella framework for trilateral action on fish targets, based on expert group work. Revision and adoption are scheduled for the 2026 Trilateral Governmental Conference. The draft Draft Swimway Vision and Action Programme is in Annex 2 of this document.

Proposal: The WSB is invited to **adopt** the Swimway Vision and Action Programme, to be referenced with a link in the MCD 15 text when it is released for stakeholder consultation.

4. Proposal to extend the period of validity of the Seal Management Plan

Following the mid-term review of the Seal Management Plan (SMP), the Expert Group on Marine Mammals (EG MM) recommends extending the validity of the Plan from 5 to 10 years. The longer timeframe would allow sufficient time to implement key actions, ensure strategic continuity, and strengthen collaboration toward the long-term conservation goals for seals.

This proposal is consistent with the *Agreement on the Conservation of Seals in the Wadden Sea* (Section IV), which states that *"The Parties shall keep the plan under review and amend it, as may be required, taking into consideration, in particular, the results of scientific research."*

The current SMP covers the period 2023–2027; the proposed extension would set its validity until 2032. This would also allow countries adequate time to meet formal procedural requirements for the extension, including coordination with other ministries or departments responsible for CMS and related matters.

Proposal: The WSB is invited to **approve** the proposal to extend the period of validity of the Seal Management Plan.

Annex 1. Draft Trilateral Strategy on Renewable Energy Infrastructure.

Introduction

The Wadden Sea is a unique marine ecosystem, recognized globally as a UNESCO World Heritage Site for its Outstanding Universal Value (OUV) and jointly protected by Denmark, Germany, and the Netherlands under the Trilateral Cooperation for the protection of the Wadden Sea (TWSC). As we face the interconnected crises of climate change, biodiversity loss, and pollution, this unique area demands our collective responsibility.

At the same time, the convergence of environmental, geopolitical, and economic pressures reinforces the urgent need to accelerate the energy transition, reduce dependency on fossil fuels, increase self-reliance in energy supply, and reduce greenhouse gas emissions by 2050 in the European Union. This transition must be pursued without compromising the OUV of the Wadden Sea.

This Trilateral Strategy represents our shared commitment to enabling the offshore energy transformation, while safeguarding the OUV, and is supported by the wider activities of the Trilateral Wadden Sea Cooperation (TWSC) and related European, international, and national frameworks.

Common Mission

To safeguard the ecological integrity and natural dynamics of the Wadden Sea World Heritage Site by supporting the environmentally responsible development of renewable energy infrastructure that contributes to the necessary phase-out of fossil fuels, while avoiding significant negative impacts on the Wadden Sea, including cumulative effects.

Objective

To implement this strategy as a coordinated systematic approach that enables a nature-compatible energy transition in the Wadden Sea region, while safeguarding its OUV.

Implementation Measures at Trilateral Level

1. **Encourage Coherent Policies**

- Align with the European Ocean Pact and Integrated Coastal Zone Management (ICZM) principles, using these as guiding frameworks for sea-basin-wide cooperation on onshore and offshore renewables, marine conservation, and ecosystem restoration.
- Promote a level playing field based on the existing legal provisions and by exchanging experiences between national authorities to harmonize environmental standards, permitting practices, and mitigation requirements.
- Contribute to the implementation of legal and political frameworks relevant to the energy transition and nature protection such as the EU Habitats Directive, Marine Strategy Framework Directive, Renewable Energy Directive, and UNESCO World Heritage Convention.

2. **Strengthen Integrated Spatial Planning**

- Use marine and coastal spatial planning instruments to enhance cross-border coherence, ecosystem-based planning and to identify suitable areas for onshore and offshore renewable energy infrastructure that minimise impacts on the OUV and associated environmental values.
- Align national planning tools with the spatial goals of the Wadden Sea Plan (e.g. minimise cables and corridors connecting to the mainland as well as keeping their effect on the environment to a minimum).
- Support spatial planning coordination mechanisms between energy, environment, and planning authorities to promote acceleration of project implementation by avoiding spatial conflicts.

3. Apply Full Impact Assessments

- Continue to conduct coordinated impact assessments (ESPOO convention, EIA, SEA) for projects with potential cross-border or cumulative impacts.
- Integrate Heritage Impact Assessments (HIA) into environmental assessments as part of national planning and permitting procedures where the World Heritage site could be affected.
- Refer to UNESCO guidance and online toolkits on impact assessment[1] and renewable energy in a World Heritage context[2] in sensitive natural areas for valuable guidance, advice, and input.
- Promote the integration of the assessment of cumulative effects on key ecological processes, species, and landscape integrity of the Wadden Sea.
- Consider potential impacts from future renewable infrastructure plans and projects (e.g. within the Joint SEA).

