Hydrological restoration through drain removal, ditch infill, and reduced water abstraction in Chaamse Beken, Netherlands

Year of issue

2026

Summary

Sponge Scapes case study NL 01

The Chaamse beken area is part of the Northern Temperate Atlantic ecological region which streches from southwestern and northern France, Belgium, the Netherlands, northwestern Germany and western Denmark. Most of the region's forests have been converted to fields or pastures, and its once-extensive wetlands have mostly been drained and filled for agriculture, as is the case in Chaamse Beken. For this case study, the sponge function is mainly based on the management of aquifer/groundwater recharge. Local stakeholders are particularly interested in the possibilities to prevent/reduce floods and droughts due to previous extreme events in the area. For this case study, long-term data and high-end groundwater and surface water modeling tools are already in place to assess the overall sponge function potential of this area.

Photo Gallery



Location

51.548, 4.789

Project

SpongeScapes

Sector

Hydromorphology

Implementation status

Planned

Overview

Location of the project

The Chaamse Beken area is located south-east of the city of Breda in the province Noord-Brabant and consists of several small streams that merge into a single stream discharging into the river Mark. The catchment consists of a mosaic of agricultural fields, pastures, small villages and several larger forested zones. Here, the soil type is mainly sandy, with some local loam layers in the subsurface that may influence infiltration characteristics.

Sponge measures implemented in the case study

Restoration of natural infiltration to groundwater

Objectives

For this case study the core objective is how to enhance the sponge functioning in a modern, optimized drained landscape. The goal is to improve the understanding of the system to increase groundwater levels, seepage, and stream discharge during summer. Some of the aspects that will be further explored include: stimulating groundwater recharge through infiltration and reducing drainage throughout the catchment.

Involved partners

Authority type	Authority name	Authority role	Authority responsibility
Regional / sub-national water authority	Water Authority Brabanse Delta	Monitoring	Responsible

Site Information

Climate Zone

Cool temperate moist

Temperature (°C)

11.00 °C

Elevation range

1-30

Design and Implementation

Area subject to Land use change or Management/Practice change (ha)

42.00 ha

Factor constraints

Vulnerability to climate-change induced drought due to reliance on precipitation, sandy soils, and intensive drainage

Policy and Governance

Policy description

Vulnerability to climate-change induced drought due to reliance on precipitation, sandy soils, and intensive drainage

Part of a wider plan

Oui

Public consultation

Non

Has contractual arrangements

Non

Impacts and Monitoring

Monitoring System

Monitoring parameters

High-end groundwater and surface water modeling tools.

Type of sponge measures: Removing drains, reducing depth of ditches and streams, increasing surface water levels, reducing irrigation abstraction from groundwater and surface water.

Impact Assessment Methodology

Performance impact estimation information

Long-term data and high-end groundwater and surface water modeling tools are already in place to assess the overall sponge function potential of this area. Efforts will focus on combining these data and tools to assess the effectivity and impact of sponge functioning measures during droughts and floods.

Socio-economic Impacts

Benefits and co-benefits

Impact Category, Aim description, Impact quantification
Runoff attenuation: Reduce flow peaks by reducing surface drainage, Hydraulic modelling (Delft3D FM 1D2D)
Peak flow reduction: Reduce flow peaks by reducing surface drainage, Hydraulic modelling (Delft3D FM 1D2D)
Groundwater recharge: Increase (summer) groundwater levels, Groundwater modelling (MODFLOW-MetaSWAP)
Increase crop production: Minimize impact of wetter landscapes on crop production, Ecohydrological modelling (Waterwijzer landbouw)
Create/restore Terrestrial Habitat: Increase suitability for groundwater dependent ecosystems, Ecohydrological modelling (Waterwijzer natuur)
Avoid or reduce negative impact on crop production (flood and drought losses)
Avoid increase of downstream flood risk resulting from sponge measures