



Swedish efforts concerning ecosystem-based management

SUSTAINABLE DEVELOPMENT GOALS

TARGET 14.2:

By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.

TARGET 14.5:

By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.

Executive summary

- › Sustainable management and protection of marine and coastal ecosystems depends strongly on the implementation of all targets of SDG14, as well as the SDGs 2 (zero hunger), 3 (good health and well-being), 6 (clean water and sanitation), 8 (decent work and economic growth), 11 (sustainable cities and communities), 12 (sustainable consumption and production patterns), 13 (climate action) and 17 (partnership for goals).
- › The governance and policy framework that can contribute to reaching the ocean related SDGs stretches from international, regional (European and marine regions), national, to sub-national level.
- › Sweden works actively towards implementing its global, regional and national commitments to manage natural resources and develop the ecosystem-based approach, realising the need to sufficiently support those countries with less means to mitigate and adapt to environmental challenges.
- › Climate change is projected to cause rise in sea levels, ocean warming and acidification, leading to shifts in the distribution of species and habitats. These changes are constricting the living environments of many species, increasing extinction risks, and triggering substantial changes in marine food webs. Diverse ecosystems are more resilient and predicated to better adapt to climate changes underscoring the importance to protect and effectively manage marine ecosystems to ensure future uses and ecosystem services.
- › Recognising and understanding the connectedness of terrestrial, freshwater and marine ecosystems, including links between biological, social and economic systems, is a critical prerequisite to achieve an ecosystem-based management and the sustainable development goals.
- › Marine systems are characterised by high complexity as well as high connectivity. As a consequence mapping and monitoring of ocean processes, flora and fauna is often associated with technical or practical difficulties. Management and conservation further needs to understand and deal with cumulative pressures and human impacts acting at different temporal and spatial scales. Given these challenges and sources of uncertainty, there is a clear need to develop scientific resources that can support government decision makers in the processes towards an ecosystem-based management.
- › There is a continued need to increase national and international efforts in research and ecosystem-based management to achieve SDG 14.2, support resilient oceans and coastal ecosystems, and secure the long-term provision of ecosystem services.

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Introduction

Marine and coastal ecosystems are highly multifaceted due to many interacting biological and physical processes. Failure to sustainably manage these systems and the human activities impacting on them is causing major ecosystem shifts across the globe. Climate change alone is expected to cause substantial biodiversity loss, which will reduce the resilience of ecosystems and threaten the provision of key ecosystem services, but is acting concurrently with and being reinforced by impacts from multiple other human pressures. Human population growth and growing competition for natural resources create additional pressures. At the same time healthy coastal and marine ecosystems are crucial for poverty reduction, food security and economic development worldwide.

Ecosystem-based management (EBM) is an approach to facilitate the integrated management of land, water and living resources, that recognizes humans and associated economic and social systems as parts of the ecosystem. To be adaptive, make use of scientific knowledge, and follow changes through monitoring are also key principles of EBM. The aim is to promote conservation and secure the long-term provision of ecosystem services and benefits from natural resources, encompassing ecological, social and economic aspects.

Challenges to the use of EBM includes the many governance institutions and management authorities involved and the need for interdisciplinary studies and advice from the multiple scientific disciplines that address the marine and socio-ecological system. Maritime Spatial Planning (MSP) is an example of a management approach that can support the implementation of EBM. Marine Protected Areas and other spatial restrictions to human activities can promote the recovery of deteriorated ecosystems and sustain resilience in terms of genetic and biological diversity.

National efforts

One government agency manages fisheries, water and marine issues

In Sweden, the Swedish Agency for Marine and Water Management (SwAM) collectively manages fisheries, water and marine issues. The presence of all of these issues under one roof greatly facilitates the development and implementation of an ecosystem-based management.

Sweden applies the ecosystem-based approach in marine spatial planning (MSP)

Sweden has developed a spatial assessment tool (Symphony) that facilitates direct consideration of cumulative environmental impacts from both land and sea-based human activities in the MSP process. Symphony works with multiple data sets of key ecosystem components and anthropogenic stressors to identify ecological indicators required to reach Good Environmental Status (GES). The transparent method ensures sectorial integration and a source-to-sea perspective in MSP. Sweden collaborates with several European partners and the USA to further develop and implement Symphony.

Sweden aims for efficient and well-designed monitoring

Implementing EU directives linked to the marine environment, such as the Water Frame Directive (WFD) and the Marine Strategy Framework Directive (MSFD), Sweden is to define and assess the environmental status of its waters, decide if Good Environmental Status (GES) is or will be achieved, establish programmes of measures if needed and keep a process running that will allow stakeholder to contribute. Policies and monitoring programmes have to be continuously adapted, a key to reach the SDGs and other environmental targets.

