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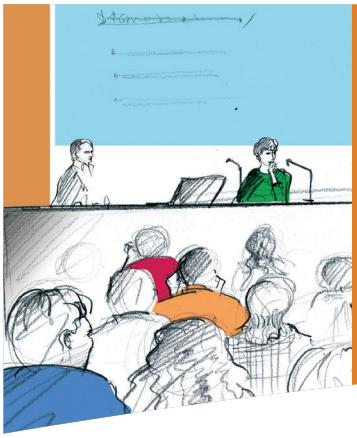

ONEMA
Meetings

River restoration and Natural Water Retention Measures

A workshop co-organised by Onema and the International Office for Water in Bucharest - Romania - 12 November 2014, and held jointly with the Europe-INBO annual conference on 12-14 November 2014

Natural Water Retention Measures as well as aquatic ecosystems' restoration and preservation provide means to achieve good water status as required by the Water Framework Directive (WFD).
In order to make progress on that topic, the workshop aimed to promote a better integration of European directives and policies through river restoration and natural water retention measures. The workshop was also focusing on the ways to improve local communities' engagement in aquatic ecosystem restoration projects.
These exchanges enabled to draw conclusions and make recommendations that may be integrated in the future WFD cycles.

The perception of restoration measures

Some identified advantages…

They are many positive impacts of hydromorphological river restoration measures: preservation of aquatic ecosystems and their associated biodiversity, conservation of ecosystem services, improvement of water quality. These measures also lead to a better groundwater recharge, contribute to flood prevention and the reduction of the associated peak flows. They enable as well to reduce erosion and soil degradation.

The flexibility and adaptability of these measures allow them to be implemented at local as well as regional scale. Thus they are consistent with integrated water resources management (IWRM), contributing to achieving good water status.

… but questions and obstacles remain regarding their implementation

The implementation of river restoration and natural water retention measures (see box page 2) faces significant barriers and raises several questions. The decision process for the effective implementation of these measures may be problematic: there is not a single measure adapted to a unique problem, but rather a set of measures which can be implemented to deal with a set of issues. The selection of measures that can be implemented in order to deal with the specific situation

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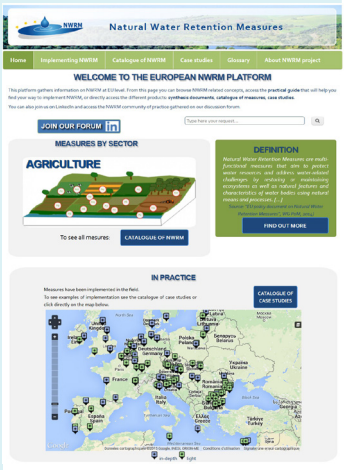
Natural water retention measures - *NWRMs*

The first objective of natural water retention measures is to improve or restore water retention capacity in natural or anthropised environments, in urban or rural areas. Some examples of NWRMs: re-meandering/reconnecting cut-off meanders, installing green roofs, retention ponds… These multifunctional measures provide various ecosystem services (filtering out pollutants, reducing flood risks…) and various advantages (improvement of water quality, runoff reduction, peak flow mitigation…), while contributing to achieving the objectives of the various environmental policies and strategies: achievement of the good ecological status of the WFD, objectives of the European Biodiversity Strategy for 2020...

The efficiency of NWRM is based on natural processes, and they can provide more cost-efficient solutions than standard engineering measures. They are not "new" measures, but they still remain little-known and thus are not often implemented by the stakeholders in charge of water management.

The objectives of the European Commission project on NWRMs are to develop a structured knowledge base and to contribute to the development of an active European community of NWRM practitioners:

http://www.nwrm.eu/list-of-all-case-studies



Source: « Guidance document on NWRM » established in the frame of the call for projects: « Atmospheric Precipitation - Protection and efficient use of Fresh Water: Integration of Natural Water Retention Measures in River basin management» - www.nwrm.eu

encountered is thus complex and requires a very thorough analysis. The impact of this type of measures and their cost-effectiveness are also difficult to quantify precisely because of their "natural" aspect, in comparison with more classic infrastructural measures (dykes, sewage treatment plants, etc.). Furthermore, the implementation of these measures often requires large land areas. Mobilising the various stakeholders, the needed funds and the decision makers remains also problematic. Besides, the lack of knowledge concerning these measures can cast doubt on their effectiveness for the decision makers and the broad public.

