Report on Twinning, Dissemination and project sustainability

D10.10  Project “After-Life Plan” with specific focus on sustainability on public participation and the maintenance of the database

D10.11.  Active communication between the project team, the private sector, civil movements and public sector

D10.13  Short Report on Implementation Twinning & Dissemination Strategy

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Lead Authors:  
Tom D’Haeyer

Contributors:  
Andrea Funk  
Bakary Kone  
Stefan Liersch  
Sylvie Morardet  
Robyn Johnston  
Istvan Zsuffa  
Luis Dominguez  
Jan Cools  
Ann Van Griensven

Website of the WETwin project:
www.wetwin.eu
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<td>Tom D’Haeyer (Antea Group)</td>
</tr>
<tr>
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1 Introduction

A key component of WETwin is the strong focus on ‘triangular’ cooperation between the three continents involved: Europe, Africa and South America. Seven case study wetlands in three continents are ‘twinned’ under the WETwin project. This means that knowledge and expertise on wetland and river basin management is exchanged, and joint research activities are carried out. Hereby, focus is given both to North-South cooperation as well as to South-South cooperation (inter-African cooperation and Africa-South American cooperation).

To emphasise the importance given to twinning an entire work package has been dedicated to this aspect of the project. The objectives of work package 10 were define as (i) to enable, and obtain the benefits from, an enhanced state of partnership between Consortium members as well as between key stakeholders associated to the different case study sites & partner countries, through the twinning of European and third-country wetlands and river basins; (ii) to maximize the potential scope of the project by means of an adequate dissemination of its results.

In addition to these general objectives, six specific objectives were added as follows;

- To contribute to breaking the paradigm lock between scientists and stakeholders
- To promote - whenever feasible and deemed beneficial - a methodological approximation between IWRM in Europe and the partner countries, in order to maximize possibilities for transfer and exchange of experiences & results from this, as well as from other, general, specific, previous, ongoing or future initiatives on wetlands- and water-related management & research (twinning).
- To realize this exchange of experiences, e.g. through the organization of twinning workshops
- To promote measures for extended partnerships that go beyond the actual timeline of the project.
- To promote measures for extending the scope of the project and its objectives well beyond the geographical limits of the case study sites & partner countries involved.
- To establish a link between the project and the Consortium, and the International Knowledge Base (communication, dissemination, networking)

In practice, the Twinning is implemented: (i) by following a common research agenda, (ii) by means of staff exchange between partners and (iii) through the participation of case study basin operational decision-makers in project workshops. At the wetland and river basin level, stakeholders are actively involved through a series of training and dissemination activities. At a more global level, networking with international wetland and river basin platforms and organizations further contributes to a more widespread exchange of lessons learnt.

Sustainability and long-term impact of the project furthermore depend on qualitative dissemination of results both the scientific community as well as to policy makers and practitioners, and this not only for the duration of the project but also in the project after-life. Results are taken forward in local follow-up projects and at the global level transfer of data, tools and approaches is promoted in other research projects as much as possible. An account of these activities within WETwin is given in this report.
2 Short Report on Implementation Twinning Strategy

2.1 Twinned river basins

Seven case study wetlands in three continents are ‘twinned’ under the WETwin project. Specific research activities have focused on a series of case study basins from Europe, Africa and South America. The river basins and their corresponding freshwater floodplain wetlands that have been selected as case study and twinning sites under the WETwin project are listed in Table 1 and in situated on the map in Figure 1.

<table>
<thead>
<tr>
<th>River basin</th>
<th>Wetland</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Niger river basin</td>
<td>Inner Niger Delta</td>
<td>Mali</td>
</tr>
<tr>
<td>Upper White Nile river basin</td>
<td>Mbaie and Masaka wetlands</td>
<td>Uganda</td>
</tr>
<tr>
<td>Olifants river basin</td>
<td>Ga-Mampa wetlands</td>
<td>South Africa</td>
</tr>
<tr>
<td>Guayas river basin</td>
<td>Abras de Mantequilla wetland</td>
<td>Ecuador</td>
</tr>
<tr>
<td>Elbe-Havel-Spree river basin</td>
<td>Spreewald wetland</td>
<td>Germany</td>
</tr>
<tr>
<td>Danube river basin</td>
<td>Gemenc and Lobau floodplains</td>
<td>Hungary and Austria</td>
</tr>
</tbody>
</table>

Figure 1 Map of case study sites
All chosen wetlands play a significant role in the river basin. The wetlands provide many functions and their services are used by many stakeholders. In the selection process, particular focus was given to following criteria:

- Existing needs for drinking water supply and sanitation (thereby supporting the EUWI and MDG)
- Connection to a river basin
- Availability of data on the study area (experience from past projects)
- Experience of partner in international projects. They are the local focal point to involve decision-makers and societal stakeholders
- Local importance and status of the partner, such that the partner can be a lever for change in the country

It is important to state that in spite of the mutuality of the twinning approach, the WETwin project from the early conceptualisation onwards has put higher emphasize on the case study wetlands from Africa and South-America in order to concentrate more on supporting EUWI. This means that vulnerability assessment, stakeholder involvement and elaboration of management solutions has been carried out first of all in respect of the African and South American wetlands. The study sites from the EU have been functioning mainly as reference and means of comparison for southern sites. Although management approached are highly context depending, European experiences and knowhow have strongly enriched the project and twinning in particular.

The required data for WETwin on the EU sites was mostly available and has allowed to produce the required deliverables.

### 2.2 Twinning activities

The overall strategy for putting twinning into practice in the WETwin project has been motivated on the organisation of the workshops, trainings and staff exchanges. While putting this strategy into practice WETwin has strongly drawn from experience in previous EU twinning projects such as TwinLatin and TwinBas.

To enhance actual twinning and capacity building, a series of twinning workshops have been hosted by wetland leaders. Workshops have been taken place both in Southern as in European case study sites to emphasise need for, and benefit from both South-South and North-South twinning. An overview is given in Table 2, for detailed information on the workshops the reader is referred to the specific workshop reports.

<table>
<thead>
<tr>
<th>Year</th>
<th>Location</th>
<th>Twinning Workshop/ project meeting</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>The Netherlands</td>
<td>Project meeting / Workshop on conceptual framewok</td>
</tr>
<tr>
<td>2009</td>
<td>Ecuador</td>
<td>Project Meeting / Twinning Workshop: Integration of wetlands in IRBM</td>
</tr>
<tr>
<td>2009</td>
<td>Mali</td>
<td>Project Meeting / Twinning Workshop: Vulnerability and scenarios</td>
</tr>
<tr>
<td>2009</td>
<td>Uganda</td>
<td>Project meeting / Workshop on wetland management</td>
</tr>
<tr>
<td>2010</td>
<td>The Netherlands</td>
<td>Workshop on modelling in of wetlands and river basins</td>
</tr>
<tr>
<td>2010</td>
<td>South Africa</td>
<td>Project Meeting / Twinning Workshop: Wetland mgt options and adaptive governance</td>
</tr>
<tr>
<td>2010</td>
<td>Austria</td>
<td>Project Meeting</td>
</tr>
<tr>
<td>2011</td>
<td>Germany</td>
<td>Project Meeting</td>
</tr>
<tr>
<td>2011</td>
<td>Uganda</td>
<td>Project Meeting / Twinning Workshop: WETwin final conference</td>
</tr>
</tbody>
</table>
Each of these workshops has been organised on a specific topic deemed important in each given phase of the project. Workshops were attended by technical staff from each of the participating organisations. Key notes speakers have been invited to share state of the art insights on the selected topics. In most of the WETwin twinning workshops local stakeholders participated as did local subcontractors, and site visits were included to frame the theory within local context.

Other project meetings (Table 2) have also included capacity building moments, field visits and moments of exchange between project partners.

