Multifunctional wetlands and stakeholder engagement: Lessons from Sweden

BALTIC COMPASS

Key Findings

- **Some Baltic Sea Region countries have embraced wetlands construction as a way to make agriculture more sustainable. Sweden has made great efforts, but only achieved 60% of its target of adding 12,000 hectares of wetlands between 2000 and 2010. Some changes could help these programmes attract more participants, put more wetlands in high-priority areas, and yield greater environmental benefits.**
- **Sweden may be focusing too narrowly on wetlands' role in containing and removing nutrients (i.e. nitrogen and phosphorus) from agricultural runoff. Yet wetlands can bring many other benefits: increased biodiversity, flood risk reduction, recreational opportunities, the availability of irrigation reservoirs and more. The full range of benefits should be valued and promoted.**
- **The structure of financing mechanisms is very important. Sweden's main source of funding for wetlands projects, the Rural Development Programme, focuses on individual farmers, and to date, the results have been weak and scattered. Larger-scale initiatives led by groups of farmers or municipalities can achieve greater impacts, but governance and financing changes are needed to encourage such projects.**
- **Wetlands initiatives must recognize that farms are businesses and cannot be expected to invest in wetlands or forgo income without proper compensation. Adjustments at both the national and EU levels may be needed to ensure that farmers do not have to incur losses or take needless financial risks.**

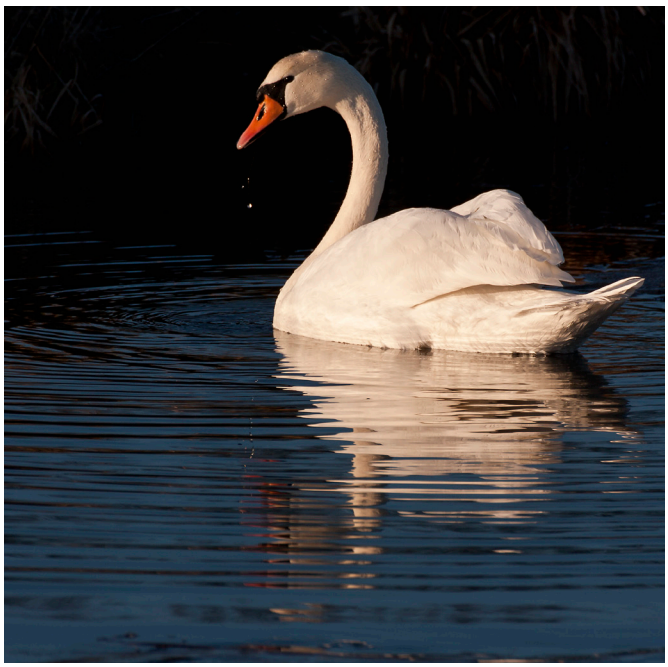
In the agricultural plains of Sweden, up to 90% of the natural wetlands were drained over the last centuries to make room for agriculture. In the last several decades, however, there have been efforts to restore and construct wetlands, first for hunting, then as an agri-environmental measure, to serve as nutrient sinks. Since the 1980s, Sweden has provided financial support for wetlands construction. Denmark and Finland have also actively promoted wetlands in agricultural areas.

The Swedish government has also made "thriving wetlands" one of the objectives guiding the National Environmental Policy. In addition, wetlands are relevant to two other objectives: "zero eutrophication", and "flourishing lakes and streams". Yet despite great efforts to scale up wetlands construction, between 2000 and 2010, Sweden only managed to achieve 60% of its national target of adding 12,000 hectares of wetlands in the agricultural landscape. Furthermore, recent studies show sub-national differences not only in terms of wetlands area added, but also in terms of their effectiveness in removing nutrients. Figure 1 (next page) shows the distribution of wetlands added across Sweden in 2000–2010.

The Baltic COMPASS study

This project reviewed Sweden's experiences with wetlands management and construction as an agri-environmental measure in Sweden and examined opportunities for introducing the concept of multifunctional wetlands. It is part of Baltic COMPASS Work Package 6, which aims to increase the legitimacy of adaptive governance processes in integrated agricultural-environmental policy development and deepen that integration in the Baltic Sea Region.

