

Swedish efforts within a Source-to-Sea continuum



EXECUTIVE SUMMARY

WHAT RESEARCH SUGGESTS

- There are strong linkages between Sustainable Development Goal (SDG) 14 and other SDGs, especially SDG 6, that call for a holistic, ecosystem-based and integrative approach to the implementation of SDG 14 and its targets.
- A Source-to-Sea (S2S) approach supports an ecosystem approach in policy, planning, and decision making that considers the entire social, ecological, and economic system from source to sea.
- A common vision and agreement on goals and targets between key stakeholders is essential in all S2S systems, from a watershed to a river basin, in a regional sea or at the global scale.
- In any S2S system there are geographic segments that are connected by key flows of water, sediment, pollution, biota, material, and ecosystem services.
- Measures defined in an S2S system should be designed to support positive feedback loops and enhance ecosystem services while tackling flows that degrade connected ecosystems.



This document has been produced with the financial assistance of the Swedish International Development Cooperation Agency, Sida. The views herein shall not necessarily be taken to reflect the official opinion of Sida.

Publisher: Swedish Agency for Marine and Water Management (SwAM)
Date: 2017-05-16

Authors: Pia Norling (main author), Ulrika Siira, Anneli Harlén, Karin Pettersson, and Laura Piriz. With expert advice from Jakob Granit and Anna Tengberg.

Images: Jonas Forsberg, Anders Jildén/unsplash.com,
Science Photo Library/ IBL Bildbyrå

Graphic Design and Illustrations: Karin Enberg, Vid Form AB

Swedish Agency for Marine and Water Management
Box 11 930
404 39 Gothenburg
Sweden

- A key element of an S2S approach is to understand how governance approaches have changed over time to support new courses of action.

WHAT SWEDISH EFFORTS ILLUSTRATE

- National S2S approaches are linked to the implementation of EU policies and directives, and Sweden's national Environmental Objectives.
- Multilateral collaboration supports comprehensive S2S policy development as illustrated by the Baltic Sea and North East Atlantic regions. Cooperation enables joint environmental monitoring and the setting of common indicators.
- At the global level, Sweden provides important contributions to S2S programs and project development.

WHAT INTERNATIONAL EFFORTS ILLUSTRATE

- Water and marine governance policies need to be better coordinated from an upstream to a downstream perspective and linked to broader policy objectives in other sectors.
- Management and coordination efforts across national boundaries need to increase in several policy areas, such as environment, agriculture, fisheries, trade, business, and tourism, to achieve long-term sustainability.

www.havochvatten.se/en/initiativesforSGD14

Swedish efforts within a Source-to-Sea continuum

Introduction

The main threats to marine ecosystems are habitat disturbance, pollution (eutrophication, hazardous substances, and marine litter), over-fishing, and climate change. Many pressures originate from land-based activities and end up in the sea. These include direct pressures from production on land, such as agriculture, forestry and energy production, and through indirect pressures, such as consumption, all causing negative impacts on water quality and ecosystem services. In addition, there are several pressures in or at the sea stemming from fisheries, transport, extraction of non-living-resources (mining, sand, oil, and gas) and point sources (industry and sewage treatment plants).

The Source to Sea (S2S) approach illustrates linkages between these pressures and activities. There are clear linkages and connections between SDG 14 “Conserve and sustainably use the oceans, seas and marine resources for sustainable development,” and other SDGs such as SDG 1 “No poverty”, SDG 2 “Zero Hunger” and SDG 6 “Ensure availability and sustainable management of water and sanitation for all”. This calls for a holistic and integrative approach to achieve SDG 14. The sustainable development of our oceans and the realisation of several targets depend on coordinating management efforts to achieve the SDGs across sectors and administrative borders.

This report gives examples of Swedish efforts in the S2S continuum from national, regional and global perspectives.