Sweden emphasises the importance of ecosystem services and green infrastructure in ocean management

The central value of marine ecosystem services and biodiversity is integrated in numerous Swedish policy documents, practices and decisions. These include environmental accounting, business models, and environmental impact assessments. Comprehensive marine habitat mapping in Sweden identifies ecological connections and biodiversity hotspots that underpin marine green infrastructure. This feeds into marine management, MPAs and MSP through a variety of local, regional and national programmes. MOSAIC, for example, is a comprehensive method for assessing environmental status and ecological value, in support of marine conservation and the safeguarding of marine green infrastructure.

Sweden is aiming to protect 30 per cent of the ocean by 2030

Marine protected areas (MPAs) can be a powerful tool to contribute to a Good Environmental Status of the world's oceans. By designating new MPAs Sweden reached the commitment of 10 % MPAs already at the end of 2016.

However, more work remains to also meet the goals concerning connectivity and representativity. In the beginning of 2020 Sweden signed up to an international initiative to protect 30 per cent of the oceans by 2030, as considered in the development of a post-2020 global biodiversity framework under the Convention on Biological Diversity.

Preserving, protecting and restoring over 300 marine areas with associated fishing conservation measures to promote fish stock recovery

Sweden has introduced multiple measures to protect and restore degraded marine habitats and populations. For example: bottom-trawling has been banned within 3–4 nm of the Swedish coastline, and 300 areas are closed for fishing as they have been defined as important fish spawning and migration areas where only handheld fishing is allowed.

A Swedish programme of measures to address the MSFD was finalised in 2016. These measures incorporate the ecosystem-based approach by promoting biodiversity, for example protecting eelgrass and mussel-beds which play key roles in supporting coastal fauna and flora. Work is underway to develop a comprehensive database and toolkit for the restoration of coastal habitats, including methodologies for the restoration of eelgrass beds, bladder wrack, mussel-beds, and deep water corals, and a framework for assessing damages and restoration needs in relation to losses to biodiversity and ecosystem services.

A strategy for ecosystem-based fisheries management (EBFM)

The purpose of EBFM is to make the use of marine and coastal waters ecologically, economically and socially sustainable by managing the fish and fisheries on both a society and ecosystem level. EBFM is supported by legislation and policy documents, both in Sweden and at EU level, and a strategic plan for EBFM has been developed by SwAM.

Regional efforts

Multilateral collaboration enables regional agreements and holistic environmental assessment

Sweden is a signatory to several regional conventions and collaborates in associated commissions such as HELCOM and OSPAR. These two commissions are important in the promotion of a holistic marine policy in the Baltic Sea and the North East Atlantic. Sweden contributes regularly to the regional collection and synthesis of data and common assessment methods. In 2017 the HELCOM countries agreed to coordinate the regional implementation of ocean-related SDGs in the Baltic Sea using HELCOM as a platform. Both HELCOM and OSPAR are updating their regional policies – HELCOM Baltic Sea Action Plan by 2021 and North-East Atlantic Environment Strategy by 2020 – with the aim of achieving good environmental status and sustainable use of resources in the marine regions. Both policies are founded on the ecosystem approach.

The EU's Common Fisheries Policy (CFP) aims to implement ecosystem-based fisheries management

Sweden, as a member of the EU, has been involved in developing the Common Fisheries Policy (CFP), which includes using an ecosystem-based fisheries management approach. One objective of the CFP is to set TACs leading to all stocks being managed above MSY levels. In addition, the CFP provides the tools for conservation measures necessary for compliance with obligations under Union environmental legislation. Sweden, together with Denmark and Germany, has developed a joint recommendation for fisheries conservation measures in Bratten, a marine protected area in the Skagerrak (North Sea). The conservation measures include no-take zones, and the mandatory use of an Automatic Identification System (AIS) and a Vessel Monitoring System (VMS) for compliance purposes. Sweden continues to work within relevant parts of the CFP to implement necessary conservation measures in marine protected areas using an ecosystem based approach.

Sweden engages in regional research for science-based management of ocean resources

Sweden is active in several regional ocean research programmes, including the EU research platform Joint Programming Initiative, Healthy and Productive Seas and Oceans (JPI Oceans), the Joint Baltic Sea research and development programme (BONUS) and the development of its tentative successor BANOS which is intended to cover research to support management of both the Baltic Sea and North Sea. Sweden and France are leading a JPI-Oceans initiative to establish a research network and agenda for ecosystem services-based assessments for MSP and MSFD. Within the Nordic Council of Ministers working group HAV, several activities and projects have developed tool-kits and best practices for science-based management. Sweden is a member of the International Council for the Exploration of the Sea (ICES). Sweden participates in many ICES working groups addressing ecosystem-based management. Through our engagement in ICES, we are involved in the work of North Pacific Marine Science Organisation (PICES) and the Northern Atlantic Alliance.

