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EcoDaLLi

# Deliverable 3.1

# Inventory of at least 8 innovative ecosystem-based practices in local, cross-border, transnational spatial policies in the 4 territorial units & at watershed/basin level of Danube River basin

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# 1. INTRODUCTION

Project “ECOsystem-based governance with DAnube lighthouse Living Lab for sustainable Innovation processes (EcoDaLLi)” is embedded in EU Green Deal and the Danube Lighthouse of Mission “Restore our ocean and waters by 2030”. It will contribute to marine and freshwater conservation and restoration targets by centralizing Danube governance structures in terms of innovative solutions for improved ecological restoration, protection and preservation of the Danube River Basin and Black Sea area by fostering a stronger innovation ecosystem within a well-connected Living Lab System, supported by a digital portal, completely linked to the Mission Implementation Platform. As the CSA of the Danube Lighthouse EcoDaLLi consolidates the stakeholders, knowledge, structures, and processes in Danube River Basin for innovative and profitable conservation and restoration of river ecosystems and water systems as well as climate change adaptation.

The identification of 8 innovative ecosystem-based practices in local, cross- border, transnational spatial policies in the 4 territorial units & at watershed/basin level of Danube River basin sets baseline data for the best spatial policies and practices at the level of Danube Lighthouse; Danube Lighthouse is a key point of exchange & learning on innovation in biodiversity, water systems & climate change for the river cities & cross-border actors. It enables an improved local potential for innovation, innovation upscaling and potential for citizen engagement.

The innovative solutions presented in this document serve as examples of successful collaboration and partnership for the implementation of ecological water restoration actions that also address social innovation and the mitigation of climate change effects. These actions take into account the socio-environmental risks and loss of capital caused by the degradation of freshwater ecosystems.

Task T3.1.2. in EcoDaLLi provides an inventory of at least 8 innovative ecosystem-based practices at watershed level within the Danube basin, whose selection is based upon agreed methodology with EcoDaLLi partners in Work Package 2. The mapping of **innovative ecosystem-based practices is considering city-river interactions and spatial policies at the local, cross-border, transnational level in the 4 territorial units (Upper, Middle, Lower Danube, Danube Delta and Black Sea)**. This identification exercise is carried with tailored stakeholder groups engaged by EcoDaLLi and the EcoDaLLi partners below classified according to their geographical area of competence:

- Upper Danube: BOKU and ICLEI;
- Middle Danube: UZ FSB and Municipality of Draz, FTS;
- Lower Danube: ADRM and MA;
- Delta and Black Sea: DDNI, IP Tulcea and GeoEcoMar.

These stakeholders were identified during the stakeholder mapping exercise in Task 3.1.1. For more information on the stakeholders mapping process please refer to the EcoDaLLi “Guidelines for Stakeholder Mapping” (MS3.1).

The EcoDaLLi Stakeholder Mapping exercise aims at identifying the optimal range of stakeholders that can contribute to the project or will be affected by the project and outline


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appropriate engagement type. The Stakeholder Database on local actors was created following the methodology described in the Guidelines for Stakeholder Mapping.

A project stakeholder data base is a project-related instrument that includes all the information about the project's stakeholders – name, type, primary topic, contact data, contact person, type of influence, etc. (it is elaborated as a working table). In the completion of the database, the mapping of governmental structures and stakeholders in the Danube RB, performed in the Baseline Study (Chanou et al., 2023, pp. 307 - 316) is a key point of reference.

A Stakeholder database is a tool for building an effective governance structure for the achievement of the Mission Restore our Ocean and Waters (Mission Ocean) objectives in the Danube River Basin and the Black Sea area.

The four-dimensional design of EcoDaLLi project instructed the organization of the stakeholder database. The stakeholders were classified in five main categories, the first four based on the geographical regions of the Danube River basin: Upper Danube, Middle Danube, Lower Danube & Danube Delta. The fifth category refers to "Transversal stakeholders", which list European level Stakeholders, that carry out activities in two or more of the Danube geographical regions. For each category, four types of actors are included: Research, Governance, Business, Citizens; following the quadruple helix model.

The approach to the selection of innovative, ecosystem-based policies and practices at local, cross-border and transnational level draws on EU definition of spatial policies, WP2 methodology for selection of nature-based solutions and additional criterion for focus on city-river interactions/cross-border and transnational character of the presented practices.

# 2. SPATIAL POLICIES

The European Spatial Development Perspective (European Commission, 1999) promotes sustainable development of the EU through a balanced spatial structure. It defines the following three policy guidelines for the spatial development of the Union:

- *"Development of a balanced and polycentric urban system and a new urban-rural relationship;*
- *securing parity of access to infrastructure and knowledge;*
- *sustainable development, prudent management and protection of nature and cultural heritage."*

The first of these policies relates to achieving well-balanced and mixed urban, rural, and peri-urban land-use. Such spatial developments should contribute to reduced local footprints, CO2 emissions, harmonised coexistence, and integration, with immediate agricultural, rural, and natural landscape, including freshwater ecosystems. Likewise, the third policy guideline sets the basis for balanced land-use implementation through sustainable development and protection of natural and socio-cultural elements. Following these three guidelines, land-use plans, and spatial policies in Danube basin territorial units should integrate all the relevant aspects related to sustainable urban development, including suitable waste and wastewater management and disposal, and studies for implementation of Nature-Based Solutions (NbS)

to enhance ecosystem services that minimise soil sealing impacts to freshwater ecosystems. These objectives should be pursued by authorities at European, national, regional, and local level.

According to the EU compendium of spatial planning systems and policies (European Committee of the Regions, 2018):

*"Spatial planning refers to the methods used largely by the public sector to influence the future distribution of activities in space. It is undertaken with the aims of creating a more rational territorial organisation of land uses and the linkages between them, to balance demands for development with the need to protect the environment, and to achieve social economic objectives.*

*Spatial planning embraces measures to co-ordinate the spatial impacts of other sectoral policies, to achieve a more even distortion of economic development between regions than would otherwise be created by market forces, and to regulate the conversion of land and property uses."*

Spatial policies refer to frameworks for land and water resources planning and use that encompass sectoral policies – ecology (biodiversity conservation and restoration, wastewater and waste management; wetland management), agriculture, fisheries, forestry, energy, transport (ports and navigation), disaster response. The concept of spatial policies entails the objectives for sustainable development and of even socio-economic development.

# 3. NATURE-BASED SOLUTIONS

A comprehensive definition of nature-based solutions (NBS) is given by the European Commission, Dumitru and Wendling (2021):

*Nature-based Solutions provide integrated, multifunctional solutions to critical societal challenges. They are "solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient interventions. Nature-based Solutions must therefore benefit biodiversity and support the delivery of a range of ecosystem services"* (European Commission). There are several elements in the Commission's definition. First, NBS identify and solve environmental and social problems simultaneously. The approach to solving environmental challenges supports biodiversity enhancement and the delivery of ecosystem services. Second, NBS provide four

types of benefits: environmental, societal, economic and security. Third, NBS are locally adapted. There can be different types of solutions: infrastructure, green, blue and hybrid (combined with grey).

Dumitru and Wendling identify the following challenge areas to be addressed by NBS, including challenges, related to urban restoration:

1. Climate Resilience
2. Water Management
3. Natural and Climate Hazards
4. Green Space Management
5. Biodiversity Enhancement
6. Air Quality
7. Place Regeneration
8. Knowledge and Social Capacity Building for Sustainable Urban Transformation
9. Participatory Planning and Governance
10. Social Justice and Social Cohesion
11. Health and Wellbeing
12. New Economic Opportunities and Green Jobs

Within the EcoDaLLi project, WP2 has established the basic criteria for selection of NbS that contribute to the main objective of the Mission Ocean and Waters Danube Lighthouse: restoring the Danube, Danube Delta and Black Sea region marine and freshwater ecosystems. The criteria are based on the four challenge areas listed below.

- Water Management;
- Biodiversity Enhancement;
- Health and Wellbeing;
- New Economic Opportunities and Green Jobs.

For more information on the EcoDaLLi methodology for the assessment of NbS please refer to Deliverable 2.1 “Methodology for Mission relevant NBS assessment.

Implementation of ecological restoration practices follows three project phases: preparation (co-participatory planning and definition of project design), restoration (implementation of the plan at the site), and operation (including maintenance and monitoring of the action). Each phase contains a decision point where the project is evaluated and terminated if necessary. This approach reduces unnecessary cost and labour.

The project performance is described using the following terms: baseline data collection for description of an initial situation; theory of change for description of the way NbSs produce their outcomes; monitoring and evaluation plan that provides methods and timeline for following progress of the NBS project.

# 4. CITY-RIVER INTERACTIONS

Good practices compiled in the EcoDaLLi project refers to river-cities interactions and spatial policies across the entire Danube Basin, where NBS are applied in land-use management and planning on water resources (Sean O`Hogain, 2018). The idea of the solution process comes through the use or mimic of natural processes, where green, grey, and blue infrastructure can strategically be designed in a combined way. Grey infrastructure represents human built up, engineered and physical structures, green infrastructure is defined as “strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services” (European Commission, 2013), and blue infrastructure represents water related elements, such as pools, pond systems, wetlands, rivers, artificial buffer basins or watercourses. The combination of green-blue and grey has the term ‘‘hybrid infrastructure’’ (Sean O`Hogain, 2018). The use of these hybrid solutions is likely to produce results that are more effective than one measure alone (Ruangpan, 2019).

In a frame of ecosystem-based good practices, NBS play a central role as well as the identification of protected areas which could deliver ecosystem services to contribute to the mitigation of some of the environmental challenges. In the publication DANUBEPARKS (2019) valuable information about barriers, hydropower plants, in seven DRB countries, as well as the issue of protected areas is presented. Protected areas, see IUCN classification, over twelve thousand in DRB, are, in most cases, effective as habitats and for ecological connectivity (EcoDaLLi, D2.1).

Fundamental paradigm for a shift in spatial planning in river basins is adopted by the EU Floods Directive (2007/60/EC) and comes along with developing approaches that incorporate both structural and non-structural measures, including NBS and ecosystem-based approaches. This notion is based on the shift from merely treating floods from a flood control perspective to a more integrated approach to risk management via a range of alternative solutions: “harmonised land-use management system” (EU Commission, 2011). Further, spatial policies for watershed restoration should be based on zoning instruments that contemplate avoiding land uses negative impacts to water quality and quantity (e.g., reduction of available flood water storage capacity).