4. Advance Technical Innovation, Monitoring, and Adaptive Management

- Support monitoring and data exchange across borders, agreeing on indicators and protocols to track environmental effects of renewable energy infrastructure and to ensure that mitigation and compensation measures are effective (as part of TMAP).
- Support TSOs and developers in continuously improving laying, operation, and maintenance techniques through nature-friendly innovation (e.g., quieter installation, low-disturbance routing, biodiversity-enhancing structures).
- Exchange of information to build on lessons learned from previous infrastructure projects to inform adaptive, science-based improvements.

5. Promote Mitigation, Compensation and Coherence Measures

- Apply the mitigation hierarchy consistently: avoid > minimize > restore > compensate[3].
- Promote "trilateral thinking" in designing transboundary compensation and coherence measures to address residual impacts that cannot be avoided around the Wadden Sea World Heritage site, going beyond national borders to prioritise the ecological needs of the Wadden Sea as one system.
- Consider transboundary restoration and connectivity projects (e.g., for migratory birds, saltmarshes, subtidal habitats) that support the integrity of the Wadden Sea World Heritage site and the Natura 2000 network.

6. Foster Stakeholder Cooperation

- Facilitate exchange of lessons learned from past and ongoing offshore renewable projects to improve future project design and approval.
- Collaborate with the relevant authorities, TSOs, NGOs, municipalities, scientists, and the tourism sector to build a shared understanding.
- Embed the strategy within the TWSC framework, particularly through the SIMP[4] key topic, which supports integrated planning, communication, monitoring, and project coordination at trilateral level, as well as through the Ministerial Declarations to foster cooperation and commitment.

A sustainable, nature-friendly energy transition in the trilateral Wadden Sea Area requires a coordinated, cross-border effort rooted in legal obligations, political responsibility for the environment, and continuous innovation. Through trilateral intersectoral and transdisciplinary collaboration, best practice planning, and sharing knowledge and experience, we can achieve renewable energy infrastructure targets while safeguarding the ecosystem, habitats, species, ecological processes, and the OUV of the Wadden Sea World Heritage Site.

[1] https://whc.unesco.org/en/guidance-toolkit-impact-assessments

[2] https://whc.unesco.org/en/renewable-energy

[3] avoidance through smart site selection, project timing, optimized design, and low-impact technologies; followed by minimisation, using operational and physical measures to reduce remaining effects. Third step, restoration, seeks to re-establish habitats and ecosystem functions, while the final step – offsetting, addresses residual impacts and may include broader restoration efforts.

[4] https://www.waddensea-worldheritage.org/integrated-management-plan-simp

Image caption goes in here

Draft Swimway Vision and Action Programme

2026 – 2032

Version: 2025-09-08

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unesco World Heritage Site

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Draft Swimway Vision and Action Programme

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CONTENT

1 Preamble 9
2 Introduction 10
3 Overview 11
4 Vision 12
5 Fish targets 12
6 Life-Cyle Approach 13
7 Pillars 13
7.1 Research & Monitoring 14
7.2 Policy 15
7.3 Measures 15
7.4 Stakeholder engagement, communication & education 16
8 National initiatives 17
9 Relation to The SIMP Integrated Management Plan for One Wadden Sea World Heritage (SIMP) 17
10 References 18
11 Action Programme 19
11.1 Overarching actions 19
11.2 Actions related to FISH targets 20

1 PREAMBLE

Fish are vital to the Wadden Sea ecosystem, both as predators and prey, transferring considerable biomass and energy top-down and bottom up through the food web of the Wadden Sea and connecting water bodies of the rivers and the North Sea. Many fish species rely or even depend on the Wadden Sea to pass during migration, or as crucial feeding and spawning ground. However, many populations of fish have declined in recent decades, for example those that use the area for the early part of their life-cycle such as flatfish as well as all diadromous species, changing their habitat between fresh and salt water for reproduction, emphasizing the need for targeted fish conservation, employing a perspective on life cycles and the ecosystem.

To address this, Danish, Dutch, and German experts developed the Trilateral Fish Targets, adopted in 2010 as part of the Wadden Sea Plan. These targets were specified and translated into the Swimway Vision 2018–2024, which was endorsed at the Leeuwarden Conference 2018 (Annex 3, Leeuwarden Declaration), with 25 stakeholder organizations from Denmark, Germany and the Netherlands pledging support and marking the start of the Swimway Vision.

