

***Deliverable 5.2.2 –
Report on lessons learnt considering administrative,
legislative and technical constrains,
potential conflicts, solutions, based on experience from
pilot area feasibility studies and national experience***

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Deliverable	D 5.2.2 Report on lessons learnt considering administrative, legislative and technical constrains, potential conflicts, solutions, based on experience from pilot area feasibility studies and national experience
Activity-leader	NARW
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Involved partners	All project partners especially those from countries with pre-selected pilot areas
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Table of Contents

Introduction.....4

Recommendations from the studied pilot areas within the Danube Floodplain project5

Conclusions.....7

From the previous restoration projects and national experience7

 The stakeholders8

 Working with partners9

 Authorizations and permits..... 10

 Cross-border cooperation 10

 Communication 10

 Constraints for floodplain restoration projects..... 11

 General lessons learnt from the implemented projects 12

References..... 13

Introduction

Deliverable D 5.2.1 contains the general lessons learnt considering administrative, legislative and technical constraints, potential conflicts, solutions, based on experience from pilot area feasibility studies and national experience.

It was based on deliverable D 4.4.3 of Work Package 4, i.e. the “Summary of general recommendations for a successful realization process, communicated to local, national, and international stakeholders in workshop activities and publications as input for D 5.2.1 and D 5.2.2”.

This report had as input the deliverable D 4.4.3 Summary of general recommendations for a successful realization process, communicated to local, national, and international stakeholders in workshop activities and publications”.

Nowadays, only 25% of the rivers within the Danube River Basin (DRB) have good ecological potential or good ecological status (ICPDR, 2015b) and 77% have good chemical health (before considering mercury's impact on the biota). Floodplains on the Danube River are affected by the high pressure on it and its heavy use. There are today only 32% of the former floodplains (Hein et al., 2016). The habitats and species listed in the Habitats Directive in floodplains in Europe are rarely untouched by human activities, as only 17 % are in good conservation status (European Environment Agency, 2020). Furthermore, flood risk management has become increasingly relevant. Since rivers and floodplains in Europe are under tremendous pressure and have experienced major changes, the EU has adopted several directives that aim to safeguard their ecological status, on one hand, and to boost their flood-regulating properties, on the other.

The Water Framework Directive was established by the EU in October 2000 to protect and enhance water bodies' ecological state and to ensure sustainable water use. A river basin is used as the management unit rather than a nation or a political boundary in this new approach to water management. Its aim was for rivers and groundwater throughout Europe to have good ecological and chemical conditions by 2015.

A transboundary river management approach is considered essential to attaining these goals. An ecological and chemical assessment was performed of surface waters and groundwater with a five-tier scale, and where necessary, measures were taken to improve the ecological status. Monitoring and implementing restoration measures will be repeated every six years because good status could not be achieved for all waters by 2015. According to the WFD, implementation has slowed the degradation of water quality and reduced chemical pollution (mainly from point sources). Even though the deadline for achieving this objective, except in legally justified situations, expired in 2015, less than half of the EU's water bodies are considered to be in good health, despite the delays in implementing the Directive (European Commission, 2019).

Using floodplains differently or partially overusing them can also result in the reduction of natural flood areas alongside rivers. Farms and urban areas can be damaged by flooding. As a result, the EU adopted the Flood Risk Directive (FD) in 2007 (European Parliament, 2007). Member states of the EU are required to prepare flood hazard maps, flood risk maps, and flood risk management plans for

areas with potential significant flooding, and to review and update them as needed every six years; this approach was used in the Danube River Basin (ICPDR, 2015a). The European Flood Risk Management Directive (FRMD) aims to minimize the loss of human life, as well as damage to the environment, cultural heritage, and economic activity and infrastructure caused by floods (European Parliament, 2007). The management of flood risks can be accomplished by hazard zone planning, local development, building regulations, and maintenance. Flood retention areas can also be effective measures, but more drastic ones like resettlement are rarely followed due to a lack of legal regulations and low acceptance by the affected community. Due to the fact that floods don't respect borders, basins are the core management units.

