Tullstorpsån rural development project in Sweden

Year of issue

2025

Summary

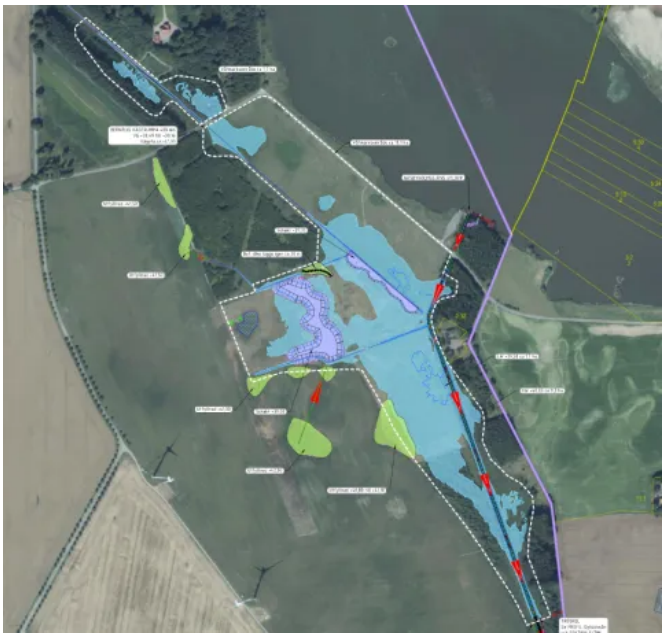
The Tullstorpsån Rural Development Project is a long-term, landowner-driven initiative implementing multiple Natural Water Retention Measures to improve aquatic and terrestrial biodiversity, retain nutrients, and enhance recreation. Since 2009, the project has restored over 25 km of river channel and created or restored more than 50 wetlands (> 200 ha), combined with riparian vegetation planting and riverbed re-meandering. These measures, supported by local landowners, regional authorities and consultants, have reduced nitrogen loads by about 30 % and phosphorus by about 50 %, improved the ecological status of the stream, and increased fish and bird populations.

Recent developments under “Tullstorp Stream 2.0” focus on multifunctional wetlands for both nutrient retention and water storage, enabling irrigation during dry periods. Since 2021, the project has also piloted large-scale controlled drainage systems (48 ha) to further reduce nutrient leakage while supporting crop yields. Continuous monitoring of water quality, hydrology, and biodiversity underpins adaptive management and knowledge transfer across the Baltic Sea region.

Photo Gallery















Location

56.2, 13.7666

Project

NWRM

National ID

Sweden_01

Sector

Hydromorphology

Installation Date

2009-2013

Implementation status

Ongoing

Contact

Martyn Futter SLU

Overview

Location of the project

Tullstorpsån is a river in Skåne, southern Sweden. The 30km long river drains a 57400 ha catchment. Land use is predominantly agricultural.

Country

Sweden

NUTS2 Code

Sydsverige

Sponge measures implemented in the case study

Re-meandering

Buffer strips and hedges

Wetland restoration and management

Stream bed re-naturalisation

Forest riparian buffers

Controlled Drainage

Objectives

The goal of the project was to reduce loading of nutrients from the catchment to the Baltic Sea with a target of 30% reduction in N loads and 50% reduction in P loads without reducing the economic value and returns for farmers and other property owners.

Involved partners

Authority type	Authority name	Authority role	Comments	Authority responsibility
Private property owners	Tullstorpsån Economic Association (TSEA)	Initiation of the measure	Landowner-led association responsible for planning, coordination, stakeholder engagement, and on-the-ground implementation. Also oversees maintenance and monitoring in cooperation with partners.	Responsible
Local water authority	Trelleborg Municipality	Other	Promoted Tullstorpsån as part of sustainability project “Kretsloppet” and hired a project manager	Supporting
National water authority	Swedish Board of Agriculture (Jordbruksverket)	Financing	Provide grants (e.g., LOVA) for nutrient reduction measures.	Supporting
Other	European Union	Financing	—	Supporting

Authority type	Authority name	Authority role	Comments	Authority responsibility
Architects / Engineers	Naturvårdsingenjörerna AB	Determination of design details of the measure	Provides engineering designs, environmental assessments, and technical guidance for wetland construction, channel restoration, and controlled drainage.	Supporting
Regional / sub-national water authority	County Administrative Board of Skåne	Other	Regulatory oversight & permitting. Issues necessary permits and supports alignment with regional water management objectives	Supporting
National water authority	Swedish Agency for Marine and Water Management (HaV)	Financing	Provide grants (e.g., LOVA) for nutrient reduction measures.	Supporting
Other	Baltic Sea Action Plan Fund (NEFCO & Nordic Investment Bank)	Financing	Supported the prestudy and implementation of controlled drainage systems.	Supporting

Documents

cs-se-01-final_version.pdf (766.34 Ko)

Site Information

Climate Zone

Cool temperate moist

Temperature (°C)

6.00 °C

Runoff coefficient

0.50

Elevation range

49

Slope range

1-2%

Soil type

Cambisols

Vegetation class

The catchment is ~85% agricultural land (arable with some pasture/meadow). For vegetation class, this corresponds primarily to cropland with managed grass/pasture in parts of the riparian/wetland network.

