Wetlands in a catchment context

Factsheet 6

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Linking wetlands to basins

One important aspect of the WETwin project was to explore ways to enhance the role of wetlands in river basin management (RBM), by explicitly considering the impact of basin management on the wetland, as well as the services and values provided by the wetland to the basin. Drawing on the approach outlined by the guidelines of the Ramsar Convention on Wetlands (see Box 1), each case study included a review of the links between the wetland and its river basin, covering the biophysical, socioeconomic, institutional and governance contexts. The planning approach developed under WETwin provides structured, transparent methods for assessing ecosystem services and measures to encourage stakeholder engagement at all levels. It is a practical actor-oriented approach that can be used in data-poor conditions, and is suitable as a tool for negotiation between different stakeholders on the priorities for ecosystems and livelihoods.

Identifying wetland ecosystem services and health

Ecosystem services provided by each wetland were identified and ranked qualitatively using an adaptation of WET-Ecoservices (Kotze et al. 2008), a set of tools and methods developed for wetland assessment in South Africa. A rapid assessment of the condition of the wetland was made using a modified version of the WET-Health tools (McFarlane et al. 2008). The WET-Health approach explicitly considers pressures on the wetland due to changes in upstream and surrounding areas. In several case studies, hydrological models were developed to explore the potential impacts of changes in catchment-scale water management, land use and climate on the hydrology of the wetland.

The WET-Health and WET-Ecoservices tools were also adapted for use at catchment scale, to provide a rapid, qualitative method to set priorities for wetland management by identifying:

BOX 1: Guidelines of the Ramsar Convention on Wetlands

The Ramsar Convention on Wetlands recognizes the critical linkage between wetlands, water management and river basin management; the governments that are party to the Convention have committed to conserving their wetlands within a framework of River Basin Management (RBM).

Ramsar guidelines for integrating wetlands into RBM identify three key requirements:

1. A supportive policy, legislative and institutional environment that promotes cooperation between sectors.
2. Communication, Education, Participation and Awareness (CEPA) programs to support communication of needs and objectives across sectors.
3. Sequencing and synchronization of planning and management activities across sectors.

The Ramsar 'Critical Path' approach (Figure 1) (adapted from the Ramsar Convention 2008) provides a 'road map' for the integration of wetlands into RBM.

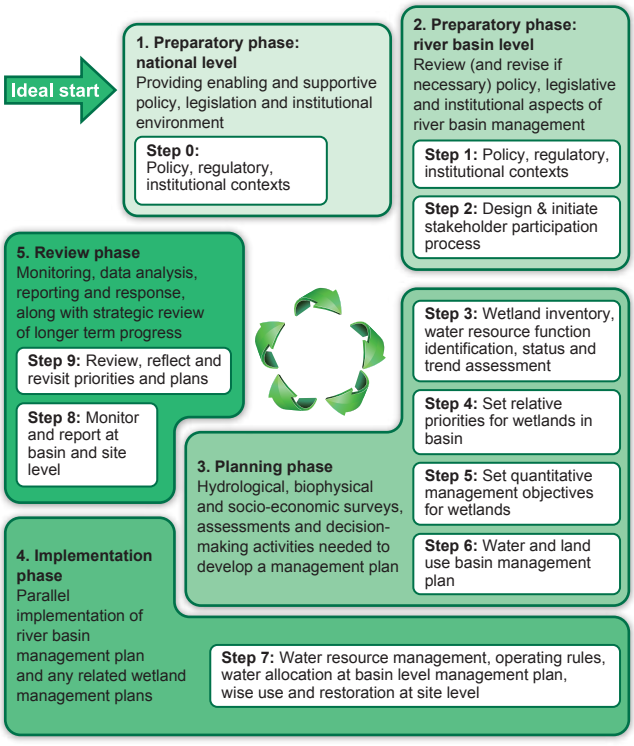


Figure 1: Ramsar 'Critical Path' approach for the integration of wetlands into river basin management

The focus of the WETwin project was restricted to the preparatory and planning phases (phases 1 to 3 in Figure 1); the adaptive management 'loop' was not closed in any of the case studies, since implementation of management plans was beyond the scope of the project.