In five pre-selected pilot areas, project partners applied hydrodynamic two-dimensional models to assess the hydraulic efficiency of restoration measures. Hydrodynamic models carried out for each pilot area have produced spatial results for maximum water depths and flow velocities showing different effects based on the various restoration measures and maximum discharge of the simulated flooding event. The results of these studies can be used to assess biodiversity, ecosystem services, and flood risk.

Landowners and residents are affected by the proposed measures in the pre-selected pilot areas. Consequently, stakeholders were informed about the project in the beginning, involved in the development of the measures, and agreed in principle to the proposed work.

The process was characterized, which included stakeholder workshops in the pilot areas to record fundamental knowledge relevant to the evaluation of ecosystem value, economic value, and cultural value of the pilot areas.

Ecosystem services were mapped, including the process by which nutrients are retained, the way natural resources are utilized, and cultural uses within an area from the perspective of stakeholders. The stakeholder analysis and ecosystem value mapping in the Danube floodplain (Danube Transnational Programme, 2020) laid the foundation for more research on ecosystem services and provided clues for further monetary estimates of floodplain restoration measures. The extended cost-benefit analysis and its results are presented, described and estimated in detail, following the methodology described.

The collection of all recommendations from pilot areas is summarized here into one document in order to assist the implementation of similar floodplain restoration measures in the future, especially in those prioritized based on the extended FEM tool.

Recommendations from the studied pilot areas within the Danube Floodplain project

From the Danube Floodplain project, we collected ideas to transfer to future projects that will deal with floodplain restoration measures.

In terms of planning and design, the measures should not be prepared by a single institution, rather, their design should be the product of a collaboration between different governing bodies and institutions, as well as (mainly) stakeholders (for acceptance). When planning the operating schedule, make sure there is enough time for this task. By restoring floodplains, we are complying with the Water Framework Directive (WFD) and Floods Directive (FD) of the European Union, which reduce flood risk and improve water status and also other important directives (Birds and Habitat).

Two-dimensional hydrodynamic models are useful to analyze the impact of possible restoration scenarios on flood hazard and risk.. Restoration measures differ significantly according to each pilot area, and the discussion of the results should consider the models' limitations, as well as the potential effects of tributary rivers.

The measures can be evaluated by considering also habitat modeling and ecosystem services. Fuzzy logic-based models are promising options for biodiversity and habitat assessment, since they can incorporate different types of input information. Generally, a meso-scale approach to habitat modeling, used in the Danube Floodplain Project, can provide insight into how restoration measures impact the ecosystem, but habitat modeling at the micro-scale provides more detailed information and enables the evaluation of specific species. However, such modeling can also be time-consuming and labor-intensive.

It is still difficult for countries of the Danube River Basin to integrate the concept of ecosystem services (ESS) into their decision-making processes. To estimate floodplain restoration benefits based on monetized ecosystem services, a combination of stakeholder engagement, land use and land cover analysis, and TESSA's Toolkit for Ecosystem Service Site-Based Assessment have been used. There are also uncertainties in the results and more modeling could be done for some ESS (such as water quality).

As done in the Danube Floodplain project, some additional benefits (monetized ecosystem services) when analyzing cost-benefits for flood risk purposes should be considered.

Researchers, engineers, and experts should only provide the tools and results needed, so that politicians can meet decisions. .

The stakeholders should be engaged continuously in future projects. Working with stakeholders in many workshops or other consulting tools proved to be an effective method of communication. The presentation of the actual situation and possible solutions during meetings in the local area should support the personal communication.

Participants in the workshops must understand the principles of ESS; for example, the organizers can help on this by presenting and explaining the concepts in an understandable way for all. Furthermore, stakeholders should be kept informed about the restoration projects to maintain the level of cooperation between them.

In assessing floodplain restoration projects, combining results from hydraulic analysis, habitat modeling, ecosystem services, cost-benefit analysis, and stakeholder analysis would simplify and standardize the process, making it as procedural in a way.