The notion of ecosystem-based focus on restoring and enhancing ecosystem services to protect citizens and the aquatic ecosystem and on the premise of evaluation for potential integration of nature-based solutions (NBS) (Climate ADAPT, 2023; Bahlmann, 2019). According to the definition of the European Commission (EC) “Nature-based solutions are actions which are inspired by, supported by or copied from nature.” Various studies, and the Mission Ocean, underline the demand for solutions supplied by the ecosystem to tackle current water-related concerns, such as the decrease of riverine biodiversity, surface and underground water quality, more recurrent and intense flooding events, etc. Nature can deliver physical, chemical, and microbiological treatment processes (Sean O`Hogain, 2018), and Nature-based states the relation to ecosystem approach, ecosystem-based approach, biomimicry or the direct use of biodiversity elements (Bahlmann, 2019). Water-related ecosystem services, such as included in most nature-based solution (NBS) approaches, are able to lead towards a wide range of benefits, including those aligned with the Mission Ocean “Restoring our Oceans and Waters by 2030”: the provision of clean water supplies, greater resilience to extreme climate

events like flooding and decarbonisation and blue circular economy (European Commission, 2023).

# 5. MAPPING OF INNOVATIVE ECOSYSTEM-BASED PRACTICES

## 5.1 Context of the inventory and mapping process

The context of the inventory of innovative ecosystem-based practices of spatial policies sets the requirements for their selection and description.

The inventory presents a total of 24 policies/practices/pilots in the following areas of intervention: biodiversity conservation and restoration, disaster response, land use planning and private developers, water management, ports and navigation, agriculture, fisheries, forestry, wastewater, and waste management; wetland management.

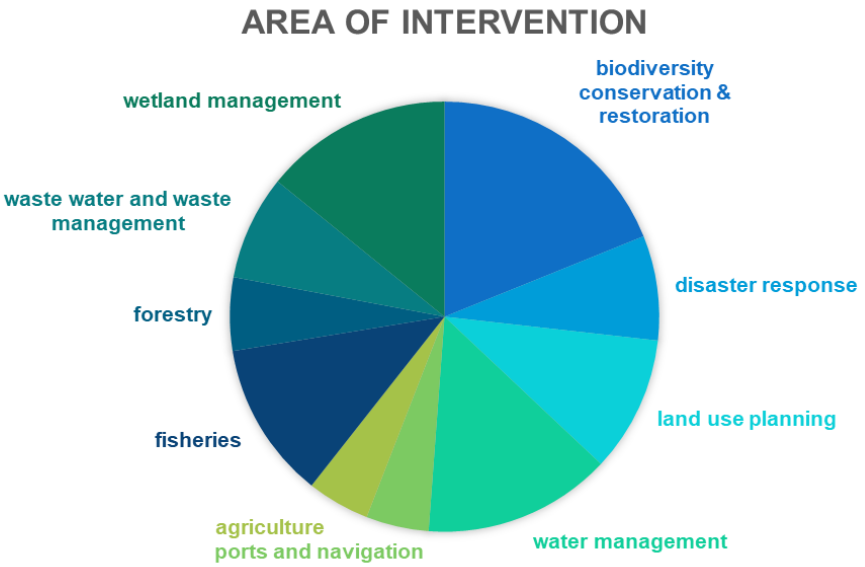


**Figure 1: Area of intervention of best practices collected**

These innovative ecosystem-based practices are distributed across the four geographic areas defined in the EcoDaLLi project: Upper Danube. Middle Danube, Lower Danube, and Danube Delta & Black Sea.

The innovative, ecosystem-based policies and practices at local, cross-border and transnational level were collected and assessed according to the:

- EU definition of spatial policies;
- WP2 methodology for selection of nature-based solutions (D2.1);

- and additional criterion for focus on city-river interactions/cross-border and transnational character of the presented practices.

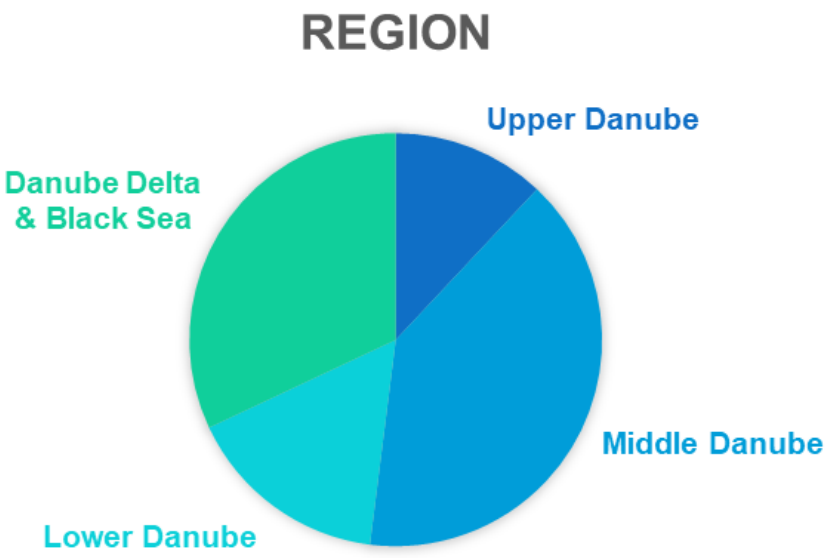


**Figure 2: Region of best practices collected**

The policies/projects/pilots listed in the inventory have varying scopes reaching from local, regional & national to transnational & cross-border. They address environmental as well as social challenges by improving the environmental status and providing ecosystem services in applying NBSs along other measures, in an economically viable way and with involvement of local communities.

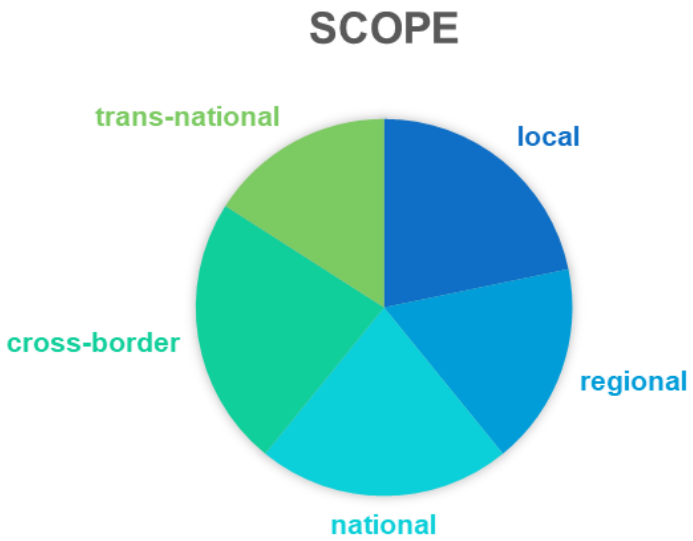


**Figure 3: Scope of best practices collected**

The inventory focuses on river-city interaction, cross-border and transnational interventions, which cover the whole spectrum of spatial planning scales (from local to regional, national and transnational) but also the complexity of integrating different spatial policy and land-use legislation frameworks.

## 5.2 Inventory of innovative ecosystem-based practices in the Danube Basin

This section presents the innovative practices collected by the EcoDaLLi consortium. For each practice an introduction of the ecosystem degradation challenge targeted is provided followed by a description of the solutions applied, the security aspects, and the environmental, social, and economic background.

When applicable, additional information on co-participatory processes, stakeholder involvement, success and limiting factors, and a costs and benefits assessment is provided.

Links to references and sources are included in the descriptions as well.

## INNOVATIVE ECOSYSTEM-BASED PRACTICE 1: UPPER DANUBE

| **Innovative ecosystem-based practice: Traisen project** | **Area of intervention**<br>– biodiversity conservation and restoration<br>– land use planning<br>– water management<br>– fisheries<br>– wetland management | **Scope**<br>– local<br>– regional<br>– national |
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**Description**

The Traisen project, which was financed under EU LIFE+ Programme, is Austria's largest land restoration project aiming at transforming the lower reaches of the Traisen river near the Danube power plant in Altenwörth into a diverse floodplain landscape. The project was implemented in the period 2009-2019.

The Traisen is one of the largest rivers in Lower Austria. During the construction of the Danube power plant in Altenwörth between 1973 and 1976, the Traisen was lengthened by 7.5 km. Nowadays this river section meets with the Danube downstream of the power plant. The riverbed used to run in an even, straight line through the floodplain between Traismauer and Zwentendorf. As a result of the LIFE+ Traisen project, the straightened section has been broken up and the mouth of the Traisen into the Danube has been completely recreated.

**Description of addressed challenges: ecological and social aspects**

The main objective of the LIFE+ Traisen project was to improve the habitat situation in the part of the European conservation area "Tullnerfelder Au" near the Danube.

The specific objectives were the following:

- To protect the existing natural wetland area and immediate environments
- To avoid detrimental changes to the local resident's flood risk.
- Establishment of a meandering river, recreated as a dynamic and ever-changing waterscape which can further develop dynamically in future and provide new habitats in bodies of flowing water.
- Creation of manifold structures in the water-to-land transition of the bank area of the new Traisen river to perform as buffer zone
- Establishment of new bodies of standing water, enriching the wetlands hydrological connectivity, recreating a complex and interconnected superficial and underground hydrological network with a variety of waterbodies.
- Creation of a floodplain along the new course of the river with frequently flooded sites, which requires integration of soft wetlands, especially the white willow wetlands.


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- Increasing the share of the typical wetland and river habitats, which today amount to just 6% of the surface in the entire Natura 2000 area.
- Integratio of fish corridors in the wetland area and the new Traisen river.
- Continuous fish passability of the new Traisen river - sustainably promoting the fish fauna of the Danube, the Traisen river and the bodies of water in the wetlands. As a result the ecosystem habitat and corridors for at least 30 species of fish should benefit. Among these are 15 Annex II species found in the area.

**Solutions with their environmental, social, economic and security aspects**

The LIFE+ project implemented a set of measures in the area between the Danube and the former Traisen canal to create a whole new Traisen river over a distance of approx. 10 km, with surrounding bank zones and a large estuary at the Danube. Around Altenwörth power plant, the waters of the Traisen were diverted into this new riverbed. The old channel was retained to provide relief during very high floods and as a body of standing water. The LIFE+ project created the NEW lower course of the Traisen, which is not a revitalisation of an old section of river, but the creation of a new dynamic river and wetland habitat.
The creation of the new, 10 km-long, meandering Traisen river with dynamic banks and intensive interplay of water and land is complete and should continue developing dynamically and naturally. New running water habitats covering approximately 30 ha were created. Flood zones covering an area of 60 ha were actively created on the new river. They are the location of the priority habitat for the silver willow wetland, which is part of riparian forests that are typical of the area.

Bodies of standing water have been created along the new Traisen and in the adjacent wetland area. These are large waterbodies, so-called wetland ponds, with natural bank zones as well as amphibian zones with shallow and temporary water areas.
With the new Traisen, the project created a fish-passable network, which nowadays connects the wetland area and its many waterbodies, the Traisen river and the Danube. Fish are able to pass through the new Traisen river unhindered at all times. The associated fish migrations and improvements in fish stocks are also having a lasting impact on the fish fauna in the Danube.