WFD Ecological status

Moderate

WFD Chemical status

Failing to achieve good

Water quality status

The main water quality pressures are high nutrient loads, particularly nitrogen and phosphorus from intensive agriculture, leading to eutrophication and moderate ecological status, with additional signs of organic pollution.

Design and Implementation

Project scale

Meso

Project scale specifications

It covers the Tullstorpsån catchment in southern Sweden and implements coordinated measures along the main river and its tributaries. Actions span multiple municipalities and involve catchment-wide planning, wetland creation, and channel restoration, making it regional in scope but not at national scale.

Project area

57400 ha

Project area specifications

Measures were applied throughout the catchment, which has a total area of 57400 ha. Key activities included remeandering of the stream channel, which had been shortened by approximately 300m over the past 200 years, and restoration of wetlands, of which more than 85% had been lost during more intensive agricultural production.

Principles

The design of this application was conducted in close collaboration with local landowners and other stakeholders. The involvement of the 90 landowners in the planning and implementation of the measures at Tullstorpsån was a unique factor contributing to the success of the project.

Factor constraints

The main factor influencing the selection and design of measures in the catchment was land owner support for the project. Measures were designed which restored the natural water holding capacity of the landscape. Measures were not designed for their water retention function per se, but for their contribution to nutrient retention, biodiversity and amenity values.

Financing

Total cost

1300000.00 €

Financing authorities

Authority name	Type of funding	Comments
European Union	EU-funds: Rural development funds	EU funds, not clear as to which funding source
Swedish State	National funds	Swedish Board of Agriculture (Jordbruksverket) and Swedish Agency for Marine and Water Management (HaV) via LOVA grants and Rural Development Programme funds.
Baltic Sea Action Plan Fund	Private funds	Baltic Sea Action Plan Fund (managed by NEFCO and Nordic Investment Bank) financed the prestudy and construction of controlled drainage systems.
Municipality of Trelleborg	Local funds	—
County Administrative Board of Skåne.	Local funds	—

Compensations

Oui

Compensations basis information

According to project documentation, landowners who host wetlands or restored river stretches receive financial compensation for the loss of productive land. This is typically covered through Swedish agri-environmental support schemes (e.g., LOVA grants, rural development programme funds) and project-specific agreements managed by the Tullstorp Stream Economic Association.

Policy and Governance

Policy description

The altered hydrological regime in Tullstorpån has negative effects on biodiversity and nutrient fluxes to the Baltic. Restoring the natural hydrologic behavior of the catchment will contribute to alleviating these effects.

Land ownership

Most of the land in the Tullstorpsån catchment is privately owned by farmers. Participation in the project is voluntary, with landowners agreeing to host measures such as wetlands or re-meandered channels.

Policy targets

Pollutants Removal

Improved Biodiversity

Oher Societal Benefits

Increase Water Storage

Policy pressure

Directive	Relevant pressure
WFD identified pressure	2.2 Diffuse Agricultural
WFD identified pressure	4.1.2 Physical alteration of channel/bed/riparian area/shore of water body for agriculture
Other EU	Habitats directive

Policy impact

Directive	Relevant impact
WFD identified pressure	Nutrient Pollution
WFD identified pressure	Altered habitats due to morphological change

Requirement directive

Requirement directive	Specification
WFD-achievement of good chemical status	Reduction in N and P export
WFD-achievement of good ecological status	Habitat restoration

Policy challenges requirements

The overall goal of the project was for the farming community and responsible authorities to work together to develop, test and implement solutions and actions that will provide as large as possible a reduction in flows of agricultural nutrients from the catchment to the sea.

Part of a wider plan

Non

Public consultation

Non

Has contractual arrangements

Non

Impacts and Monitoring

Monitoring System

Monitoring requirements

Monitoring is led by TSEA under national protocols, tracking nutrient levels, flow, and ecological indicators.

Monitoring parameters

The project undertakes long-term, systematic monitoring of water chemistry (total nitrogen, total phosphorus, sometimes nitrate and ammonium), water flow/discharge, and biological indicators such as benthic invertebrates, diatoms, and fish populations. Water quality sampling points are located along the main channel and in key wetlands to measure nutrient loads entering and leaving the system. Biological surveys follow Swedish environmental monitoring standards, allowing classification of ecological status (e.g. “moderate” for recent years). In the 2.0 phase, monitoring also extends to controlled drainage systems to evaluate their effect on nutrient leakage and water storage.

Maintenance

Maintenance requirements

The measures have been designed to be maintenance-free, but TSEA and local partners keep vegetation, hydraulic connections, and structures in working order.

Socio-economic Impacts

Benefits and co-benefits

One of the key benefits of this project is a raised societal awareness of the importance of water bodies in the southern Swedish agricultural landscape, and the importance of local stakeholder involvement in their management.