Conclusions

Floodplain restoration is seen as a win-win solution to the flood risk problem. The hard-technical measures used in the last century to protect us from extreme floods have not proved to be reliable. Several flood control structures deal with the flood risk problem in an isolated and unilateral way, for example by neglecting ecological and societal aspects.

A problem which might get more relevant in the future as a result of climate change has depleted the possibility of further raising dikes. Differently, floodplain restoration might alter the relationship between humans and floodplains, and how the latter could benefit from the former, i.e. floodplain restoration might improve floodplain ecosystem services (ESS).

To improve the ecological and chemical condition of rivers and floodplains, as well as to decrease flood damages and flood risks, many measures can be taken. These measures usually have two effects. However, not all measures have the desired results. Some restoration measures fulfill the requirements of the Water Framework Directive (WFD) while increasing the flood risk locally by extending flood durations. Some measures can negatively impact biodiversity while fulfilling the Floods Directive (FD). In riparian zones, shrubs and herbs are removed, resulting in habitat loss and maybe even some biodiversity.

Our attention should be paid to the extent to which such habitats are left in the adjacent active floodplains or can be reestablished. Measures to reduce flood risk should need to take into account these aspects.

The policymakers should give stakeholders an increasing role in the design of floodplain restoration measures and their evaluation, including ESS assessment and monetarization as well as decision-makers.

The extended CBA is only one aspect of whole image to be considered when making decisions about flood risk management. It is always up to politicians to decide what is best for the city.

The Danube Floodplain project partners opinion is that all project outcomes need to be incorporated into protected area management plans, in cooperation with stakeholders, which should be realized by the protected area managers.

The floodplain restoration promotes a sustainable economic growth on long term and facilitates a sustainable management of water and ecosystems.

From the previous restoration projects and national experience

Regarding previous partners experiences from the already finished restoration projects some relevant aspects needs to be emphasized.

The stakeholders

All project stories are in a way driven by the stakeholders. There is no real project that can be achieved without them. Besides agencies, observers, researchers, WWF network, NGOs, higher education, ICPDR, in each wetland restoration projects are dozens of landowners, users, entire communities with many conflicting interests.

Even if an area could be technically feasible to be restored, the political, and administrative conditions must be favorable in order to motivate and interest the local stakeholders, so that they agree with a restoration measure.

For the improvement or restoration of biodiversity, it is not enough to simply wish this. From the stakeholders' viewpoint, we need to think about what may be important for them in the restoration process. Is there a way to enhance recreation, fishing, maybe new investments promoting, flood risk or drought mitigation? How the project is designed will be affected by this will.

Restoration and education are going hand in hand. We should make the work relevant for the audience we are speaking to, in order to understand what delights the stakeholder on issues related to water and biodiversity. We need to keep them engaging. We should let people experience it in whatever way they can, either physically or digitally.

The partnership of a project should enable a more systematic and targeted approach, resulting in the gradual building of awareness, trust and eventually acceptance of stakeholders for the proposed restoration measures. Stakeholder involvement has been an important element from the beginning of the project. Stakeholders were consulted by the project team to identify and design the technical solutions. Due to their interests, which sometimes diverged, the potential technical solutions varied during the process of project preparation and implementation. The input of private landowners and other stakeholders regarding potential solutions for problems and risks were taken into account during the finalization of the technical issues. Stakeholder involvement, information and education were important to the success of the entire project and follow-up activities.

All key decisions were made consensually, which facilitated project implementation.

The stakeholders' opinions and interests will influence the original restoration idea, and their involvement throughout the design process will help to avoid misunderstandings and conflicts, increase acceptance and find satisfactory solutions for all parties.

The project idea should be discussed with local, regional, and even national authorities jointly. Water management authorities must cooperate with each other. Initiating a project is crucial to determining future development, so they should be involved from the beginning.

By consulting and involving stakeholders who are initially skeptical, they can be won over. Involving stakeholders smoothly can make a big difference in the success of the project. Experience and expertise in stakeholder involvement are essential. It is recommended that one of the partners in the project has this expertise and experience; alternatively, third parties can provide this via a consultancy. Engaging stakeholders effectively usually pays off in time and resources.