For realizing the Swimway Vision, the Trilateral Swimway Vision Action Programme (SVAP) has been formulated to outline steps to operationalize the Fish Targets. It's first term, from 2019 – 2024 has been adopted and extended to 2026. The SVAP is implemented by the Expert Group Swimway (EG-S), facilitating trilateral exchange between Dutch, German and Danish scientific representatives, responsible authorities and NGOs. EG-S offers a platform to bring together national, bilateral or trilateral initiatives instrumental in achieving the implementation of trilateral fish targets for the Wadden Sea area. See also: https://swimway.waddensea-worldheritage.org/

The Swimway Vision and Action Programme operationalizes the implementation of SIMP's trilateral objectives while supporting the protection and sustainable use of Wadden Sea's Outstanding Universal Value (OUV). In addition, SIMP highlights species conservation and ecological connectivity across the trilateral states as key priorities. SVAP provides the framework for fish-related measures, facilitating the realization of these goals through collaborative conservation efforts and enhanced stakeholder knowledge sharing and communication.

The SVAP 2026–2032, developed by EG-S builds on the Swimway Vision and Action Programme 2019–2026. For implementing trilateral fish targets, the SVAP applies the life cycle approach with special reference to obstacles to closing the life cycle, the so-called bottleneck, as outlined in the previous SVAP. The actions and recommendations described in this Action Plan are based on the work of the Expert Group in the past years as well as the group's expert knowledge and aim at supporting the trilateral community involved in working on fish in the Wadden Sea region. They are not necessarily actions for the EG-S itself to carry out but should rather be used as recommendations for the authorities mandated and thus responsible to protect fish. Funding still needs to be secured, and the suggested budgets in the list of actions are indicative. There is no commitment by parties yet.

The draft SVAP 2026-2032 underwent a national consultation process by the members within the [EG-S].

The draft SVAP was endorsed by the Wadden Sea Board on XX for consultation.

2 INTRODUCTION

With 162 known species (Berg *et al.* 1996) the fish community of the Wadden Sea is exceptionally diverse due to the convergence of marine species from the North Sea and diadromous species from the estuaries meeting in the Wadden Sea. While most fish in the Wadden Sea are marine species that primarily inhabit the North Sea, some spend the majority of their lives within the Wadden Sea itself, and others utilize it as a stopover along their migration routes. Additionally, diadromous species start their life in freshwater environments, spend their adult life in the sea and return to freshwater to spawn, or, in the sole case of eel (*Anguilla anguilla*), vice versa. Some species use seagrass beds, saltmarshes or other habitat types as a nursery ground, using and coping with the fluctuating conditions of this dynamic environment, formed by wind, waves and tides.

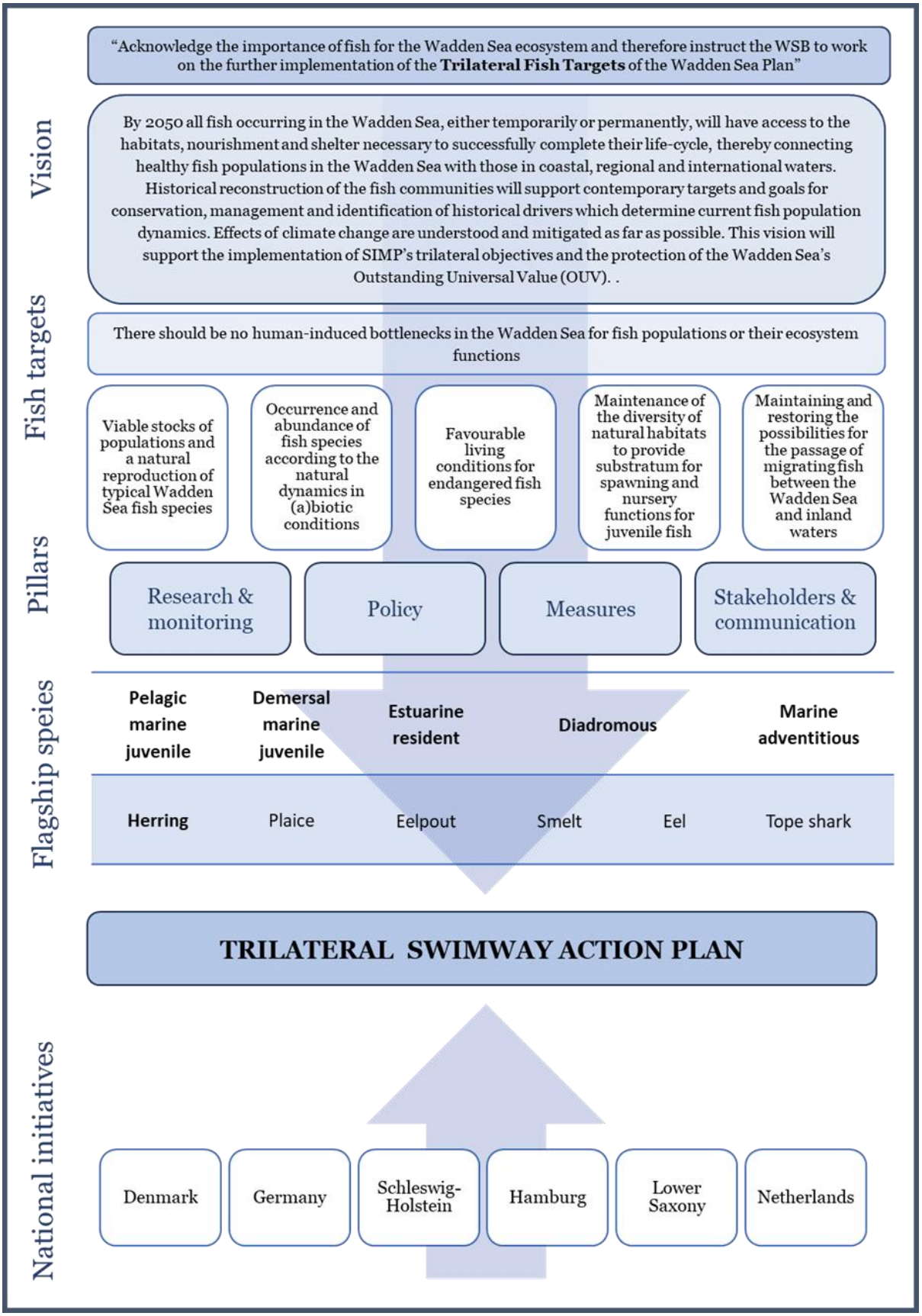
The populations of many fish species in the Wadden Sea have declined in recent decades (van der Veer et al. 2015, Tulp et al. 2022), and the causes of these declines are only partly known or understood. Formerly typical elements of the Wadden Sea fish fauna such as sharks, rays and cod are today largely absent, and the nursery function provided for juvenile plaice and sole, both characteristic for the Wadden Sea, has declined (van der Veer et al. 2015, Tulp et al. 2022). Processes and developments well outside the Wadden Sea can have profound impacts on the life cycles of species being part of the fish community in the Wadden Sea.