The second component of the twinning strategy relied on staff exchanges and trainings. Staff members of various project partners have been taking part in external trainings, internal training sessions have been organised by project partners, internships have been taking place, and numerous students have performed MSc or PhD research activities connected to the WETwin case studies. An overview is given in Table 3. Also stakeholders have been involved in these activities, either as guests lectures or as participants. In doing so we have achieved our objectives regarding exchange of knowledge between partner institutions and between wetland and river basin managers.

Table 3 Overview of staff exchanges, training activities and field visits.

<table>
<thead>
<tr>
<th>Overview of staff exchanges, training activities and field visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training of NWSC staff (Susan Namaalwa) by UNESCO-IHE (Uganda/The Netherlands) - December-February 2010 &amp; October-November 2011</td>
</tr>
<tr>
<td>Training of ESPOL (Mijail Arias Hidalgo) staff by UNESCO-IHE (Ecuador/The Netherlands)</td>
</tr>
<tr>
<td>Field visit in Uganda including workshops with NWSC and local partners by UNESCO-IHE (Anne van Dam) - May 2011</td>
</tr>
<tr>
<td>Field visit in Uganda including workshops with NWSC and local partners by UNESCO-IHE, Antea Group, VITUKI, WKI – August 2010</td>
</tr>
<tr>
<td>Training, technical assistance and backstopping of ESPOL staff by Antea Group (Patrick Debels) – 2009 &amp; 2010</td>
</tr>
<tr>
<td>Training, technical assistance and backstopping of IWMI staff by Antea Group (Patrick Debels) – 2010</td>
</tr>
<tr>
<td>Training of NWSC staff and WMD staff in GIS and data management by Antea Group (Patrick Debels) – August 2010</td>
</tr>
<tr>
<td>Field work in South Africa by Clément Murgue.</td>
</tr>
<tr>
<td>Technical assistance and backstopping by Irstea (Sylvie Morardet) to IWMI staff in South Africa</td>
</tr>
<tr>
<td>Participation in stakeholder workshops in South Africa by Irstea (Clément Murgue – July 2010, and Sylvie Morardet – October 2009, October 2011)</td>
</tr>
<tr>
<td>Field work &amp; data collection in South Africa by Ilse Kogelbauer.</td>
</tr>
<tr>
<td>Field work &amp; data collection by Dries Coertjens (Antea Group) in Mali – February 2011</td>
</tr>
<tr>
<td>Field work &amp; data collection by Amy Verbeke (Antea Group) in Mali – February 2011</td>
</tr>
<tr>
<td>Field work &amp; data collection by Marie Mahieu (Antea Group) in Uganda – August/October 2010</td>
</tr>
<tr>
<td>Training and meeting on modelling activities in WETwin hosted by UNESCO-IHE – February 2010</td>
</tr>
<tr>
<td>Workshop on WETwin conceptual framework hosted by UNESCO-IHE – January 2009</td>
</tr>
<tr>
<td>Workshop on Wetlands and Catchment management organised in South Africa by IWMI (Robyn Johnston) and Antea Group (Patrick Debels) – March 2011</td>
</tr>
<tr>
<td>Field work by Astrid Unterberger (WKI) in Uganda – December 2010</td>
</tr>
<tr>
<td>Training of NWSC staff by WKI (Andrea Funk) – February 2011</td>
</tr>
<tr>
<td>Training of WI staff by WKI (Andrea Funk) – August 2011</td>
</tr>
<tr>
<td>Training of WI staff by Antea Group (Annelies Beel, Jan Cools, Patrick Debels) – August 2011</td>
</tr>
<tr>
<td>Data collection mission to Uganda and South Africa / collect case study information for the WETwin database. By Gonzalo Villa (ESPOL) October 2010.</td>
</tr>
</tbody>
</table>
2.3 Twin2Go

A particular aspect of twinning has been the collaboration of WETwin in the coordination project Twin2Go.

Twin2Go reviewed, consolidated, and synthesised research on integrated water resources management (IWRM) in basins around the world. Twin2Go drew policy relevant research results on issues around ‘adaptive water governance in the context of climate change’ that are transferable to other basins. To ensure up-take of the research results in water resources management practice and political decision making, all synthesis activities involved stakeholders from the projects and basins.

WETwin has organised a joint twinning workshop with Twin2Go in South Africa (April 2010) to review the participating African River Basins. The WETwin basins of the Olifants River, the Niger and the Upper White Nile were included in the analysis with the support of experts from South Africa, Mali and Uganda. ESPOL participated in the Latin American Twin2Go basin review workshop to bring in expertise on the Guayas which has also been included in the Twin2Go database.

All project outputs of Twin2Go, publications and workshop reports are available from the download section of this website http://www.twin2go.uos.de/.

The Twin2Go database on water governance systems in river basins can be accessed on line at www.watergovernance.uos.de.
3 Short Report on Implementation Dissemination Strategy

WETwin has been presented by the consortium members on a large number of events and several exchanges have taken place between the project staff, stakeholders and international experts. The main dissemination events have been conference presentations, networking events, twinning workshops, newsletters, factsheets, scientific and popular publications and a set of guidelines constituting one of the main deliverables of the project.

Several platforms are being used to continue disseminating information and the results. Many will be maintained and even added after the project will have officially ended; the website will remain active and content will be integrated in other sites and initiatives by the commission, WETwin partners and related projects. For this we refer to the next chapter in this report on project after-life plan.

Throughout the duration of the project relations have been maintained with a number of international groups. Especially the contacts with the RAMSAR SRTP have been important. WETwin main results which have been discussed with the SRTP. It is expected that the WETwin guidelines will be partially integrated in RAMSAR. At this stage a box on the vulnerability assessment method by WETwin has been included in the RAMSAR technical Report N°.5 / CBD Technical Series N°57 – A Framework for assessing the vulnerability of wetlands to climate change (Figure 2).

A list of main events where WETwin has been presented in given in Table 4.

Table 4 Overview of main dissemination events (not including twinning workshops)

<table>
<thead>
<tr>
<th>Overview of main dissemination events (not including twinning workshops)</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ 2009. STRIVER Final Conference (Brussels, Belgium). Jan Cools. EU 7FP project on ‘wetland twinning’ in the EU, Africa and South-America.</td>
</tr>
<tr>
<td>▪ Presentation: Specificity: a key issue in eco-hydrological modelling</td>
</tr>
</tbody>
</table>
• 2010. Seventh International Conference on Ecological Informatics (Ghent, Belgium)


• 2011 International Conference on the Status and Future of the World's Large Rivers (Vienna). Poster: Role of wetlands in the management and restoration of large rivers. Zsuffa, I., Hein, T., Cools, J., Pataki, B.


• 2011 SWAT-SEA conference (Ho Chi Minh City). Griensven, A., Evaluation and adaptation of the wetland and paddy field modules in SWAT.

• 2011 WETwin workshop on Wetlands and Catchment Management (Pretoria, South Africa). Debels, Patrick (2011) Integrating Wetlands in River Basin Management: The WETwin project (EC FP7) and the Olifants River Basin Case study, South Africa. / Johnston, Robyn (2011)
WETwin and the WET-Management tools.


Networking (other):

- RAMSAR – there have been many interactions between RAMSAR and WETwin. Main contacts have been taking place during (i) the second twinning workshop which has been attended by Dr. RAMSAR STRP, Chairman Dr. Heather McKay. (ii) 2010 World Water Week (Stockholm, Sweden). Seminar titled ‘Challenges to the Integration of Wetlands into Water Resource Management’ attended by WETwin staff and RAMSAR STRP members. (iii) participation of Jan Cools and presentation of WETwin on the 16th Meeting of the Scientific & Technical Review Panel (STRP). At this stage a box on the vulnerability assessment method by WETwin has been included in the RAMSAR technical Report N°.5 / CBD Technical Series N°57 – A Framework for assessing the vulnerability of wetlands to climate change (Figure 2).


- Networking with World Bank and Government of Nicaragua with regard to the relevance of the conclusions from the first WETwin twinning workshop for the wetlands in the Cocibolca Lake Basin, Nicaragua, a previous EC FP case study site (Twinlatin project)

- Networking with Niger Basin Authority; Dessouassi Y. Robert

- Networking with the CGIAR Challenge Program on Water and Food (CPWF): Basin Focal Projects. Andrew Ogilvie.