It is recommended to keep in touch with stakeholders on a regular basis to ensure efficient cooperation. The development of a project idea and a technical solution and their acceptance will prevent misunderstandings and conflicts.

By illustrating simple model projects among stakeholders and the general public, we are able to build awareness, trust and support among stakeholders and the general public, and so overcome resistance to habitat restoration.

Keep in mind that the success of a project depends on the active and passive support of local stakeholders.

It is important to attract volunteers, who participate actively in the field work, as well as to raise awareness activities, which are highly needed for a true successfully project.

Working with partners

From all our projects, we have learned how important it is to build good relationships and a common understanding with all partners. To keep cooperation on a firm footing and avoid future misunderstandings, it is vitally important to clearly state shared goals, restoration visions, and project outcomes at the beginning. In order to build strong relationships with partners, it is essential to meet face-to-face or at least often seen each-other online.

Motivating all stakeholders and ensuring their ownership of the project is essential. In order to accomplish this, it is important to adhere to deadlines and maintain a smooth flow of information between project partners.

The best advocacy and promotion for river and wetland restoration is a good cooperation between partners and stakeholders. When a restoration pilot is successfully implemented, project partners are motivated to initiate and implement further initiatives. A cross-sectoral partnership could bring together very different and complementary expertise, experience, tools and opportunities of each of the partners. Certainly, working together has yielded more results than working alone.

To achieve results at large scale, the project partners have to build a trusting relationship and focus on achieving overarching targets and objectives. Thus, technically complex wetland restoration

projects involving a variety of stakeholders with various interests can be accomplished. But building trust often takes time. It does not happen automatically or sudden.

Long-term planning is important. To build trust, as well as to accomplish complex and risky restoration of rivers and wetlands, a long-term approach has been crucial. A majority of these projects have taken many years or even a decade to acquire - to win support of local organizations and stakeholder groups, to complete pre- und feasibility studies, to clarify land ownership, to promote technical solutions, to handle tendering processes and to complete all of the necessary approvals before real implementation. Flexibility in management is essential in this kind of projects.

Authorizations and permits

The process of obtaining permits for the use of water and other environmental resources can take a long time. To avoid delays and complications in the future, the water planners, ministries, and relevant authorities can be involved in project development.

Various authorizations and permits are likely to be delayed so it is better to plan plenty of time and resources for facing these challenges.

Cross-border cooperation

In a cross-border project, the cooperation can be complicated and delayed by language barriers. Sometimes it may be necessary to use a third language to facilitate communication between partners and stakeholders (mainly English for example). While this can reduce interactions, it will also require additional resources and patience on both ends. The capacity for translation and longer meetings and interactions needs to be taken into account in planning projects.

The legal and administrative procedures, including environmental and water permits, differ greatly between countries and can be difficult to harmonize, resulting in significant delays.

As in case of permits the necessity to reserve time and money appears.

Communication

It is important to "educate" the local communities and key stakeholders about the proposed actions and implementation of field measures.

For communication materials use, we need to select simple and easy-to-understand means and ways to present results and intermediate phases of the project.

In our time, communication tools and variety are changing very quickly compared with the duration of some projects, so we need to adapt them keeping as much as possible in our plans flexibility in developing it and also budgets for communication actions.

Constraints for floodplain restoration projects

Floodplain restoration is constrained by several factors.

The most important is that human activities contributed to the loss of functional floodplains.

In a few of these areas, we find settlement development, agricultural land use and flood defense works. In light of the importance of these activities, floodplains should not be allowed to flood naturally and floodplain ecosystems could not develop unhindered.

The task of changing entrenched land and water use practices, however, in an effort to restore ecosystems is complicated by numerous other issues related to the institutional challenges of doing so.

In previous projects, some significant constraints have been identified:

- The land use and/or ownership

As a result of their favorable topography, floodplains are generally very attractive development for agricultural destination sites. Their soils are one of the most fertile by nature.

The undeveloped floodplains possess a high level of biodiversity and landscape value as well.