This study is based on a participatory analysis of wetlands implementation, involving interviews with professionals from governmental agencies, civil society organizations and the private sector, as well as a field visit to a larger wetland project to facilitate direct communication with farmers and other professionals working hands-on to build and restore wetlands. In addition, documents for other projects and relevant studies and reports were reviewed, including materials recommended by interviewees.



©WikimediaCommons/David Castor

The views presented are meant as a sampling of key stakeholders, not a comprehensive survey. In order to encourage interviewees to speak freely, and to ensure that all relevant views and experiences could be explored, no statements are attributed to specific individuals. The resulting report underwent two rounds of reviews to strengthen the document and give interviewees a say in how their views were presented.

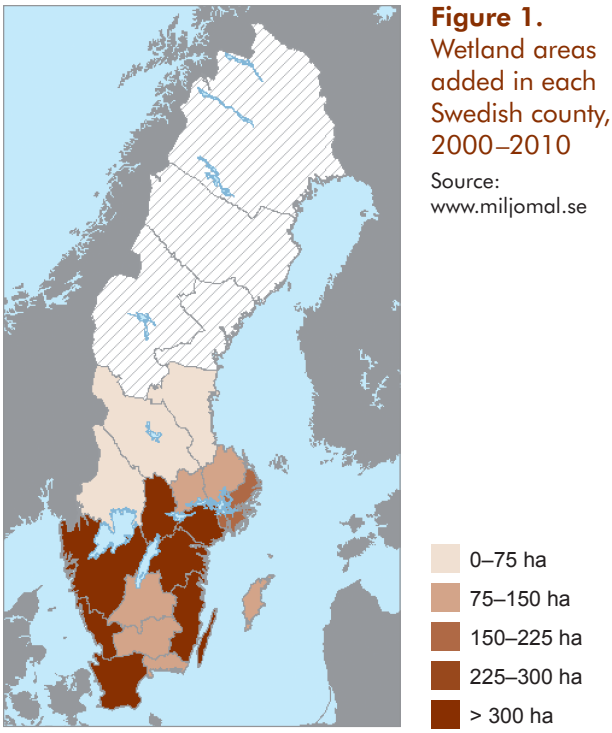


Figure 1. Wetland areas added in each Swedish county, 2000–2010

Source: www.miljomal.se

Recognizing wetlands' multiple benefits

The Swedish Environmental Protection Agency (EPA) defines wetlands as "areas where the water table for the main part of the year is close below, at, or above the ground level, including vegetation-covered lakes. A site is called a wetland when at least 50% of the vegetation is hydrophilic, i.e. water loving. An exception is periodically flooded shores along lakes, seas and rivers, which are classified as wetlands despite a lack of vegetation". Given the interest in wetlands construction as an agri-environmental measure, there is a fair amount of research in Sweden on wetlands' multiple benefits, summarized here:

Retention of nutrients: The input of excess nutrients, especially phosphates and nitrates, to water bodies stimulates excessive plant growth and algae blooms, a state referred to as eutrophication – a common problem in the Baltic Sea. Bacteria, plants and algae in wetlands can retain and remove excess nutrients. The level of nutrient retention in a wetland depends on many factors, such as oxygen levels, pH, and presence of bottom-living animals. Wetlands can be planned, designed and managed to facilitate nutrient retention. Specially designed ponds can maximize phosphorus sedimentation.

Biodiversity enhancement: The restoration and construction of wetlands can greatly contribute to biodiversity enhancement especially in the agricultural plains. Wetlands can serve as habitats for migratory birds, vulnerable amphibians and invertebrates, among others. The design needs will vary depending on the species to be attracted, but in general, diverse landscapes attract more species. Desirable features can include shallow banks, long irregular beach lines, and ensuring an uncultivated buffer zone.

Reducing flood risk: The large-scale drainage of wetlands and the channelling of rivers and creeks have had severe impacts on natural water regulation. The natural buffering capacity is partly lost, and the water is rapidly drained from the land, creating high flows and high water levels with increased flood risks. To maximize wetlands' flood-control benefits, it is important to create large wetland areas in a river basin, which in most cases means that it is most feasible and cost-efficient to restore former wetland areas.

Irrigation reservoirs: Constructed wetlands may be used as irrigation reservoirs to support agricultural production during the dry season. Because this provides a competitive advantage to farmers, authorities tend to provide less financial support for wetlands meant for this purpose. However, extracting water from wetlands for irrigation can also enhance their function as buffers during peak water flows, and if irrigation improves crop growth, it will ensure higher nutrient uptake by plants on fertilized fields.