Sweden plays a progressive role for environmental protection within the International Maritime Organization (IMO)

Recent achievements that will substantially reduce the eutrophication and acidification of regional seas include the Ballast Water Management Convention, the Sulphur Emission Control Area (SECA), the Nitrogen Emission Control Area (NECA) and the International Code for Ships Operating in Polar Waters (IMO Polar Code).

Monitoring fisheries to support healthy ecosystems

The EU Data Collection Framework (DCF) provides a common framework for the collection, management,

and sharing of fisheries data. Annual surveys and stock assessment within The EU Data Collection Framework (DCF) form the basis for scientific advice on the CFP, which aims to achieve fisheries sustainability.

Collaboration in various cross-border planning initiatives

Sweden is supporting coordination of MPA processes and marine spatial planning (MSP) through the development of a methodology for producing maps in order to increase the understanding of biodiversity and protection needed in the Baltic Sea. EU Baltic SCOPE, Pan Baltic SCOPE and North SEE are some examples of cross-border planning initiatives.

Collaboration between intergovernmental organisations should be strengthened

Collaboration among sectorial bodies responsible for fisheries and for biodiversity is of key importance to achieve an ecosystem approach to fisheries management. One such example is the collaboration between OSPAR and NEAFC (Northeast Atlantic Fisheries Commission).

International efforts

Sweden strives to increase regional and international collaboration

In addition to the Regional Seas cooperation, such as OSPAR and HELCOM, Sweden participates actively in international fora including FAO, OECD, UNEP, UNDP, UNCLOS, CBD, CITES, the Arctic Council, CCAMLR, IMO, and Regional Fisheries Bodies.

Sweden supports multilateral cooperation on coastal ecosystems

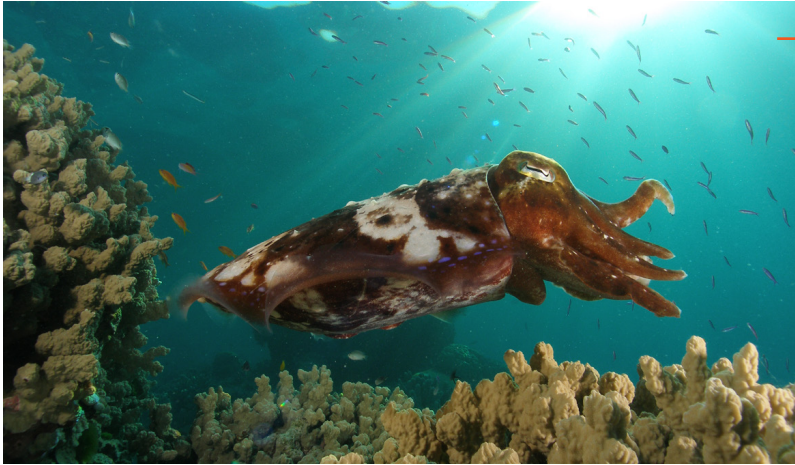
Sweden's long-term commitment to international ecosystem-based management includes: 1) programmes in Asia and the Pacific - Mangroves for the Future (Southeast Asia) and Southeast Asian Fisheries Development Center, 2) research cooperation in Tanzania and Mozambique, 3) the Western Indian Ocean Marine Science Association, and 4) several marine regional programmes in Africa to support the Nairobi and Abidjan regional seas conventions.

The Source-to-Sea Platform

The Source-to-Sea Management Platform (S2S) is a Swedish initiative with diverse international stakeholder participation. S2S encourages global collaborations among freshwater, coastal and marine experts in land - sea interconnections, and provides on-demand knowledge, support, and guidance for policy development and implementation.

UNCLOS increases protection of the high seas

Sweden is playing an active part in negotiating an Agreement on Biodiversity Beyond Areas of National Jurisdiction (BBNJ) to protect biodiversity on the high seas.



Past failure to under-stand how to sustainably manage ecosystems is causing major ecosystem shifts across the globe. Therefore there is a clear need to develop a process that can assist governments and other decision makers to reduce the uncertainties in ecosystem-based management.

Sweden engages in bilateral marine environmental, climate, and fisheries collaborations

Sweden has developed multiple partnerships with many nations, such as Brazil, China, Russia, South Africa and Vietnam to increase capacity-building and knowledge-exchange to better understand how to govern for resilient marine ecosystems and rights-based fishing practices.

