Reconstruction and modernization of existing and construction of new reservoirs and ponds in rural areas of Poland

Year of issue

2025

Summary

The Polish governmental agreement on water retention in small-scale infrastructures was signed in 1995 to improve the structure of the water balance of small catchments by 2015. Regional authorities (voivodships) elaborated retention development programmes, largely completed by 1996. The plan focused on small water bodies - ponds - anticipating retention gains of approximately 860 million m^3 across 4 789 reservoirs.

Since then, however, new initiatives and practices have emerged. The State Forests (Lasy Państwowe) have been implementing and consolidating small-scale retention works in lowland forest ecosystems since the mid-1990s, under EU-funded programs. By 2014, this effort increased landscape storage from about 8.38 million m^3 (2007) to roughly 31 million m^3, enhancing biodiversity via wetland restoration and management.

In parallel, a growing number of micro-retention (rainwater harvesting) schemes have been observed in rural and urban contexts: individual rainwater systems for households, small reservoirs, and green-blue infrastructure, used to counter drought, reduce stormwater runoff, and support local water availability.

However, the national “My Water” subsidy programme (2020–2024), which supported residential micro-retention installations, is not being continued in 2025. Instead, many municipalities now offer their own incentives and grants - for example in Goleszów, Gostyń, Warsaw, and Lubliniec - supporting rainwater retention systems with varying subsidy levels.

Photo Gallery



Location

52.232, 21.008

Project

NWRM

National ID

Poland_01

Sector

Hydromorphology

Installation Date

1997-2015

Implementation status

Completed

Contact

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Overview

Sponge measures implemented in the case study

Basins

Ponds and scrapes

Rainwater Harvesting

Wetland restoration and management

Objectives

Improve water balance in small catchments by 2015.

Build or modernize 4,789 small reservoirs.

Reach a total retention capacity of 860 million m^3.

Involved partners

Authority type	Authority name	Authority role	Comments	Authority responsibility
National water authority	Voijevodship	Other	Planning of measures, implementing and financing	Responsible

Authority type	Authority name	Authority role	Comments	Authority responsibility
Farmers	Farmers and land owners	Implementation	—	Supporting
NGO	Various NGO	Implementation	—	Supporting
National water authority	Misitry of Agriculture	Financing	—	Supporting
National water authority	Ministry of Environment	Financing	—	Supporting

Site Information

Climate Zone

Cool temperate dry

Temperature (°C)

7.00 °C

Elevation range

0- 500 m

WFD Ecological status

Unknown

WFD Chemical status

Unknown

Design and Implementation

Project scale

Large

Project scale specifications

The programme was national in scope, initiated through a governmental agreement in 1995, involving all voivodships of Poland. The objective was to plan and implement thousands of retention reservoirs (target: 4,789) to collectively store 860 million m³ across rural areas. These efforts contribute to national water management and climate adaptation policy.

Project area

20

Principles

− stop degradation of the existing and start the construction of new reclamation facilities, particularly those intended for irrigation, water lifting and hampering rapid water outflow,
− consider the possibility of flood control,
− facilitate the reduction of surface runoff through planting forests and midfield woods,
− locate the objects in places appropriate for increasing the recharge of aquifers, − consider the motions of local communities (communes, farmers), − be agreed on with regional boards of water management.

Factor constraints

The main reason was low financial inputs but also complex formal procedures before realisation of an object due to legal restrictions associated mainly with environmental protection.

Financing

Costs investment information

393 million zloti in the period of 1997-2007; unit costs were between 3.63 to 19.60 zloti per m3 of a water reservoir.

Financing authorities

Authority name	Type of funding	Comments
voivodships	Sub-national funds	Voivodship funds for environmental protection and water management, and their own budget
Poland	National funds	National Fund for Environmental Protection and Water Management (NFEPWM),
Municipalities	Local funds	budget of communes
Poland	National funds	Fund for the Protection of Agricultural Lands (FPAL)
Agency for Restructuring and Modernization of Agriculture (ARMA)	National funds	—

Compensations

No

Policy and Governance

Policy description

Since the beginning of the 1990th agriculture have encountered climate changes which manifested themselves by dry years, less snowy winters and rapid floods even in small rivers. It posed periodical problems in water management because Poland is a country of relatively small water resources and their variable spatial distribution. Actions were undertaken to slow down or hamper water outflow
from natural and artificial running waters, to store waters in small reservoirs and terrain depressions and to increase the retention of water in soils and aquifers. In Poland such actions are termed †œsmall retention† as opposed to water retention in large reservoirs for power production, flood control, drinking water intakes for large cities etc.

Land ownership

In forested areas, land is publicly owned and managed by State Forests (Lasy Państwowe). In rural/agricultural areas, land is often privately owned, mainly by farmers or rural households.