The S2S approach to governance and management

The S2S conceptual framework offers a way to recognise, in any given S2S system, relevant system linkages to support sustainable outcomes and is an aid in developing operational methods and tools to put S2S governance and management into practice.

The conceptual framework is designed around a set of key flows to help analyse ways of addressing negative aspects of flow alterations or enhancing positive ones (Fig. 1). These include biophysical flows of water, sediments, pollutants, biota, and material. Positive feedback loops and return flows that are strived for in supporting a blue or green economy are defined as ecosystem service flows such as clean water, food, and navigation.

Socio-economic drivers and pressures that alter the key flows and management action to date should be defined in order to identify a course of action. Stakeholder engagement is necessary in all steps of managing S2S systems considering that political and economic contexts change constantly. The S2S approach supports the coordination of processes and segments along the continuum from source to sea at the scale defined as a watershed, a river basin, or a regional sea to global system linkages such as marine debris and ocean acidification (Fig. 1).

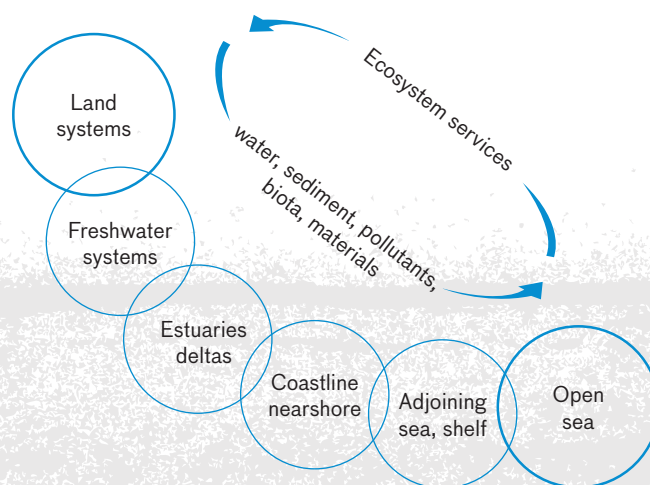


Fig. 1. Key flows connecting geographies from source to sea: ecosystem services, water, sediment, pollutants, biota, and material flows. (Granit et al. Water Policy 2017)



MANY PRESSURES on marine ecosystems and biodiversity originates from land-based activities, including migration obstacles such as dams. The building of fishways on or around artificial and natural barriers can facilitate fishes' natural migration.

National efforts

National efforts in Sweden within the S2S continuum are linked to the implementation of EU policies and directives, such as the European Water Framework Directive (WFD), the Marine Strategy Framework Directive (MSFD), the Habitats Directive, the Maritime Spatial Planning Directive (MSP), and the Common Fisheries Policy (CFP). These efforts include restoration of habitats in fresh water and marine environments, adapting hydropower to modern environmental standards, linking spatial planning on land with ongoing marine spatial planning processes, and management of marine protected areas and fishing reforms supporting an ecosystem-based fisheries management agenda.

The Swedish Agency for Marine and Water Management (SwAM) was created in 2011 to increase the integration of relevant policies to achieve a unified and coherent management of the aquatic resources in rivers, lakes, and the sea.

Sweden is divided into five water management districts for WFD. Each district has a river basin management plan including a programme of measures (PoM) and environmental quality standards for all groundwater and surface water bodies. Encouraging local stakeholder participation is one of the key processes of Swedish river basin management.

In 2015, Sweden established a PoM for the country's marine waters according to the MSFD. The programme consists of 32 measures spanning from awareness and legislation to physical activities. The measures address sources of different pressures such as input of nutrients, hazardous substances, and litter; biological pressures such as fisheries and invasive

species; and include restoration of habitats and coordination efforts with other national agencies.

In Sweden, terrestrial and marine spatial planning are closely connected along the coastal zone. The comprehensive spatial planning responsibility by Swedish municipalities spans internal waters and includes parts of the territorial waters. The national marine spatial planning includes most parts of the territorial waters and the Exclusive Economic Zone, and coordination between the planning frameworks is being developed.