To make progress concerning these issues, the workshop had as objective to clarify two specific points: firstly, how to help WFD implementation with better integration of European directives and policies through river restoration measures and NWRMs, and secondly how to improve the local communities' engagement in ecosystem restoration projects and NWRMs?

River restoration: innovative approaches and success factors

Practices which contribute to achieving the good water status…

In Europe, the hydromorphological alterations and diffuse pollutions are the most problematic pressures for the achievement of the good water status. Two thirds of the rivers are facing a risk of not achieving the good status because of physical alterations.

Their causes are multiple and related: they come from economic activities, land use, urban development, amongst others. Measures implemented so far by member States are not sufficient to solve these problems.

In this regard, river restoration measures and natural water retention measures participate in the development of a holistic approach taking into account the natural

European centre for river restoration

The network for the best practices of river restoration in Greater Europe

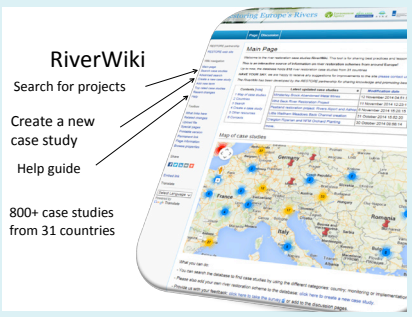
Allowing recovering natural conditions, river restoration improves the resilience of aquatic ecosystems and provides the framework for sustainable and multifunctional management of estuaries, rivers, lakes and streams. River restoration is an integral part of sustainable water management and directly supports the objectives of the water framework directive as well as national and regional policies for water management.

The European Union has recognized in recent years the need for the restoration of rivers and flood plains expansion, and already funded a number of small restoration projects. However, to take the best part of the experience and knowledge on river restoration in the future, it is necessary that national and international networks collect and spread this information. This is the objective of the European centre for river restoration (ECRR), established in 1995.

The ECRR connects people and bodies working on the restoration of river. The network consists of 900 members (privates and organizations), is represented by a national centre in 12 European countries (a French centre is currently being considered), and works in close collaboration with a large number of key partners.

The ECRR encourages the development of best practices for river restoration and spreads information about the ecological restoration of streams, for example via the RiverWiki platform which identifies case studies of Greater Europe and the Conferences (European) on the Restoration of River.

Bart Fokkens - www.ecrr.org



processes, the ecosystemic services and the socioeconomic aspects of the territories. They constitute one of the answers to these problems and are innovative approaches for integrated water resources management, adapted to favour the achievement of the good water status.

… helping to better integrate European directives and policies

The restoration measures include as well water management and reduction of flood related risks while preserving and restoring aquatic environments. They also enable to treat different types of pressures on water bodies (agricultural, industrial...): it is therefore necessary to optimize their implementation, to consider all of the benefits that can arise for different sectors and policies and to implement the suitable collaborations.

These measures thus contribute to the implementation of numerous water related European directives (water framework directive, flood directive, renewable energy directive, habitats directive…) and promote the integration of various sectorial European policies (as shown by the Lower Danube Green Corridor project, presented in the box page 4). They can facilitate the concerned institutions to work more closely together.

How to facilitate the implementation and promotion of restoration measures

By developing knowledge

The technical knowledge to develop restoration projects exists but the implementation of these actions is still challenging.

These actions being territorial, an appropriation from the local communities is essential. It is thus important to establish a stakeholders' network which will foster the exchanges of knowledge and practices and will encourage the implementation of these measures. On-line databases of study cases contribute to these exchanges and to the promotion of restoration practices. The European Union, well aware of the potential contributions of natural water retention measures and restoration measures to achieve the good water status, now promotes these measures in its common strategy for WFD implementation.