- 2011 CIS-SPI Water Science-Policy Interface Brainstorming meeting (Brussels, Belgium). Thematic presentations / Brainstorming: Ecological Status - Projects involved: WISER, ACQWA, WETWin, MIRAGE, GENESIS, MOTIVE, LAGOONS, ESAWADI, IMPACT, STREAM, BIOFRESH

- Cooperation with the World Bank funded GEF project on the restoration of the Gemenc floodplain in Hungary. This project has prepared and evaluated ecological restoration plans for the Gemenc floodplain, which is one of the EU study sites of WETwin. VITUKI has been taking part in this project as consortium member. The outcomes of this project are also available and usable for WETwin.
Presentation of WETwin in local media e.g. coverage of project meetings and twinning workshops on national TV, the NWSC Quarterly Newsletter – The Water Herald, project briefs.

Planned:

- Linking CLIWASEC-cluster website. The CLIWASEC-website will initially cluster three independent EU-projects, subsequently it will be made possible for other projects on similar topics to link into the cluster.
- Linking AfricaCAN portal for dissemination of results.

A list of papers or abstracts written and submitted or planned by WETwin staff, is given in the following table. This includes a series of papers which will be published together in a special issue of the Environmental Science and Policy Journal later in 2012;

### Table 5 Overview of papers and abstracts

<table>
<thead>
<tr>
<th>Overview papers and abstracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liersch, S., Koch, H., F.F. Hattermann. Integrating wetland processes in river basin modelling. [planned to be submitted to Hydrological Processes]</td>
</tr>
<tr>
<td>Pataki B., Zsuffa I. Hunyady A. Vulnerability assessment for supporting the revitalisation of river floodplains. [Submitted to: WETwin special issue. Environmental Science and Policy.]</td>
</tr>
</tbody>
</table>


- Funk, A., Reckendorfer, W., Gschöpf, C., Blaschke, A.P. Ecological niche models for the evaluation of management options in an urban floodplain — conservation vs. restoration purposes. [Submitted to: WETwin special issue. Environmental Science and Policy.]


- Morardet, S., Murgue, C., Honarmand P., Johnston, R.M. Reconciling livelihoods with ecosystem integrity in GaMampa wetland, South Africa. [Planned 2012]

- Pataki, B., Hein, T. et al., Zsuffa I. Ecosystem services of large wetland systems along the Danube (Lobau, Szigetköz, Gemenc) [Abstract accepted 2012 - special issue entitled “On the morphodynamics of large rivers” of the Journal Earth Surface Processes and Landforms]


- Johnston, R.M., Debels, P, Wickremaratne, C and Declerq, R. Assessing wetland ecosystem services for catchment planning: Olifants catchment, South Africa. [planned in 2012]
4 Project “After-Life Plan” with specific focus on sustainability on public participation and the maintenance of the database

4.1 Transfer of project results

As reported in section 3 of this report, the WETwin project and its results have so far been presented in numerous international events and contacts have been maintained with relevant international organisations.

To assure further dissemination of project output and further uptake of results more actions are being planned:

- The main actions which will contribute to the dissemination and uptake of results is the collaboration with the RAMSAR SRTP. WETwin guidelines – particularly guidelines on vulnerability assessment – will be edited for uptake by RAMSAR. At this stage a box on the vulnerability assessment method by WETwin has been included in the RAMSAR technical Report N°5 / CBD Technical Series N°57 – A Framework for assessing the vulnerability of wetlands to climate change (Figure 2). A side event on the RAMSAR COP11 (6-13 July 2012, Bucharest, Romania) is under consideration.

- A special issue of the Environmental Science and Policy journal is in preparation to be published in 2012. Environmental Science and Policy promotes communication among government, business and industry, academia, and non-governmental organisations who are instrumental in the solution of environmental problems. It also seeks to advance interdisciplinary research of policy relevance on environmental issues such as climate change, biodiversity, environmental pollution and wastes, renewable and non-renewable natural resources, and the interactions between these issues. The journal emphasises the linkages between these environmental issues and social and economic issues such as production, transport, consumption, growth, demographic changes, well-being, and health. However, the subject coverage will not be restricted to these issues and the introduction of new dimensions will be encouraged.

- WETwin has been presented on the kick-off meeting the FP7 AfriCAN Climate project on Uptake of Climate related Research Results through Knowledge Platforms with African Collaboration Partners. The main aim of the AfriCAN Climate project is the development, operation and promotion of a web-based Knowledge Platform for efficient dissemination of climate change research results and good practices, to encourage users for uptake of success stories and research knowledge in new projects. Results from WETwin, including main reports, factsheets and guidelines will be shared with the AfriCAN Climate project and possibilities for a wetlands management practitioners group on the web-based Knowledge Platform are being considered.

- Taking up results and building on WETwin in ongoing and future EC funded research. Several WETwin partners are also involved in other projects awarded under the FP7. Several of these projects are working in the same case study sites. These projects include; AFROMAISON (coordinated by Antea Group, with participation of WETwin partners PIK, WI, IWMI, Irstea and UNESCO-IHE), DEFORWA (PIK, WI, UNESCO-IHE), IMPACT2C (PIK, WI), Aquastress (Irstea), EAU4FOOD (Irstea, IWMI).
Box 1. WETwin vulnerability assessment case study

Inner Niger Delta, Mali

Food production within the Inner Niger Delta is strongly related to the intensity (extent or seasonal variation) of its floodplain (Sweet et al. 2005; Roper et al. 2006). However, this pattern is likely to change in the future as a consequence of climate change, competition for upstream water and land management, and changes in the hydrology of the area. In addition, the livelihoods of approximately one million people and their livestock depend on the Delta.

There is little quantitative data for the area, and thus it is necessary to carry out a case study for assessing vulnerability assessment in data-scarce situations. The vulnerability assessment approach used involves expert judgment using qualitative data to assess impacts on different aspects of different management options.

Downscaled global change scenarios were applied to the current system condition, in which the system was exposed to different perturbations. The resilience of the system to a perturbation in the difference between the current condition and the scenario conditions. The impact on the system was assessed as a combination of exposure and system sensitivity.

A range of management options were then applied to the scenarios. The adaptive capacity of the system was determined by comparing the system state with and without application of each of the management options. The resulting change in vulnerability was assessed from the combination of the impact of each management option (adaptive capacity), the system’s sensitivity, and its exposure to a perturbation. The effectiveness of each management option was assessed for each scenario by comparing the change in vulnerability for each scenario and management option.

---

**Vulnerability assessment for the Inner Niger Delta, Mali.**

Trends show the assessed qualitative impact of each management option on three aspects of the system for the wet season and the dry season.

- Dark green: highly positive (+); green: positive (+); neutral (0); negative (-); red: highly negative.

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Figure 2 Ramsar Technical Report No. 5 / CBD Technical Series No. 57 - A Framework for assessing the vulnerability of wetlands to climate change - Box 1. WETwin vulnerability assessment case study

Inner Niger Delta, Mali
4.2 Transfer and accessibility of data and tools

Making decisions based on geography is basic to human thinking in our day to day life. By understanding geography and people’s relationship to location, we can make informed decisions about the way we live on our planet. Geographical information could be defined as geospatial data or information telling something about a location on earth. Data in WETwin has been mainly collected in WP3 and WP6, additional data as well as tools (models, maps, …) has been created in most of the other work packages. Making this information available to wetland managers and decision makers will largely determine the uptake of project results, and implementation and future use in the WETwin case studies.

In terms of data transfer and project after-life planning, two strategies have been combined. Data collected and produced as well as tools developed by WETwin partners for each of the case study area’s is being transferred to local managers where appropriate. A report on the developed tools is produced by WP7.

On the global level the data has been structured in a Spatial Data Infrastructure which is basically a catalogue of meta-data made public. Users world-wide can browse the data, when the data is public domain it can be downloaded immediately for use. If restrictions on the use of selected data apply, the user is referred to the data owner or manager.