According to Danish, German and Dutch red lists, there are 17 endangered fish species in the Wadden Sea area: river lamprey (*Lampetra fluviatilis*), sea lamprey (*Petromyzon marinus*), twaite shad (*Alosa fallax*), European eel (*Anguilla anguilla*), North Sea houting (*Coregonus oxyrinchus*), Atlantic salmon (*Salmo salar*), sea stickleback (*Spinachia spinachia*), greater pipefish (*Syngnathus acus*), snake pipefish (*Entelurus aequoreus*), greater weever (*Trachinus draco*), poor cod (*Trisopterus minutus*), transparent goby (*Aphia minuta*), piked dogfish (*Squalus acanthias*), tope shark (*Galeorhinus galeus*), starry smooth-hound (*Mustelus asterias*), common stingray (*Dasyatis pastinaca*) and thornback ray (*Raja clavata*).

The Swimway approach, and the protection of fish, goes well beyond the notion of fish migrating between the river and sea or from offshore waters to the coast and vice versa. It also relates to movements of all life stages nested in different spatial scales: across several 100s of kilometres larvae drift or, later in their development, move actively from their spawning grounds and aggregate in their coastal nurseries, where they switch between available habitat patches according to biotic (predators, feeding, intra- and interspecific competition) and abiotic (availability of physical habitat, tides, currents, temperature distribution etc.) conditions. Adult fish species living their entire life cycle in the Wadden Sea or migrating there to spawn may have different habitat requirements but are still vulnerable to interruption of their life cycle, be it through limited spawning substrate, poor growth environments, food shortage or direct sources of mortality such as predation or certain human activities. In this strategy we focus on the trilateral cooperation but also provide incentive for protection of key areas affecting fish in the Wadden Sea.

3 OVERVIEW

The figure below shows the different elements of the SVAP and how national initiatives can feed into the Action Programme.



4 VISION

By 2050 all fish occurring in the Wadden Sea, either temporarily or permanently, will have access to the habitats, nourishment and shelter necessary to successfully complete their life-cycle, thereby connecting healthy fish populations in the Wadden Sea with those in coastal, regional and international waters. Historical reconstruction of the fish communities will support contemporary targets and goals for conservation, management and identification of historical drivers which determine current fish population dynamics. Effects of climate change are understood and mitigated as far as possible. This vision will support the implementation of SIMP's trilateral objectives and the protection of Wadden Sea's Outstanding Universal Value (OUV).