The project also resulted in a permanent improvement in the conservation status of typical meadowscapes in the wetland area. The project battled unwanted plants, so-called neophytes, on an area of 25 hectares in the new section of river and on the meadows with lasting success.

**Stakeholder participation**

In 2004 a feasibility study for the restoration of the lower reaches and estuary of the Traisen River was developed. In 2011 citizen informational events were held in Zwentndorf, Traismauer and Altenwörth in Austria.

**Success and limiting factors**

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| LIFE+ Trasien was not a classic river restoration project because no river course was restored, but it was a new river course that was created in the floodplain. In addition, large quantities of excavated material were necessary for the riverbed to be shaped in an ecologically functional manner.<br><br>The construction of the new Traisen was carried out in three years, but the preparation phase, including design, planning, and financing, lasted for more than 10 years. |
| **Costs and benefits**<br><br>The total project budget amounted to 30 million Euro. What needs to be underlined is the fact that the project was financed by a mix of different financing sources: VERBUND Hydro Power GmbH (15 million euros) and other financing partners: Office of the Lower Austrian Provincial Government, Federal Ministry of Agriculture, Regions and Tourism, EU-LIFE+ Nature and Biodiversity Fund, Lower Austria Landscape Fund, Lower Austrian Provincial Fishing Association, viadonau.<br><br>The river landscape will now continue to develop naturally and undisturbed. Nature itself can create new habitats and change old ones. The positive ecological consequences of the new Traisen can be felt far beyond the project's limits and are sustainably effective. |
| **Links to websites, patents, webinars, and further visual media**<br><br>Project website (main source): https://www.life-traisen.at/<br><br>Project resources: https://www.life-traisen.at/en-at/information-events |

## INNOVATIVE ECOSYSTEM-BASED PRACTICE 2: UPPER DANUBE

| **Innovative ecosystem-based practice: DanubeSediment project** | **Area of intervention**<br>– biodiversity conservation and restoration<br>– water management | **Scope**<br>– local<br>– regional<br>– national<br>– cross-border<br>– transnational |
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| **Description**<br><br>"DanubeSediment – Danube Sediment Management – Restoraton of the Sediment Balance in the Danube River" was financed under the Danube Transnational Programme 2014-2020. It was implemented in the period 2017-2019. | | |
| **Description of addressed challenges: ecological and social**<br><br>Sediments are a natural part of aquatic systems. During the past centuries, humans have strongly altered the Danube River. Riverbed straightening, hydropower dams and dykes have led to significant changes in the sediment load. This sediment imbalance contributes | | |

to flood risks, reduces navigation possibilities and hydropower production. It also leads to the loss of biodiversity within the Danube Basin.

More than a decade ago, the International Commission for the Protection of the Danube River (ICPDR) identified a changed sediment regime in the Danube River as an issue. As the Danube flows through ten counties from the Black Forest to the Black Sea, a transnational project on sediment management was needed to obtain a full picture. The aim was to improve the sediment and water management as well as the morphology of the Danube River. To tackle these challenges, 14 project partners and 14 strategic partners came together in the DanubeSediment project for almost three years. The partnership included numerous sectoral agencies, higher education institutions, hydropower companies, international organisations and nongovernmental organisations from nine Danubian countries.

**Solutions with their environmental, social, economic and security aspects**

For the first time, the project collected sediment transport data in the Danube River and its main tributaries. This data provided the foundation for a Danube-wide sediment balance that analysed the sinks, sources and redistribution of sediment within the Danube. In addition, the different monitoring instruments and methods used to collect sediment data by the Danubian countries were compared. The project recommends establishing a harmonized quantity monitoring network, setting-up new monitoring stations and a centralised data storage. In order to understand the impacts and risks of sediment deficit and erosion, the project partners analysed the key drivers and pressures causing an alteration of the sediment balance.

Other project output is the Danube Sediment Guidance. It contains recommendations for reducing the impact of a disturbed sediment balance, e.g. on the ecological status and on flood risk along the river. By feeding into the Danube River Management Plan and the Danube Flood Risk Management Plan, issued by the ICPDR, the project directly contributes to transnational water management and flood risk prevention.

The project led to the elaboration of a Sediment Balance Assessment for the Danube.

**Stakeholder participation**

International stakeholder workshops supported the transfer of knowledge to key target groups throughout the Danube River Basin, for example hydropower, navigation, flood risk management and river basin management, incl. ecology. These target groups were also involved in the development of the project results, for example in the frame of national events. The project specifically addresses the key target groups in its second major output: the Sediment Manual for Stakeholders. The document provides background information and concrete examples for implementing good practice measures in each field.
These results were obtained through a broad participative process, with involvement of all key stakeholders such as representatives from administrations, flood risk management, hydropower, waterway authorities, environmental organisations (e. g. national parks), NGOs and the scientific community. The stakeholders were involved through various

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| national and international expert meetings and workshops as well as through personal consultations with the project partners. |
| **Success and limiting factors**<br><br>The project was successful in bringing various experts from different European countries together to discuss these river-relevant topics. As a result, the first detailed study on sediment transport in the Danube was developed. The specifics of the project subject require close transboundary cooperation and expert exchange. |
| **Costs and benefits**<br><br>The total project budget amounted to 3 558 581.62 Euro. |
| **Links to websites, patents, webinars, and further visual media**<br><br>Project website (main source): https://www.interreg-danube.eu/approved-projects/danubesediment<br><br>Project Library: https://www.interreg-danube.eu/approved-projects/danubesediment/outputs |

## INNOVATIVE ECOSYSTEM-BASED PRACTICE 3: MIDDLE DANUBE

| **Innovative ecosystem-based practice: TID(Y)UP Project – F(ol)low the Plastic from source to the sea: Tisza-Danube integrated action plan to eliminate plastic pollution of rivers** | **Area of intervention**<br>– biodiversity conservation and restoration<br>– disaster response<br>– land use planning<br>– water management<br>– ports and navigation agriculture<br>– fisheries<br>– forestry<br>– waste water and waste management<br>– wetland management | **Scope**<br>– local<br>– cross-border<br>– transnational |
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| **Description**<br><br>The project was funded under the Danube Transnational Programme 2014-2020. It was implemented in the period 2020-2022. The Faculty of Technical Sciences Novi Sad was one of partners.<br><br>Tid(y)Up project aims at improving water quality and reducing plastic pollution in the river of Tisza – reportedly, one of Europe's most heavily contaminated rivers. Thus, the project investigates plastic pollution and its effect on the Danube and the Black Sea. | | |

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| Tid(y)Up focuses on developing and launching a set of integrated actions, consulting and providing tools for relevant stakeholders and initiating long-term trans-border and intersectoral cooperation with the aim of monitoring and eliminating the plastic pollution.<br><br>The official website gives information that the project operates with a list of diverse tools including research activities to standardize methods for estimation of the size of pollution, formulating recommendations toward standardized measurement and analyzing methods. The partnership of Tid(y)Up carries out field trips, expeditions, pilot actions to identify and restore polluted areas, as well as education and awareness raising actions for prevention. |
| **Description of addressed challenges: ecological and social**<br><br>It is stated that currently there are no standard methods and consistent data available on plastic pollution of rivers in the Danube Basin that would help harmonized actions of water management authorities and allow cooperation with other sectors.<br><br>In addition, there is the need for awareness-raising campaign and building social coalitions in the fight against plastic waste contamination of river basins. |
| **Solutions with their environmental, social, economic and security aspects**<br><br>The reported novelty of Tid(y)Up project is that it provides tools, data and the assessment of various used methodology for understanding of the sources, nature and risks of contamination flows; and delivers practical examples of possible actions and legislative solutions both on local and transnational level. |
| **Stakeholder participation**<br><br>The key focus of the project is to gather all necessary information, raise awareness of the relevant actors and provide them with practical tools in order to create active, cooperating communities in the fight against the plastic waste contamination and contribute to the work of water authorities to improve water quality. |
| **Success and limiting factors**<br><br>The results of the Tid(y)Up project – Follow the Plastic from Source to the Sea were presented at a closing event in 2022. In the framework of this co-ordinated action plan, as a result of research carried out in order to eliminate the plastic contamination of the Danube and the Tisza, river clean-up actions, awareness-raising activities and the elaboration of legislative proposals, not only 18 tons of waste were removed from the water, but the 21 organizations from 7 countries participating in the project implemented international cooperation and raised the representation of the rivers to a higher level. |
| **Costs and benefits**<br><br>The total project budget in Euro is 1 628 193.54. |

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| The project led to the elaboration of online knowledge repository (Waste Reduction Toolbox) which is available to be downloaded by the general public in Hungary, Austria, Slovakia, Ukraine, Romania, Serbia and Bulgaria. |
| **Links to websites, patents, webinars, and further visual media**<br><br>Project website (main source): https://www.interreg-danube.eu/approved-projects/tid-y-up/outputs<br><br>Project library: https://www.interreg-danube.eu/approved-projects/tid-y-up/outputs<br><br>Waste Reduction Guide: https://kszgysz.hu/images/palyazatok/interreg/tudastar/Waste_reduction_guide/WasteReduction_handguide_ENG.pdf<br><br>Molnar, A.D., Hanko, G. 2022. Aquatic plastic. Vol. 1. Transnational river clean-up handguide.<br><br>Lenz, S., Mayerhofer, J., Obersteiner, G. Deliverable T1.3.1 Elaboration of micro and macro plastic database, 0.T1.3 Illustrated Joint Protocol for Waste Monitoring, available on project web site. (In this is presented innovative procedure for sampling and few innovative appliances for performing this.) |

## INNOVATIVE ECOSYSTEM-BASED PRACTICE 4: MIDDLE DANUBE

| **Innovative ecosystem-based practice: CLEVER Cities project** | **Area of intervention**<br>– biodiversity conservation and restoration<br>– disaster response<br>– land use planning<br>– water management<br>– ports and navigation agriculture<br>– fisheries<br>– forestry<br>– waste water and waste management<br>– wetland management | **Scope**<br>– local<br>– cross-border<br>– transnational |
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| **Description**<br><br>Within the EU project *CLEVER Cities*, financed under EU Horizon 2020 Programme, was included Belgrade. One of the outcomes is the following article:<br><br>Mitic-Radulovic, A., Lalovic, K. 2021. Multi-Level Perspective on Sustainability Transition towards Nature-Based Solutions and Co-Creation in Urban Planning of Belgrade, Serbia. Sustainability, 13, 7576. https://doi.org/10.3390/su13147576. | | |

Crucial part of the article is initiative of Linear Park creation. Although the Linear Park is located close to two rivers, water management issues are not included.