The term spatial data infrastructure was invented in 1993 by the U.S. National Research Council to represent a framework of technologies, policies, and institutional arrangements that together facilitate the creation, exchange, and use of geospatial data and related information resources across an information-sharing community. Such a framework can be implemented narrowly to enable the sharing of geospatial information within an organization or more broadly for use at a national, regional, or global level.

Usefulness of a data set depends on information about the data set itself (metadata). When it comes to an SDI the effective use of a spatial data set is influenced by the following factors (UNECA 2005):
- Clearly defined core or base data sets
- Adherence of the spatial data sets to known and accepted standards
- Documentation for the spatial data sets (metadata)
- Policies and practices concerning the access and use of the spatial data
- And finally, adequate technology and human resources to collect, maintain, manipulate and distribute spatial data.

The tools used to build the SDI with functionality are the catalogue service for the web, web map service, web feature service, web coverage service and web processing service.
- GeoNetwork: is a catalogue application with an easy to use interface to manage spatially referenced resources. It provides powerful metadata editing and search functions as well as an embedded interactive web map viewer. (See Figure 1).
- GeoServer: is an open source software server written in Java that allows users to share and edit geospatial data. (See Figure 2).
- Data storage: Data is the core for SDI. There are a lot of different ways to store data: File system, MySql, PostGreSQL/ArcSD and PostGreSQL/PostGis.

The following elements of SDI were implemented in the WETwin project:
- Catalogue service for the web where the available metadata in WETwin database is presented
- Web map services to graphically present some geographically referenced data
The WETwin SDI is not intended to work as a standalone product. It will be linked and integrated in other spatial data infrastructure projects. At this stage it is being further implemented by UNESCO-IHE to make a UNESCO-wide catalogue and the WETwin data has been integrated in the AFROMAISON data infrastructure. Through AFROMAISON it will be further linked to the 7FP-AFRICA-Call projects, and will be promoted in the GEOSS network.

A full report on the WETwin database has been produced by work package 6.

4.3 Uptake of project results and follow-up activities at the wetlands

4.3.1 Lobau

Studies performed on the Lobau floodplain in Austria in the context of WETwin are shared in several other projects and will amongst others inform the Lobau Floodplain reconnection project (funded by the Municipal Authority of Vienna) and a parallel project (MAB Project Lobau2020) on effects of increasing visitor numbers. The results will be integrated in future management plans (see description of project Floodplain reconnection below).

All data available for the Lobau case study have been integrated on project based database for the Lobau projects that is being developed.

In addition to the Reconnection project and the MAB project, a new project has been submitted to analyse the development of the ecosystem services of the Lobau including a historical analyses and potential future changes considering global change scenarios (Ecodrivers Lobau). And an second projects that will study the effects of hydromorphological changes and changes in network configuration on the biodiversity of floodplains (WETECO) is also being developed.

Summary of related project:

**TITLE:** Ecodrivers Lobau

**ABSTRACT:** Urban biosphere reserves (BR), such as the floodplain “Untere Lobau”, provide numerous ecosystem services for the society. However, during the past centuries, many European floodplains have undergone severe hydro-morphological transformations which have changed not only the state of the ecosystems but also the state of the ecosystem services.

This study aims to assess the effects of human activities on ecosystem services and to develop adequate management responses for area management. It explores regulating, provisioning, supporting, and cultural ecosystem services of the past and the present to predict potential impacts of future drivers and pressures on the biosphere reserve state and its ecosystem services. Future pressures investigated are namely urban settlement development, recreation needs, and potential climate change effects. In addition, this study develops an approach for a cultural ecosystem service assessment of an urban biosphere reserve.

**FUNDING:** submitted to the Austrian MAB - Man and Biosphere Programme

**TITLE:** Floodplain reconnection Lobau (GV-Lobau)

**ABSTRACT:** The historically braided River Danube at Vienna is now significantly altered (regulation, fragmentation, habitat destruction) and is among a huge number of endangered braided river stretches in Europe. Restoration of side-arm connectivity is a key approach to improve the ecological integrity of riverine floodplains. Limited by manifold human requirements, setting clear aims for restoration of the floodplain „Lower Lobau“ is difficult. The main objective of the project „GV-Lobau“ is to develop models in various thematic fields, such as groundwater and surface water
hydrology, sediment transport, water quality and ecological models, to make reasonable predictions of the development of the Lower Lobau after a hydrological reconnection with the River Danube has been established.

**FUNDING:** AMA – Agrarmarkt Austria

**TITLE:** Biodiversity of wetlands: Effects of hydromorphological changes and network configuration (WETECO)

**ABSTRACT:** River-floodplain systems with their inherent biodiversity are among the most endangered ecosystems worldwide. In many countries their deterioration due to global change and its consequences for river-floodplain systems through (1) modifications of river courses such as channelisation or embankments, and (2) changes in traditional agricultural practices (i.e. usually pastures), into intensive production is an ongoing process.

On the other hand, river floodplain restoration with focus on “more room for the river” and the re-integration of nowadays disconnected floodplains gains increasing public support.

Both processes affect the physical environment as well as the configuration of the landscape (i.e. the network of floodplain water bodies). Side arms may be abandoned due to river engineering measures aimed to improve navigation or due to an incising river bed. In contrast, river restoration may enhance the lateral integration between the river and its floodplain. Thereby the physical conditions (e.g. hydraulics, sediments), the network structure and the habitat connectivity of the river-floodplain-system are significantly altered. Network configuration has significant effects on community assemblage processes (neutral processes vs. niche processes). Thus, with regard to river-floodplain-systems and their management, additionally to the understanding of the species-habitat-relationship, the understanding of the spatial context for habitats within river-floodplain networks is of central interest for biodiversity policy and management.

Within the connectivity gradient there may exist tipping points were small changes in connectivity lead to large changes in biodiversity. We suppose that that happens on the extremes of the connectivity gradient. Such tipping points may also exist with regard to the spatial configuration. Different taxa (or functional groups) may be differently affected by fragmentation of water bodies: Passive dispersers vs. active dispersers; insects (terrestrial dispersal) vs. other invertebrates, ....

We combine multiple lines of evidence to assess how different processes may contribute to the observed community assemblage and their resilience in a river-floodplain system. Based on these results we make predictions for community structure and diversity in river floodplain systems and how they are affected by restoration measures and/or global change. Furthermore, we analyse the trade-offs between restoration/management measures and alternative land/water uses as well as assess the cost-effectiveness of measures to attain connectivity and biodiversity targets in river-floodplain systems.

**PROJECT PARTNERS:** University for Natural Resources and Life Sciences, Institute of Hydrobiology and Aquatic Ecosystem / Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences / University Antwerp, Department of Biology / Antea Belgium nv / University for Natural Resources and Life Sciences, Institute for Sustainable Economic Development, Department of Economics and Social Sciences / VITO, Environmental modelling unit

**FUNDING:** Will be submitted for BiodivERsA call 2011-2012 – funded under the FP7 ERA_NET scheme

### 4.3.2 Gemenc

Work carried out within the frame of WETwin with regard to the Gemenc floodplain is closely linked to the GEF Nutrient Reduction Project (TF 055 978). This project is funded jointly by the Hungarian...
Government and the World Bank. VITUKI, the coordinator of WETwin, is a partner in the consortium of the GEF project. The objective of this GEF project is to elaborate and implement technical restoration measures for the Gemenc, with the aim of restoring the floodplain water bodies for the benefit of aquatic and semi-aquatic ecosystems and also for the benefit of nutrient retention. The proposed interventions envisage the installation of weirs and sluices into the lateral surface water connections of the water bodies, by which waters can be retained in the floodplain after floods. These interventions are implemented in the period of 2011-13.

WETwin has assessed the vulnerability of the Gemenc floodplain to climate change, river bed incision and floodplain aggradation, by taking into consideration the impacts of restoration measures proposed by the GEF project. Our results will be delivered to the managers of Gemenc in order to support the adaptive management of this wetland during and after the implementation of the restoration measures.