Direct benefits information

not specified

Ancillary benefits information

improved social welfare asociated with amenity ecosystem services

Biophysical impacts: Hydrology

Information on retained water

Installation of 48 ha of controlled drainage systems (2022) allows temporary water storage in the field drains, reducing peak runoff and nutrient losses.

Information on runoff reduction

Modelling studies suggest that the construction of wetlands can help to mitigate peak flows and sustain low flows.

Information on Restoring hydraulic connection

There have been qualitative improvements in river connectivity. Creation/restoration of >50 wetlands (> 200 ha) and 25 km of re-meandered channel increases water retention capacity in the catchment.

Biophysical impacts: Biodiversity

Information on improved biodiversity

The VIX fish status index improved in most stretches of the river between 2009 and 2013. Significant increases in fish populations, notably brown trout, linked to restored habitats and improved channel structure.
Bird diversity and abundance have increased around wetlands; several new species recorded in the catchment.
Re-meandering and riparian vegetation planting have enhanced habitat heterogeneity for aquatic invertebrates and plants.

Biophysical impacts: Water & Soil Quality

Water quality overall improvements

Positive impact-WQ improvement

Information on water quality overall

Average total phosphorus and inorganic nitrogen concentrations showed slight declines between 2009 and 2012.
Long-term monitoring shows ~30 % reduction in nitrogen and ~50 % reduction in phosphorus loads at the catchment scale.
Despite nutrient load reductions, ecological status remains “moderate” (based on diatom index), with persistent high nutrient enrichment and signs of organic pollution.
Wetlands and vegetated riparian zones also trap sediments, improving water clarity locally (qualitative observation in project reports).

Water quality improvements - Phosphorus (P)

50.00

Water quality improvements - Phosphorus (P) - Unit

% reduction pf pollutant

Water quality improvements - Nitrogen (N)

30.00

Water quality improvements - Nitrogen (N) - Unit

% reduction pf pollutant

Biophysical impacts: Others

Information on ecosystem impact climate regulation

not specified

Lessons Learned

Key lessons

One key lesson from the Tullstorpsån project is that a landowner-driven approach can greatly accelerate implementation and acceptance of measures. By giving farmers a leading role through the Tullstorp Stream Economic Association, the project built trust, ensured voluntary participation, and aligned environmental goals with agricultural interests. Riparian land owners, farmers and other stakeholders must be involved in the decision making process if measures aimed at restoring the natural water retention capacity of agricultural landscapes are to be successful.

Another lesson is the value of multifunctionality. Designing wetlands not only for nutrient retention but also for water storage and irrigation has increased their relevance to farmers, especially under changing climate conditions. This has strengthened local engagement and broadened the benefits beyond biodiversity alone.

The project also shows the importance of long-term monitoring and adaptive management. Continuous data collection on water quality, hydrology, and biodiversity has provided evidence of successes and areas needing improvement, such as the persistent high nutrient levels despite significant load reductions. This information is essential for refining measures and justifying ongoing investment.

Finally, Tullstorpsån demonstrates the benefits of diversified funding and partnerships. Combining national grants, municipal support, and international funding sources like the Baltic Sea Action Plan Fund has allowed the project to evolve from initial restoration into innovative measures such as controlled drainage. The mix of technical expertise, local knowledge, and sustained financial backing has been critical to its resilience and scalability.

Drivers

Driver type	Driver role	Comments
Legal obligations	Secondary driver	WFD and Baltic Sea nutrient reduction commitments
Organisation committed to it	Main driver	—

Success factors

Success factor type	Success factor role	Comments
Attitude of decision makers	Main factor	governance framework supported discussion and consensus
Attitude of the public	Main factor	Commitment of the local farmers and riparian land owners.

Success factor type	Success factor role	Comments
Attitude of relevant stakeholders	Main factor	involving landowners, farmers and other businesses was key to success

Cost effectiveness

As “traditional/structural” measures cannot achieve the goals of the measures implemented at Tullstorpsån, these measures must be seen as being more cost-effective.

Flexibility / Adaptability

While it seems self-evident that the success of these measures are very dependent on the biophysical regime in which they are implemented, the social environment is even more important.
The Tullstorpsån project has shown that land conversion to restore the natural water retention capacity of the landscape can succeed when farmers and other land owners play an active role in the decision making process and feel a sense of ownership of the project.

Transferability

The Tullstorpsån approach is highly transferable to other agricultural catchments if strong local leadership, stakeholder trust, and diversified funding are in place. Success depends on aligning environmental goals with farmers’ interests, offering fair compensation, and ensuring long-term monitoring. Care is needed to adapt designs to local hydrology, land use, and nutrient pressures, and to secure sustained engagement beyond initial implementation.

Sources

Sources

www.tullstorpsan.se

Adapting agriculture to wetter and drier climates – the Tullstorp Stream Project, Sweden

Controlled drainage helps reduce nutrient losses in the Baltic Sea

Tullstorpsån – Samverkan Hanöbukten

Vattenkvalitetsrapport för Tullstorpsån 2023

Vattenföringsdata och näringsämnestransporter i Tullstorpsån 2019–2023

Tullstorpsån 2.0 – Förstudie flerfunktionella våtmarker