Recreation and landscape: Although these benefits are seldom cited as the motivation for wetlands projects, farmers said in interviews that they see wetlands as an investment in the environment and a way to provide new experiences for themselves and younger generations, e.g. for skating and wildlife encounters.

Fishing and hunting: In general, fishing and hunting are allowed in restored and constructed wetlands. However, restrictions regarding active breeding and planting or feeding of animals are often stipulated in wetland permits, because of the animals own environmental impacts. Still, opportunities for fishing and hunting should be valued because they appeal to landowners and generate additional income for them.

Biomass for energy and nutrient recovery: A recent and unexplored concept is the harvesting of wetland plants, such as common reeds, for biogas production, which also removes nutrients from the wetland. Incineration would give a higher energy output, but the potential for nutrient recovery for nitrogen would disappear. In either case, the added revenue is an incentive for investing in wetlands.

Financial support for wetlands

The Rural Development Programme (RDP) in Sweden has offered different support mechanisms to farmers over the years, administered through the County Administrative Boards (CABs). Wetlands implementation and management are mainly covered under the two categories: non-productive investments and agri-environmental payments.

Non-productive investments can be used for construction and restoration of wetlands but also for other restoration projects in water bodies, such as terrace ditches. The investment support available for landowners generally covers up to 90% of the actual cost, to a maximum of 200,000 SEK /ha (about €24,000); high-priority projects can get 100%, but still capped at 200,000 SEK/ha, but lower-priority projects can also get less than 90%; CABs set their "willingness to pay".

Agri-environmental payments can help farmers with the cost of maintaining restored and constructed wetlands, and help offset lost revenue or higher costs due to the changed land use. For former cropland, the payments are 4,000 SEK/ha

(about €485); in some areas, another 1,000 SEK/ha (€120) is available for loss of harvest. For wetlands on former grazing land, the payment is 1,500 SEK/ha (€180). In the current funding cycle, 2007-2013, contracts for agri-environmental payments for wetland maintenance are for five years. In the previous two programming periods, they were for 10- and 20-year periods, respectively.

The CABs, guided by national regulations and guidelines, make support decisions for individual wetland projects, based on factors such as the ratio of wetland area vs. runoff area to be affected; share of cropland within the runoff area; proximity to a water body; design and size; and cost-efficiency. Certain restrictions for complementary uses may lower or remove the financial support, however, such as irrigation, fish and crayfish farming, and feeding and breeding of wildfowl.

The **Marine Environment Grant**, managed by the new Swedish Agency for Marine and Water Management, provides support to CABs for priority planning and outreach for wetlands implementation. Grants are also available for non-profit organizations and municipalities to support projects aiming at the improvement of status of the marine environment, including the restoration and construction of wetlands in the agricultural landscape.

Wetlands implementation in practice

Wetlands projects are initiated at different levels in Sweden: by individual farmers, by organized groups of farmers, by municipalities, and by CABs. The only formal mechanism to support wetlands projects is under the RDP, for individual farmers. CABs do outreach to build interest among farmers, or farmers can apply on their own. However, farmers say the process is cumbersome and financially risky, so participation is low; the resulting wetlands are also small, scattered and not optimally situated.

Projects by organized groups of farmers may hold greater promise. On the river Tullstorpsån in the county of Skåne, for example, more than 50 farmers and landowners have joined an association to develop a wetland and river restoration project initiated by an influential farmer and a former municipal environmental official. The project has gained political interest and financial support outside the RDP and has been given regional priority with national relevance due to its innovative profile, working at the water catchment level in a small, 19 km long river. To date, 21 wetlands have been constructed, and other river restoration measures have also been implemented.

There are also interesting examples from Skåne and Halland (on the rivers Kävlingeån, Höjeå, Segeå and Smedjeån, among others) where municipalities have led large-scale wetland implementation projects. The actual implementation has been done mostly by consultancies, but the municipalities have served as administrators and secured external funding that made it possible to invest in preparatory studies, for example, to identify optimal locations for wetlands and build long-term relationships with farmers.