4.3.3 Abras de Mantequilla

Results of the WETwin project have been shared with local stakeholders in a series of meetings. The inhabitants of the communities of the wetland should be considered as the main actor, considering inside actors who represent the community and external actors who affect it; the term actor is understood by a person who is involved actively or passively in the management processes for their own development, in other words, any person who by their leadership skills is able to influence other members of the community.

To choose the right actors, it was considered the specific legal framework for the management of the Abras de Mantequilla wetland expressed in the formation of the "Commonwealth of Municipalities for the Sustainable Management of Abras de Mantequilla Wetland" in 2008, and the adoption of the articles of association of the "Commonwealth of Municipalities for the Sustainable Management of Abras de Mantequilla Wetland", conferring it legal personality under the law in 2010. The association is established with the Municipalities of the cantons Baba, Puebloviejo and Vinces.

In decision making, participation levels aim to raise the quality of information available and the quality of the decisions themselves, while the perspective of different segments of the parties involved are taken into account. For an adequate participation, it is a prerequisite that those who are social and community actors of the processes must have the appropriate information and open communication channels with other social and institutional actors.

Participatory research was conducted in February of 2012 in the counties that are part of the Commonwealth Abras de Mantequilla Wetland.

Using the method of "Peer Comparison" a ranking was performed on each of the components that make up each area and, according to priority, the corresponding score was obtained. In each group of actors an actor was chosen by county. The result has been segmented to meet the prioritization criteria of the various groups of actors on the topic investigated: a) policy makers, 3 surveys to high-end servers of the towns of Vinces, Puebloviejo and Baba and 3 surveys to public servants of the respective cantonal Policy Headquarters; b) population, 3 surveys to residents of each county and 3 to college students; c) scientists, 3 surveys to professors at the Academy (Technical University of Babahoyo); and d) the private and technical group, 3 surveys, making a total of 18 surveys.

The result of the meetings have been presented in report on consultation to stakeholders, Abras de Mantequilla.
At this moment local stakeholders are mainly focused on the plan for territorial organization of the Abras de Mantequilla Wetland. The public documentation generated by WetWin has been made available to local stakeholders. We hope that information will be considered as a source of valuable information for the plan of territorial organization.

Given the interest of ESPOL to contribute the development of integrated watershed management in Ecuador, attained experience will be applied to other case studies in basis of further research proposals for national or international funding.

Once the data would be in the project database repository, stakeholders will be notify about its existence and guided on its use. The database is also a valuable source of information for further postgraduate theses.

ESPOL is continuing to develop studies with regard to wetlands and river basin management in the Guayas basin. Since agriculture represents probably one of the major stressors for the wetland, the research agenda is now being oriented towards the development of integrated alternative technologies for agriculture effluents treatment.

4.3.4 Ga Mampa

The WETwin project established participatory approaches to wetland management and planning for the Ga-Mampa community. The priorities identified under WETwin have been communicated to the organizations in charge of local planning (IDP process) at community (ward councillor) and municipal (department of economic development). Municipal and provincial planning agencies were involved in stakeholder meetings, and introduced to the concepts and procedures involved, which may then be taken up by other groups.

Exchange visits with other community wetland groups provided further exposure of the WETwin approaches. In March 2011, Frank Mampa, secretary of the Community Development Forum of Ga-Mampa and another wetland farmer from Ga-mampa to visit the wetland of Ha Makuya, a village north of Thohoyandou, in the Vhembe district of Limpopo, on the Mutale river. Working for Wetlands has a wetland rehabilitation project there, with a full time worker and temporary workers to do the works. The first actions were focused on building anti-erosion infrastructure (gabion weir) to increase the groundwater level and boost natural vegetation growth. They also visited a project where the infrastructure is functioning for three years and WfW is now moving towards livelihood activities (community training for wetland management and increasing value of natural resources). The visit was co-organised by Clement Murgue (Irstea) and Collin Silima, coordinator of WfW programme in Limpopo. They met the person employed by WfW in Ha Makuya and a woman using the wetland for sedge collection. Ga-Mampa people were able to discover a rehabilitated wetland and understand the potential in Ga-Mampa. For more details on the Mutale project: http://wetlands-sanbi.org/project_details.php?id=201

A Mohlapitsi wetland project, partly funded by UNDP is on-going on the site, negotiated among stakeholders who participated in the WETwin workshops. It will use information on management options generated by WETwin as a basis of an action plan for the site. The Centre for Rural Community Empowerment (CRCE), an outreach organization within the University of Limpopo, which was a major stakeholder for the Ga-Mampa site, has been appointed by UNDP as the implementing agent of this project.
IWMI’s involvement in the Ga-Mampa case study will conclude at the end of the WETwin project, but methods and tools developed in WETwin are being applied and refined in a broader land management context within the Afromaison project.

Development and application of the WETSYS model at Irstea (ex Cemagref) is on-going, and work will continue on characterising vulnerability scenarios. The WETSYS model is available from Irstea and can be adapted to other small-scale wetlands in Southern Africa. Results of the farming system models developed by Tumelo Masilela as part of his MSc research will be presented to stakeholders under the responsibility of CRCE.

The Wet-WAG role-playing game is available from Irstea upon request. It can be adapted to other case studies in southern Africa. The South African National Biodiversity Institute has expressed its interest to use it. CRCE also intends to use the game with schools in Ga-Mampa valley as an environmental educational tool, and with farmers to support discussion on wetland management options. A game set was handed over to CRCE. In addition, Irstea plans to develop a game user manual to facilitate its dissemination.

Data collected during the project is available both from IWMI and on the WETwin ftp site. Complete metadata for project data are available as part of WP6. Data will remain a live part of IMWI’s GIS database.

Final results from field studies and modelling will be presented at regional conferences (WATERNET and INDABA) in 2012-3.

### 4.3.5 Nabajuzzi - Namatala

Results for the Nabajuzzi and Namatala case studies in Uganda have been presented and discussed nationally and locally. The management objectives are being fed into the wetland management plans.

WETwin guidelines moreover will be taken into account by the Ugandan Wetland Management Department in the review of national wetland management guidelines for local governments.

### 4.3.6 Inner Niger Delta

Management objectives which have been identified at sub-basin scale using the methodology and tools developed in WETwin include; a) Optimization of flow for irrigation, b) Optimization of flow for energy production and c) Maintain minimum flow during the dry season. All of these objectives are high in the agenda of many program in Mali. These objectives are coherent with the Sustainable Development Program of the Inner Niger Delta and also with the Action Plan for the Sustainable Development Program of the Niger Basin. As a result, there are opportunities for implementation of some of the solutions at Niger Basin and/or the Inner Niger Delta level.

At local level following have been identified as key issues: a) Sanitation, b) Clean drinking water, c) Ecosystem restoration & conservation, and d) Off-farm income generation. The solutions which have been analysed for these issues are integral parts of the priority action of the Sustainable Development Program of the IND (2011-2013). Under the WASH project funded by the Dutch Cooperation some of these management solutions will be implemented at local scale by Wetlands International and members of the WASH Alliance. Also, there will be an advocacy component in the same project for insertion of these solutions in the Socio-Economic and Cultural Development Program of the partner rural districts through the members of the WASH Alliance. Within the WASH
project we will investigate possibilities for up scaling and implementation of some of the management options by existing and new partner rural districts catalyze by Wetlands International and its partner ONGs.

Members of the WASH Alliance in Mali will be trained to apply the approaches: participatory methods for defining management options, definition de indicators linked to the latter, evaluation of management options in terms of affordability/costs and institutional capacity/planning. It is expected that in the future planning procedures several partners will make use of the lessons learnt in WETwin. In the near future WETwin approaches may be applied in the Sikasso and Koulikoro regions in the frame of the WASH project.

Wetlands International is also beneficiary in the FP7 projects AFROMAISON and DEFORWA, in these projects the partners involved in the Inner Niger Delta case study will continue to work on the products that have been initiated under WETwin.