The following statements (cited from publication) could be treated as the innovative approach:

- A wide urban innovation partnership was established;
- An online platform for information exchange was created.

The following citation is interesting as NBS relevance:

*For public spaces interventions, citizens expressed interest, in particular, for NBS such as Infiltration Areas and Porous Paving, Community Gardens, Urban Bee-keeping, Facilities for Birds and Fauna, Butterfly Park, Urban Fruit Trees, Sensory Gardens, Urban Flower Fields, Usage of Treated Surface Water, The Living Garden Concept, Islands of Coolness, Green Noise Barriers, Eco-Urban Furniture, Shade provided by vegetation, etc. For new structures and complexes planning and design, such as Marina Dońol, citizens believe that plans and technical documentation should integrate the following Building-Scale Interventions: Green Walls, Green Roofs, Urban Rooftop Farming, Rainwater Collection, etc.*

However, authors notified that the high level of authorities expressed kind of disagreement with the proposal.

**Description of addressed challenges: ecological and social**

According to the website description, western and northern sections of the included neighbourhood Dorćol are mainly residential, but eastern and riverside regions are heavily industrialized, with depots and warehouses of Belgrade's transportation company, the waterworks and sewage company and numerous power plants. The area along the promenade on the Danube bank, called Obala majora Gavrilović,a is well developed with a long bicycle path for recreation and night clubs on water. There's a railway connectivity and a small marina. The co-existence of residential and industrial infrastructure on the intersection of two rivers creates ecological and social challenges to be overcome.

**Solutions with their environmental, social, economic and security aspects**

The Belgrade CLEVER Cities Plan is described, as follows: The vision for CLEVER Cities in Dorćol is to transform the area around a historic railway track into a Linear park. This park 'Dorćol' will be more than just a park: it will be a hybrid public space where families and other groups can view art, walk through gardens, experience performances, explore local history and horticulture, enjoy delicious food or just connect with friends and neighbours - while enjoying a unique perspective of the city. pecial tour options will be available for schools and summer camp programmes. Ultimately the vision is of a place where locals can retreat from city life and connect to nature - and themselves. The aim with this project is to reduce crime and improve public health in the Dorćol area.

In addition, the park is designed to improve the local microclimate, support biodiversity, and ensure co-benefits for public health and resident well-being. This will be achieved through

the creation of a continuous ecological corridor that is planted with vegetation suited to different layers of an urban forest.

**Stakeholder participation**

There are three main tools for stakeholder participation envisaged by the project:

- Belgrade Urban Living Lab with a website in Serbian language (http://bellab.rs/) - the Belgrade Urban Living Lab is a platform for establishing cooperation and creating synergies for planning, design and implementation of ecological, green, nature-inspired solutions for current challenges in the development of the city. This platform brings together citizens, representatives of the administration, cultural and educational institutions, academia, potential investors, the economy and other interested parties with the aim of better information, more effective communication and encouraging innovation through co-creation.
- A questionnaire for citizens has been elaborated and published on the Living Lab site. At the end of December 2019, a questionnaire for citizens was opened about content, activities and other Linear Park-related topics. By March 15th, 2020, 570 citizens answered the questionnaire, 42.5% of them live in the immediate vicinity of the Linear Park.
- A call for young architects has been announced. The Office of the Chief Town Planner of the City of Belgrade, with the support of the Association of Belgrade Architects, announced in December 2019 a call for young architectural and transdisciplinary teams for the conceptual design of part of the Linear Park area in Belgrade. 28 concept proposals were received.

Also, the Linear Park project offers best practice strategies including direct communication via a variety of channels, including interviews, focus groups, and targeted discussions, and the empowerment of stakeholders to ensure a sustainable transition to ambitious NBS.

**Success and limiting factors**

The above-mentioned article analyses the planning process of the CLEVER Cities Linear Park which was found to have successfully constructed a space for citizen engagement through the clear management of expectations, well-defined articulation of the project vision and a gradual building of trust. Not only do the authors agree that this project has the potential to serve as a model for future co-creative NBS, but they also believe that the CLEVER Cities Linear Park planning demonstrates a significant capacity to realise systemic change – the ultimate goal of any nature-based solution.

Also, with the support from ICLEI and local experts Belgrade has elaborated an Urban Greening Plan for a Linear Park along a former railway corridor. It is a result of the co-creation process (citizen questionnaire and design competition).

**Costs and benefits**

No information about the costs of the project is publicly available.

According to the website information, the impact of the Urban Greening Plan extends beyond the Linear park – the document lists green roofs and green as obligatory elements

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| of any new construction adjacent to the park. These changes are expected to have a positive impact on business opportunities in the area. |
| **Links to websites, patents, webinars, and further visual media**<br><br>Project website (main source): https://clevercities.eu/belgrade/<br><br>CLEVER Data Hub: https://clevercities.eu/resources/clever-data-hub/ |

## INNOVATIVE ECOSYSTEM-BASED PRACTICE 5: LOWER DANUBE

| **Innovative ecosystem-based practice: IDES project - "Improving water quality in the Danube River and its tributaries through integrative floodplain management based on ecosystem services"** | **Area of intervention**<br>– biodiversity conservation and restoration<br>– water management<br>– fisheries<br>– wetland management | **Scope**<br>– local<br>– regional<br>– national<br>– cross-border<br>– transnational |
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| **Description**<br><br>The IDES project - "Improving water quality in the Danube River and its tributaries through integrative floodplain management based on ecosystem services" is financed under the Danube Transnational Programme 2014-2020. It aimed to develop and implement an integrated transnational approach based on ecosystem services, in order to thus manage the quality of the Danube river and generate mutually beneficial solutions for multifunctional flood zones and not compromises. Thus, the key national actors involved in water quality management can identify the most sustainable measures without neglecting the needs of other sectors, they can evaluate, both in the pilot area of the Brăila Big Island and at the transnational level, an assessment of ecosystem services for flood zones, to support the making of sustainable decisions in the integrated management of floodplains. | | |
| **Description of addressed challenges: ecological and social**<br><br>Nutrient loads transported by the Danube affect its ecological status and have to be reduced, active floodplains can have a significant retention potential. But floodplains are subject to multiple human uses which strongly affect water quality of rivers. So far, these uses were sectorally managed (e.g. flood retention, nature conservation, agriculture), rarely regarding water quality and interactions between sectors. | | |
| **Solutions with their environmental, social, economic and security aspects**<br><br>The “Danube Floodplain Project” financed under the Danube Transnational Programme 2014-2020 linked attempts of improving flood retention and restoration, while water quality is not yet in focus. IDES project aimed to add water quality targets to this effort and improve water quality by developing an integrative floodplain management based on Ecosystem Services. The Ecosystem Services concept in the Danube region is not used to proactively manage different activities holistically. The use of a River Ecosystem Service Index in | | |


Funded by the European Union

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| Germany has even shown that water management can be significantly improved by the identification of synergies between the various Ecosystem Services, which reflect the various sectoral interests and targets. |
| **Stakeholder participation**<br><br>Stakeholders were involved in a series of stakeholder workshops in all selected project pilot areas. The Romanian pilot area were the Braila Islands, whereas in Bulgaria the Yantra River Basin was chosen. |
| **Success and limiting factors**<br><br>Existing Ecosystem Services evaluation methods in the Danube region with a focus on water quality issues were harmonized to the IDES tool and adjusted according to data availability. A spatial analysis documented the actual drivers of water quality along the Danube and its tributaries and of relevant ES in their floodplains. IDES Danube was applied in five areas, as a result, the effect of water quality management scenarios on relevant Ecosystem services was assessed in order to derive an optimized concept. Key actors were trained in using the IDES tool for water quality management, a manual on the implementation of the tool was elaborated. |
| **Costs and benefits**<br><br>The overall project budget in Euro estimated to 1 951 170.<br><br>Based on the results, national action plans with prioritized areas and a joint strategy were developed to improve water quality at transnational level regarding the Danube river basin management plan and targets of PA4 and PA6 of the EUSDR. |
| **Links to websites, patents, webinars, and further visual media**<br><br>Project website (main source): https://www.interreg-danube.eu/approved-projects/ides<br><br>Project Library: https://www.interreg-danube.eu/approved-projects/ides/outputs |

## INNOVATIVE ECOSYSTEM-BASED PRACTICE 6: LOWER DANUBE

| Innovative ecosystem-based practice: GRENDEL project – Green and efficient Danube fleet | **Area of intervention**<br>– biodiversity conservation and restoration<br>– disaster response<br>– land use planning<br>– water management<br>– ports and navigation agriculture<br>– fisheries<br>– forestry<br>– wastewater and waste management | **Scope**<br>– regional<br>– national |
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| | – wetland management | |

**Description**

The GRENDEL project – "Green and efficient Danube fleet", was financed under the Danube Transnational Programme 2014-2020. It supported the Danube vessel fleet operators and their public counterparts in modernisation of the sector. GRENDEL addressed various fleet modernisation aspects: use of low carbon & alternative fuels, reduction of air pollutant emissions (CO2, NOx, PM) and overall energy consumption.

**Description of addressed challenges: ecological and social**

Even though Inland Waterway Transport (IWT) is considered as one of the most environmental-friendly modes of transport, it is by far not exploited at its full potential. The reasons for this are manifold. Since the Danube Region is primarily characterized by less developed regions, vessel operators usually lack the necessary financial capacities to properly invest in their fleet. Moreover, the findings of GRENDEL have shown that there are currently no financial incentives available at the national level that would encourage the greening of the Danube fleet. The IWT sector is furthermore characterized by the relatively slow incorporation of innovative technologies as compared to other modes of transport.