5 FISH TARGETS

https://swimway.waddensea-worldheritage.org/wadden-sea-fish-targets

Fish are an integral part of the Wadden Sea ecosystem, facilitating the flow of energy and matter up and down the food web. Many marine and estuarine fish species depend on the Wadden Sea at some point in their life cycle. The majority of these species spend only part of their lives in the Wadden Sea, as juveniles to feed and grow, or as adults to spawn or search for food, or en-route between marine and freshwater habitats. In recent decades, there has been a notable decline in the populations of many fish species in the Wadden Sea due to largely unknown reasons. As fish are an important part of the Wadden Sea ecosystem the authors of the QSR (2009) proposed fish targets for the Wadden Sea, which were adopted as part of the revised Wadden Sea Plan (WSP) in 2010 (CWSS 2010) - the so-called Trilateral Fish Targets.

These Fish Targets are:

1. Viable stocks of populations and a natural reproduction of typical Wadden Sea fish species;
2. Occurrence and abundance of fish species according to the natural dynamics in (a)biotic conditions;
3. Favourable living conditions for endangered fish species;
4. Maintenance of the diversity of natural habitats to provide substratum for spawning and nursery functions for juvenile fish;
5. Maintaining and restoring the possibilities for the passage of migrating fish between the Wadden Sea and inland waters.

Fish experts conduct a regular assessment of the trilateral targets in the Wadden Sea Quality Status Report (QSR; Vorberg et al. 2005, Jager et al. 2009, Tulp et al. 2017, 2022). An **overarching target** for fish conservation in the Wadden Sea was described by authors of the 2017 QSR thematic report on fish (Tulp *et al.*, 2017):

There should be no human-induced bottlenecks in the Wadden Sea for fish populations or their ecosystem functions.

6 LIFE-CYLE APPROACH

https://swimway.waddensea-worldheritage.org/life-cycle-approach

Based on occurrence patterns, feeding and reproduction behaviour, Elliott et al. (2007) defined functional guilds to increase the understanding of the use of estuaries by fishes. The grouping of species for the Swimway programme was inspired by this approach. Species were identified per guild and grouped into focal species ("flagship species") and representing others with a similar lifestyle ("fleet species") (see Table 1 below). Considering the differing ecological role of the separate guilds, it is possible to identify specific actions directly related to each flagship and corresponding fleet species.

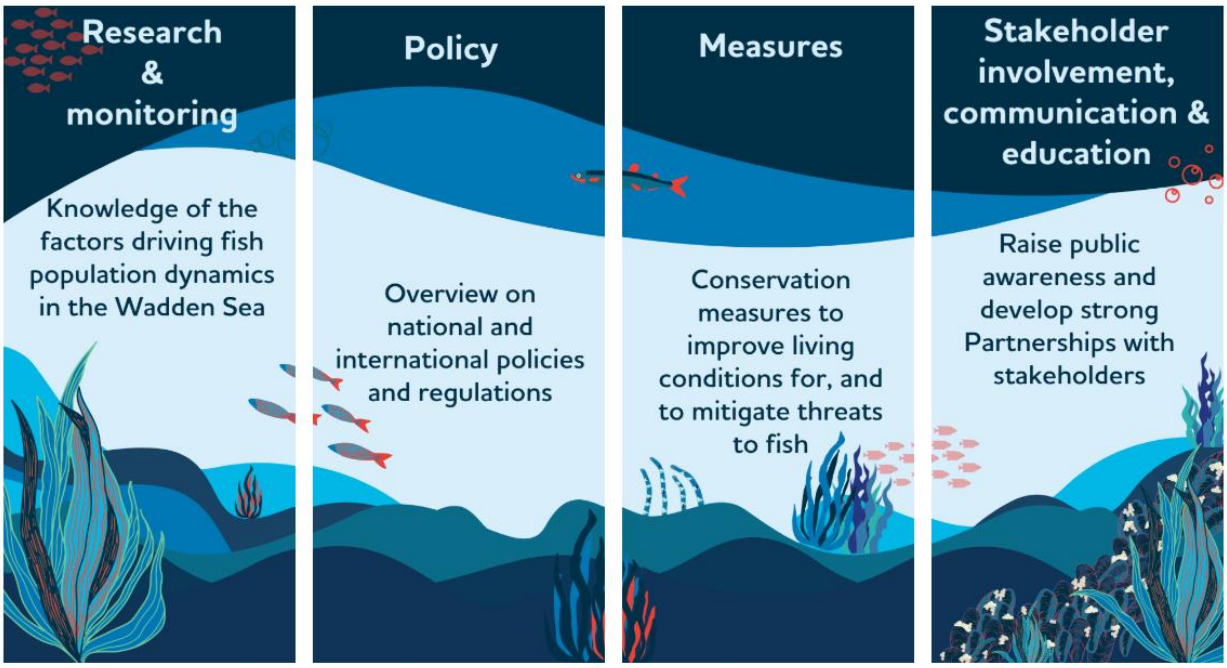
Table 1 Flagship and fleet species of fish for the Wadden Sea.