Results have also been presented to the REDDIN project (Rehabilitation des Ecosystèmes Dégradées du Delta Intérieur du Niger) by the Swedish Embassy in Mali

Wetlands International is furthermore exploring possibilities to organise a number of additional dissemination activities which may include:

a) Translating the WETwin factsheets into French and printing of copies for large diffusion to stakeholders platform, partner NGOs, Government institutions mainly in the IND region,

b) Preparing training materials for local use based on the WETwin deliverables, particularly the WP9 guidelines.

c) Elaborating of a brochure made of a summary of the scientific publications and other documents (Vulnerability of food production in the Inner Niger Delta to water resources management under climate variability and change, Health impact of wetlands management solutions for the IND, Mali, etc.) and translate into French and two local languages (Bambara and Fulani) and print for large diffusion.

The data collected in the frame of WETwin will be part a joint database which is in course of construction by Wetlands International/Mali and IUCN/Mali. These data will be also used as a contribution to the development of “Environmental information system of the IND”. The latter is under development with a funding of IFAD under a project implemented by FODESA (Programme Fonds de Developpement en Zone Sahelienne). These databases will be will be public access and will be transferred to a governmental institution “Agence de l'Environnement pour un Developpement Durable” where it will be update.
5 Lessons learnt on twinning

5.1 Lessons from the WETwin case studies

Measures currently undertaken to protect and conserve wetlands are not sufficiently effective and wetlands are still degrading. Many wetlands are under severe pressure of upstream land and water developments and climate variability. And the pressure is expected to increase as a consequence of population growth and climate change. Although, the wetlands’ ecosystem services are essential for the subsistence of wetland communities, their unsustainable practices are driven by the struggle to survive and offer only marginal improvement to their livelihood.

The main objective of WETwin was to enhance the role of wetlands in basin-scale integrated water resources management (IWRM), with the aim of improving the community service functions while conserving good ecological status of the wetland. To work towards this objective a Conceptual framework has been developed on the basis of four basic exiting premises.

- Wise use (Ramsar Convention Secretariat, 2007): since wetlands provide a wide range of ecosystem services and livelihood benefits, they must be managed in ways that protect and enhance wetland ecology and health
- Adaptive management recognises management as an on-going cyclical process, not an end point; the components of adaptive management for wetland are set out in the Ramsar “Critical Path” approach
- Integrated water resource management embeds wetland management into a catchment context, taking account of the impacts on catchment management on the wetland, and of the contribution of the wetland to the functioning of the catchment (CIS, 2003; UNESCO, 2009).
- Participatory planning and management recognises that local communities and stakeholders are ultimately both the actors and the beneficiaries of management, and must be involved at all stages.

The Conceptual Framework for wetland management developed in the WETwin project nests adaptive management of the wetland within the adaptive management cycle of the river basin, with on-going feedback between the two WETwin focused on the preparatory and planning stages of the Critical Path; implementation and monitoring of plans is the responsibility of local authorities and stakeholders, and was not part of the project.

A Decision Support Framework (DSF) was developed to help planners and stakeholders build-up and evaluate different wetland management solutions. Both the Conceptual Framework and the Decision Support Framework has been explained at lengths in work package 8 and 9 reports.

Applying the methodology in case study wetlands

The WETwin project set out to create scientifically based decision support tools and approaches for wetland and river basin managers, suitable for use even where data is scarce. The initial step was an inventory / situation analysis using rapid assessment tools to describe ecosystem services, wetland health, human health and institutional context and a modified DPSIR framework to explore drivers and impacts of change, as the basis for identifying potential management interventions. Proposed management solutions were analysed to provide an integrated assessment of suitability, trade-offs and vulnerability using multi-criteria analysis (MCA) techniques. Simple decision matrices
were constructed scoring proposed management interventions against agreed evaluation criteria, using best available information and a mix of qualitative and quantitative indicators. Decision matrices were constructed to reflect both current conditions and (in some case studies) a range of possible future conditions (scenarios). Suitability, based on predicted impacts and feasibility, was derived as a ranking by combining scores weighted according to preferences of different stakeholders: rankings could differ for different stakeholders.

In practice, it was found that this analytical framework provided a very useful set of tools to promote understanding and underpin negotiations, but was not suitable for final selection of priority management options. This is due in part to the way the methods were conceptualized and implemented; but also in large part to the nature of the problem. The assumption underlying relative scoring of different proposed management regimes is that the response of the wetland ecosystem to different management can be reliably predicted. A number of recent studies have pointed out that, despite the growing body of knowledge on freshwater ecosystems, they are essentially “unknowable”. Because any ecosystem is made up of hundreds to thousands of interacting sub-systems, it is virtually impossible to predict the future state of the system when it is disturbed. The understanding that these uncertainties cannot be resolved, but must be managed, has underpinned development of adaptive management approaches. Even where the outcomes of future management can be predicted with sufficient certainty, that knowledge will not necessarily resolve competing views of what constitutes the best outcome, and decisions must be negotiated in a social and political, rather than analytical, context.

“Data poor” does not mean that nothing is known about the system – only that the existing knowledge has not been formalised and recorded. Local communities, who live with and use the wetlands, have quite detailed knowledge of system characteristics and dynamics, often with an holistic perspective that is lacking in discipline based studies. Local knowledge can provide an important complement to (and in many cases a better starting point for management than) incomplete compilations of scientific data.

The role of scientific and technical studies is to identify links and interdependencies that may not be obvious at local level, to provide predictive capacity for situations outside local experience, and based on this to identify thresholds and tipping points where management (or lack of it) could fundamentally transform the system. Since management will proceed with or without this information, where detailed assessments are not available it is important to use existing knowledge to adapt concepts to the local context with qualitative assessments. Day to day management of wetlands devolves mainly to local stakeholders, so to be effective, tools and information must be simplified to a level where they can be understood and used by managers, not only by technical experts, although this does not preclude the need for specialist input.

Use of rapid assessment tools and simplified scoring methods provided a structured way to summarise existing knowledge and identify important issues. Although they did not necessarily present new insights for local or disciplinary experts, these tools were useful in explaining issues across sectors and scales, and were important in creating mutual understanding. In many cases, the major barrier for cooperation or integration (across disciplines or levels of government / management) is lack of understanding of what the important issues are in other domains. The use of simple but structured analyses allowed focus on the essential elements within each domain. The fact that new insights were not revealed in the expert’s own domain is foreseen; the analysis serves mainly to offer insights on how they system functions as a whole. The methodology developed is thus more a tool for negotiation-support than a tool for decision-support.

The use of multiple evaluation criteria is essential in systems as complex as wetlands, with multiple uses, users and values, but there is a tension between the need for a range of criteria to adequately
reflect complex values of the system and complexity swamping the decision process. The process of defining and scoring criteria was very important in identifying the range of issues to be considered and their sensitivity to management; and in eliciting the values and concerns of stakeholders. However, many of the criteria could not be scored with sufficient sensitivity or reliability to differentiate between solutions; and it can be argued that the complexity of dealing with large numbers of criteria may mask the really important issues. In all case studies, stakeholder groups simplified analyses by grouping criteria. In data-poor contexts, where uncertainty in scoring of criteria is likely to be high, but is not explicitly assessed, relative rankings from MCA are of doubtful validity. In the final assessments, rankings derived from MCA were most useful for exploring the preferences of different stakeholders.

- Developing and implementing generic frameworks & apply tools in data-scare conditions

Although the WETwin tools were initially designed as decision-support tools, aimed at optimization of a complex multi-issue problem and associated trade-off analysis, evidence from the case studies however showed that we need to be careful with the validity of the results in a data-poor context with substantial uncertainty. The developed tools however did have value to improve the mutual understanding of issues for stakeholders. Therefore we suggest rather speaking of negotiation support tools when dealing with data-scare cases, rather than decision-support tools. Meaning that we can use it to look – together with stakeholders - for cooperation and win-wins, and not only trade-offs.