- sub-basins at particular risk of wetland degradation due to land use, hydrological alteration or demographic pressures (Figure 2); and
- sub-basins where wetlands provide high levels of particular ecosystem services, based on type and area of wetlands (Figure 3).

Geographic Information System (GIS) based analysis was used to examine the ways in which different pressures and threats affecting wetlands either increased or decreased in moving downstream (Declercq et al. 2011).

and the Inner Niger Delta in Mali, where the capacity to implement integrated water resources management (IWRM) is less evolved.

Lessons learned: Inner Niger Delta, Mali

The Niger River Basin is the largest in West Africa, spreading over 2.2 million square kilometers (km^2) in ten countries. The Inner Niger Delta (IND) is a large inland floodplain of the Niger River in Mali, covering 41,195 km^2, and was designated as a site of international importance by the Ramsar Convention on Wetlands in 2004.

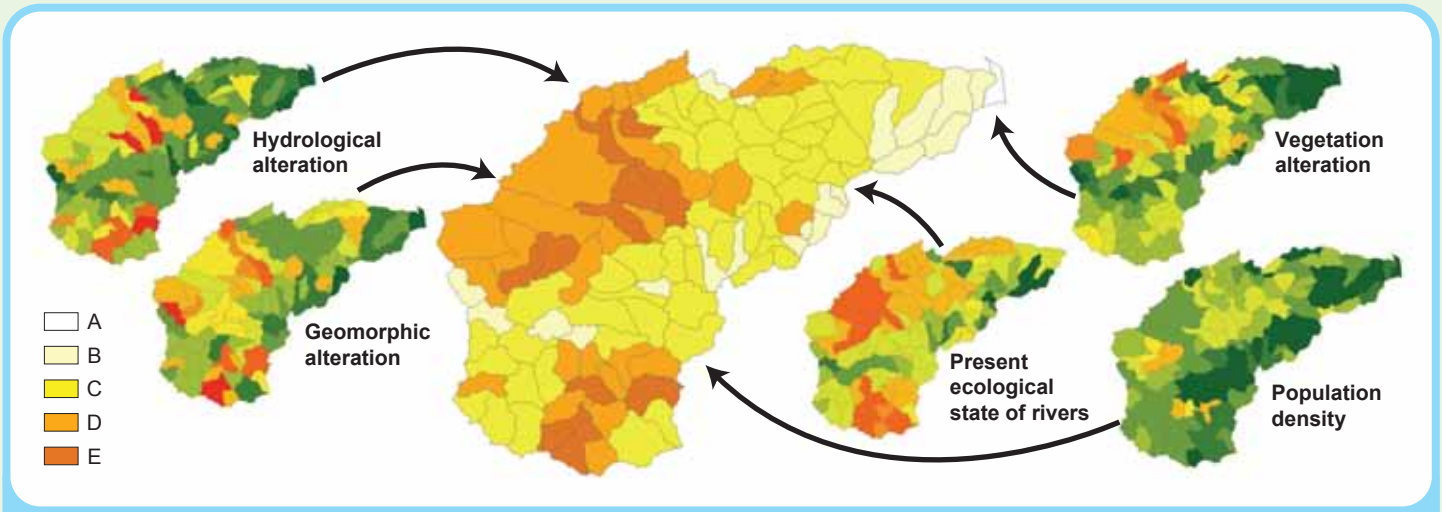


Figure 2: Index of risks to wetland health by sub-catchment; Olifants River Basin, South Africa

