Recovery of dried out communities in Slovakia

Year of issue

2025

Summary

Integrated rainwater retention was applied to recover degraded landscapes and local climate in north-eastern Slovakia, using small check dams, retention ponds, rain gardens and re-cultivated logging roads. Coordinated by People & Water (Ľudia a voda) and co-financed by the LIFE programme (LIFE11 ENV/SK/001019), the project worked across the Ondávka micro-region (Humenné district; eight municipalities). Implemented from August 2012, it ended early in May 2015 after loss of co-financing. By closure, 1,148 small barriers, 7 rain gardens and ~1 km of logging roads had been built or re-profiled; planned fishponds were cancelled. Local reporting indicates the measures reduced flood peaks during intense storms in 2013–2014 and were estimated to enhance the "small water cycle" by ~140,000 m³/year. The project also created short-term jobs (e.g., 56 unemployed people engaged in 2013 via the Humenné Labour Office). Since 2015, similar water-retention approaches have been incorporated into regional plans (e.g., the Košice Region's 2021–2030 landscape and river-basin restoration programme) and referenced in national flood-risk planning updates (2024) covering the area.

Photo Gallery






Location

48.951, 21.916

Project

NWRM

National ID

Slovakia_06

Sector

Urban

Installation Date

2015

Implementation status

Completed

Contact

REC

Overview

Location of the project

The case study is in the Ondavka micro-region (District Humenné, Prešov Region), across the municipalities Baškovce, Černina, Gruzovce, Hrubov, Ohradzany, Slovenská Volová, Sopkovce and Turcovce.

Country

Slovakia

NUTS2 Code

Východné Slovensko

Sponge measures implemented in the case study

Rain Gardens

Check dams

Ponds and scrapes

Permeable surfaces

Objectives

Integrated works to retain rainwater across eight Ondavka municipalities: re-cultivation of logging roads/paths, flow-control barriers, retention ponds, and rain gardens—to prevent excess runoff, floods, drought and erosion.
Planned outputs (LIFE plan, Action B.1): 20 retention ponds, 150 flow-control barriers, 35 rain gardens, and 7 km of re-cultivated logging roads.
Target hydrologic effect: confirm ~120,000 m³ of retained water (annual “small-water-cycle” gain) through monitoring.
Monitoring deliverables (C.1): monthly thermal images (≥6 per site), 48 monitoring documents, and networking with other LIFE projects.
Socio-economic objective: employ at least 80 local residents for one year as part of the works.

Involved partners

Authority type	Authority name	Authority role	Authority responsibility
NGO	People and Water	Implementation	Responsible
Regional / sub-national water authority	Regionálne združenie Ondávka	Financing	Supporting
Local water authority	Municipalities (Baškovce, Černina, Gruzovce, Hrubov, Ohradzany, Slovenská Volová, Sopkovce, Turcovce)	Implementation	Supporting

Site Information

Climate Zone

Cool temperate moist

Precipitation

550.00 mm

Temperature (°C)

8.00 °C

Elevation range

340

Vegetation class

Predominant class is forest land (~50.22%), with substantial permanent grassland (~29.75%) and arable land (~12.95%) across the 7,044 ha project area.

WFD Ecological status

Moderate

WFD Chemical status

Good

Design and Implementation

Project scale

Meso

Project scale specifications

The project spans the Ondavka micro-region (Bodrog sub-basin, E. Slovakia) across eight municipalities : Baškovce, Černina, Gruzovce, Hrubov, Ohradzany, Slovenská Volová, Sopkovce and Turcovce ; implementing a distributed set of measures (small check dams, rain gardens, re-cultivated logging roads) at multiple sites within the sub-basin rather than a single point location.

Project area

7044

Financing

Total cost

1431535.00 €

Total cost information

EU Contribution: 690267 €
PandW Contribution: 141288 €
Ondavka Contribution: 600000 €
Total elegible budget: 1380535 €

Financing authorities

Authority name	Type of funding	Comments	Financing share
European Union	EU-funds: LIFE+	€690,267	50 %
People & Water (NGO)	Private funds	€141,288	8 %
Regional Association Ondávka	Sub-national funds	€600,000	42 %

Policy and Governance

Policy description

A damaged environment characterized by erosion, erosion furrows in agricultural lands, drought, flooding, quick rainwater runoff, low water retention capacity of soil, increasing rate of flow of water bodies near built up areas and deforestation.
Thinning atmosphere with higher allergenic content in the atmosphere and greater temperature oscillations between daytime and nighttime temperatures.

Land ownership

Mixed ownership across the eight municipal cadastres.

Policy targets

Increase Water Storage

Runoff control

Erosion Control

Oher Societal Benefits

Improved Biodiversity

Part of a wider plan

Non

Public consultation

Oui

Consultation activities

Activity stage	Activity type	Comments
Screening phase	Project presentations and their approvals at municipal gatherings	—
—	Introductory conference presenting project proposal	—
—	Monitoring project output	—
Other	Preparation and publication of manual	†œRevitalizing the Climate in my Community†□
Other	Closing conference and dissemination of project results	—

Has contractual arrangements

Non

Impacts and Monitoring

Monitoring System

Monitoring requirements

The project itself says long-term monitoring is needed - especially rainfall measurement and water-level monitoring in the Ondavka - to validate hydrological and ecological effects.

Monitoring parameters

Monitoring was run by two monitoring experts from the project team (NGO People & Water). They executed 14 missions (Sep 2013–Feb 2014) and 16 missions (Nov–Dec 2014), focusing on field inspections during and immediately after precipitation, mapping/photo documentation, and building a database of measures; Action C.1 was only partially completed because of the early termination.

