



HUNGARY

Reduction of Nutrient Discharges

Project Summary and Scope

The key development and global environmental objectives of the project will be achieved through: (i) the development of tertiary treatment (nutrient removal) at the North Budapest Wastewater Treatment Plant (NBWWTP); (ii) the rehabilitation of wetlands in the Gemenc and Beda-Karapanca areas of the Danube-Drava National Park (DDNP); and (iii) the establishment of a comprehensive monitoring and evaluation system for water quality and environmental health that allows measurement of nutrient reduction and contributes to the development of an impact evaluation methodology. The project will also finance dissemination activities to foster replication in Hungary and in other parts of the Danube River basin.

Component 1: Development of tertiary treatment at the NBWWTP.

The project supports the upgrading of the NBWWTP to the tertiary level of treatment for nitrogen and phosphorous removal. The evaluation of an appropriate technology will be based on technical and financial efficiency in, among other factors, attaining nitrogen and phosphorous reduction.

Component 2: Wetland restoration in the Danube-Drava National Park.

Under this component, investment support has been provided for the rehabilitation of about 10,000 hectares of wetlands in order to develop their nutrient trapping capacity. The wetlands are in Gemenc and Beda-Karapanca, located within the DDNP on the Danube. The rehabilitation process has been implemented in stages, starting with the establishment of a one-year pilot in each of the two areas. A comprehensive baseline study was carried out at the beginning of the project to assess the environmental quality of the areas and to help determine the precise location of the two pilots.

Component 3: Dissemination and replication.

Comprehensive impact evaluation and results analysis studies of the two interventions (tertiary treatment and wetlands restoration), including a cost-benefit analysis, will be carried out at the end of the project. The results of the studies will serve as a basis for the dissemination, replication and knowledge-sharing activities. This component will also finance workshops, public communication campaigns and the promotion of cost-effective solutions for nutrient reduction in other areas of Hungary and in other riparian countries.

INVESTMENT

WB-GEF Strategic Partnership for Nutrient Reduction in the Danube River and Black Sea **USD 31.97 million**

PROJECT DURATION

2006–2011

NUTRIENT CHALLENGES

- Eutrophication caused by the enrichment of water by nutrients, especially compounds of nitrogen and/or phosphorus
- Nutrient discharges into the Danube River originating from untreated communal wastewaters from Budapest
- Biological processes of nutrient trapping in floodplains and wetlands

EARLY NUTRIENT BMP “WINS”

- Demonstration role in developing technically and financially sound solutions for wastewater treatment of domestic discharges and to restore high-priority wetlands to work as nutrient traps, allowing for the best use of scarce resources
- Institutional strengthening and building the capacity of local staff



Best Practices

- **Municipal wastewater treatment and aeration** — Reduction of nutrient discharges (nitrogen and phosphorous) from Budapest into the Danube River, and consequently into the Black Sea through the implementation and operation of aeration tanks.
- **Wetlands restoration** — Enhancement of the nutrient trapping capacity of the Gemenc and Beda-Karapanca wetlands situated in the lower Hungarian reaches of the Danube River. It is critical to demonstrate this approach in Hungary and the region as a replicable model for the treatment of non-point sources of nutrient pollution using wetlands and floodplains.
- **Leveraging investments** — Generation of the necessary commitment to complementary investments for nutrient reduction in order to achieve the ultimate objective of controlling eutrophication in the Black Sea.

Other Key Successes

- Progress towards compliance with EU directives, in particular the wetland management aspects of the Water Framework Directive.
- Increased capacity of existing central, regional and local institutions to protect and manage wetlands, floodplains and aquatic ecosystems.
- Improvement in environmental conditions.
- Improved water quality and decreased risk of pollution at 700 potable water wells producing 1.2 million cubic meters of drinking water daily.
- Support to the GEF Danube and Black Sea regional projects, to dissemination activities of international conventions for the protection of the Danube basin and Black Sea, and to the GEF-funded IW Learn initiative (International Waters Learning Exchange and Resource Network).
- Protection of the ecosystems of two internationally important Ramsar sites that are nesting places for a number of migratory birds and other species of global importance.

Key BMP Indicators

- Annual reduction of nutrient discharges from the NBWWTP (kg/year of nitrogen and phosphorous).
- Average operating costs of the nutrient reduction process in the NBWWTP (USD/kg of nutrients reduced).
- Number of hectares of wetlands rehabilitated in the DDNP.
- Annual amount of nutrients retained by the DDNP wetlands (kg/year of nitrogen and phosphorous).
- Average operating costs of wetland management procedures in the DDNP, in terms of its nutrient reduction capacity (USD/kg of nutrients reduced).

Further Information

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About the Living Water Exchange

The Living Water Exchange, a GEF/UNDP project promoting nutrient reduction best practices in Central and Eastern Europe, will share information and accelerate the replication of the most appropriate nutrient reduction practices developed from GEF and other investments in the region.

For more information, please visit <http://nutrient-bestpractices.iwlearn.org/> or email Chuck Chaitovitz chuck@gef.org