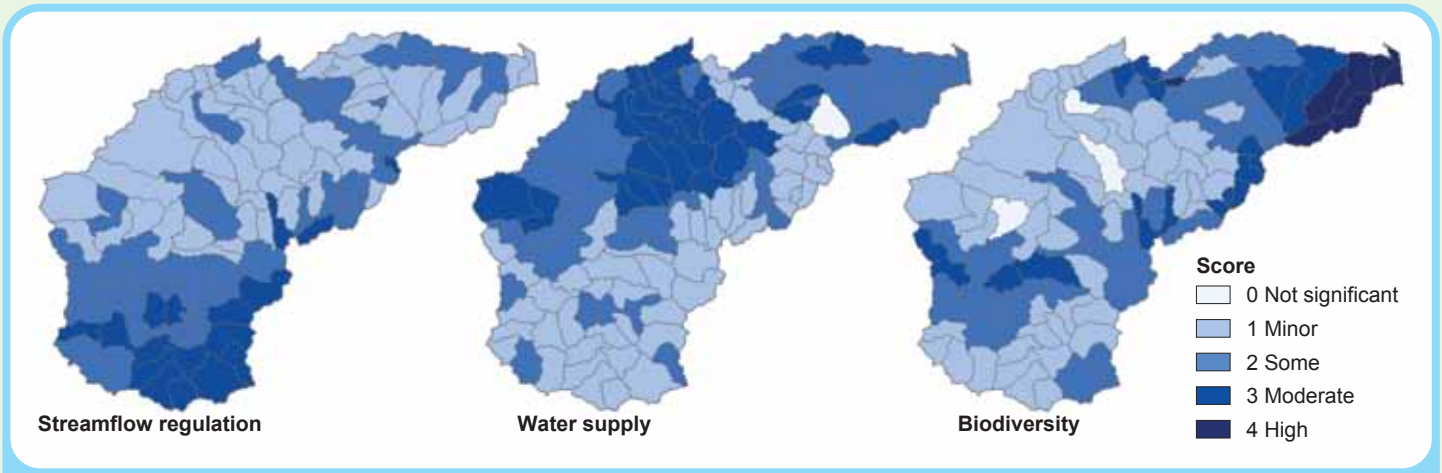
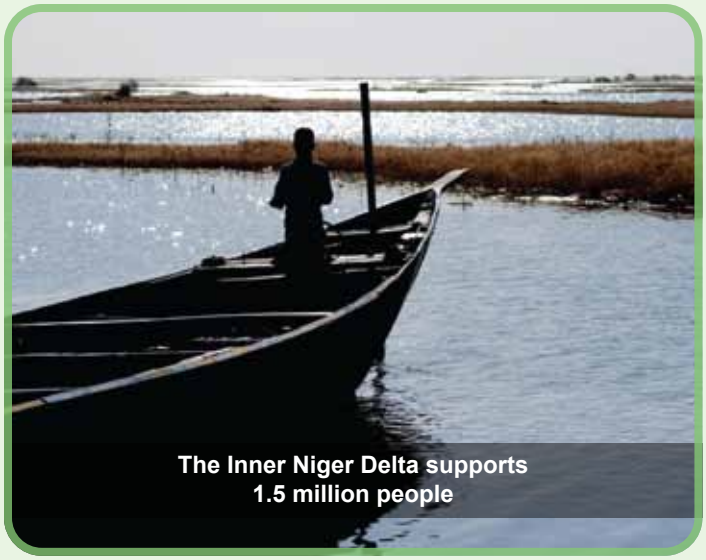


Figure 3: Example index of provision of wetland ecosystem services by sub-catchment, based on wetland type and extent; Olifants River Basin, South Africa

WETwin case studies provided important insights into both the importance and the difficulties of linking management at wetland and catchment scales. Two contrasting Ramsar sites illustrate the issues in different development contexts: the Lobau wetland in Austria, where management institutions and regulatory frameworks are highly developed;

Impact of the catchment on the wetland: Large irrigation schemes and dams for irrigation and hydropower have been constructed in the Upper Niger Basin, reducing flood intensity and peak flows in the IND. Biological productivity in IND is dependent on the intensity of the flooding, and a decrease in the production of fish, rice and floating bourgou grass is expected, and exacerbated by climate change and demographic growth.

