OPTAIN : Schwarzer Schöps [Germany]

Year of issue

2025

Summary

The Schwarzer Schöps case study is located in the East of Germany. The catchment area is about 137 km2, most of which is used as cropland (48%), forest (25%) and grassland (15%). The area is facing an increase in severe floods, soil erosion, and droughts, with negative implications for crop yield stability. In addition, the downstream reservoir Quitzdorf suffers more often from low water tables and high phosphorus pollution which is causing blue-green algae bloom and threatening its multiple services, in particular its important role for nature protection, recreation, and maintaining downstream environmental flows.

Photo Gallery



Location

51.226066, 14.792066

Project

OPTAIN

National ID

DE_07

Sector

Agriculture

Installation Date

Year- Unknown

Implementation status

Modeled

Contact

Michael Strauch- Helmholtz-Centre for Environmental Research (UFZ)

Overview

Location of the project

The Schwarzer Schöps case study is located in the East of Germany.

Saxony/Oberlausitz/Reichenbach OL

Country

Germany

NUTS2 Code

Dresden

Sponge measures implemented in the case study

Buffer strips and hedges

Filter Strips

Cover crops

Ponds and scrapes

Site Information

Climate Zone

Cool temperate moist

Precipitation

746.00 mm

Temperature (°C)

9.30 °C

Evapotranspiration

585.00 mm

Runoff

161.00 mm

Elevation range

159 - 449 m a.s.l.

Slope range

2 - 10%

Soil type

Luvisols

Stagnosols

Groundwater level

0.4 - 6.7 m

Vegetation class

All potential NSWRM are implemented on cropland. In the model, the vegetation cover changes depending on the type of NSWRM. It changes to permant grassland in case of grassed riparian buffer and grassed waterways, it changes to grass/shrubs/deciduous trees in case of hedges, while for low tillage combined with cover crops there is only a change in crop and soil management (the status quo crop rotation remains the same, but also includes cover crops before corn, spring barley and sugar beet). In case a pond is implemented, arable land changes to a pond. Note: The NSWRM implementation is only simulated.

Design and Implementation

Project scale

Meso

Project scale specifications

Effectiveness of NSWRM for a small river basin

Project area

136 km²

Project area specifications

rural area

Policy and Governance

Policy description

The river basin has faced increasing numbers of climatic events such as floods and droughts as well as increased soil erosion. This has impacted the quantity and quality of the Quitzdorf reservoir, located at basin outlet. The reservoir is a key water resource for the region and notably Berlin. It is used as a service water supply, for downstream flood protection, to increase downstream flow, as well as for recreation and nature protection. Pollution of the reservoir has resulted in strong eutrophication, blue-green algae blooms, and the poor ecological status of the water body.
The project will be implemented with a variety of stakeholders including: Saxon State Office for Environment, Agriculture and Geology, the State Reservoir Administration of Saxony, the Saxon Farmers' Association, as well as local farmers and stakeholders implicated in landscape management and conservation.

Land ownership

There are 302 potential sites considered for implementing NSWRM in this case study. All are on arable land. Details on the land ownership vary across the potential sites of the NSWRMs.

Policy targets

Runoff control

Peak-flow reduction

Pollutants Removal

Erosion Control

Requirement directive

Requirement directive	Specification
Nitrate Directive (NiD) 91/676/EEC	Nitrates Directive – 91/676/EEC
The Birds and Habitat Directives	—
Other EU	Sustainable Use of Pesticides Directive – 2009/128/EC
Water Framework Directive (WFD) 2000/60/EC	—
European Natura 2000 Network	—
Common Agriculture Policy	—

Part of a wider plan

Yes

Wider plan

Wider plan focus	Name	Comments
Agriculture	Common Agricultural Policy	The Common Agricultural Policy provides funding for grassed riparian buffers and grassed waterways under Ecoscheme 1a (“non-productive land”). The establishment of hedges is supported by the Free State of Saxony’s regional policy, the Natural Heritage Funding Guideline, although this program is currently inactive. Other measures receive no support or are funded only under specific conditions.

Public consultation

No

Has contractual arrangements

No

Impacts and Monitoring

Biophysical impacts: Water & Soil Quality

WFD ecological status obj quantity

Schwarzer Schöps: Moderate Reichenbacher Wasser: Poor

Lessons Learned

Barriers

Barrier type	Barrier role	Comments
Legal obligations / restrictions	Main barrier	Ponds: Subject to bureaucracy as it requires an administrative approval.
Lacking financing sources	Main barrier	—

Barrier type	Barrier role	Comments
Lacking financing sources	Main barrier	Hedges to subdivide larger fields: The implementation is very expensive and impractical for farming operations (because a field parcel is split into multiple parts).
Lacking financing sources	Secondary barrier	Grassed riparian buffer: No major barriers if the greening is sufficiently subsidised (as it is in the current CAP from 2025).
Other	Main barrier	Grassed waterways on erosive slopes: Impractical for farming operations (because a field parcel is split into multiple parts).
Other	—	Lowtill combined with cover crop: There might be the need for new equipment, beside of that no major barriers.

Drivers

Comments
Not applicable (OPTAIN is a modelling study, => no single measure has been implemented)

Success factors

Comments
Not applicable (OPTAIN is a modelling study, => no single measure has been implemented)