OPTAIN: Dotnuvėlė River Basin [Lithuania]

Year of issue

2025

Summary

Dotnuvėlė river basin covers 192.7 km2. Four reservoirs are situated in the area: near Mantviliškis, Akademija, Dotnuva and near Kėdainiai. The Dotnuvėlė basin is in the Central Lowlands of Lithuania, which is rich in moist soils. Agricultural areas account for 69.2%, forests and other natural areas for 24.5%, artificial surfaces - 5.8%, and water bodies make up only 0.5%. State river monitoring is carried out for this river. The ecological status of the Dotnuvėlė river corresponds to poor (upstream) and medium (downstream) classes.

The OPTAIN project will support the case study team with identifying and developing efficient land management strategies and small technical solutions to improve the soils' infiltration and water holding capacities as well as its capacity to filter, buffer and transform pollutants.

Photo Gallery





Location

55.519442, 23.800036

Project

OPTAIN

National ID

LT_01

Sector

Agriculture

Installation Date

2015

Implementation status

Completed

Contact

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Overview

Location of the project

Dotnuva

Country

Lithuania

NUTS2 Code

Lietuvos Vidurio ir Vakarų regionas

Objectives

The installation of this wetland contributes to reducing the ecological debt to nature by restoring natural complexes, reaching a balance between environmental and economic interests, and promoting sustainable farming conditions in one of the most important and valuable natural areas of central Lithuania.

Involved partners

Authority type	Authority name	Authority role	Comments	Authority responsibility
Architects / Engineers	UAB "Aplinkos inžinierių grupė"	Determination of design details of the measure	Under supervision of Environmental Protection Agency at the Ministry of Environment	Responsible

Authority type	Authority name	Authority role	Comments	Authority responsibility
Other	Environmental Protection Agency at the Ministry of Environment	Implementation	—	Responsible
Architects / Engineers	UAB "Aplinkos inžinierių grupė"	Monitoring	The project team UAB "Aplinkos inžinierių grupė" is responsible for maintenance during the project period. Afterward, local farmers or community members will take over.	—

Site Information

Climate Zone

Cool temperate moist

Precipitation

615.00 mm

Temperature (°C)

9.00 °C

Evapotranspiration

396.00 mm

Runoff

0.72 mm

Elevation range

22-124

Slope range

Flat (0 -2%)

Soil type

Gleysols

Vegetation class

Cultivated cropland, grass turf, forests

WFD Ecological status

Moderate

WFD Chemical status

Unknown

Design and Implementation

Project scale

Micro

Project scale specifications

In the lower part of the river Stabė, 1.8 km from its mouth, a wetland of 2.38 ha has been installed.

Project area

192.7 km²

Project area specifications

urban, rural, wetlands, agricultural, forests

Size

2.38

Size unit

ha

Basis of design

The wetland was constructed by artificially flooding the valley. Corrugated metal plating was used at the inlet and outlet of the wetland to protect the stream banks.

Design capacity

The wetland has four main sections. The deepest part covers 0.21 ha and is up to 2.0 m deep. Sediments are deposited here.

Financing

Total cost

89591.00 €

Costs operation maintenance information

Since the wetland was established form the project funds, the project team UAB "Aplinkos inžinierių grupė" is responsible for the maintenance of the wetland until the end of the project. After the end of the contract - the successor or authorized person of its results, local farmers or members of rural communities will be responsible for the maintenance of wetland. Land user has no maintenance costs and had no establishment costs. The implementation of the project is therefore considered to be positive in terms of cost efficiency.

Administrative costs

5000.00 €

Administrative annual cost information

Since the wetland was established form the project funds, the project team UAB "Aplinkos inžinierių grupė" is responsible for the maintenance of the wetland until the end of the project. After the end of the contract - the successor or authorized person of its results, local farmers or members of rural communities will be responsible for the maintenance of wetland.

Financing authorities

Authority name	Type of funding	Comments	Financing share
European Environment Agency	Other	EEA grant	100%

Policy and Governance

Land ownership

The land is owned by the family farm. All the agreements were prepared with the supervision of the Enviromnetal Protection Agency. The project for the cuntructed wetland was prepared by the private company.

Policy targets

Pollutants Removal

Target remarks

Reduce nutrient pollution (particularly nitrogen and phosphorus) from agricultural runoff in alignment with EU Water Framework Directive.

Requirement directive

Requirement directive	Specification

Water Framework Directive (WFD) 2000/60/EC	—
Nitrate Directive (NiD) 91/676/EEC	—
The Birds and Habitat Directives	Habitats Directive 92/43/EEC
Floods Directive-mitigating Flood Risk	—

Part of a wider plan

Yes

Wider plan

Wider plan type	Wider plan focus	Name	Comments
Catchment-based	Water	EU Water Framework Directive	The artificial wetland in the Dotnuvelė River basin is part of a catchment-scale effort to reduce nutrient pollution from agricultural runoff and improve water quality in alignment with the EU Water Framework Directive.

Public consultation

No

Has contractual arrangements

No

Impacts and Monitoring

Monitoring System

Monitoring requirements

The land user incurs no maintenance or setup costs, making the project cost-efficient.

Presence of formal monitoring system

Yes, reports

Downstream station

The wetland was designed to retain nutrients in the spring and reduce their concentrations downstream. Through an ongoing research programme, the impact of the wetland has been monitored from the start. In the first year, vegetation had not become established so there were no impacts. However in 2020 and 2021 there were very positive results in terms of nutrient capture.

Maintenance

Maintenance requirements

The maintenance activities depend and differ on the year. Not every year there is a need to remove sediments or excessed plants. Sometimes there is a need of reintegration or replacement of plant material, especially after winter.

Lessons Learned

Barriers

Barrier type	Barrier role	Comments
Attitude of relevant stakeholders	Main barrier	Land availability and willingness
Lacking financing sources	Main barrier	Lack of long-term funding
Expected maintenance needs	Main barrier	uncertain responsibility post-project

Drivers

Driver type	Driver role	Comments
Balancing different objectives	Main driver	Nutrient pollution reduction needs, water quality improvement goals

Success factors

Success factor type	Success factor role	Comments
Attitude of relevant stakeholders	Main factor	Stakeholder engagement
Other	Main factor	Tailored design
Available support tools	Main factor	External funding and support

Cost effectiveness

Land user has no maintenance costs and had no establishment costs. The implementation of the project is therefore considered to be positive in terms of cost efficiency

Sources

Sources

Efficiency monitoring services of installed engineering environmental pollution containment measures

Įrengtų inžinerinių aplinkosauginių taršos sulaikymo priemonių efektyvumo stebėsenos paslaugos/ Monitoring Services for the Efficiency of Installed Engineering Environmental Pollution Control Measures