Creation of semi-natural wetlands near the Drava river, Slovenia

Year of issue

2025

Summary

The LIVEDRAVA project, funded by the LIFE programme, transformed 61 ha of former wastewater basins at the Ormož sugar factory into semi-natural wetlands on the Drava River in eastern Slovenia. Since 2017 the site has been legally designated as the Ormož Lagoons Nature Reserve (≈66 ha) and is managed by DOPPS–BirdLife Slovenia under an operational management plan. Management focuses on dynamic water-level control and conservation grazing with water buffalo to maintain open reedbeds and wet meadows. Visitor facilities now include several bird hides built from shipping containers and an educational trail; in 2023 an interpretation centre within the regional “Drava Natura 2000” initiative opened in Ormož. Post-LIFE actions have consolidated the site, including the purchase of adjacent land (1.09 ha) and restoration of additional species-rich grasslands in 2022–2023. The reserve lies within the Mura-Drava-Danube UNESCO Biosphere Reserve and has become an important hub for migratory and breeding wetland species.

Photo Gallery



Location

46.4172, 15.772

Project

NWRM

National ID

Slovania_07

Sector

Hydromorphology

Installation Date

2017

Implementation status

Ongoing

Contact

REC

Overview

Location of the project

Entrance is near the hamlet of Pušenci (≈3 km SE of Ormož).

Country

Slovenia

NUTS2 Code

Vzhodna Slovenija

Sponge measures implemented in the case study

Elimination of Grey River Bank Protection

Wetland restoration and management

Objectives

Convert 61 ha of the former sugar-factory wastewater basins into a semi-natural wetland functioning as a key stopover for migrating waterbirds.
Establish a conservation grazing system (water-buffalo based) to keep reedbeds and wet meadows open.
Manage softwood alluvial forest within the reserve and run a multi-year deadwood experiment to develop management guidance for threatened saproxylic beetles; restore ~200 m of a forest side-channel on site.
Secure land tenure for long-term management through purchase/lease of key parcels at the basins.

Involved partners

Authority type	Authority name	Authority role	Authority responsibility

NGO	DOPPS - BirdLife Slovenia	Initiation of the measure	Supporting
Regional / sub-national water authority	Dravske elektrarne Maribor d.o.o.	Other	Responsible
Regional / sub-national water authority	VGB Maribor d.o.o.	Other	Responsible
Other	DRAVA Vodnogospodarsko podjetje Ptuj, d.d.	Other	Supporting
Research institute / University	Institute of the Republic of Slovenia for Nature Conservation	Monitoring	Supporting
Local water authority	Urban Municipality of Ptuj	Other	Responsible
Local water authority	Municipality Ormoz	Financing	Supporting
National water authority	Slovenian Environment Agency	Financing	Supporting
Regional / sub-national water authority	Obcina Sredisce ob Dravi	Financing	Supporting

Site Information

Climate Zone

Warm temperate moist

Precipitation

1231.00 mm

Temperature (°C)

11.00 °C

Elevation range

241

Vegetation class

Shallow pools with reedbeds and rush/sedge stands (Phragmites, Typha) surrounded by softwood riparian forest (alluvial alder–ash).

WFD Ecological status

Good

WFD Chemical status

Failing to achieve good

Water quality status

the lagoons are former sugar-factory wastewater basins; historically nutrient-rich conditions supported abundant bird food.

Design and Implementation

Project scale

Micro

Project scale specifications

This is a single-site restoration and management project at the former Ormož sugar-factory wastewater basins—converted into semi-natural wetlands within the Drava corridor near Lake Ormož.

Project area

66 ha

Financing

Total cost

4377483.00 €

Costs capital

4409483.00 €

Financing authorities

Authority name	Type of funding	Comments	Financing share
European Union	EU-funds: LIFE+	€2,188,741	50 %
Slovenian Ministry of the Environment and Spatial Planning (MOP)	National funds	—	43%
Dravske elektrarne Maribor d.o.o	Local funds	—	43 %
Municipality of Ormož	Local funds	—	43 %
DOPPS–BirdLife Slovenia	Other	—	7 %

Authority name	Type of funding	Comments	Financing share
VGB Maribor d.o.o	Other	—	7 %
DRAVA VGP Ptuj d.d.	Local funds	—	7 %
Municipality of Ptuj	Local funds	—	7 %

Compensations

No

Policy and Governance

Policy description

The natural habitats and dependent species have been deteriorating for decades due to the construction of hydro-power plants in the 1960s and 70s, which caused enormous changes in the natural dynamics of the river, the human pressure from uncontrolled recreational activities, winter hunting and greater public access to the most sensitive areas.

Land ownership

DOPPS owns 61.68 ha there and leases about 2 ha from the Farmland and Forest Fund

Policy targets

Improved Biodiversity

Part of a wider plan

No

Public consultation

No

Has contractual arrangements

No

Impacts and Monitoring

Monitoring System

Monitoring requirements

DOPPS monitors biodiversity with regular bird counts and breeding-mapping in the basins (and 10-day waterbird totals on nearby Lake Ormož), complemented by invertebrate surveys, as required by the reserve's decree.