Impact of the wetland on the catchment: The IND is crucial for the livelihoods of 1.5 million people (herders, fishermen and crop farmers), many of whom are entirely dependent on the natural resources of the Delta. The Delta has an important cultural significance for its inhabitants and is a major biodiversity hot spot. In addition, the IND serves as a natural water reservoir for Niger, releasing a stable flow downstream.



The Inner Niger Delta supports 1.5 million people

Mali has a strong legal framework for IWRM. Stakeholder involvement through steering committees is an accepted practice for projects in the area; and management plans have been developed at basin, wetland and municipal scale. The Niger Basin Authority (NBA) is a formal transboundary authority. A management plan for the IND was released in mid-2011, but implementation is now the major challenge.

The IND encapsulates many of the issues in linking wetland management and IWRM in developing nations: weak links between local and national governance structures; ignorance or disregard at the national level of the local importance of wetlands to livelihoods; and a lack of resources and capacity to implement management programs at local levels. (See also WETwin Factsheets 7 and 8)

Lessons learned: Lobau wetland, Austria

The Danube River Basin (DRB) is the second largest in Europe, covering 801,463 km^2 and 19 countries. The Lobau is a small urban wetland within the city of Vienna, part of the "Trilateral Ramsar site: Floodplains of the Morava-Dyje-Danube Confluence."

Impact of the catchment on the wetland: work in the 19th century to protect Vienna from floods resulted in disconnection of the wetland from the main channel, which was exacerbated by recent vertical erosion in the river and aggradation in the floodplain. Without any management activity, most aquatic and semi-aquatic habitats will disappear within the next decades. The Danube is an important transport route and all management concepts have to guarantee a minimum water depth and width for ship passage in the main river channel. This restricts management options for the wetland.

Impact of the wetland on the catchment: The Lobau plays a central role in the regional water balance downstream of Vienna. It retains floodwaters, recharges the groundwater, and provides drinking water supplies and recreation, receiving over 600,000 visitors a year. It also has very high biodiversity values, and, in addition to its designation as a Ramsar wetland site, is protected under the European Union's Natura 2000 network.

The Lobau's beauty attracts 600,000 visitors a year

Policy in the Danube Basin promotes restoration (not only conservation) of protected areas. In the case of the Lobau, multiple uses of the wetland established over the last 100 years may be in conflict with moves towards ecological restoration which aim for pre-regulation conditions. The current form of the wetland (as floodplain pools) provides a different set of ecosystem services than its 'natural' form as a dynamic floodplain. Water storage during high flow is of lower importance, while recreational uses have increased in importance. Current uses and values need to be considered in management schemes.

In many ways, Lobau is a textbook case for embedding wetland management into RBM. Policies defined at the basin scale are implemented effectively through a network of agencies, with strong governance and accountability at all levels. However, the local uses and users of the wetland have changed over time, and the implications for management of this evolution is not well understood or accounted for in basin-scale planning, (See also WETwin Factsheet 9).

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About WETwin

The WETwin project aims to enhance the role of wetlands in integrated water resources management for twinned river basins in the European Union (EU), Africa and South America in support of EU water initiatives. The objective is to improve community service functions while conserving good ecological status.

Partners

VITUKI Environmental and Water Management Research Institute, Hungary (coordinating partner)
Wetlands International, Mali
Antea Group, Belgium
Potsdam Institute for Climate Impact Research, Germany
WasserCluster Lunz, Austria
UNESCO-IHE Institute for Water Education, the Netherlands
National Water and Sewerage Corporation, Uganda
International Water Management Institute, South Africa
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Factsheet topics

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12: Case study: Gemenc floodplain, Hungary
13: Case study: Namatala wetland, Uganda

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