In 1999, the Swedish Parliament adopted the Environmental Objectives, a system of goals to guide Swedish efforts aimed at safeguarding the environment. There are strong S2S linkages in this national framework.

Regional efforts

The multiple uses and pressures of water resources are clearly recognised in EU water policy. The WFD river basin planning system commits all EU member countries and enables water management in a holistic and transparent way. Sweden and other EU member countries follow the EU Blueprint to Safeguard Europe's Water Resources, a strategy to ensure good water quality that meets the needs of people, the economy, and the environment.

The EU Strategy for the Baltic Sea Region (EUSBSR) is an important tool for deepening cooperation between the countries around the Baltic Sea. The EUSBSR takes a broader

policy and development perspective, addressing three interlinked objectives: save the sea, increase prosperity, and connect the region.

Sweden is engaged in multilateral policy collaboration in the Baltic Sea through the Helsinki Commission (HELCOM) and the Oslo-Paris Convention (OSPAR) for the North Sea. Sweden is also engaged in the Nordic Council. Both HELCOM and OSPAR apply an S2S approach by inclusion of pressures from terrestrial freshwater catchments in both marine conventions. Important key flows identified for management on a regional level are nutrients, hazardous substances, and litter. Sweden is committed to the HELCOM Baltic Sea Action Plan (BSAP), which includes actions for reducing hazardous substances and national nutrient reduction targets to restore the good ecological status of the Baltic marine environment by 2021. Sweden is co-lead for two regional actions within HELCOM's Regional Action Plans on Marine Litter (RAP ML), with the objectives of preventing and reducing marine litter in the fisheries sector and wastewater treatment plants. Sweden further works to strengthen collaboration between intergovernmental organisations in order to increase cooperation between water, marine, and fisheries management, such as between OSPAR and NEAFC (Northeast Atlantic Fisheries Commission) or the coordination of MPA and MSP processes.

Global efforts

On the global level, Sweden contributes to international collaboration, policy influence, and capacity building in accordance with the development goals in Agenda 2030. Sweden actively promotes improved cooperation and the establishment of collective arrangements between existing regional and global conventions and organisations to ensure a coherent and ecosystem-based management of marine resources. Sweden strives to increase regional and international collaboration through several international forums, including the GEF, FAO, OECD, UNEP, UNDP, CITES, Arctic Council, CCAMLR, IMO, and Regional Fisheries Bodies.

Sweden is actively working toward an implementation agreement to UNCLOS for the protection of marine biodiversity in areas beyond national jurisdiction. S2S examples include Partnerships in Environmental Management of the Seas of East Asia (PEMSEA) and collaboration in the Bay of Bengal Large Marine Ecosystem (BOBLME). Under the Convention on Biological Diversity (CBD), Sweden and other parties have adopted the ecosystem approach as the primary framework of the convention, defined as “a strategy for the integrated management of land, water, and living resources.” Integrated basin-scale, coastal, and marine management, and control of land-based pollution sources are highlighted as priorities under the convention.

THE RED RIVER flows from Yunnan in Southwest China through northern Vietnam to the Gulf of Tonkin. The region around the river is densely populated and agriculturally rich. Climate changes and the building of dams for energy consumption constitute major challenges and the use of water in one sector will affect the other sectors. A Source to Sea approach is necessary to tackle the challenges within the region.



Sweden is strengthening its environmental commitment to the Arctic region by focusing on area-based conservation, monitoring and assessing acidification in the Arctic, co-leading the project Marine Litter in the Arctic, and participating in several Arctic Council expert groups (MPA Expert Group, Ecosystem Expert Group, CAFF Marine Biodiversity Expert Group) that apply S2S approaches.

