Wetland management on the Burgas lakes, Bulgaria

Year of issue

2025

Summary

Life for the Burgas Lakes (LIFE08-NAT/BG/000277) was an EU LIFE+ Nature project aiming to secure the long-term conservation of five Annex I bird species and the sustainable management of their wetland habitats around Burgas, implemented in coordination with Burgas Municipality, Chernomorski Solnitsi (Black Sea Saltworks), the Bulgarian Biodiversity Foundation and RSPB (2010–2014). Since then, complementary measures across the complex have consolidated and expanded results: at Poda (Ramsar), works in 2023 reopened the Komlushki canal, rehabilitated a dyke and installed water-level control; at Lake Vaya, the outlet canal to the Black Sea was rehabilitated in 2023 to increase hydraulic capacity, rebalance salinity and improve the water regime; at Atanasovsko Lake, the Salt of Life and Lagoon of Life projects (2012–2018; 2018–2024) restored dikes, cleaned saltwater channels and enhanced lagoon habitats, with Bulgaria’s first successful Greater Flamingo breeding recorded in 2024. Grid-related bird mortality is being addressed by the ongoing LIFE “Safe Grid for Burgas” (2021–2026). According to the project manager, most NWRM remain operational and continue to deliver benefits to birds, with natural transformations and targeted upgrades.

Photo Gallery





Location

42.5775, 27.454

Project

NWRM

National ID

Bulgaria_05

Sector

Hydromorphology

Installation Date

2012-12

Implementation status

Completed

Contact

REC

Overview

Location of the project

Atanasovsko Lake, on the north side of Burgas. The Burgas–Varna main road (E87/I-9) cuts the lake into north and south basins.

Country

Bulgaria

NUTS2 Code

Югоизточен (Yugoiztochen)

Sponge measures implemented in the case study

Wetland restoration and management

Basins

Lake restoration

Objectives

Restore/manage habitats: Repair dikes at Atanasovsko; deepen lagoons (Atanasovsko, Poda-Mandra); cut reed for Bittern/Ferruginous Duck; create roost/nesting sites for pelicans and cormorants; predator control on key dikes. Planned reed cutting 48 ha

Involved partners

Authority type	Authority name	Authority role	Authority responsibility
NGO	Bulgarian Society for the protection of birds	Initiation of the measure	Supporting
Private property owners	Chernomorski solnici JSC	Implementation	Supporting

Authority type	Authority name	Authority role	Authority responsibility
NGO	Royal Society for the Protection of Birds/BirdLife	Monitoring	Supporting
NGO	Biodiversity Foundation	Implementation	Responsible
Local water authority	Municipality of the city of Bourgas	Implementation	Responsible

Site Information

Climate Zone

Warm temperate dry

Precipitation

560.00 mm

Temperature (°C)

12.30 °C

Elevation range

10 m

Slope range

0.0

Vegetation class

reed and bulrush, grasslands and marsh plants

WFD Ecological status

Bad

WFD Chemical status

Failing to achieve good

Water quality status

Petroleum products, phenols and other chemicals from the nearby refinery, plus agricultural pesticides and fertilizers causing eutrophication. 2015 pipeline rupture released up to ~40 t petrol into a Burgas lake.

Design and Implementation

Project scale

Meso

Project scale specifications

This project targets the Burgas Lakes complex around the city of Burgas—not a single plot but a regional/metropolitan wetland system including Atanasovsko Lake and the wider Burgas lakes (Vaya/Mandra-Poda), with actions on dikes, canals and water-level control across multiple Natura 2000 sites. The NWRM record itself flags the application scale as “Region” (area noted ~10,600–12,285 ha, with ~4 ha of direct restoration works), and LIFE project materials describe work across the Burgas lakes, not just one locality.

Project area

10600

Area subject to Land use change or Management/Practice change (ha)

4.00 ha

Size

12285.00

Size unit

ha

Constraints

Difficult access for mechanization; Soft soils

Favourable preconditions

Deepening of existing wetland

Financing

Total cost

1775006.00 €

Total cost information

Total budget

Costs investment

200000.00 €

Costs investment information

Budget of the actual restoration works

Administrative annual cost information

13,825.38€ in 2013. Ensure effective national and international media coverage of the project.

Financing authorities

Authority name	Type of funding	Comments	Financing share
European Union	EU-funds: LIFE+	LIFE08 NAT/BG/000277 – “LIFE for the Burgas Lakes” (2010–2014) Total eligible budget: €1,775,006; EU (LIFE) contribution: €1,331,254	75 %
European Union	EU-funds: LIFE+	LIFE20 NAT/BG/001234 – “LIFE Safe Grid for Burgas” (2021–2026) Total eligible budget: €5,492,571; EU contribution: €4,119,428.	75 %

Compensations

Non

Policy and Governance

Policy description

Around Burgas, coastal wetlands (Atanasovsko, Vaya/Mandra–Poda) faced habitat degradation and disturbed hydrology (dykes/canals damaged by floods), disturbance/poaching, bird mortality on power lines, and pollution/eutrophication from nearby industry and agriculture. These map to WFD-relevant pressures: hydromorphological alteration (embankments, silted canals), point-source/industrial and diffuse-agricultural pollution (nutrients, chemicals), and risk from accidental spills along the Vaya–Black Sea canal.

Land ownership

Mostly publicly owned (over 90% state owned, rest municipality or private)

Policy targets

Improved Biodiversity

Pollutants Removal

Oher Societal Benefits

Part of a wider plan

Non

Public consultation

Oui

Has contractual arrangements

Non

Impacts and Monitoring

Monitoring System

Monitoring requirements

Continue regular hydrology/hydrochemistry and bird/coastal-habitat monitoring at site scale with clearly defined responsibilities and an active role for RIEW–Burgas post-LIFE.