Promoting knowledge on restoration measures and on their implementation is crucial. Sharing knowledge also provides arguments for the implementation of restoration measures towards different sectors and policies, and encourages associated funding.

The durability of knowledge on this topic should also be ensured. For this purpose an easily accessible information system as exhaustive as possible is useful. This is the purpose of the River Restoration Centre UK and RiverWiki website, or the NWRM project of the European Commission (see boxes page 2).

By connecting the different implementation levels

The articulation of different levels for the development of these measures is another important success factor: the national level provides management when the regional and local levels are in charge of the implementation together with the local stakeholders. The upstream-downstream solidarity and the basin approach must always be highlighted.

The establishment of committees/water councils with representatives of various sectors, including cross-border committees when necessary, ensures a better coordination, a better consideration of the various issues and a better integration of different objectives of the territory.

A closer association of the administrations in charge of the various policies is also a necessity.

By enabling the funding of these measures

Funding is also a key point in the implementation of restoration measures, especially when people involved in the implementation of the measure are not those who receive direct benefits from it. Many opportunities to fund

Some European funds

To facilitate the handling of restoration measures, it is necessary to encourage the development and use of financial instruments (structural funds), planning tools (integration of these measures in river basin management plans) and databases (internet platforms, etc.) that are related to it.

> For example, the European Regional Development Fund (ERDF) aims to strengthen economic and social cohesion within the European Union by correcting regional imbalances. It supports the resolution of economic, environmental and social problems in cities.

http://ec.europa.eu/regional_policy/en/funding/erdf/

> The European Agricultural Fund for Rural Development (EAFRD) aims to develop an environmentally friendly rural area. It co-finances agri-environmental measures that subsidize farmers committed to protect biodiversity and water resources through actions such as maintaining grassland, preserving the stream in its floodplain, replanting hedges.

http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV:l60032

> Life 2014-2020 is the financial instrument for environment and climate action.

The Life 2014-2020 programme works by annual calls for projects on environment-related issues (environment and rational use of resources, nature and biodiversity, governance and information in the field of the environment) and climate action (mitigation of climate change, climate change adaptation, climate-related information and governance).

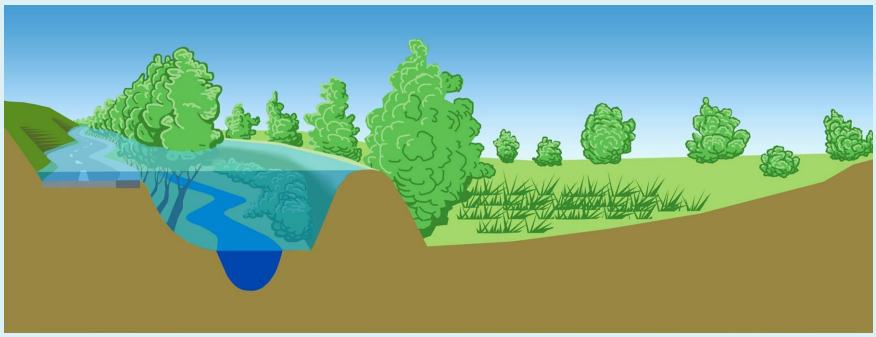
http://ec.europa.eu/environment/life/funding/life2015/index.htm

restoration measures exist: public funds (national or European - see box page 3), compensation funds, etc. Again, a better synergy using various sectoral policies (flood, nature protection, integrated water management...) for the allocation of funding is needed.

The restoration project on the Russenski Lom river - Bulgaria - WWF

The "Lower Danube Green Corridor" aims to make the Danube river alive again, connected with its floodplains and wetlands, reducing flood related risks in built-up areas and at the same time offering other benefits for the local economy and for the ecosystems and the biodiversity along the river.

The Russenski Lom, Danube tributary, has benefited from a restoration project. The river was strongly dyked up on one side and bordered by a road on the other. The floodplain was flooded several times a year, and the dyke prevented the evacuation of water, making the floodplain unsuitable for any use and poor in biodiversity.