Pelagic marine juvenile	**Demersal marine juvenile**	**Estuarine resident**	**Diadromous**		**Marine adventitious**
Herring	Plaice	Eelpout	Smelt	Eel	Tope shark
Sprat, anchovy, horse mackerel, seabass	Sole, dab	Gobies, sandeel, sea snail, rock gunnel, mullets, hooknose	Twaite shad, salmon, sea trout, houting		Thornback ray, dogfish

7 PILLARS

https://swimway.waddensea-worldheritage.org/four-pillars-trilateral-wadden-sea-swimway-vision-action-programme

The Action Programme and Vision is based on four pillars: research and monitoring; policy; measures; stakeholder involvement; communication and education.



7.1 RESEARCH & MONITORING

General approach

The main objective for the Swimway research approach will be the identification of population bottlenecks and the translation of this knowledge into effective management and conservation measures. Closing these knowledge gaps will help to improve effectiveness of conservation efforts. In order to do this, the [EG-S] will facilitate trilateral exchange between Dutch, German and Danish research institutes, as well making connections with national, bilateral and/or trilateral initiatives, including national research agendas. Collaboration will be sought with current Trilateral research agendas such as Trilateral Expert Group Climate.

Future topics

Research

In order to evaluate the state of fish populations in the Wadden Sea, an assessment framework is required against which to evaluate the effectiveness of measures. This should go beyond the interpretation of the trend analyses made in the QSR and should be directly related to the fish targets. A fish assessment for the Wadden Sea could incorporate species-specific assessment of fish population status (declining, rising, stable, all three including the adult population of juveniles found in the WS), stressors (climate change, fisheries, obstruction of migration routes, dredging, etc.), and mitigation measures (see measures). In addition - where possible - information on the condition of biotopes as possible essential fish habitats and on food availability should be included in the assessment. Based on this, it is suggested to develop a suite of indicators for the implementation of the fish targets in order to assess if the targets have been met; these will also enable the evaluation of the effectiveness of measures.

Create bottleneck map and/or overview of mortalities and sub-lethal bottlenecks along the life-cycle.

Carry out a historical reconstruction of the Wadden Sea fish assemblage to support contemporary targets and goals for conservation, management and identification of historical drivers which determine current fish population dynamics.

Initiate a plan to address Activity 5 under the Key Topic “Fisheries” within the SIMP:

- **Activity 5**. The TWSC, through the trilateral groups responsible for science and fish, to initiate research on fish ecology (e.g., population quantity and quality, ecosystem function, closed areas, nursery function for juvenile fish, endangered species, historic species and habitats occurrence, food webs) to support the OUV and sustainable management.

A Grad School for post-graduate students who are setting their first steps in Wadden Sea fish research has been discussed by the [EG-S] to strengthen trilateral research and educational networks. This would need to be embedded in one of the universities and needs core funding. The Grad School can be seen as complementary to the Wadden Sea World Heritage Summer School educational programme currently being run by CWSS and the Partnership Hub, and it is envisaged that there would be linkages as far as field work and trilateral activities.

Fish monitoring in the Wadden Sea

https://swimway.waddensea-worldheritage.org/fish-monitoring-wadden-sea

In order to address the goals for “Harmonization of existing monitoring programmes and research”, first essential steps have been completed, such as the collation of metadata (purpose, methods, time and place, parameters, responsibilities, reporting, data availability etc.) and the selection of candidate monitoring parameters for the Trilateral Monitoring and Assessment Programme (TMAP), to feed into the revision of the TMAP and updating of TMAP Monitoring Handbooks (Walker *et al.* 2022a). This approach addresses existing monitoring gaps regarding fish, ensuring that input for the Wadden Sea Quality Status Report (QSR) is comprehensive and enables an assessment of the ecological status of the Wadden Sea.

The report recommends the following focused and dedicated investigations to cover the most severe gaps:

For reporting, data availability and exchange we recommend:

- that the data exchange format proposed in Walker *et al.* (2022a) could be trialled for effectiveness;
- to have links provided to data repositories and to develop and publish R scripts or templates to harmonize and analyse datasets of the different monitoring programmes to facilitate the QSR, plus more in-depth and frequent reporting;
- To identify any national initiatives to improve data availability and to discuss if and how these can be linked to improve data availability at the trilateral level;
- To harmonize pelagic surveys across the three countries;
- Save historical stow net data: The new and old methods should be compared to provide insights into comparability, particularly regarding calibration.

7.2 POLICY

General approach

Current national and international policies and regulations which are potentially relevant to achieving the Trilateral Fish Targets have been described and analysed with regard to their contribution to the realisation of the Fish Targets (WG-Swimway, 2021). Next steps need to be identified, incorporating recommendations from the policy statement and mid-term review (Kellermann, 2022).

