River floodplain restoration on the Tundzha, Bulgaria

Year of issue

2025

Summary

The maintained reserve “Dolna Topchiya” (Natura 2000 BG0000195 “Reka Tundzha 2”) was restored by RIEW–Stara Zagora through a diversion weir and a ~900 m channel linking the River Tundzha to the Malka Tundzha, to rewet riparian floodplain forest (habitat 91F0). In 2018–2024 the scope expanded under OP Environment project BG16M1OP002-3.007-0010 to also restore the inundation regime of the adjacent maintained reserve “Balabana” (Elhovo Municipality). Main works delivered in 2023: at Balabana, a water intake on the Tundzha and reconstruction of irrigation canals “Iztochen” (1,897 m), “Popovska 1” (879 m) and “Popovska 2” (863 m); at Dolna Topchiya, three gabion weirs (“Dipsiza 1–3”) with crest lengths 14/10/12 m to raise soil moisture. Contractor: Technostroy-Engineering 99 AD; supervision: IVPI Consult OOD. Total budget BGN 1,489,422.96 (ERDF + national co-financing). Closing press event: 21 Nov 2023; administrative end: 26 Apr 2024. The objective is to sustain riparian forests (habitats 91F0, 92A0) by re-establishing periodic flooding and groundwater recharge.

Photo Gallery







Location

42.23, 26.56638

Project

NWRM

National ID

Bulgaria_07

Sector

Hydromorphology

Implementation status

Completed

Contact

REC

Overview

Location of the project

Lower Tundzha River by the town of Elhovo (Yambol Province), within/adjacent to the maintained reserves “Dolna Topchiya” and “Balabana.” Access to the Dolna Topchiya trail is after crossing the bridge over the Tundzha from Elhovo’s centre (local bridge on road III-7008).

Country

Bulgaria

NUTS2 Code

Югоизточен (Yugoiztochen)

Sponge measures implemented in the case study

Wetland restoration and management

Floodplain restoration and management

Objectives

Rewetment/inundation restoration of PR Balabana and PR Dolna Topchiya by supplying additional water quantities and restoring floodplain hydrology to sustain mixed riparian hardwoods (oak, ash, elm) and willow–poplar galleries (habitats 91F0/92A0).
Balabana: intake on the Tundzha and reconstruction of irrigation canals “Iztochen” (1,897 m), “Popovska 1” (879 m), “Popovska 2” (863 m) to convey water onto the reserve.
Dolna Topchiya: construction of three gabion weirs “Dipsiza 1–3” with crest lengths 14 m, 10 m, 12 m to raise soil moisture and promote inundation.
Weir + ~900 m channel linking the Tundzha to the Malka Tundzha

Involved partners

Authority type	Authority name	Authority role	Comments	Authority responsibility

Regional / sub-national water authority	Regional Inspectorate of Environment and Water Stara Zagora	Implementation	—	Responsible
Architects / Engineers	—	Implementation	Construction contractor	Supporting
Architects / Engineers	IVPI Consult OOD	Implementation	Construction supervision	Supporting
Regional / sub-national water authority	East-Aegean Basin Directorate (BD-IBR, Plovdiv)	Other	Approvals / coordination	Supporting

Site Information

Climate Zone

Warm temperate moist

Precipitation

650.00 mm

Temperature (°C)

13.00 °C

Elevation range

106 m

Vegetation class

Riparian floodplain (longoz-type) gallery forests—habitats 91F0 / 92A0—with white willow and white poplar galleries and mixed hardwoods (oak, ash, elm).

WFD Ecological status

Poor

WFD Chemical status

Good

Water quality status

Exceedances/pressures include macrozoobenthos and nutrients (BOD_5, ammonium, nitrites, total N, total P).

Design and Implementation

Project scale

Micro

Project scale specifications

Localized hydromorphological works within two maintained reserves next to Elhovo—PR “Dolna Topchiya” and PR “Balabana”, not a whole sub-basin or region. The actions are site-specific: a diversion/weir and ~900 m channel linking the Tundzha to Malka Tundzha (historic phase), plus a 2023 package adding a Tundzha intake and reconstruction of three short irrigation canals at Balabana (“Iztochen”, “Popovska 1”, “Popovska 2”) and three small gabion weirs (“Dipsiza 1–3”) at Dolna Topchiya to re-wet the adjacent floodplain forest.

Project area

467,6 ha

Financing

Total cost

761552.68 €

Financing authorities

Authority name	Type of funding	Comments	Financing share
European Union	EU-funds: Cohesion and regional development funds	via OP Environment 2014–2020: BGN 1,266,009.51	85 %
National budget of Bulgaria	National funds	BGN 223,413.45	15 %

Compensations

Non

Policy and Governance

Policy description

The measure addresses the loss of periodic inundation and drying of riparian floodplain forests in the maintained reserves Dolna Topchiya and Balabana near Elhovo. The project’s stated aim is to rewet the reserves by providing additional water and restoring their inundation regime to improve the conservation status of habitats 91F0/92A0.

Land ownership

exclusive state property

Policy targets

Improved Biodiversity

Pressure remarks

In the adjacent WFD river water bodies of the Tundzha, the stretch “from Mochuritsa confluence to Simeonovska” (BG3TU570R066) has been reported with poor ecological status in regional reporting (exceedances affecting macroinvertebrates and nutrients/oxygen), and RBMP materials list hydromorphological and invasive-species pressures for nearby Tundzha segments, context that this restoration seeks to alleviate by reconnecting floodplain habitats to river flows.