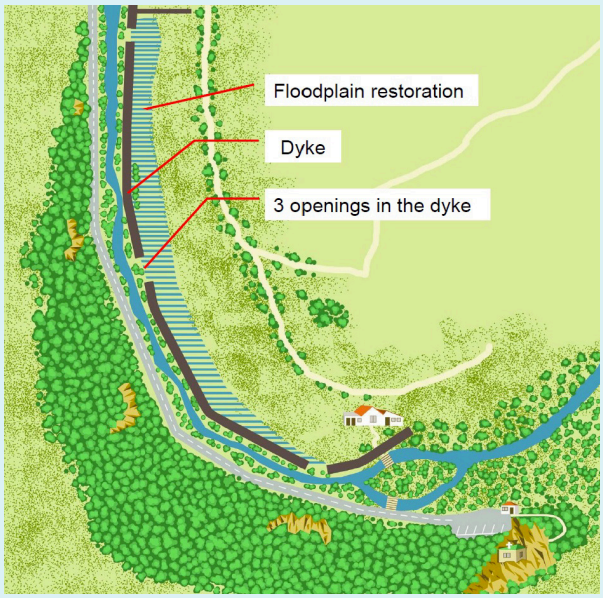


In 2006, a particularly important flood destroyed road infrastructures and strongly affected banks. The local authorities had to make a decision to improve the situation.

Their attitude was considered as an essential success factor for the implementation of this project, the restoration measures being generally difficult and long to set up due to the complexity of the decision-making process.

The floodplain was restored, and three openings have been made in the dyke, allowing flooding to communicate more easily with the floodplain: the retention capacity has been increased by 100 000 m^3, the residence time reduced and biodiversity improved. Damages to road infrastructure were also avoided.

The project has an undeniable demonstration character that encourages the development of other restoration projects.



Source: Restoration project of the Russenski Lom river - Ivan Hristov, Cristian Tetelea - WWF DCP, ihristov@wwfdcp.bg

By improving the local communities' involvement in the implementation of restoration measures

Involvement and mobilisation of various stakeholders and the public in development choices and the implementation of restoration measures or NWRM is essential for the success of the project.

Restoration measures can induce changes for people and their environment. Their implementation must involve local communities in particular through appropriate communication (see the Órbigo river restoration project as an example, presented in the box page 5). It is essential to work with stakeholders, authorities, local decision makers, and more generally with influential local people as well as the general public to raise awareness on the interests of restoration measures and ecosystem services that they could preserve or restore.

Intermediary structures such as schools are used to reach people who are not usually part of the participatory process.

Communication enables the highlighting of successful projects and demonstrates the practical benefits of restoration measures such as the return of the stream to its original bed, the restoration of floodplains, etc., compared to the infrastructural measures such as dykes, dams, etc. A wide media range exists to do this.

To describe, understand and take into account the interests of local stakeholders, it is important to enhance their ownership of these measures. A participatory process specifically adapted to the local context must thus be initiated.

The roles and responsibilities of project managers/contracting authorities and the local community should be clearly defined. The involvement of reputed local NGOs to support the management of projects or of local business for their implementation will be beneficial. Similarly

taking into account the local knowledge on the area, its history and its challenges will improve the decision making process and the consideration of the basin specificities. Lastly, it can be efficient to promote the intervention of local communities "ambassadors" involved in successful projects. They can present their experiences, concerns they may have originally, and positive outcomes.

The European comparative study of restoration projects, Cerceau, carried out by AScA consultancy and by Onema, focuses in particular on the involvement of local communities and brings a number of advices and information on these points (see box below).