Sweden is engaged in bilateral cooperation with strategic countries within the fields of S2S. Exchanges of experiences on the coordinated management of fresh and marine waters are developed with South Africa, Vietnam, China, and Brazil. Within the Global program of SwAM, Sweden engages in relevant projects and policy processes to promote the integrated management of fresh and marine waters. The goal is to minimize negative impacts on ecosystems and ensure ecosystem services that poor people depend upon for their livelihood and food security.

The Swedish International Development Cooperation Agency (Sida) is one of the major financiers of the Mekong River Commission (MRC). The main objective of the MRC is to strengthen regional cooperation between the four

member countries regarding hydropower development. S2S issues are increasingly gaining attention in the MRC, especially in the context of biota flows such as fisheries management and sediment flows. In the Red River, the IUCN implemented the Mangroves for the Future program (MFF) which supports S2S approaches in the cooperation between Vietnam and China. The river delta area between Hanoi and the river mouth in the South China Sea is one of the most important areas in the region contributing to poverty alleviation by supporting agriculture and fisheries production. Opportunities exist for scaling up S2S approaches in 11 coastal countries, which have rivers originating in the high mountain areas of the Himalayas, and supplying valuable nutrition to coastal and marine ecosystems in the East Asian seas.

Sweden is supporting the work of the Action Platform for Source-to-Sea Management (S2S Platform) to promote S2S approaches at a larger and more systematic scale in international efforts. The S2S Platform is a multi-stakeholder initiative that helps freshwater, coastal, and marine experts contribute to generate global knowledge on S2S interconnections.



A SOURCE TO SEA

(S2S) approach can contribute to meeting sustainability by considering the strong system linkages in the socio-ecological systems that surrounds a water system. It can identify pressures on water, and their drivers, and ensure stakeholder participation in the management. Thus it can support a robust framework of governance.

NATIONAL GAPS AND GLOBAL OPPORTUNITIES

To enhance SDG implementation in Sweden and beyond, an S2S approach can contribute to meeting sustainability by considering the strong system linkages in the socio-ecological systems. Gaps to be addressed in order to achieve an S2S approach include:

- applying a system thinking along the S2S continuum to identify pressures and their drivers to tackle detrimental flows;
- incorporating the role of ecosystem services and the significance of their connections across several SDGs;
- supporting a robust framework of governance that takes into account sustainability objectives and indicators, and the fact that governance regimes evolve over time;
- ensuring stakeholder participation to achieve ownership in all aspects of management in the S2S continuum;
- articulating and connecting marine- and land-based spatial planning frameworks;
- including green infrastructure approaches in all aspects of management in the S2S continuum;
- applying ecosystem-based fisheries management approaches to secure the connectivity between fresh and marine water management systems and their species;
- supporting regional water and marine environmental policies and S2S objectives by integrating these into other policy areas at the national and regional level.

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. It has been developed as a part of Sweden's work in support of The Ocean Conference in New York, June 5–9, 2017.
- Several other Swedish agencies and institutions have contributed to the content in these compilations: the Swedish Environmental Protection Agency, the Swedish International Development Cooperation Agency (Sida), the Swedish Meteorological and Hydrological Institute (SMHI), the Swedish Board of Agriculture, the Swedish Chemicals Agency, the Swedish Transport Agency, and the Swedish Institute for the Marine Environment (SIME).
- 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.
- Furthermore, the Swedish Environmental Research Institute (IVL) has been commissioned by SwAM to compile initiatives and examples from Sweden's industry and blue growth sector. The Sustainable Development Solutions Network (SDSN) Northern Europe has also composed a complementary compilation of efforts from innovative blue growth initiatives. The result of this work is presented in separate reports.
- The Swedish Institute for the Marine Environment has been commissioned by SwAM to produce two syntheses in support of the conference. One concerns mitigating marine eutrophication in the presence of strong societal driving forces, with a focus on impacts and measures, and the other concerns impacts and measures regarding marine litter in small island developing states.