Part of a wider plan

Non

Public consultation

Non

Has contractual arrangements

Non

Impacts and Monitoring

Monitoring System

Monitoring requirements

(i) RIEW park-guard/inspection checks, (ii) regular hydrometric observations on the Tundzha at the Elhovo station (HMS No. 74850), and (iii) river-water-body status monitoring by the East Aegean River Basin Directorate reported via RIEW

Monitoring parameters

Hydrometric: river stage/flow at HMS №74850 Elhovo on the Tundzha.
Water-body status (nearby Tundzha segments): biological elements (macrozoobenthos, macrophytes, phytobenthos) and physico-chemical indicators (BOD_5, ammonium, nitrite, total nitrogen, orthophosphate, total phosphorus), with exceedances periodically reported in RIEW/EARD documents.

Maintenance

Maintenance requirements

Routine protection and upkeep are carried out by RIEW–Stara Zagora as manager of the maintained reserves, primarily via scheduled park-guard patrols/inspections; a 2020 tender for invasive-species removal and planting was issued but later canceled.

Socio-economic Impacts

Direct benefits

Recreation & nature-based tourism (existing use): Dolna Topchiya has a marked eco-trail created by RIEW–Stara Zagora, intended for visitors to discover the site’s biodiversity; the trail starts from Elhovo’s bridge and is promoted in local tourism materials. Commercial kayak tours on the Tundzha pass through the Balabana reserve (heron colony area), indicating ongoing recreational use of the river corridor.

Biophysical impacts: Hydrology

Information on retained water

Hydraulic reconnection works built (outputs): a Tundzha intake + reconstruction of canals “Iztochen” (1,897 m), “Popovska 1” (879 m), “Popovska 2” (863 m) at Balabana; three gabion weirs “Dipsiza 1–3” with crest lengths 14/10/12 m at Dolna Topchiya to raise soil moisture/restore inundation. No measured post-works hydrologic outcomes (e.g., diverted volumes, retained water, peak reduction, groundwater levels) are published.

Biophysical impacts: Biodiversity

Improved biodiversity

Oui

Information on improved biodiversity

Works help preserve mixed riparian broadleaf stands (oak, ash, elm) and willow/poplar galleries (habitats 91F0/92A0)

Biophysical impacts: Water & Soil Quality

Water quality overall improvements

N/A info

Soil quality overall improvements

Not relevant for this application

Biophysical impacts: Others

Ecosystem impact climate regulation

Not relevant for the specific application

Lessons Learned

Key lessons

Insufficient public consultations and limited public information during the NWRM planning and implementation phases create difficulties to deliver integrated (multi-benefit) results.
A phased pathway—pre-project studies (2019), technical design and approvals (2020), then construction (2023) under a single beneficiary—helped bring a small, site-specific project to completion despite the long lead time to April 2024. Clear stewardship by RIEW–Stara Zagora and ring-fenced EU/national funding were pivotal.
Early coordination with the Basin Directorate, the municipality and the state irrigation company was formally required by the design tender; securing these alignments appears essential where rewetting depends on intakes/canals in protected areas.
Public communications emphasise delivered works (intake, canal rehabilitation, gabion weirs), but do not publish quantified hydrologic/ecological results to date—making it harder to evidence multi-benefit outcomes post-construction. Future replications should plan transparent monitoring and data release from the outset.

Barriers

Barrier type	Barrier role	Comments
Lacking coordination between authorities	Secondary barrier	Multi-agency dependencies: design required approvals/coordination with BD-IBR (Basin Directorate), Municipality of Elhovo, and “Irrigation Systems” EAD.
Other	Secondary barrier	Limited public reporting of outcomes: post-works monitoring results have not been published alongside the closure communications.

Success factors

Success factor type	Success factor role	Comments
Attitude of decision makers	Main factor	Single accountable beneficiary & site manager: RIEW–Stara Zagora led implementation for the maintained reserves.
Financing possibilities	Main factor	Stable finance package: OP Environment 2014–2020 (ERDF + national co-financing) with stated totals ensured delivery.
Existing staff and consultant knowledge	Secondary factor	Pragmatic engineering choices: re-using and rehabilitating existing irrigation canals (“Iztochen”, “Popovska 1/2”) to convey water to Balabana.

Transferability

Transferable to lowland rivers with degraded floodplain forests, especially where old irrigation/drainage canals can be reused. Watch for: environmental flows/water rights; Natura 2000 & permit needs; early stakeholder buy-in; sediment, debris and invasive-species management; O&M for intakes/weirs (trash-rack cleaning, desilting); and transparent hydrologic/ecologic monitoring to prove benefits.

Sources

Sources

Case study:Restore riparian floodplain habitats maintained in reserve "Dolna topchia" and run off on his sleeve "Malka Tundzha"

„На 01.08.2023 г. с ‘първа копка’ започна изпълнението на дейност 3...“ (First-sod start of Activity 3)

„Заключителна пресконференция по проект № BG16M1OP002-3.007-0010-C01“ (Closing press conference)

“Годишен план за контролната дейност на РИОСВ–Стара Загора за 2025 г.” (Annual Plan for Control Activity 2025)

„В резервата ‘Долна Топчия’ край Елхово вече има екопътека“ (An eco-trail now exists in Dolna Topchiya Reserve)

„Проект ‘Подобряване природозащитното състояние...’“ (Municipal post about the project)

„Започва изпълнението на дейности за възстановяване...“ (Start of works to restore the inundation regime...)

BG0000195 – “Река Тунджа 2” (SCI) – Protected Site page