The Arctic – Sweden engages in ecosystem-based management, marine protected areas and marine litter

Since 2016 Sweden has an environmental policy for the Arctic, with emphasis on greater protection of biodiversity and ecosystems on land and at sea, enhanced climate efforts and sustainable use of resources. Sweden's commitments in the Arctic council include projects to further develop area-based conservation and ecological connectivity (MPAs), co-leading in the development of a Regional Action plan on Marine litter in the Arctic, and monitoring and assessing acidification in the Arctic. Sweden also participates in several Arctic Council expert groups, and annually conducts collaborative research in the region with other countries.

Swedish engagement in Antarctica

Sweden conducts collaborative research in the Antarctic region. Sweden is also engaged in international organisations working with coordinating international scientific research in the region, e.g. SCAR (Scientific Committee on Antarctic Research) and COMNAP (Council of Managers of National Antarctic Programs).

Swedish engagement in the UN Decade of Ocean Science for Sustainable Development

UN has launched the initiative Decade of Ocean Science for Sustainable Development (2021-2030). The aim is to create a common ocean science framework that can support countries in achieving the UN SDGs and turn the scientific knowledge and understanding into effective actions to support a sustainable development. Contribution to EBM is one of the highlighted outcomes of the Decade. In this context, HELCOM committed in 2020 to organize a workshop on ecosystem-based management in support of the UN Decade of Ocean Science. On commission from the government, Formas (Swedish research council for Sustainable Development) is responsible to develop the plan for Sweden's contribution to the UN Decade.



Challenges and Gaps

- › Given the high complexity of marine and coastal ecosystems, demands associated with monitoring and observation, and our challenges in improving environmental status as well as understanding cumulative impacts, there is a clear need to develop transparent science-based processes that can reduce prevailing uncertainties and assist governments and other decision makers in dealing with management options under uncertainty, forwarding ecosystem-based management.
- › The multiple governance levels and the many policies that influence the state of the seas necessitates collaboration and coordination for achieving the agreed environmental goals; between countries and between national authorities, organizations and institutions.
- › The failure of some nations to ratify UNCLOS and other internationally binding agreements, threatens protection of the high seas (i.e. 64% of the ocean's surface).
- › Habitat degradation and climate change are global threats to conservation and the long-term provision of natural resources, and are further exacerbated by insufficient implementation of international legal instruments targeting unsustainable fishing and pollution.
- › Current limitations to the valuation of marine resources and ecosystem services restrict capacity to manage marine ecosystems from a holistic perspective. This gap challenges, for example, the quality of maritime spatial planning and the designation of marine protected areas in relation to key aspects under the ecosystem approach, such as ecological representativity, connectivity and functionality.
- › Knowledge on the effectiveness of management measures, including spatial measures, is often limited and thereby also the potential to evaluate if management actions are sufficient. Finding synergies across mitigation measures could contribute to mitigation of several pressures and lessen the cumulative burden on the marine ecosystem.
- › Practical implementation and management of marine protected areas is a challenge as some protected areas may include several restrictions whereas others are not associated with relevant regulations or monitoring. Further, the protected areas may not serve as intended if they are affected by external pressures acting at a larger scale than the designated area, such as climate change, ocean acidification, extraction of mobile species and pollution .
- › It is important to apply an adaptive and ecosystem-based management approach to marine protected areas to ensure effective management plans.
- › A lack of operational experience in how to understand the impacts of multiple pressures and successfully integrate cumulative impact assessments in marine policy limits our capacity to move from sectoral to holistic ocean management.
- › There is insufficient transdisciplinary and cross-sectoral management practices to understand and sustainably manage marine and coastal ecosystems, including the ecosystem resilience, biodiversity, food web processes and the interconnectedness of ecological and socio-economic dimensions.
- › There is the need to closely establish collaborations with the work in progress by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and embrace the Nature's Contribution to People (NCP) conceptual framework for the valuation of ecosystems.

Compilations made by SwAM for SDG 14, Life below water

This document represents one out of nine compilations made by the Swedish Agency for Marine and Water Management (SwAM) to highlight Sweden's key efforts and initiatives for Sustainable Development Goal 14 of the 2030 Agenda for Sustainable Development. This report has been developed as a part of Sweden's work in support of The Ocean Conference in Lisbon 2020. It is based on the report developed for The Oceans Conference in New York 2017 and has been updated by the Swedish Institute for the Marine environment together with researchers and experts from universities, organisations and agencies including the Swedish Agency for Marine and Water Management.

The documentation focuses on a situation assessment and does not constitute a complete picture of Sweden's initiatives being carried out in order to achieve the goal and targets. A starting point for the content is operational areas within national authorities, but the content has also been expanded to include other significant aspects based upon existing contacts and knowledge.