Even though we have worked as much as possible with existing concepts, still quite some efforts have been spend by project partners to develop and agree on a common WETwin Conceptual Framework and a Decision Support Framework. The difficulty we have been facing for starts has been in the definition of the frameworks boundaries or levels. Wetland and river basin management requires decisions and actions on many levels going form farm or plot level up to the international level. At each of these levels we are dealing with other expectations but also with other levels of expertise. A generic framework and a toolbox for wetland and river basin management therefore should be composed of different building blocks with varying levels of complexity that can be combined in function of the available capacity and resources.

Having made this analysis early into the project i.e. as discussed on the second twinning workshop, it nevertheless has proven to be difficult to find that balance between a generic framework and a very case specific drive approach.

- Mutual understanding: trade-offs and win-win

Two important and inter-related points regarding the dynamics of negotiations and conflicts emerged from WETwin case studies. The first is that the multi-use character of wetlands intrinsically lends itself to compromise solutions. Managing to meet multiple use objectives inherently requires managing to maintain the overall health of the wetland; and vice versa, maintaining the health of the wetland maximises the range of ecosystem services it can provide. Stakeholders displayed understanding that maintaining or improving the overall health of the wetland benefitted all concerned, reflected in the interest shown in integrated solutions that aimed to find a balance between different uses. For example, in both Ga-Mampa and Abras de Mantequilla, where there are potential conflicts between agriculture and wetland conservation, integrated solutions balancing the two emerged as the preferred option in community consultations.
Perhaps reflecting this understanding that multiple uses of wetlands are possible, it was observed in the case studies that stakeholders were often reluctant to frame decisions in terms of direct trade-offs. While acknowledging that trade-offs and conflicts exist, wherever possible, communities sought “no-regrets” options or to find integrated solutions that provided some benefits for all. Although trade-offs have connotations of balance, the concept is intrinsically adversarial. Friend et al (2009) point out that framing debate on ecosystem management in terms of trade-offs may “close the space for alternative development pathways”, and that it is important to consider “…whether the choices can be reduced as simply and crudely … whether these choices reflect the development challenges, whether there are alternative means of framing the challenges and options, how these decision are made and who has the power to make them”. In many cases, trade-offs are caused because of an insufficient insight into the collateral damage of a measure someone is taking for their own benefit; in others, trade-offs are driven by perceived or actual lack of alternatives. Tools to explore system dynamics and interconnections can support negotiations by identifying potential points of conflicts and alternative solutions, and by fostering mutual understanding and cooperation.

The case studies also shed an interesting light on the realities of interactions between scales. Wetland stakeholders were usually very aware of the potential impacts of catchment development on the wetland, but saw these impacts as outside their sphere of influence and hence as inevitable. For example, in both Abras de Mantequilla and Inner Niger Delta, large upstream developments were seen as inevitably imposing new flow conditions; the focus at wetland level was on understanding and adapting to changing conditions, rather than seeking to influence the size or direction of these changes. This reflects the realities of the governance structures, where devolution of management responsibility to local agencies is relatively recent and not matched by changes in the real balance of power in decision making. Conversely, in most cases, management of the wetland was seen a primarily a local concern with little relevance for those outside the area. In this context, ecosystem service assessments provided a useful starting point for understanding the wider values of wetlands.

The question arises of whether the complexity of truly integrated management of wetlands and catchments is feasible in countries where links in the governance between different levels are not well developed. In practical terms, the most pressing requirement is for cooperation and exchange of information on critical links, rather than full integration.

- **Building capacity as a prerequisite for effective wetland management**

Understanding the physical environment of the wetland system itself furthermore is not longer enough to cope with the pressures, also the understanding of the enabling environment (legislation, formal institutions), current management practices, sustainability and robustness of management options are necessary. The performance of wetland management is only as strong as the weakest link of the chain. Although, the context in the different case studies was very different, one of the weakest links in all case studies was the need for cooperation, exchange of information and mutual understanding of each others requirements.

Our analysis show that many concepts for wetland management and river basin management exist, they are widely known in the community of wetland and river basin managers and in many cases have already been integrated in national policies. Despite this, the current wetland management practices usually deviate from what guidelines and policies prescribe.
The main challenge for more effective wetland management is therefore not to develop more generic guidelines and frameworks, but rather to develop capacity to implement integrated wetland and water resources management at local level.

5.2 Short recommendations

- Understanding the physical environment of the wetland system itself is not enough to cope with these challenges, also the understanding of the enabling environment (institutional context, management practices, sustainability/robustness of management options of managing wetlands is necessary.
- Modelling is to become more demand-driven; modellers and resource managers need to communicated better and start cooperating from the inception phase. The results need to be translated into digestible information for planners.
- Enhance local capacity to update, run new simulations and interpret results. This includes the capacity of the local GIS offices.
- Involve multiple experts and derive a group compromise complemented by individual in-depth interviews.
- Inventory of local practices and beliefs, rationales behind behaviour and potential substitutes.
- The issue in ensuring sustainable management of wetlands is not developing new and improved guidelines and policies. Rather the main challenge appears to be translating existing guidelines into local guidance taking into account the local context, and to develop capacity at the local level.
- It is important that capacity development efforts build upon locally existing knowledge, context and institutions. Institutional capacity development should not be complementary to wetland management, but should be its integral part.
- Effective solutions to wetland degradation lie in understanding how stakeholders value wetlands, especially those owning or directly utilizing the wetland resources on which they depend.
- A number of conditions need to be in place before any guidance can operate effectively including an adequate and functioning legal regime, sound administration and flexible policy-making, stakeholder understanding of the aims of the process and its potential benefits, political commitment, institutional capacity for implementation, adequate technical capacity, data and information, financial capacity and public involvement.
- Rapid, qualitative methods preferred over more detailed, quantitative assessments
- Timing of tools need to match timing of stakeholders and planning; Models e.g. are require a lot of time in order to deliver results; then traditionally stakeholders are involved, but not much can be changed. Consequently model results are not used for planning; stakeholders do not change their behaviour.
- Instead of decision-support tools, a shift towards negotiation support tool should me made
- In practice, it was found that this analytical framework provided a very useful set of tools to promote understanding and underpin negotiations, but was not suitable for final selection of priority management options.
- Even where the outcomes of future management can be predicted with sufficient certainty, that knowledge will not necessarily resolve competing views of what constitutes the best outcome, and decisions must be negotiated in a social and political, rather than analytical, context.
- Day to day management of wetlands devolves mainly to local stakeholders, so to be effective, tools and information must be simplified to a level where they can be understood and used by managers, not only by technical experts, although this does not preclude the need for specialist input.
Communities sought “no-regrets” options or to find integrated solutions that provided some benefits for all. Rather win-win solutions than trade-offs.

Trade-offs are caused because of an insufficient insight into the collateral damage of a measure someone is taking for their own benefit; in others, trade-offs are driven by perceived or actual lack of alternatives. Tools to explore system dynamics and interconnections can support negotiations by identifying potential points of conflicts and alternative solutions, and by fostering mutual understanding and cooperation.

Ecosystem service assessments provided a useful starting point for understanding the wider values of wetlands.

The question arises of whether the complexity of truly integrated management of wetlands and catchments is feasible in countries where links in the governance between different levels are not well developed. In practical terms, the most pressing requirement is for cooperation and exchange of information on critical links, rather than full integration.

Stronger social networks are important to improve resilience and reduce vulnerability, and to change behaviour (although some formal solutions like “insurances” are definitely an important lack)

5.3 North-South collaboration in EU funded research

The final chapter in this report draws on the results of a survey made by Dr. Chris Dickens on experiences from European and African researchers in EU funded research projects. The results of this survey have been presented under the title ‘The necessity of international co-operation in comparative water resource research in the EU & Africa’ at the ECRAAL Water Node Conference, Brussels, Belgium, 25th-27th January 2012.