Future topics

One recommendation from the Policy Statement is to make better use of the existing legislative frameworks, including the trilateral declarations and the Wadden Sea Plan and Single Integrated Management Plan (SIMP), but also requirements of European legislation such as MSFD, Habitats Directive, Water Framework Directive, EU Restoration Regulation and EU Biodiversity Strategy.

Wadden Sea fish researchers should put more emphasis on science-policy integration in the political areas of the regions. There is a need to improve communication and get the message across to stakeholders involved in key processes and ultimately decision-makers (Kellermann, 2022).

Agree on goals for improved scientific knowledge and its use in management. This may cover better and multiple use of scientific data, indicator and monitoring schemes, decision support tools for e.g., natural resource management. A key role of Swimway could be to provide guidance on best practise to individual scientists (Kellermann, 2022).

7.3 MEASURES

General approach

At various locations in the Wadden Sea, conservation measures have already been carried out to improve living conditions for, and to mitigate threats to, fish. An integrative and comprehensive overview of such measures, together with a review of their contribution to the realization of the Fish Targets, will help to evaluate the do's and don'ts and identify the "lessons learned". Combining this approach with the analysis of the bottlenecks (Pillar Research) will help gain insight into where measures might be developed in a participatory process with stakeholders.

The Swimway programme will continue to assist the trilateral community in sharing data and information between the three countries, defining best practices and applying research outcomes to develop measures and improve fish conservation. The information will be provided clearly and coherently and discussed with stakeholders in close collaboration with the relevant (nature conservation) authorities. Special emphasis will be given to the exchange of best practice examples between the different water, coastal defence and nature authorities and the stakeholders concerned.

Future topics

Create an Atlas of Measures - work in collaboration with the responsible authorities (National Park administrations, Rijkswaterstaat, BfN) on a map showing concrete measures. For example, it has long been

known that fish migration routes are influenced by anthropogenic structures and that this impedes the closing of life cycles. Developing refuge and resting areas for fish species, enhancing fish migration through technical obstacles like sluices and pumping stations in the coastal dikes, and the restoration of habitats can collectively help to close fish life cycles and support the requirements of the MSFD, Habitats Directive, Water Framework Directive, EU Restoration Regulation and EU Biodiversity Strategy.

7.4 STAKEHOLDER ENGAGEMENT, COMMUNICATION & EDUCATION

General approach

It is important to build an integrated framework to raise awareness and motivate relevant actors, to inspire decision makers and to promote actions. A trilateral education and communication programme on fish conservation to address the fish targets needs to be developed for stakeholder involvement and political support to be integrated into the existing framework.

Progress up until now can be seen in the two international Swimway symposia which have been organised in Hamburg (2019) and Groningen (2024), and on the Wadden Sea Swimway Microsite Welcome to Swimway Wadden Sea | Swimway (waddensea-worldheritage.org). A third Swimway conference is foreseen for 2027 in Denmark.

Future topics

The strategies described in this Swimway Vision and Action Programme aim at improving life conditions for fish, thereby substantially increasing the probability of successful life cycle completion. Effective implementation of these actions depends on the commitment of all stakeholders. More specific aims are:

- Raise awareness amongst stakeholders: Collate and communicate the existing knowledge about fish using the Wadden Sea and promote the knowledge about the movement of fish species outside the Wadden Sea including inland waters, the North Sea and beyond.
- Engage and mobilize stakeholders: Inspire involved parties to connect trilaterally in sharing knowledge and experiences.
- Foster international partnerships, dialogues and cooperations: Stimulate communication between countries and sectors about fish in the Wadden Sea.
- Develop tools to enhance the communication between the stakeholders with different areas of focus or expertise.
- Perpetuating and optimizing the interaction between all stakeholders, including scientists. For each of these aims, it is necessary to have a clear impression of stakeholder involvement and communication strategies and activities that need to be planned. These activities will all be closely connected with actions related to research and monitoring, policy and measures.

Specific trilateral actions

Build on a series of Swimway webinars and workshops to involve practitioners based on the discussions in the EG and the action points in the SVAP.

Foster international partnerships, dialogues and cooperations: Stimulate communication between countries and sectors about fish in the Wadden Sea.

Coordinate trilaterally on how to involve practitioners and other stakeholders in organizing partnerships under the umbrella of the Trilateral Partnership in support of the Wadden Sea World Heritage and develop communication tools and/or a communication strategy within the trilateral communication framework.