**Solutions with their environmental, social, economic and security aspects**

Improving the environmental and economic performance of the Danube fleet is the overall goal of the GRENDEL project. It aims to achieve a higher acceptance and use of inland waterway transport (IWT) as an environmentally friendly transport mode contributing to economic growth and a more sustainable transport system in the Danube region. GRENDEL addresses various fleet modernisation aspects: use of low carbon & alternative fuels, reduction of air pollutant emissions (CO2, NOx, PM) and overall energy consumption. Besides this, transport & logistics management processes are addressed to ensure better integration of the Danube IWT into logistics chains through new services (including River Information Services), digital data provision as well as dedicated tools to improve efficiency of fleet operations. Three specific objectives are listed:

1. Know-how transfer for Danube fleet operators with the help of intensive transnational collaboration between private & public stakeholders and targeted know-how transfer activities in order to overcome the existing knowledge gap, lack of activities and absence of instruments to deploy innovative solutions
2. Elaboration of innovative technical vessel concepts and improved transport & logistic management processes of fleet operators and sharing these as good practices for wide-scale implementation to strengthen the competitive position of inland navigation and to exploit its market potential
3. Supporting development of favourable regulatory framework & well-designed public support measures by introducing Model State Aid Scheme & innovative financial instruments to design national public support measures which will clearly address the needs of the sector

An Innovative Technological Database is to centrally collect valuable information on greening technologies. It provides both a general overview as well as - based on the

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| provided documentation - an in-depth analysis of the existing innovation rate and its potential to be efficiently implemented in IWT. |
| **Stakeholder participation**<br><br>Several editions with public and private stakeholders and relevant EC services focussing on the drafting process of the Model State Aid Scheme and on the impact of the COVID-19 pandemic on Danube IWT, discussing possible recovery actions & plans. |
| **Success and limiting factors**<br><br>Studies carried out to quantify environmental costs ultimately show the same results: IWT is the most environmentally friendly mode of transport in terms of greenhouse gas (GHG) emissions per tonne-kilometre. Shipping more goods on water reduces GHG, traffic congestions and accidents. Inland vessels offer an enormous carrying capacity per transport unit and inland waterways dispose of ample unused infrastructure capacity. However, there is significant potential for reducing energy use (up to 10-20%) and pollutant emissions (up to 80%), in particular regarding existing vessels as well as a large potential for modal shift by improved transport & logistic services. Whereas in Western Europe, public and private efforts aim to modernise and green the IWT sector, the Danube region lacks such initiatives. Little awareness, high investment costs of new technologies, higher price of alternative fuels, limited investment capacity of Danube fleet operators, lack of public support measures and unfavourable regulatory framework slow down innovation uptake and prevent deployment of greener fuels and propulsion solutions. |
| **Costs and benefits**<br><br>The total project budget in Euro estimates to 1 824 999.20.<br><br>GRENDEL was a step forward in providing a fruitful ground for the establishment of dedicated financial instruments that trigger investments in the fleet. |
| **Links to websites, patents, webinars, and further visual media**<br><br>Project website (main source): https://www.interreg-danube.eu/approved-projects/grendel/section/iwt-innovative-technologies-database |

## INNOVATIVE ECOSYSTEM-BASED PRACTICE 7: DANUBE DELTA & BLACK SEA

| **Innovative ecosystem-based practice: "Ensuring a favorable conservation status for the rescue from the extinction of the European mink population – Mustela lutreola (species of interest community, critically endangered) - from Romania - SAVE E-MINK-RO (2017-2020)" project** | **Area of intervention**<br>– biodiversity conservation and restoration<br>– wetland management | **Scope**<br>– regional<br>– national |
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Funded by the European Union

**Description**

The Administration of the Danube Delta Biosphere Reserve (ARBDD) runs, as beneficiary, the project "Ensuring a favorable conservation status for the rescue from the extinction of the European mink population – Mustela lutreola (species of interest community, critically endangered) - from Romania - SAVE E-MINK-RO (2017-2020)", financed through the Large Infrastructure Operational Program (POIM), Priority Axis 4: Protection the environment through biodiversity conservation measures, air quality monitoring and decontamination of historically polluted sites. The project is implemented by ARBDD in partnership with the Danube Delta National Research and Development Institute (DDNI).

In order to achieve the conservation objectives, the project achieves the following:

- Habitats for the European mink (by raising the submerged banks of some canals from the central area of the Danube Delta, respectively construction of canals on the artificial islands on the Sf. Gheorghe arm of the Danube);
- Ecological revitalization of the artificial islands on the Sf. Gheorghe Arm of the Danube;
- Improve knowledge of coverage areas and use of different habitats by the European mink throughout the year;
- Knowledge of the health status of the European mink in the RBDD;
- Increasing public awareness of European mink conservation
- Evaluation of the threats faced by the European mink in Romania.

**Description of addressed challenges: ecological and social**

The Danube Delta Biosphere Reserve (RBDD) represents one of the last refuges of the European mink species (Mustela lutreola L.) at the area level, which used to have a wide distribution in Romania.

Also, environmental pollution, desiccation, burning of reeds, changes in preferred biotopes, habitat reduction, degradation and fragmentation, parallel to the invasion and acquisition of increasingly large territories in other countries by the American mink, represent threats to the decimation of the European mink. Currently, the European mink still exists only in a few fragmented populations in France, Spain, Ukraine, Romania (in the Danube Delta Biosphere Reserve-RBDD); possibly also in the Danube meadow and some areas of the Carpathians) and several populations in Russia. There is also a reintroduced micropopulation in Estonia.

**Solutions with their environmental, social, economic and security aspects**

Ecological revitalization and restoration of habitats.

To create suitable habitats for minks, the following works will be carried out to restore the feeding and breeding habitats:

1. 33 elevated platforms, positioned in the Șontea-Fortuna Natural Aquatic Complex on the left/right bank of the Lac Fortuna Ring Canal, on UAT Maliuc range;
2. Works to revitalize the islands, dredging works necessary for the creation of new channels deep enough to ensure an optimal level and at medium and low levels of the

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| waters in the Danube, and from the dredged material construction of a pier (platform), within the Sf. Gheorghe UAT radius; |
| **Stakeholder participation**<br><br>Within the framework of the project a series of information events, seminars and meetings with representatives of local communities were organized. |
| **Success and limiting factors**<br><br>N/A |
| **Costs and benefits**<br><br>The works carried out by this project actively contribute to reducing the risk of flooding as follows:<br>- the construction of new channels deep enough to ensure an optimal level even at medium and low water levels in the Danube, over a long period of time;<br>- from the dredged material, the construction of a dam (platform), in the Sf. Gheorghe UAT, will be implemented. |
| **Links to websites, patents, webinars, and further visual media**<br><br>Project website (main source): https://salvatinurcaeuropeana.nosce.ro/<br><br>https://ddni.ro/wps/ro/proiecte-nationale/ |

## INNOVATIVE ECOSYSTEM-BASED PRACTICE 8: DANUBE DELTA & BLACK SEA

| **Innovative ecosystem-based practice:** | **Area of intervention** | **Scope** |
|---|---|---|
| "Ecological reconstruction of the lands belonging to the public domain of the Mahmudia local council within the Carasuhat precinct in the Danube Delta" project | – biodiversity conservation and restoration<br>– wetland management | – regional<br>– national |
| **Description**<br><br>Ensuring lateral connectivity through natural restoration actions. In 1993, the Danube Delta Research and Development Institute, the Danube Delta Reserve Administration and WWF initiated a pilot project with the aim of restoring two agricultural polders: Babina (2200ha) and Cernovca (1580ha) located in the Danube Delta. Dikes and canals built to drain the polders were opened and connected to the Danube. With the restoration of the hydrological regime, the periodicity of flooding, the area has again become breeding habitat for fish, breeding, feeding and resting habitat for waterfowl, and the natural resources bring benefits to local communities. environment, individuals that have been already genetically proven to be wild and not from captivity. | | |

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| In 2012, the project "Ecological reconstruction of the lands belonging to the public domain of the Mahmudia local council within the Carasuhat precinct in the Danube Delta" was proposed for financing.<br><br>The restoration of the Mahmudia wetland was co-financed by the European Regional Development Fund and conducted under the Sectoral Operational Programme Environment 2007-2013. The local Council of Mahmudia implemented the project in partnership with WWF-Romania and the Danube Delta Biosphere Reserve Administration. |
| **Description of addressed challenges: ecological and social**<br><br>The aim of the project was to create conditions for maintaining biodiversity and increasing connectivity of habitats by reducing fragmentation due to the damming and drying of some aquatic complexes in the Danube delta. In addition to the concrete objectives of ecological reconstruction, the diversification of the natural resources available to the local community was also pursued. |
| **Solutions with their environmental, social, economic and security aspects**<br><br>This approach is an alternative proposal to local development, on the one hand for restoring wetlands, improving water quality, storing/mitigating the flood wave, and on the other hand for the possibilities offered to the local community to develop eco-tourism, fishing activities and traditional agriculture. |
| **Stakeholder participation**<br><br>Stakeholders and local communities were identified and consulted during the different project implementation stages. |
| **Success and limiting factors**<br>Engagement of local communities, mapping of local needs |
| **Costs and benefits**<br><br>The project outcomes were considered being a good starting point for local communities to developed eco-friendly business models. |
| **Links to websites, patents, webinars, and further visual media**<br><br>https://wwf.ro/ce-facem/ape-dulci/reconstructie-ecologica/babina-si-cernovca/<br>https://wwf.ro/ce-facem/ape-dulci/reconstructie-ecologica/mahmudia/ |

## OTHER INNOVATIVE ECOSYSTEM-BASED PRACTICES IMPLEMENTED IN ECODALLI TERRITORIAL UNITS

**INNOVATIVE ECOSYSTEM-BASED PRACTICE: MIDDLE DANUBE**

| Innovative ecosystem-based practice: Tamnava and Kolubara | Area of intervention | Scope |
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| | – biodiversity conservation and restoration | – regional<br>– national |

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| | – water management<br>– waste water and waste management | |

**Description**

Serbia accounts for two relevant studies for river restoration, one in the Tamnava and other in the Kolubara, conducted by a reputable institute from Delft (Holland), with a Serbian contact point acting as Project Director. Two publications can be found of these actions, one in English and other in Serbian. Three or more of the most relevant stakeholders will gather in September or October to discuss their current involvement in surface water management and, eventually, urban restoration in the watershed, with possible integration of NBS in restoration plans.

Case study in the Kolubara River Basin in Serbia, focussing on two tributaries: Tamanva and Ub River sections.

**Links to websites, patents, webinars, and further visual media**

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**INNOVATIVE ECOSYSTEM-BASED PRACTICE: MIDDLE DANUBE**

| **Innovative ecosystem-based practice: Rain gardens** | **Area of intervention**<br>– biodiversity conservation and restoration<br>– disaster response<br>– land use planning<br>– water management<br>– ports and navigation agriculture<br>– fisheries<br>– forestry<br>– waste water and waste management<br>– wetland management | **Scope**<br>– local<br>– cross-border<br>– transnational |
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**Description**

DaWetRest is a project that has received co-financing through the Horizon Europe program, aimed at supporting the EU Mission Ocean, seas, and waters. The project is centered around three demonstrator sites situated in the following areas: the Croatia-Middle Danube Demo (located in the Draž Municipality within the Osijek-Baranja County), the Bulgaria-Lower Danube Demo (in the Kalimok-Brashlen area), and the Romania-Danube Delta (specifically, the Danube Delta Ramsar area).

Demonstrator sites serve as platforms for showcasing both active and passive restoration measures. Additionally, beyond these demonstrators, DaWetRest encompasses numerous pilot projects and sibling locations situated along the Danube River or within the Danube River Basin. While these sites may not be directly involved in the DaWetRest

implementation, they play vital roles as exemplary models for best practices and as critical areas requiring future revitalization efforts.