The survey has been conducted against the background of the Joint Africa-EU Strategic Partnership, endorsed at the December 2007 Summit in Lisbon. This agreement is a political vision and roadmap for the future cooperation between the two continents in existing and new areas. Cooperation between Europe and Africa in the field of science and technology, with its long and multifaceted history, is one of the pillars supporting the increasingly diverse relationship between our two continents and is a strand running both explicitly and implicitly through the joint strategy and its first action plan.

Several research topics under the EU FP have been targeting cooperation between EU and African researchers. The awarded projects generally include specific results such as (i) to strengthen local capacities in the relevant science and technology fields and their applications, also through appropriate training activities and exchange of staff, or (ii) to provide amongst others, innovative management and governance tools and adaptive technologies suitable for the relevant authorities and stakeholders for providing contributions to reduce poverty, increase food security, academic training and health research networks, manage water more efficiently and protect natural ecosystems in Africa. Furthermore, (iii) the participation of local stakeholders, and/or regional actors, and the necessary networking, is considered of paramount importance to achieve the expected impact.

The questionnaire which is at the basis of these results has also been circulated among WETwin partners in Africa. The findings of the survey to a large extend can be acknowledge by the project team and therefore is included in this report.

Findings of the survey:

- EU researchers have been effective in African case study research. Respondents have reported that EU researches do acknowledge locally defined problems and often have a
thorough understanding of the local context enabling them work toward appropriate solutions. This is most likely to be the case where a long-term collaboration has been established between EU and African institutions. Champions in this regard are often international organisations such as WWF, IUCN or UNESCO-IHE. In these organisations the staff is most often a mixture of EU and African nationals which thus allows for strong involvement of and exchange between researchers from both continents.

Another aspect which is being evaluated in a positive sense has been the capacity building activities in the reviewed projects. Case study sites have been described as places of knowledge generation both for EU and African scientists. The EU funded research has moreover enabled the participation of students and young scientists at bachelor, master of PhD levels, offering them valuable experience for their future careers.

EU researchers have also been effective in African case studies in these cases were a decent exit strategy had been integrated in the project.

- However, in other cases the EU researchers have not been effective in African case study research. As has been far too often the case in relations between the EU and Africa in the distinct past, EU researchers still tend to demonstrate a patronising attitude towards their African counterparts. Large institutions with highly technical expertise, which have been highly successful in winning projects, need to be particularly aware of this trap. These advanced centres of knowledge generation may - unwillingly or not – undermine African initiative and creativity while imposing European solutions that do not fit local conditions in Africa. Where EU researchers in many cases may not be aware of this, in other case they actually do express an ‘African way of doing things’ being an obstacle rather than an opportunity.

In most EU funded research projects in Africa, the EU partners strongly outnumber the African partners. The coordination and centre of decision making is dominated by the European partners making it more difficult for African partners to push forward home-grown solutions. EU partners often strongly emphasis the academic research. Research for the sake of knowledge generation as such however is not likely to produce long-lasting effects in the case studies. Results are published in scientific journals and conferences but are not turned into useful output for local stakeholders. In addition to this, the timeframe in which the projects need to run are inadequate, they do not allow thorough implementation in case studies and/or decent capacity building of local stakeholders.

Regarding the selection of case studies, it is felt that the selection criteria are limited to convenience, that EU case studies get priority, and that few results are left behind in the study sites. Furthermore, researchers acknowledge the EU often not being able to set an example.

Consequently, some African researchers have expressed their feeling of merely being used by EU research institutions to be able to secure projects.

- It is reported that African researchers are contributing meaningful to African case study research. This is particularly the case where they have real tasks to do – other than implementing EU guidance. Where tasks and concepts are initiated within Africa, they are more likely to be adapted to local condition and at the level of local capacities. African researchers provide important knowledge on the local context and socio-ecological systems. Without this knowledge it is difficult to achieve meaningful results.
Researchers have reported many strengths emerging from Africa as well. African researchers tend to perform better in data scarce conditions, relying less on data and numeric models and more on expert knowledge. This is making them more adapted to African research conditions which are mostly characterised by data scarcity. This could also be the reason why African researchers seem to be performing better in engaging with local stakeholders and being stronger engaged in social networks. Consequently less gap between policy and stakeholders is being reported.

- According to the respondents, African researchers do not contribute meaningfully to African case study research for a variety of possible reasons. These reasons often have to do with a lack of skills and facilities. The infrastructure may be inadequate to conduct research; poor logistics may be hampering progress in the projects. Or researchers are leaping behind on the state-of-the-art scientific knowledge in their field of expertise.

African researchers simply do not invest the required time into the project. Projects are merely seen as ways to secure funding (i.e. salary) and are indeed in many cases a dire necessity for the institutions to survive. Consequently researchers implementation capacity is exceeded by the number of projects they get to manage.

The African research institutions do not have adequate skills in finance and administration to handle the complex European project procedures. Projects develop into small or large catastrophes because institutions fail to comply with EU standards in finance and administration.

African researchers are reported to have a passive attitude which may be traced back to causes mentioned earlier such as EU patronising attitudes or little time invested in the project by African researchers. But this is may also be explained by cultural differences. Culturally, Africans are usually less outspoken, less assertive than Europeans. Because of this African ideas are often not heard, they should be shared more articulately and even forcefully. Europeans in working with African researches should be aware of this, in particularly when collaborating with young African researchers.

- EU research is being welcomed in Africa! Money for one is a good reason why African researchers are welcoming EU funded projects. Whether it is greed, or an attractive top-up of salaries, the EU funds are often substantial and important sources of funding for African researchers and their institutions.

EU research is offering possibilities to African researchers to grow in their field of expertise. African researchers are motivated to collaborate in EU research by a genuine desire for knowledge.

The EU research programs are particularly welcomed where African counterparts are enabled a strong involvement from the start on, and thus are involved in the project design and not only in implementation. For the same reasons long-term collaboration or programmes are evaluated much more positive than short time case study based projects.

- EU research is not being welcomed in Africa because of the short term nature of the projects making it more difficult to produce adequate results and effective capacity building. The high demands and efforts that needs to be invested to match administrative requirements is furthermore frightening African institutions. It is felt that the administrative burden is too high, to the extend that innovation comes second to administration and meetings.
The co-funding requirements in EU funded research are a serious bottleneck. Many African institutions are not able to match these requirements; the matching funds are often not available. Certain places have been seriously overexploited as research sites by European and other researchers. Stakeholders have been mobilized again and again, but far too often they have not received meaningful feedback and there is only very little implementation of results. Local stakeholders in these circumstances do not welcome the researchers any longer, and do not longer want to support the ‘scientific tourism’ business as some came to call it.

Others have gotten rather suspicious about EU funded projects, claiming that these projects are benefiting mostly European research institutions and private companies but not Africans. The research projects by some have been considered to be in the same boat of a number of EU companies privatising water supplies in Africa.

**Lessons learnt from these findings:**

- EU involvement should be aligned to African context, thus responding to African problems and working towards meaningful solutions with strong implementation potential
- Focus on policy relevant bottlenecks is needed
- Concentrate on building capacity in African researchers, offering sufficient means for African researchers to get fully involved and creating an environment where the ideas of African researchers can be heard
- Involve African partners integrally and early, as to bring their ideas, insights, approaches, or solutions in the project early for the conceptualisation stage
- Less academic desk-top research - real world problems, or less research for publication targets but more research with implementation potential.
- Sharing of results is paramount, researcher are to be accountable for their actions to local stakeholder and not only to donors.
- Introduce post-project testing of efficacy. Researchers are now evaluated based on the deliverables, reports or publications they have produced during the project but not on the impact that the project has created. This impact can only be measured some time after the project has ended. The way research is being organised there is no way of measuring short-term or long-term impacts.
- Separate case studies from original research? In many cases it is difficult to combine very case specific action research with more fundamental research, leading to confusing, wrong expectations and poor results.
- Bureaucracy and policies; procedures are complex and co-funding requirements are a serious bottleneck jeopardising the projects.

*Dr. Chris Dickens has been an external reviewer for WETwin and has been participating in the joined WETwin-Twin2Go workshop held in South Africa, April 2010.*