How to develop an ambitious river restoration project?
Experience in Europe, a human and social sciences point of view

Changing the morphology of a river is not only a technical operation, it is also an economic, social, environmental, cultural and political operation that raises questions on the concerned territory. The central question is thus to design a project that is coherent with its territory, in its technical aspects but also in its social, cultural or economic aspects. Such a challenge requires strategic thinking from the project leader who must be able to mobilise human and social science approaches on technical restoration issues. With the valuable experience of European and French cases, the study proposes a strategic approach and the key issues that it needs to tackle: to determine a strategic vision for the restoration process, to develop the recognition of the contracting authority, to take into account the social, political and territorial relevance of the restoration project, and to demonstrate its technical and economic integration. To access the study:

http://www.onema.fr/IMG/EV/publication/Cerceau.pdf

Órbigo river restoration project - Spain

Because of its channelling and its embankment, the Órbigo River presented a number of problems which led to high maintenance costs: hydraulic malfunction, flood related risks, impacted aquatic ecosystems.

A restoration project was implemented on a 25 km section of the river. Its objective was to improve the continuity of the river, its connectivity and its lateral dynamics in rehabilitating its floodplain by removing dykes and reconnecting side channels.

The results: rehabilitation of 480 hectares of floodplains helping to reduce flooding, better infiltration and improved soil quality, improved biodiversity, aesthetic improvement of the landscape, reduction of maintenance costs.

This project contributed to a better integration of the European directives by the achievement of effective objectives set by the WFD, the flood directive and the habitats directive. It allowed in particular to avoid the negative impacts of floods that occurred in 2013, and to improve the ecological status of the water body.

Public participation and communication were essential to the success of this operation. Fifty meetings with stakeholders, authorities and the public have been carried out over the three years of preparation and implementation of the project, and an awareness programme aimed in particular to large public (families, children and young people) was developed. The project has become a reference for universities, authorities and water professionals in Spain and Europe. It allows highlighting the environmental and socio-economic benefits of such measures. A video has been produced to support their diffusion:

http://www.chduero.es/VerVideo-previo-orb2.aspx

Source: Órbigo river restoration project - Rosa Huertas González - Duero Basin Agency

Restoration and preservation of the river's hydromorphology and ecological continuity

Many actions aimed at restoring hydromophological processes, essential components for a good ecological functioning of the rivers, have been conducted for several years in France.

Reducing the flood related risks, facilitating sediment transportation, restoring continuity for aquatic species, restoring habitats and hydraulic connections, improving water quality and developing recreation areas could be some objectives for these hydromorphological restoration projects.

> The referencing of river restoration projects developed by Onema and six French water agencies brings together a selection of over 90 cases. It presents the involvement of local actors in the implementation of these actions and the levers mobilised to realise the project.

For more information:

http://www.onema.fr/IMG/EV/cat7a-rex2014.html

> A selection of projects on the hydromorphological restoration of rivers and the preservation of wetlands is accessible on the wetlands internet portal.

http://www.zones-humides.eaufrance.fr/agir/retours-d-experiences-cours-d-eau-et-zones-humides

On this website you can find a particular case by doing a search by basin and/or by project.

Restoration measures still not well developed, but with a strong potential

The restoration measures and natural water retention measures are still insufficiently implemented with regard to their effectiveness and their potential to meet the requirements of European directives. The achievement of good water status, the management of flood related risks and the improvement of biodiversity yet benefit from these actions.

In cause, a lack of knowledge from the public and the water stakeholders. This problem is however gradually tackled thanks to local initiatives which help in the diffusion of the practice by their exemplary character. National and European initiatives also develop information databases on existing projects, accessible to the political decision-makers and project managers.

Support from the public and from the local population is also essential. This requires the continuation of the communication and awareness raising work, facilitated by their multi-beneficial, cost-effective and natural aspects. It must be however supported by the diffusion of examples and effective results. The work done in France on the capitalisation of feedbacks from river restoration projects and the preservation of wetlands contributes to this objective (see box above).

The production of short films for the general public such as the one for the Órbigo project presented in the box page 5 should be extended to foster this broad communication. ■

For more information

Presentations and documentation pertaining of the workshop:
http://www.inbo-news.org/events/12-15-novembre-2014-bucarest/communications-comunicaciones/workshop-river-restoration-and/?lang=en

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