A number of vested interests relate to agriculture/forestry, urban development, recreation, landscape enhancement, biodiversity, and flood defense.

The ownership of floodplain land has implications for flood damages and is subject of future compensations from insurance companies or from state directly.

This natural resource is often fragmented and complex, requiring the cooperation of a large number of landowners and users.

- The policy/planning instruments

Floodplains are in practice highly vulnerable to development, even a number of planning instruments designed to keep them protected are presented.

In general, planning rules to limit settlement development on floodplains have not been able to stop the loss of floodplains, or even encourage their restoration.

Actual environmental subsidies schemes, have a limited success in encouraging farmers or landowners to accept changes to land use because they do not provide an adequate long-term financial support.

Focusing on flood defense compensations on building and maintaining hydraulic structures or targeted on EU Common Agricultural Policy for an increasing agricultural productivity are typically means discouraging restoration projects.

Moreover, a floodplain that is a protected area can act as a constraint on restoration because nature conservation legislation generally focuses on preserving existing habitats rather than creating new ones.

- Coordination

Many groups of stakeholders are involved in creating a coordinated and operational strategy for floodplain restoration.

Collaboration across administrative boundaries of a catchment is often difficult, as the coordination across a variety of policy fields and stakeholder groups.

It is also crucial to address inconsistencies between national and EU policies, regardless of the scale.

- Entrenched practices/mindsets

Finally, the most severe constraint and also the most difficult to change is the key stakeholders' everyday practices and mindsets. Most people are not willing to change their day by day behaviour, regardless of the rational arguments favouring the restoring a river or land that has been used for generations. The farmers still desire to protect their land as much as possible, despite the danger of flooding and helping also the flood defense managers to persist in hard engineering solutions for flood protection against nature conservationists seeking to protect biodiversity.

The intensity and significance of all these constraints varies in large way between national and regional contexts, but they are in some way universal in all countries where restoring project have held.

General lessons learnt from the implemented projects

1. Inherently, river and wetland restoration projects are complex, and their completion is often difficult
2. It is important to plan an adequate amount of time and capacity for preparation, including for building-up a collaborative team with a shared knowledge base and a team spirit. Making good relationships with all partners and agreeing on clear goals and project outcomes is an essential part of the planning process.
3. In general, by preparing carefully at the beginning, difficulties can be avoided later on. A detailed list of all relevant stakeholders should be prepared, including landowners and users, interest groups and political decision-makers (e.g. water, environment, infrastructure), NGOs. Also, water, environment, and other ministries should be included, as well as local and regional development authorities. The cooperation between water management

- authorities and locals is essential. An important role played by experts is to facilitate cooperation and negotiations between water management and nature conservation field.
4. Harmonizing the different viewpoints and deciding on a joint restoration approach take time. Involving various stakeholders in the initial restoration idea will allow them to bring their opinions and interests to the process, avoiding misunderstandings and conflicts, increasing acceptance, and finding satisfactory solutions for all parties.
 5. It is possible to overcome public resistance to habitat restoration by providing simple and illustrative, easy to understand model projects .
 6. It is important to check the cadastral maps and the legal rights of the land, as well as any liens or rights to use on floodplain areas.
 7. Predicting and planning for all eventualities is essential. Buffers when planning budgets and timelines should be included, and it should be checked that the intervention and funding are designed so that they can accommodate flexibility and adaptive management. The staff of each partner and relevant authorities may change from time to time.
 8. All risks should be assessed during the planning phase. Even in stage of feasibility studies, climate change impacts should be taken into account. As a result of long dry periods with low water levels, long-term climate change impacts must be considered during the preparation and feasibility assessment of the project.
 9. When preparing a timeline for project implementation, it is important to consider the different working protocols and speeds of the various cooperating institutions and organizations. Public processes usually take longer and initial coordination with public institutions is paramount.
 10. Planning and realizing smaller restoration projects in a first stage is a good strategy. The more it will be able to build trust, awareness, and support among stakeholders, the more it will increase the chances for larger-scale follow-up projects.

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