8 NATIONAL INITIATIVES

There are initiatives in each of the three countries to address the fish targets, such as the enhancement of fish passages at sluices and pumping stations for diadromous fish. The [EG-S] will collate all the available information on man-made bottlenecks and measures for fish into a comprehensive matrix including activities, time frames and persons responsible for each of the specific cases. The [EG-S] will use this information to identify where measures have been implemented, and to evaluate their effectiveness and will report on progress of this on an annual basis. This will explicitly address the overarching target that *there should be no human-induced bottlenecks in the Wadden Sea for fish populations or their ecosystem functions.*

9 RELATION TO THE INTEGRATED MANAGEMENT PLAN FOR ONE WADDEN SEA WORLD HERITAGE (SIMP)

The Swimway Vision and Action Programme (SVAP) operationalizes the implementation of SIMP's trilateral objectives while supporting the protection and sustainable use of Wadden Sea's Outstanding Universal Value (OUV). With the implementation of the SVAP it will be possible to address the OUV's, Key Values and Key Topics by promoting knowledge exchange and collaboration across the three trilateral countries, Swimway directly supports the SIMP's objectives of an integrated, transboundary governance in the Wadden Sea.

Swimway connects directly to two of the OUV and five Key Values:

Criterion (ix) Ongoing ecological and biological processes

- Intact intertidal ecosystems
- Linked geomorphological, biophysical and biological processes
- High biomass production typical for the Wadden Sea
- Key site for sustaining abundant wildlife beyond its borders

Criterion (x) Vital habitats for in-situ biodiversity conservation

- High typical biodiversity

Within the **Key Topic "Fisheries"** there are linkages to:

- **Activity 5**. The TWSC, through the trilateral groups responsible for science and fish, to initiate research on fish ecology (e.g., population quantity and quality, ecosystem function, closed areas, nursery function for juvenile fish, endangered species, historic species and habitats occurrence, food webs) to support the OUV and sustainable management.
- **Activity 6.** The TWSC to produce a coordinated approach to contribute to reaching the objectives of the EU Biodiversity Strategy for 2030 according to nationally based interpretation of key elements thereof and in line with the Wilhelmshaven Declaration 2022.

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11 ACTION PROGRAMME

Costs	Estimated costs	Priority	Key priorities to achieve targets
€	10.000-25.000 €	*	Low
€€	25.000-75.000 €	**	Medium
€€€	> 75.000 €	***	High

These are high level actions that still need to be further implemented. To date no funding has been secured for the actions which are detailed below. The suggested budgets in the list of actions are indicative and there is no commitment by parties as yet. This is a list of actions that EG-S has identified as needed to address the trilateral fish targets, both at national level and trilaterally.

11.1 OVERARCHING ACTIONS

Pillars & target actions	When	Cost - see above	Priority – see above
Research & Monitoring • Develop Wadden Sea Grad School	2026-2027	€	***
Policy • Identify how the existing frameworks can enable agencies to address the fish targets	2026-2030	€	**
Communication • Organise annual webinars (e.g. improving connectivity; reducing impact of human activities)	2026-2032	€	***
• Fostering engagement of [EG-S] in international partnerships, dialogues and cooperations by organizing exchange of information and strategies	2026-2032	€	***
• Develop a stepwise approach toward organizing partnerships and developing communication tools and/or a communication strategy	2026-2027	€	***

11.2 ACTIONS RELATED TO FISH TARGETS

Targets	Actions	When	Cost – see above	Priority – see above
1. Viable stocks of populations and a natural reproduction of typical Wadden Sea fish species	Initiate year-round monitoring in the Wadden Sea	2026-2028	€€€	***
	Develop a suite of indicators for the implementation of the fish targets in order to assess if the targets have been met; these will also enable the evaluation of the effectiveness of measures	2026-2030	€€	**
2. Occurrence and abundance of fish species according to the natural dynamics in (a)biotic conditions	Harmonise [and expand] monitoring of pelagic fish	2026-2032	€€€	***
	Improve reporting, data availability and exchange.	2026-2028	€€	***
	Identify any national initiatives to improve data availability; discuss if and how these can be linked to improve data availability at the trilateral level.	2026-2028	€	**
3. Favourable living conditions for endangered fish species	Recognize the Wadden Sea area as a nursery area for tope shark	2026-2036	€€	**
4. Maintenance of the diversity of natural habitats to provide substratum for spawning and nursery functions for juvenile fish	Include habitat requirements for juvenile herring, sprat and flatfish in salt marsh management plans	2026-2028	€	***
5. Maintaining and restoring the possibilities for the passage of migrating fish between the Wadden Sea and inland waters	Aim to have an increased number of migratory bottlenecks addressed in the coming years	2026-2032	€€	***
	Improve and protect suitable habitat for reproduction of smelt in the estuaries	2026-2030	€€	**
	Atlas of measures. Work in collaboration with the responsible authorities (National Park administrations, Rijkswaterstaat) on a list of measures	2026-2028	€	***