Few wetland projects in Sweden have been led by the CABs themselves. An example is the river Svartå project in the county of Södermanland. CAB-led projects could facilitate more efficient administration and prioritization, but CABs' different roles in the wetlands process, including outreach, permits,

©Johnny Carlsson, River Tullstorpsån project

control, monitoring, funding, and regulatory, could also create conflicts. In this sense it may be preferable for water councils or even municipalities in some cases to take on a more central or leading role.

Other options suggested by stakeholders or implemented in other EU countries are land exchanges or eminent-domain takings for wetlands construction led by the public sector, not yet applied in Sweden.

What works and what doesn't

Stakeholders interviewed for this study identified several factors that have contributed to the success of Sweden's wetlands initiatives, and others that have hindered it. Enabling factors include:

- Wetlands are prioritized among a large number of authorities and organizations.
- Diverse groups of stakeholders (e.g. farmers, local and national NGOs, municipalities and CABs) are collaborating to implement these measures.
- The existence of a strong knowledge base through agri-environmental advisors within the "Focus on Nutrients" initiative facilitates the process between the CABs and farmers.
- Financial support is not limited to the RDP. Providing additional support can contribute to long-term communication with farmers while compensating for investments not covered by the RDP. It can also give funders a chance to help plan and optimize the siting of wetlands.

Barriers and limitations for progress in Sweden identified by interviewees include:

- Coordination challenges make it difficult to implement large-scale projects to benefit entire water basins.
- The emphasis on nutrient retention may impede implementation, since this is often a criterion to be eligible for financial support, even if the wetlands could generate other important benefits.
- CAB and Swedish Board of Agriculture regulations are often changing. Restrictive interpretations of guidelines by CABs limit the diversity of wetlands and reduce the flexibility for functions and use.
- There are conflicts of interest due to diverging development and natural conservation goals (e.g. old drainage permits, biotope protection, and fishing interests).
- There is not enough agri-financial support to farmers. In most cases the loss of income for transforming productive cropland to wetland will not be fully covered by the RDP payments.

Policy recommendations

- Involve key actors who will maintain a local presence and develop long-term relationships with farmers. It is crucial to recognize farmers' positive contributions to the environment, but without forgetting that farms are also businesses.
- Provide comprehensive support to farmers, including access to information and technical advice, and also competitive financial compensation.
- Implement a system that supports the development of large-scale projects with a water basin approach. This way, different stakeholders can be involved by considering the multi-functionality of wetlands (e.g. flood prevention). Payments for ecosystem services may be a promising way forward to generate a platform for a broader stakeholder approach.
- Wetlands initiatives should promote multiple benefits, not focus less narrowly on nutrient retention. In general, the agriculture sector (and society as a whole) should focus more on reuse and recycling of nutrients, and efficient on-field (both management and technical) measures to prevent nutrient leakage. Wetlands, meanwhile, should be recognized more for their long-term functions and benefits, e.g. as a natural buffer and sink, and for the full range of environmental services they provide.
- Further research should be conducted on the multiple functions of wetlands. For example, it would be useful to investigate how well wetlands retain nutrients and prevent other kinds of damage during floods.

Conclusion

Sweden has made important progress with wetland construction and restoration in the last 20 years. However, the new wetland areas are only a fraction of the wetland area lost to drainage over the last 100 years. Sweden needs to scale up wetlands initiatives to add more wetlands overall, and to promote larger, more ambitious projects. This will require engaging new actors and sectors, and highlighting wetlands' multiple benefits is a key strategy to accomplish this. To scale up wetland construction, Sweden should also find ways to promote water basin-wide initiatives, including more support for outreach and coordination. There is also a need for continuous capacity-building and knowledge exchange. Sweden already has an impressive knowledge base, and it also has great success stories to learn from.

©Johnny Carlsson, River Tullstorpsån project

This policy brief was written by Marion Davis based on a report of the same title by Kim Andersson, of SEI. The report is available at www.balticcompass.org and www.sei-international.org.

BALTIC COMPASS

Part-financed by the European Union (European Regional Development Fund and European Neighbourhood and Partnership Instrument)

Baltic Sea Region Programme 2007–2013

Published by:
Stockholm Environment Institute
Kräftriket 2B
SE -106 91 Stockholm
Sweden
+46 8 674 7070

sei-international.org
2012

Contact: Kim Andersson
kim.andersson@sei-international.org
Further Information: Robert Watt
Director of Communications
robert.watt@sei-international.org
+46 73 707 8589