



First Open Tender for Innovations

Case Study #6: Black Sea - Danube Delta sub-Case Study in Romania

[Supplementary information](#)

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The Danube Delta sub-Case Study in Romania

With a total area of over 800,000 km², the Danube River Basin covers 10% of Continental Europe. While the main river flows through ten countries, the full basin including its tributaries covers nine more. In terms of water dynamics, the Danube River, with a mean water discharge of about 200 km³/yr, accounts for a large part of the freshwater input to the Black Sea.

The availability and quality of water resources in the coastal areas and the Danubian valley represent a major factor for sustainable development. The issues on water management and water pollution are generating many debates in the cross-border area, leading sometimes to critical political conflicts.

In the implementation of the virtual watershed¹ approach for the Black Sea Case, the impact of climate change on the Danube has been taken into consideration from the viewpoint of the Upper, Middle and Lower Danube basins, as well as from that of the Danube Delta.

The complexity of the factors influencing the response of the ecosystems in the Danube Delta to Climate Change (severe weather conditions, length of drought periods, volume of rainfalls, changing paths of interaction with anthropogenic pressures and other similar) is very high and recognized by several studies published in the last years. For this reason, the CS6 sub-case in Romania concentrates on the Danube Delta.

The Living Lab “Danube Delta sub-Case Study”

For the evaluation of the problems related to Climate Change in the Danube Delta a Living Lab has been established involving a large variety of representatives from different institutions, like R&D institutes, specialized agencies, local communities, businesses and civil society.

In the preliminary consultations the following climate change impacts were identified on the Danube Delta water quality and its ecosystems:

- Increase of mean temperature values by up to 2°C over the last decades
- Decrease of freshwater level in the Delta, resulting from lower average annual flows in the Danube River

¹ The virtual watershed approach is taking into consideration that the Danube River is a major contributor to the fresh water balance of the Black Sea and particularly on the West coast that are interacting with the Romanian and Bulgarian coasts. Further, based on the balance of water exchange through the Turkish straits, the Danube River waters have also an impact to the Marmara Sea and North-western coasts of the Aegean Sea. In such way, the virtual watershed approach is a modelling paradigm for testing the connectivity of models on water quality in the Danube Delta and Ropotamo River with the West coast continental waters of Black Sea, Marmara Sea and the models used for the Aliákmon River in Greece.

- Unfavourable exchange of water streams between the Danube lakes with consequently impact on the aquatic life value chains
- Algal blooms in Danube lakes and coastal waters during summer
- Disappearance of small rivers
- Coastal erosion
- Sea water intrusion into the wetlands, high vulnerability of reedbeds, lakes, lagoons and salt marshes
- Events favouring halophyte species and suppressing freshwater flora
- Disappearance of rare species due to ecosystem fragmentation and habitat change
- Spread of invasive species
- Fish mortality events and decrease of fish stocks

On the basis of the above items, causality diagrams have been subsequently prepared.

The Problem Statement by Stakeholders

To support the resilience building of the local communities in the Danube Delta in the process of adaptation to climate changes related to the challenges of the quality of water with a special emphasis on biofiltration capacity of the aqueous biota in the Danube branches and related lakes.

The motivation of this approach is the rapid alteration with significant changes of parameters of the ecosystems functioning and the water quality in the Danube Delta water ecosystems is worsening due to low adaptation capacity of the water microbiota complex.

The Vision of a climate-resilient Future

In 2050 the Danube Delta is characterized by a good environmental status, pollution flows (excess nutrients, chemicals and solid waste inputs) and extreme events (i.e. floods) are monitored and mitigated throughout the river basin thanks to early warning systems and real-time data collection and cooperation across the 8 Danube countries. The well-being of inhabitants is based on fishing, farming and tourism activities which have adapted to climate change and benefits from naturally preserved Danube Delta environment.

The Key Challenge for the first Tender for Innovations

The Key Challenge for the first Tender for Innovations is to provide local communities, local authorities and other stakeholders from the Danube Delta with access to scientific evidence on the impacts of climate change on water quality and ecosystem health and functioning. This evidence may come in

the form of measured data, explanatory models and simulations, and should enable scenario building and forecasting of consequences of climate change on the biofiltration adaptation capacity of the aqueous microbiota from the Danube Delta branches and related lakes.

Case Study-specific requirements to comply with procurement and contracting procedures

Taking into account the legal requirements for procurement and contracting, the company has to have registration in the Public Procurement Portal – SICAP. This is possible also for companies from the EU that are not resident in Romania but have to follow a registration process.

There are some clear requirements in the Romanian Regulation regarding the companies that could participate in public procurement procedures. The requirements start from minimal requirements as legal registration in an EU member state and could go further with financial track records and references from different institutions in their home countries. According to the Romanian Regulation on Public Procurements, the selection of the partners and contracting will be done following the regulatory framework of the Romanian National Agency for Public Procurement (NAPP). The procedures will be implemented by the National R&D Institute on Biological Sciences from Bucharest.