Monitoring parameters

Hydrology: water levels and salinity as core controls for lagoon functioning and active management.
Hydrochemistry: project docs indicate hydrological & hydrochemical tracking; studies list pH, dissolved oxygen, temperature, nutrients (NO_2^-, NO_3^-, NH_4^+, total N, PO_4^{3-}) and broader physico-chemical indicators.
Biota: birds (Annex I breeding/migratory species) and biological quality elements (e.g., phytoplankton).

Maintenance

Maintenance requirements

Routine O&M focuses on keeping canals, sluices and dikes functional (dredging/cleaning, structural repairs) and actively managing water levels/salinity, led by RIEW–Burgas with BBF/Black Sea Salinas/BSPB and NGO support.

Impact Assessment Methodology

Performance impact estimation information

With new data 2013 are prepared maps for the potential and recorded breeding sites of importance for and distributions of the Bittern and the Ferruginous duck.

Socio-economic Impacts

Direct benefits

Visitor infrastructure & interpretation improved (hides, trails, signage) under LIFE08; Poda Nature Conservation Centre continues to operate year-round with guided visits and fees (eco-tourism revenue).
Works at Vaya (rehabilitated outlet to the Black Sea) reduce hydraulic load and improve the lake’s regime - addressing past flood issues affecting adjacent urban/agricultural areas.

Biophysical impacts: Hydrology

Retained water

3.20

Retained water unit

mio m3/year

Information on retained water

25 ha restored by deepening; 18 ha improved by reed cutting (vs. 48 ha planned)

Increased water storage

80000.00

Increased water storage unit

m3/year

Runoff reduction

80000.00

Runoff reduction unit

m3/year

Biophysical impacts: Biodiversity

Improved biodiversity

Oui

Information on improved biodiversity

Observed 318 bird species, 241 vascular plants (Salicronia, Sea Wormwood, Typha, Suaeda, etc). Orchid. Endanger species like Otter. Salty part with micro scopic brine shrimp which give pink color to the water.
8 artificial islands + 10 roosts (332 m²); 796 bird diverters and 60 insulated poles on 8.8 km of lines; 14.5 km dikes/barriers further restored; poaching attempts reduced by 55%

Biophysical impacts: Water & Soil Quality

Water quality overall improvements

Positive impact-WQ improvement

Information on water quality overall

Improvement of oxygen and decrease of Chlorophyll-a after channel cleaning and dyke works (indicative of reduced eutrophication).

Soil quality overall improvements

Neutral impact-no change in SQ status

Biophysical impacts: Others

Ecosystem impact climate regulation

No information available

Lessons Learned

Key lessons

Coordinating a multi-site wetland system inside protected areas requires early, sustained buy-in from competent authorities. Permitting and legal alignments can be lengthy, and project teams must plan time for approvals and cross-agency coordination. The original NWRM record already stressed this, and project documents confirm the challenge of working under Natura 2000 regimes with multiple actors and contractors.
Pairing conservation with salt-production operations is a strength. When the saltworks maintain hydraulic infrastructure, biodiversity benefits follow; conversely, floods that destroyed >30 km of dykes showed how vulnerable the system is without continuous O&M. Aligning economic uses with habitat targets proved both feasible and beneficial.
Monitoring must go beyond birds. Post-LIFE guidance calls for continued hydrology/hydrochemistry and coastal-habitat tracking, with clearly defined roles and an integrated management plan.
Grid risks remain a system-level issue. Early mitigation helped locally, but the majority of hazardous power lines still require retrofitting or undergrounding, so long-term avian safety depends on continued investment.

Barriers

Barrier type	Barrier role	Comments
Lacking coordination between authorities	Secondary barrier	Complex legal/administrative procedures and multi-authority coordination in protected areas.

Barrier type	Barrier role	Comments
Other	Secondary barrier	Technical constraints in habitat works (e.g., reed cutting reduced vs plan due to terrain and machinery needs).
Other	Secondary barrier	Incomplete mitigation of hazardous power lines; sizeable retrofit/undergrounding still outstanding.

Drivers

Driver type	Driver role
Organisation committed to it	Main driver
Availability of subsidies	Main driver

Success factors

Success factor type	Success factor role
Attitude of decision makers	Main factor
Attitude of relevant stakeholders	Main factor
Existing staff and consultant knowledge	Main factor
Financing possibilities	Secondary factor

Transferability

Highly transferable to coastal lagoons and salt-pan wetlands where levels and salinity can be actively managed. Key cautions: tailor hydrological/salinity design; allow long permitting/coordination across authorities; plan sustained O&M of dikes, canals and sluices; mitigate power-line risks; address local pollution/eutrophication. Monitor not only birds but hydrology and hydrochemistry to verify benefits and adapt.

Sources

Sources

Hydro-chemical study of the waters of Burgas Lake and its inflowing rivers Chakarliyka and Aytoska (Bulgarian Black Sea coast)

Monitoring and Water Quality Assessment of Burgas Lake (Vaya Lake) in the Black Sea Region of Republic of Bulgaria

Multiple factor analysis using water quality index scores and parameters as an approach for evaluating the environmental status of polluted lakes along the Black Sea coast of Bulgaria

Petrol spills into Bulgarian lake after pipeline rupture

Conservation of threatened bird species through retrofitting of hazardous overhead power lines around Burgas Lakes (LIFE Safe Grid for Burgas)

Започна изпълнение на проект за подобряване водния режим на езерото Вая (Project to improve the water regime of Lake Vaya has started)

Подобрен е водният режим в Местност „Пода“ и езерото „Вая“ (Improved water regime at Poda locality and Lake Vaya)

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Case Study 3 Burgas: Land–Sea Interactions (MARSPLAN-BS)