The primary undertakings within the scope of DaWetRest in the Middle Danube region encompass the following activities:
a) Implementation of hydrotechnical initiatives to enhance the ecological conditions essential for ecosystem functionality, which includes the removal of natural barriers within lateral canals.
b) Establishment of a green hatchery with the objective of replenishing fish populations in hydro-ecosystems and augmenting the biodiversity of waterfowl.
c) Execution of comprehensive biodiversity, water quality, and soil quality monitoring efforts.
d) Formulation of a strategic plan aimed at enhancing wetlands and floodplains, in addition to improving management practices for carbon storage.

The overarching objective of the DaWetRest is to illustrate the application of restoration measures within limited geographic regions and to propose forthcoming actions essential for enhancing the conditions of wetlands, floodplains, coastal wetlands, and salt marshes within the Danube Region. These proposed actions will be incorporated into the Action plan, slated for development upon the project's conclusion.
All of these endeavors are underpinned by a holistic and interdisciplinary approach, necessitating the active involvement of local communities and citizens across distinct phases of implementation:
a) The identification of needs and challenges is initiated through technical dialogues with stakeholders, a thorough analysis of scientific findings, and the review of official reports.
b) Subsequently, the preparation phase is launched, which involves an assessment of the initial status, primarily achieved through on-site observations and data collection.
c) Finally, the implementation phase ensues, entailing the application of both active and passive restoration measures.

**Links to websites, patents, webinars, and further visual media**

Project website: www.dawetrest.eu

**INNOVATIVE ECOSYSTEM-BASED PRACTICE: MIDDLE DANUBE**

| **Innovative ecosystem-based practice: Rain gardens** | **Area of intervention**<br>– biodiversity conservation and restoration<br>– disaster response<br>– land use planning<br>– water management<br>– ports and navigation agriculture<br>– fisheries<br>– forestry<br>– waste water and waste management | **Scope**<br>– local<br>– cross-border<br>– transnational |
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Funded by the European Union

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| | – wetland management | |

**Description**

The publication: Amela Greksa, A., Blagojević, B., Grabić, J. 2023. Nature-based Solutions in Serbia: Implementation of Rain Gardens in the Suburban Community Kać. Environmental Processes 10:41. https://doi.org/10.1007/s40710-023-00659-2

has already been commented in the task T 2.2. Satellite, peri urban settlement of Novi Sad close to Danube and connected with two channels. It is kind of pilot actions aimed to (citation from publication):

*Rain gardens (RGs), also called bioretention systems, biofilters etc. RGs can be described as a small-scale NbS that are specially designed to collect, absorb and filter stormwater runoff from impervious areas, both in private areas as well as in the urban context, for both flood control and water quality control.*

The rain gardens were tested, for three years, and results evaluated.

In the article this is named as small-scale NBS, but more appropriately, however, still not introduced, this can be mini-scale.

As innovative may be understood (citation from publication) following effects:

- Promoting stormwater infiltration,
- increasing biodiversity and providing habitat and food for wildlife, pollutant removal.

**Links to websites, patents, webinars, and further visual media**

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**INNOVATIVE ECOSYSTEM-BASED PRACTICE: MIDDLE DANUBE**

| **Innovative ecosystem-based practice: Project "Connecting Nature"** | **Area of intervention**<br>– biodiversity conservation and restoration<br>– disaster response<br>– land use planning<br>– water management | **Scope**<br>– local<br>– cross-border<br>– transnational |
|---|---|---|

**Description**

Project "Connecting Nature" is funded by EU Horizon 2020 Programme. Within this project NBS activities for several cities are performed, including Sarajevo. The small river, Miljacka, which is streaming through Sarajevo, is tributary of river Bosna, which is tributary of river Sava. This means, Miljacka belonging to Danube River Basin.

The following citation is taken from the web site https://connectingnature.eu/sarajevo:

In Sarajevo, the NBS exemplar proposed is to create urban garden in a state-run Children's Home which is located next door to a Centre for Healthy Ageing. A core feature of the exemplar is to promote and encourage intergenerational learning through the joint design,

management and maintenance of the garden. If successful, the City of Sarajevo intends to roll out the model in similar settings across the city.

Challenges: Poor quality of the river. Urban poverty.

Goal to be achieved within 5 years' timeline: Healthy multifunctional green spaces. Green focused local businesses. Clean drinking water.

Public green areas with a mix of wilderness and human managed zones (like allotment gardens). Better understanding of flooding challenges. Healthier conditions for collaboration within the city.

Goal to be achieved within 10 years' timeline: Seriously reduced pollution from vehicles. The river water is clean enough to swim in.

Comment: it is performed kind of preliminary study, with NBS features, but it is not fully documented. Expectations, kind of Theory of Change, are obviously related to the water management.

**Description of addressed challenges: ecological and social**

There are problems in several segments, incl. an evident problem of pollution, especially in the winter, deforestation, turning green areas into parking lots and buildings, and illegal construction that affects airflow, which exacerbates pollution. Sarajevo faces the problem of traffic and heating that affect pollution as well, and this problem requires systemic changes, not short-term solutions. Sarajevo is characterised with a lot of new buildings for living and business purposes, but often, these buildings are built on green areas within the municipalities and local communities, often not respecting urban planning. This approach creates additional issues, such as lack of wind, creating high pollution and fog in winter periods.

Sarajevo, as a modern city, is a complex of buildings for various purposes: architectural and infrastructural buildings, free spaces, water surfaces, green plantations, etc. However, the city cannot be defined as a mechanical sum of its constituent elements, but a connected whole, which is constantly growing and evolving. The character of the interconnections of the components of that system is complex and determined by numerous factors. However, the basic condition for its normal functioning is ecological unity. A certain balance of environmental factors, which form the area of the city, primarily determines the living conditions of the inhabitants.

**Solutions with their environmental, social, economic and security aspects**

One of the ways to improve the environment is to raise green areas. For green areas to be able to fulfil health, microclimatic and aesthetic functions, it is of great importance to connect them into a single system of greenery, which must be set on certain organizational principles.

Environmental aspects: improved accessibility to green spaces, air temperature reduction (for micro location, biodiversity increase, air pollution decrease, raising awareness on multiple benefits of NBS, community accessibility educational component of importance on environmental protection, more green areas in urban are.

Social aspects: cross-generation networking, creating cooperation with various stakeholders, social cohesion, creating cooperation with various stakeholders, inclusion of marginalised groups, Community involvement in NBS implementation. Socio-cultural life in the city is increasingly transferred to open green spaces. Parks, squares, gardens, and other categories of greenery contribute to the development of social life and provide the city population with the opportunity to gather in nature, connecting the useful with the beautiful.

Economic aspects: new business attracted, public-private partnership promoted.

**Stakeholder participation**

Within the workshop with Nua Horizon (held in February 2020), the Agency and the City defined an exemplar that included several factors: economic, social, environmental, etc., and due to events in the recent history of Bosna and Herzegovina and the city, another additional factor was taken into consideration, and that is peace and reconciliation. Thus, the first idea of the example was a park of friendship/ future on the border between the two cities, but after considering the administrative requirements and due to the complicated bureaucracy, the second idea was approached.

The Sarajevo Team did this by exchanging experiences with FRC - a peer to peer learning session was held with Glasgow, where we exchanged experiences, key stakeholders, but also the way how they will be engaged in the project (e.g. cooperation with universities, involvement of NGO dealing with environmental protection, cooperation with architects etc was mentioned as a good approach). Also, during communication with some of the project partners, the idea of additional cooperation between cities was raised in order to share experiences and good practices. Also, support in defining the key stakeholders was provided by the partner Osmos. Through a conversation with Glasgow the Sarajevo Team realised it would be useful to do stakeholder mapping and then an engagement plan.

The Sarajevo Team gave the attention to the aspect of interest of key stakeholders, and to get involved in the project and how we can achieve mutual cooperation and connections that can maintain long term cooperation (e.g. with the university, Faculty of Science - Department of Biology), also, how to involve actors who can contribute to the project and development of the exemplar.

**Success and limiting factors**

Planning phase: included detection of ideas for the exemplar and its financing – defining the exemplar provided the Sarajevo team basis for further work, including peer-to peer sessions with FRC Glasgow – sharing experience and best practices helped the Sarajevo Team in many learning questions and stakeholder mapping – gave the Team wider picture in key actors for the exemplar; Business Model canvas helped the team to define key elements for the financing the exemplar and The Sarajevo process – artistic based approach firstly tested in Sarajevo, which will be used as a tool in the exemplar activities.

Delivery phase: included activities regarding funding opportunities and financing the exemplar, ex-change of good practices in similar activities (Glasgow, Poznan, A Coruna) and inputs for the exemplar – stakeholder needs and opportunities for cooperation; indicator

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| assessment training programme – defining key indicators for the exemplar as important method for measuring the benefits.<br><br>Stewardship phase will involve maintenance of the exemplar and its replication in other areas of the city, but also ambition to create sustainable model for the design and implementation of the urban gardens and its recognition as strategic project of the city/canton. |
| **Costs and benefits**<br>Business Model Canvas workshop was held in Sarajevo, in February 2020 by Horizon Nua, where main financing opportunities and models have been identified. It helped the Sarajevo team to think wider and to apply comprehensive approach to this important section of the exemplar. |
| **Links to websites, patents, webinars, and further visual media**<br><br>Project Website (main source): https://connectingnature.eu/; https://connectingnature.eu/oppla-case-study/24729<br><br>Publication on The vital role of Nature-based solutions in a nature positive economy: https://connectingnature.eu/sites/default/files/images/inline/Nature%20based%20Economy%20policy%20doc.pdf<br><br>Case Study Sarajevo: https://connectingnature.eu/oppla-case-study/24729<br><br>Guidebooks: https://connectingnature.eu/guidebooks |

**INNOVATIVE ECOSYSTEM-BASED PRACTICE: MIDDLE DANUBE**

| **Innovative ecosystem-based practice: Aquaponics** | **Area of intervention**<br>– biodiversity conservation and restoration<br>– disaster response<br>– land use planning<br>– water management<br>– ports and navigation agriculture<br>– fisheries<br>– forestry<br>– waste water and waste management<br>– wetland management | **Scope**<br>– local<br>– cross-border<br>– transnational |
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| **Description** | | |