Monitoring parameters

Avifauna is the primary focus: DOPPS performs mapping of SPA-qualifying breeders in the Ormož Basins (2013–2017) and counts breeding colonies (e.g., Common Tern, Black-headed Gull); on Lake Ormož adjacent to the site, waterbirds were counted every 10 days through the LIVEDRAVA period to track abundance and pressures. Species occurrence calendars and reserve-level population tables (e.g., for Little Grebe, Ferruginous Duck, Marsh Harrier, waders and terns) are published for the reserve, evidencing ongoing monitoring. In addition, beetle monitoring (incl. saproxylic taxa) has been conducted within the basins' dry parts. The Decree also explicitly requires "monitoring of biodiversity and all factors affecting it," under which these activities sit.

Maintenance

Maintenance requirements

DOPPS–BirdLife Slovenia manages the reserve through targeted water-level regulation in the basins, directed grazing with water buffalo, late mowing of embankments, and routine upkeep of paths, fences and hides.

Socio-economic Impacts

Benefits and co-benefits

Nature-based recreation & visitor use. The reserve is open year-round; entry for individuals is free, while guided visits (fee-based) are compulsory for groups >10 and for all formal school groups—this channels revenue to the manager and controls impacts. The Municipality of Ormož reports the area attracts >10,000 visitors per year, highlighting local tourism potential.
Education & outreach. DOPPS runs regular guided activities, mostly for pupils and students, as part of annual management.
Community engagement : Volunteers and visitors have participated in habitat works (e.g., 1,230 seedlings planted by ~40 participants on a 0.4-ha plot).

Biophysical impacts: Hydrology

Information on retained water

Permanent water supply established and upscaled: water inflow from Lake Ormož to the basins was raised from ~30 L/s to ~200 L/s

Biophysical impacts: Biodiversity

Improved biodiversity

Yes

Information on improved biodiversity

Hydraulic micro-habitats created in the basins: during restoration, managers built islets, channels and mudflats; target depth structure now ranges from 10–50 cm shallows to 1–2 m areas depending on basin, enabling foraging/roosting niches. A small backwater (~0.5 ha) with natural banks was also created/managed.
Common Tern breeding pairs increased from 100 (2004–12) to 128 (2013–17) and Black-headed Gull from 343 to 707; Kingfisher +25% (five new breeding pairs); Sand Martin +200%.
Invertebrates: management produced suitable conditions for the Natura 2000 beetle Graphoderus bilineatus in the Ormož backwater; the species was recorded at Ormoške lagune in 2014.

Lessons Learned

Key lessons

The case shows that conserving Annex I birds and Annex II fishes/beetles by actively managing alluvial habitats along the Lower Drava goes hand-in-hand with stakeholder cooperation and public outreach around Natura 2000 values. This was an explicit aim of the project and remains central to the reserve.
Long-term protection and governance mattered. Donation of the basins to DOPPS in 2010, followed by legal designation of the Ormož Lagoons Nature Reserve in May 2017 and a conservation contract with the state, created the stable framework needed for ongoing management.
Ecological outcomes depend on precise hydrological control and continuous habitat management. Re-establishing and piping a reliable water supply enabled seasonal water-level regimes (lower in summer, higher in winter), creation of islands/channels, and measurable habitat shifts—e.g., surfaces of open water +137%, reed & bulrush stands +203%, reed beds +20% (2015 vs. pre-works).
Conservation grazing with water buffalo, backed by fit-for-purpose infrastructure (≈12.8 km electric fence, stable) proved effective to keep vegetation open for shorebirds while limiting heavy machinery use.
Visitor pressure must be managed from the start. Early “wild” visits caused disturbance; managers responded by marking trails, installing information boards and hides, and developing guided interpretation to align tourism with conservation.

Barriers

Barrier type	Barrier role	Comments
Expected maintenance needs	Main barrier	Rapid overgrowth by woody and invasive plants despite restored water supply—requires permanent grazing/mechanical control
Other	Main barrier	Lengthy path to permanent protection (2010 donation → 2017 legal designation), illustrating governance lead times.

Success factors

Success factor type	Success factor role	Comments
Attitude of relevant stakeholders	Secondary factor	Clear tenure & legal status (DOPPS ownership; 2017 reserve decree; conservation contract)
Available support tools	Main factor	Effective vegetation control (water-buffalo grazing; late mowing; dedicated infrastructure).
Public participation	Secondary factor	Visitor management & interpretation (trail, hides, centre; guided activities).

Transferability

Highly transferable to disused wastewater/industrial basins near rivers. Key checks: secure a reliable, controllable water supply; ensure land tenure/legal protection; plan long-term O&M (grazing or mowing) to prevent overgrowth; control invasives; manage visitors to limit disturbance; and assess legacy pollution before reconnecting to the river.

Sources

Sources

LIVEDRAVA - Riparian Ecosystem Restoration of the Lower Drava River in Slovenia

LIVEDRAVA

LiveDrava - layman's report

Mura-Drava-Danube UNESCO page

Management area of Ormož Basins Nature Reserve has been enlarged

“Riparian Ecosystem Restoration of the Lower Drava River in Slovenia” (LIVEDRAVA)