Maintenance

Maintenance requirements

No formal, published maintenance regime for the built measures is described; the LIFE record only notes a “high level of ownership” by the engaged municipalities, without detailing upkeep operations.

Socio-economic Impacts

Direct benefits information

114 local long-term unemployed were trained and employed on site (56 people worked ~Aug–Dec 2013 after a training course on 1–9 Aug 2013; 58 people worked Apr–Sep 2014 in 8 teams across the 8 municipalities).
16 information boards installed; 1,500 + 1,500 bilingual leaflets printed; 4 press releases (of 8 planned) due to early close; project film broadcast 79 times on regional TV; website and multiple technical events/visits (e.g., NVE Norway) delivered.

Ancillary benefits information

Greater attractiveness of the basin contributing to increased tourism

Biophysical impacts: Hydrology

Information on retained water

Achieved 21,299 m^3 one-off storage capacity; the team then estimated this at ~28,000 m^3 considering additional infiltration during events, and ~140,000 $m^3\ yr^{-1}$ added to the local “small water cycle.”

Information on increased water storage

Rainwater retained more time on earth

Information on increased groundwater level

No site measurements; the team estimates ~1/3 of annually retained water recharges groundwater (the rest evapotranspires).

Information on Restoring hydraulic connection

Planned fish/retention ponds were cancelled for financial reasons (so no new off-channel water bodies).

Information on reducing flood risks quantity

After measures were in place (2013–2014), heavy rains reportedly did not cause the earlier recurrent flooding in target communes; check dams “had a big flood-prevention effect.”

Biophysical impacts: Water & Soil Quality

Water quality overall improvements

N/A info

Biophysical impacts: Others

Ecosystem impact climate regulation

Impact on GHGs (net emissions and storage) including soil carbon

Information on ecosystem impact climate regulation

The project fills groundwater sources, feeds vegetation, and increase evaporation so revitalizes the small hydrological cycle and maintain a stable climate.

Increased evapotranspiration information

Via enhanced evapotranspiration, the team estimates ~93,000 $m^3\ yr^{-1}$ evaporated, corresponding to a ~65 GWh yr^{-1} reduction of sensible heat released to the atmosphere (cooling effect); also anticipates higher photosynthesis and carbon sequestration. These are project estimates, not direct measurements.

Lessons Learned

Key lessons

Retaining rainwater locally with many small, low-cost measures across a micro-basin can curb rapid runoff and reduce flood peaks. In Ondavka, check dams and rain gardens coincided with heavy rains in 2013–2014 without the earlier recurrent flooding, and works delivered ~21–28 thousand m^3 of event storage with an estimated ~140 thousand m^3 yr^{-1} added to the small water cycle (project figures).

“The retention of rainwater on earth allows water to carry out its numerous unique functions which support various forms of life on earth. Water maintains a stable climate and a healthy hydrological cycle. Water is essential for evaporation which transforms the solar radiation into latent heat and thus contributing to a cool and stable climate. Without water, the solar energy is released back into the atmosphere as sensible heat therefore contributing to a rising temperature and drier atmosphere. An atmosphere abundant in moisture content maintains a stable and cool climate mitigating weather extremes such as drastic temperature oscillations, heat waves and intensive precipitation.”

Strong community engagement matters. Training and employing local long-term unemployed built capacity and ownership in the eight municipalities, which the project cites as key to rapid deployment and care of dispersed structures.

Funding continuity is a risk to delivery. Loss of co-financing led to early termination and cancellation of planned ponds; phasing and diversified budgets would help safeguard critical outputs.

Monitoring must be designed, funded, and sustained. The project planned thermal imaging and systematic hydrometric tracking but only partial monitoring was completed; future efforts should secure rainfall gauges, stream level/flow records, and standardized field inspections to verify long-term hydrologic, ecological, and climate effects.

Scaling is feasible but coordination is essential. Mixed land ownership and multi-municipality footprints require early permits, clear roles, and simple, maintainable designs; the approach has since informed wider regional programs.

Barriers

Barrier type	Barrier role
Limited staff and consultant knowledge	Main barrier
Missing regulatory support	Secondary barrier
Expected maintenance needs	Secondary barrier

Drivers

Driver type	Driver role
Organisation committed to it	Main driver
Past flooding events	Secondary driver

Success factors

Success factor type	Success factor role
Communication activities	Secondary factor
Financing possibilities	Main factor
Successful coordination between authorities	Secondary factor

Transferability

Highly transferable to small sub-basins with similar topography and land use. Success depends on early municipal/landowner buy-in, clear permits, and stable co-financing. Design simple, maintainable check dams/rain gardens sized to local rainfall, soils and slopes; plan for sediment management and safe overflows. Build a minimal monitoring scheme (rain, water levels, inspections) and assign clear upkeep responsibilities.

Sources

Sources

REVITALIZATION OF THE CLIMATE IN DRIED - OUT COMMUNITIES IN SLOVAKIA VIA HYDRO - CLIMATE RECOVERY

O nás – Miestna akčná skupina TRI DOLINY, o.z.

Predbežné hodnotenie povodňového rizika v čiastkovom povodí Bodrogu – aktualizácia 2024

PLÁN VODNÝCH RÁD PROGRAMU OBNOVY KRAJINY KOŠICKÉHO KRAJA

REVITALIZATION OF THE CLIMATE IN DRIED-OUT COMMUNITIES IN SLOVAKIA VIA HYDRO-CLIMATE RECOVERY (project presentation)

FINAL REPORT – LIFE11 ENV/SK/1019 (corrected edition)

Revitalisation of the climate in dried-out communities in Eastern Slovakia via hydro-climate recovery

Ľudia a voda