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| The following planned activity, innovative aquaponic, combination of fishponds and organic production of vegetables, foreseen for Middle and Lower Danube, is applied for Ocean Mission Charter.<br><br>The term “aquaponics” is well known technology of combined fishery and agricultural production, first of all organic growing of vegetables. The idea is to use fish effluents, of ponds as substrate, nutrients and bacteria, for organic production. This will, on one side, contribute to the cleaning of fishery ponds, reduction of litter coming to waters, and, on the other side, enable organic fertilizer for organic production of vegetables and medicinal and aromatic crops. The crops will be produced by as soil less cultures (hydroponic), whereby needed inputs, nutrients and bacteria, will be used from fishpond. This combination of producing of fishes and agro-food is called aquaponics. The project, co-financed by governments of Norway and Montenegro, is aimed to introduce aquaponics on six small fishery farms. Idea is to demonstrate technology, test solutions and create public awareness of reduction of litters, *i.e.* effluents emission to waters. Innovation Fishery Cluster is doing planning, monitoring and training in cooperation with Uni Novi Sad, Serbia. For the future is planned the development of commercial size demonstration plants in at least three countries of Danube Lower Stream.<br><br>**Name of organisation:** Innovative Fishery Cluster Ikra Akvaponija<br>**List of Partners:** University of Novi Sad, Faculty of Agriculture, Faculty of Technical Sciences |
| **Links to websites, patents, webinars, and further visual media**<br><br>Website: https://maritime-forum.ec.europa.eu/en/node/7534 |

**INNOVATIVE ECOSYSTEM-BASED PRACTICE: MIDDLE DANUBE**

| **Innovative ecosystem-based practice (please specify the geographical scope): Plastic Cup** | **Area of intervention**<br>- biodiversity conservation and restoration<br>- disaster response<br>- waste water and waste management | **Scope**<br>- national<br>- cross-border<br>- transnational |
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| **Description**<br><br>The key to the success of Plastic Cup is that it’s able to transform a difficult and dangerous exercise, like collecting trash, into a fun and inspiring team-building exercise, into the adventure of a lifetime. Plastic Cup is the first, and as far as we know, an initiative in the world that looks to fight pollution by using pollutants.<br><br>Main activities:<br>• voluntary/community and professional clean-up activities,<br>• upcycling riverine waste/aquatic plastics,<br>• monitoring floodplain forests through satellite images,<br>• developing eco-friendly trash collector systems. | | |

| **Links to websites, patents, webinars, and further visual media** |
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| Website: https://petkupa.hu/eng/<br><br>YouTube channel: https://www.youtube.com/@PETKupa<br><br>Aquatic Plastic, the transnational river clean-up handguide: https://www.interreg-danube.eu/uploads/media/approved_project_output/0001/56/4fb08d49141573d5aecbea014f841deaa6cb28c7.pdf |

**INNOVATIVE ECOSYSTEM-BASED PRACTICE: MIDDLE DANUBE**

| **Innovative ecosystem-based practice: PETÉNYI and PETII – The trash-eater trash boats: Tisza-river** | **Area of intervention**<br>- biodiversity conservation and restoration<br>- disaster response<br>- wastewater and waste management | **Scope**<br>- national<br>- cross-border |
|---|---|---|

**Description**

Restoring the water quality of transboundary rivers to good status and near-natural conditions is a complex challenge. An important part of the solution is of course to eliminate the source of pollution. However, in the case of international river pollution, the “polluter pays” principle is often difficult to enforce and preventive waste management solutions are even more difficult to develop. It usually takes decades, not years, to find a systemic solution. In the meantime, what should happen to the plastic that ends up in natural waters? Should it continue to accumulate in riverbeds, on banks, in floodplains, or drift out to sea? Immediate reactive measures are needed in parallel and in parallel with preventive measures. There are many arguments, supported by research, for the introduction of river clean-ups, both ad hoc and systematic.

80% of ocean plastic pollution enters the seas through rivers. It is therefore necessary to prevent the further growth of oceanic islands of waste in rivers.

Renewable energy from rivers is used to clean, pre-sort and landfill large quantities of waste. River clean-up interventions in the lower reaches of rivers can achieve a high mitigation factor at relatively low cost.

The Tisza is one of the most polluted rivers in Europe. It is the largest tributary of the Danube. Its source is in Ukraine and its catchment area is shared by 5 countries, of which 3 (Hungary, Romania, Slovakia) are members of the European Union and 2 (Ukraine, Serbia) are non-member countries. In the Tisza's headwaters in Ukraine, 400 million tonnes of household waste are not properly managed every year. It is common practice in the upper reaches of the Tisza to dump household waste directly into the river, but landfills are usually built alongside watercourses. One of the largest in the region is the landfill near Raho. When the river floods, some of the waste is washed away and the water carries it to the European Union. Currently, the Tisza is one of the most polluted rivers in the EU, with hydrological


Funded by the European Union

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| data showing that it brings more than 500 bottles per minute from Ukraine and Romania during flooding. Plastic is dumped into floodplains or clogs the riverbed, threatening drinking water supplies, wildlife, the quality of life of local residents, tourism and other sectors.<br><br>M. V. PETÉNYI boat:<br>Its body is buoyed by recycled pill bottles collected from the Tisza. During the operation, it is anchored and the force needed to manoeuvre is provided by the current of the river. Its outstretched tentacles filter out debris on the river surface, which is lifted out of the water by hand using nets.<br><br>PETII boat: Rapid response river waste collection and treatment vessel<br><br>Principle of operation: During the operation, anchored at anchor, it uses its outstretched tentacles to filter out debris on the river surface, which is lifted out of the water by hand using nets. Meanwhile, the wastebasket is lowered into the water, which, when full, is lifted out by hand, emptied, and released. |
| **Links to websites, patents, webinars, and further visual media**<br><br>YouTube: https://youtu.be/gQbs5hEDE4k?si=MnbReupF6bFZEvd5<br><br>Website: https://petkupa.hu/hu_HU/?cikkId=m-v-petenyi-alias-szemetevo-szemethajo |

**INNOVATIVE ECOSYSTEM-BASED PRACTICE: MIDDLE DANUBE**

| **Innovative ecosystem-based practice: LIFE MICACC - Hungary** | **Area of intervention**<br><br>- biodiversity conservation and restoration<br>- disaster response<br>- land use planning<br>- water management<br>- forestry<br>- wastewater and waste management<br>- wetland management | **Scope**<br><br>- national |
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| **Description**<br><br>The LIFE MICACC project, coordinated by the Hungarian Ministry of Interior, aims to find solutions to various climate change problems in 5 small Hungarian villages with different problems by applying natural water conservation solutions. Natural water conservation solutions are multifunctional solutions to protect water resources and solve other water-related problems by maintaining and restoring ecosystems based on self-sustaining natural processes. They aim to improve the water-holding capacity of habitats, soils and groundwater aquifers while improving the status of water and water-dependent ecosystems. | | |

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| They will expand green infrastructure networks, improve water quantity and quality, and reduce vulnerability to droughts, heat waves and floods; all through natural processes, enhancing ecosystem services. In addition, they provide a range of co-benefits such as erosion control, soil conservation, natural habitat creation and preservation, microclimate regulation and recreational opportunities. Their application also helps to mitigate and adapt to the effects of climate change.<br><br>Püspökszilágy: slowing down run-off to combat flash floods<br><br>Bátya: innovation in stormwater management<br><br>Rákócziújfalu: no waste of inland water<br><br>Ruzsa: wastewater is also valuable<br><br>Tiszatarján: landscape management in the floodplain |
| **Links to websites, patents, webinars, and further visual media**<br><br>Website: https://vizmegtartomegoldasok.bm.hu/en |

**INNOVATIVE ECOSYSTEM-BASED PRACTICE: UPPER/MIDDLE DANUBE**

| **Innovative ecosystem-based practice (please specify the geographical scope): NetworkNature** | **Area of intervention**<br><br>– biodiversity conservation and restoration<br>– disaster response<br>– land use planning<br>– water management<br>– ports and navigation agriculture<br>– fisheries<br>– forestry<br>– wastewater and waste management<br>– wetland management | **Scope**<br><br>– local<br>– regional<br>– national<br>– cross-border<br>– transnational |
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| **Description**<br><br>NetworkNature is a project funded under the EU Horizon 2020 Programme. It is a resource for the nature-based solutions community, creating opportunities for local, regional, and international cooperation to maximise the impact and spread of nature-based solutions.<br><br>The project activities are described on the project website, as follows:<br><br>• **Synthesize & strengthen the NBS evidence base** by gathering experiences, knowledge, tools and services from **over 30 Horizon 2020** projects.<br>• **Engage existing stakeholders & expand the NBS community** to new sectors and target audiences, by creating new partnerships and identifying | | |

sectoral champions, sharing knowledge in dedicated events, educating young generations and communicating the latest findings in the field.

- **Ensure NBS science informs the policy agenda and vice versa.** As an interface between NBS innovators and knowledge generators as well as business and policy makers, NetworkNature is a bridge between the European policy landscape and the NBS community.
- **Accelerate the uptake of NBS** across science, business, policy and practice by providing guidance and capacity building, creating and operating new European NBS regional hubs, coordination of the EU H2020 Nature-based Solutions Task Forces and networking with practitioners, business, investors and policymakers.

**Links to websites, patents, webinars, and further visual media**

Project website: https://networknature.eu/

Nature-based solutions search: https://networknature.eu/nbs-search

Nature-based solutions knowledge databases: https://networknature.eu/nature-based-solutions-knowledge-databases

Case studies finder: https://networknature.eu/network-nature-case-study-finder

**INNOVATIVE ECOSYSTEM-BASED PRACTICE: LOWER DANUBE**

| **Innovative ecosystem-based practice: "Restoration and Sustainable Management of Wetlands" project** | **Area of intervention**<br>– biodiversity conservation and restoration<br>– water management<br>– fisheries<br>– wetland management | **Scope**<br>– local<br>– regional<br>– national<br>– cross-border<br>– transnational |
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**Description**

In the Lower Danube Region, a remarkable example of innovative ecosystem-based practice is the "Restoration and Sustainable Management of Wetlands" project implemented in Bulgaria and Romania. This cross-border initiative targets the conservation and revival of wetland ecosystems along the Danube, emphasizing the restoration of floodplains and the enhancement of natural hydrological processes. By reinstating the connectivity between river channels and their floodplain areas, the project has enabled water to flow into these wetlands during periods of high discharge, mimicking natural flooding patterns. This practice not only replenishes groundwater resources but also supports the recovery of diverse flora and fauna, enhancing the overall ecological health of the Lower Danube region. Collaborative efforts between scientific institutions, local communities, and environmental agencies have facilitated the success of this project, serving as a model for integrated watershed management and ecosystem restoration.