Policy targets

Increase Water Storage

Groundwater Recharge

Runoff control

Policy pressure

Directive	Relevant pressure
WFD identified pressure	3.1 Abstraction - Agriculture
Floods Directive identified pressure	Natural Exceedence
WFD identified pressure	4.1.2 Physical alteration of channel/bed/riparian area/shore of water body for agriculture

Policy impact

Directive	Relevant impact
WFD identified pressure	Altered habitats due to hydrological changes
WFD identified pressure	Waterbody status

Requirement directive remarks

The programme was not intended to support the WFD as it was launched before the WFD was adopted. However, its implementation supports integrated water management.

Policy challenges requirements

The small retention measures including reservoirs or ponds aimed at addressing the challenge of water balance in small catchments in Poland.

Part of a wider plan

No

Public consultation

No

Has contractual arrangements

Yes

Contractual arrangements

Arrangement type	Role
Institutional arrangement	Agreement between between the Ministry of Agriculture and Food Economy and the Minister of Environmental Protection, Natural Resources and Forestry of Poland on cooperation in the field of the development of small water retention

Impacts and Monitoring

Monitoring System

Monitoring requirements

Monitoring and maintenance are conducted locally by project owners (e.g. voivodship governments, communes, State Forests, or private beneficiaries) depending on the type of small retention project.

Monitoring parameters

In State Forests projects, monitoring focuses on functionality of retention structures, state of vegetation, and biodiversity indicators.

Maintenance

Maintenance requirements

In recent municipal projects, maintenance is integrated in the design-build contract, and focuses on sediment removal, vegetation management, and structural inspections of small reservoirs.

Socio-economic Impacts

Direct benefits information

Water provision to deliver water services to the economy both for drinking and non-drinking purposes. Amenities (associated to habitat protection): fish and plants, tourism, recreation, and others.

Biophysical impacts: Hydrology

Hydrological effects

Raised groundwater; improved retention; reduced flood peaks

Biophysical impacts: Biodiversity

Improved biodiversity

Yes

Information on improved biodiversity

Enhanced forest moisture and habitat; increased beetle, bird, and fish diversity; minor habitat loss and invasive species noted

Biophysical impacts: Water & Soil Quality

Water quality overall improvements

Positive impact-WQ improvement

Information on water quality overall

Significant reduction in nitrogen pollution downstream from small reservoirs. Water quality improvements were observed at the Jagodno Reservoir: reductions of roughly 43.4% in total nitrogen and 58.2% in nitrate nitrogen loads downstream

Lessons Learned

Key lessons

The Polish governmental agreement on water retention in small scale infrastructures was signed in 1995 to improve the structure of the water balance of small catchments by 2015. The regional authorities (voivodships) had to elaborate the programme of small retention development which was accomplished in 1996 for most of the regions. The planned increase in the volume of retention waters was based mainly on small water bodies (ponds), which was predicted to get the retention of the order of 860 million m3 (4789 reservoirs). However, by 2007, the achieved capacity of reservoirs was 9% of planned. The main reason was low financial inputs but also complex formal procedures before realisation of an object due to legal restrictions associated mainly with environmental protection.

Barriers

Barrier type	Barrier role	Comments
Other	Main barrier	Limited finances to construct the reservoirs

Drivers

Driver type	Driver role	Comments
Organisation committed to it	Main driver	The Polish Government in 1995 decided to launch the programme of small water retention in rural areas

Success factors

Success factor type	Success factor role	Comments
Other	Main factor	Public ownership of land (in forest areas) : Implementation was easier and faster in areas owned and managed by State Forests (Lasy Państwowe), avoiding complex negotiations with private landowners.
Attitude of relevant stakeholders	Main factor	Local engagement and flexibilityMunicipalities and counties launched local co-financing schemes to support small-scale retention (e.g., rainwater systems).Flexibility in design (ponds, rainwater tanks, ditches) allowed adaptation to various terrains and land uses.
Conducted assessments (incl. economic)	Secondary factor	Long-term monitoring and maintenance by land managers. In forests, local forest units are directly responsible for maintenance, using existing structures and staff. In residential schemes (e.g. “My Water”), users commit to maintaining installations, ensuring function over time.

Flexibility / Adaptability

The small reservoirs can be and are constructed in different ways and for various purposes - recreational, floristic and faunistic conservation sites, swimming pools, water quality protection (constructed wetlands) and infiltration reservoirs

Transferability

The small retention programme is national wide. Initially having focus on agriculture areas, but since 2007 the activities are also implemented in forest areas of Poland. Installation of ponds or small reservoirs is also taking place in nature protected areas where wet habitats play important role.

Sources

Sources

Small (natural) water retention in rural areas

Small water reservoirs †“ their function and construction

kowalewski.htm

Assessment of the Local Impact of Retention Reservoirs - A Case Study of Jagodno (Existing) and Sarny (Planned) Reservoirs Located in Poland

Small-scale retention in forests. Foresters on the trail of good solutions

The future of the My Water program. Will it continue in 2025

Mała Retencja – duża sprawa (Little Retention – Big Deal)