**Links to websites, patents, webinars, and further visual media**

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**INNOVATIVE ECOSYSTEM-BASED PRACTICE: LOWER DANUBE**

| **Innovative ecosystem-based practice: "Fish-friendly Hydroelectric Turbines" initiative** | **Area of intervention**<br>– biodiversity conservation and restoration<br>– water management<br>– fisheries<br>– wetland management | **Scope**<br>– local<br>– regional<br>– national<br>– cross-border<br>– transnational |
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| **Description**<br><br>A noteworthy innovation in the Lower Danube Basin is the "Fish-friendly Hydroelectric Turbines" initiative, adopted in Romania to address the ecological challenges posed by hydropower installations. Recognizing the importance of balancing renewable energy generation with aquatic biodiversity conservation, several hydroelectric facilities along the Danube and its tributaries have adopted specialized turbines designed to minimize the impact on fish populations. These turbines feature modified blade designs and intake structures that reduce fish mortality rates and improve fish passage. Collaborative research efforts between engineering firms, fisheries experts, and conservation organizations have led to the development and deployment of these fish-friendly turbines. This practice not only contributes to the preservation of fish species but also promotes sustainable energy production, showcasing a harmonious integration of technology and ecology in the Lower Danube region. | | |
| **Links to websites, patents, webinars, and further visual media**<br><br>Assessment Report on Hydropower Generation in the Danube Basin: https://www.icpdr.org/main/sites/default/files/nodes/documents/hydropower_assessment_report_danube_basin_-_final.pdf | | |

**INNOVATIVE ECOSYSTEM-BASED PRACTICE: DANUBE DELTA & BLACK SEA**

| **Innovative ecosystem-based practice: "Revision of the management plan and regulations of the Danube Delta Biosphere Reserve DDBR" project** | **Area of intervention**<br>– biodiversity conservation and restoration<br>– land use planning<br>– water management<br>– fisheries<br>– wetland management | **Scope**<br>– local<br>– cross-border |
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| **Description**<br><br>"Revision of the management plan and regulations of the Danube Delta Biosphere Reserve DDBR" is a project with the following goals:<br>– Mapping wild species of community interest;<br>– Updating the geospatial database of DDBR; | | |


Funded by the European Union

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| – Carrying out a socio-economic study to assess anthropogenic pressures and the relationship between communities and protected areas;<br>– Increasing community awareness, education and involvement regarding the protection of the Danube Delta's biodiversity;<br>– Biodiversity Protection Action Plan for the next 10 years;<br>– Review the monitoring plan of the DDBR species and habitat;<br>– DDBRA capacity building. |
| **Links to websites, patents, webinars, and further visual media**<br><br>https://ddbra.ro/proiecte/ |

**INNOVATIVE ECOSYSTEM-BASED PRACTICE: DANUBE DELTA & BLACK SEA**

| **Innovative ecosystem-based practice: NEVERMORE project** | **Area of intervention**<br>– biodiversity conservation and restoration<br>– land use planning<br>– water management<br>– fisheries<br>– wetland management | **Scope**<br>– local<br>– cross-border |
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| **Description**<br><br>Another innovative project is “NEVERMORE – New Enabling Visions and tools for End-useRs and stakeholders thanks to a common MOdeling appRoach towards a climatE neutral and resilient society” implemented by an international consortium that promote international cooperation (e.g. through the dissemination of the project to the Covenant of Mayors for Climate and Energy or The European Climate Adaptation Platform – Climate ADAPT), create partnerships with researchers, stakeholders and end-users, and build the capacity for coordinated global climate action in line with the Paris Agreement and the Sustainable Development Goals (SDGs). The innovative element is the interdisciplinary co-production of knowledge development of integrated methods necessary to support decision-making in the transition to the necessary transformation pathways (e.g. energy, society, etc.) participation of stakeholders in climate science and policy by: Downscaling algorithms for climate data/ Cross-sectoral methodology for modelling CC impacts, risks/A&M effects/ Open-source-code IAM. | | |
| **Links to websites, patents, webinars, and further visual media**<br><br>Project website: https://www.nevermore-horizon.eu/nevermore-actions/ | | |

**INNOVATIVE ECOSYSTEM-BASED PRACTICE: DANUBE DELTA & BLACK SEA**

| **Innovative ecosystem-based practice: ITI Danube Delta** | **Area of intervention**<br>– biodiversity conservation and restoration<br>– land use planning<br>– water management | **Scope**<br>– local<br>– cross-border |
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| | – fisheries<br>– wetland management | |

**Description**

The biosphere reserve also has dedicated funds from the integrated territorial instrument - ITI Danube Delta. The instrument is dedicated to implement the Danube Delta Integrated Development Strategy 2030 and it is accessed through the Danube Delta Community Development Association. The role of the association is to prioritize the projects that will be promoted to obtain financing from the ESI funds and issues compliance (relevance) notification with SIDD DD, which will be carried out by the technical staff under the leadership of the ITI coordinator and the President of the ADI-ITI Board of Directors. The eligibility evaluation and project contracting will be done by each Management Authority separately and the elaboration of Financing Applications will be carried out in accordance with the provisions of the Applicant's Guidelines for each Operational Program separately. The instrument can only be accessed by the local entities and most programs calls are not competitive.

**Links to websites, patents, webinars, and further visual media**

https://www.itideltadunarii.com/adi-iti-delta-dunarii/cine-suntem

**INNOVATIVE ECOSYSTEM-BASED PRACTICE: DANUBE DELTA & BLACK SEA**

| **Innovative ecosystem-based practice: Cultural events** | **Area of intervention**<br>– biodiversity conservation and restoration<br>– land use planning<br>– water management<br>– fisheries<br>– wetland management | **Scope**<br>– local<br>– cross-border |
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**Description**

ANONIMUL International Film Festival (20th edition in 2023), organized in the heart of the Danube Delta, in Sfântu Gheorghe. The festival was created at the initiative of the ANONIMUL Foundation, which wanted a different film festival for independent films and young directors. The festival takes place in August every year and receives more than 5000 visitors annually. The location of the festival is a small village with streets covered with fine sand, which preserves many ancient traditions, a literally new land for an event dedicated to youth, free spirit, meetings, debates and dialogue. The "Film festival Village" includes the Green Village Complex and Green Dolphin Camping, being equipped with all the necessary facilities to organize a film festival. Moviegoers stay in guesthouses, tents or cabins, they can watch movies all day in the cinema and all night outdoors, on the huge screen in the campsite. The complex has an eco-friendly design, which harmonizes with the surrounding environment.

Delta Rowmania Triathlon (12th edition in 2023): is a competition of road triathlon, addressed to lovers of nature, exercise and outdoor sports, for professional and amateur

athletes.The Delta Rowmania Triathlon is an initiative of the multiple Olympic champion in canoeing, Ivan Patzaichin, part of the Rowmania campaign to promote ecotourism destinations in the Delta Danube and the values of common sense tourism, a movement that works for a better understanding and interpretation of nature.

Rowmania Fest, International Festival of Rowing Boats (11th edition in 2023): the event includes rowing competitions, workshops, film screenings, concerts. It is organized at the end of August ans first days of September and the moment coincides every year with the arrival in Tulcea of the TID tour (Tour International Danubien), an old tradition of more than 60 years, which consists of traveling the river from the sources to the discharge by a convoy of about 100 kayaks. The journey of more than 2500 km on water takes more than two months, and the participants are usually daredevils from: Germany, Austria, Hungary, Slovakia, Bulgaria, Czech Republic, Serbia, Ukraine and Romania.

Also there are several fish borsch festivals that in addition to the gastronomic side, they include a series of sports and art events which are meant to highlight the Danube Delta iconic landscapes. https://www.turistulliber.ro/blog/evenimente/festivalul-borsului-lipovenesc-de-jurilovca-2023/ ;
http://www.romaniaturistica.ro/festivalul-borsului-de-peste-al-deltei-dunarii-crisan
https://www.info-delta.ro/calendarul-evenimentelor-din-2023-din-delta-dunarii-si-dobrogea-de-nord/

**Links to websites, patents, webinars, and further visual media**

https://www.festival-anonimul.ro/despre/festival/

https://www.eco-romania.ro/delta-dunarii/rowmaniafest-festivalul-international-al-barcilor-cu-vasle/

**INNOVATIVE ECOSYSTEM-BASED PRACTICE: DANUBE DELTA & BLACK SEA**

| **Innovative ecosystem-based practice in Danube Delta & Black Sea: "Development of the Monitoring Station for migratory fish: sturgeon and pontic shad - Isaccea" project** | **Area of intervention**<br>– biodiversity conservation and restoration<br>– fisheries | **Scope**<br>– regional<br>– national |
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**Description**

Maintaining the genetic stock through artificial methods. The Danube Delta Biosphere Reserve Authority (DDBRA) in partnership with the "Danube Delta" National Institute for Research and Development (DDNI) implements the project "Development of the Monitoring Station for migratory fish: sturgeon and pontic shad - Isaccea", financed by the Large Infrastructure Operational Program (POIM).

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| The general objective of the project is to preserve biodiversity by implementing some measures from the Danube Delta Biosphere Reserve Management Plan to improve the conservation status of migratory fish, sturgeon and pontic shad populations in the DDBR.<br><br>As a result of the artificial breeding activity carried out during the week of April 24 - 28, 2023, part of the activities provided for in the project, young Russian sturgeons have resulted. The youngster will ensure the genetic diversity of the species due to the fact that they are a resulted from captured and released parents from the natural environment, individuals that have been already genetically proven to be wild and not from captivity. |
| **Links to websites, patents, webinars, and further visual media**<br><br>https://ddni.ro/wps/ro/proiecte-nationale/<br><br>https://www.facebook.com/INCDDD/posts/pfbid02qsyaBQhmhJTNx5oKM4G7FmwQ3uQzNWzW2ABrjfHHaHwLyyMepxCgU1cpVRiw4Hxcl |

**INNOVATIVE ECOSYSTEM-BASED PRACTICE: DANUBE DELTA & BLACK SEA**

| **Innovative ecosystem-based practice in Danube Delta & Black Sea: "Improving hydrological conditions in natural aquatic habitats from the Delta Biosphere Reserve Danube for the conservation of biodiversity and fisheries resources" project** | **Area of intervention**<br>– biodiversity conservation and restoration<br>– wetland management | **Scope**<br>– regional<br>– national |
|---|---|---|
| **Description**<br><br>The project focused on Improving hydrological conditions in natural aquatic habitats from the Delta Biosphere Reserve Danube for the conservation of biodiversity and fisheries resources.<br><br>The general objective of the project was to improve the degree of protection and conservation of the state of the ecosystems that represent habitats of conservation interest for species of community importance from The Danube Delta Biosphere Reserve by ensuring optimal circulation of water in the Gorgova-Uzlina Dunavăţ–Dranov,Razim–Sinoie, Sinoie-Istria–Nuntaşi and Roşu-Puiu complexes. | | |
| **Links to websites, patents, webinars, and further visual media**<br><br>https://ddbra.ro/aflate-in-implementare/ | | |

# 6. CONCLUSION

The inventory of innovative ecosystem-based practices in local, cross-border, and transnational spatial policies will serve as a baseline for identifying best practice examples in the Danube basin. The inventory is connected to MS3.3 and the list of projects is made available to the public and EcoDaLLi stakeholders on the EcoDaLLi website. The inventory will be continuously used and updated during the project and will be included in the EcoDaLLi portal.