

River basin management





About the Convention on Wetlands

The Convention on Wetlands (Ramsar, Iran, 1971) is an intergovernmental treaty whose mission is “the conservation and wise use of all wetlands through local, regional and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world”. As of June 2007, 155 nations have joined the Convention as Contracting Parties, and more than 1700 wetlands around the world, covering over 151 million hectares, have been designated for inclusion in the Ramsar List of Wetlands of International Importance.

What are wetlands?

As defined by the Convention, wetlands include a wide variety of habitats such as marshes, peatlands, floodplains, rivers and lakes, and coastal areas such as saltmarshes, mangroves, and seagrass beds, but also coral reefs and other marine areas no deeper than six metres at low tide, as well as human-made wetlands such as waste-water treatment ponds and reservoirs.

About this series of handbooks

This series has been prepared by the Secretariat of the Convention following the 7th, 8th and 9th meetings of the Conference of the Contracting Parties (COP7, COP8, and COP9) held, respectively, in San José, Costa Rica, in May 1999, Valencia, Spain, in November 2002, and Kampala, Uganda, in November 2005. The guidelines on various matters adopted by the Parties at those and earlier COPs have been prepared as a series of handbooks to assist those with an interest in, or directly involved with, implementation of the Convention at the international, regional, national, subnational or local levels. Each handbook brings together, subject by subject, the various relevant guidances adopted by Parties, supplemented by additional material from COP information papers, case studies and other relevant publications so as to illustrate key aspects of the guidelines. The handbooks are available in the three working languages of the Convention (English, French, and Spanish).

The table on the inside back cover lists the full scope of the subjects covered by this handbook series at present. Additional handbooks will be prepared to include any further guidance adopted by future meetings of the Conference of the Contracting Parties. The Ramsar Convention promotes an integrated package of actions to ensure the conservation and wise use of wetlands. In recognition of these integrated approaches, the reader will find that within each handbook there are numerous cross-references to others in the series.

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Handbook 7

Ramsar handbooks for the wise use of wetlands

3rd edition, 2007

River basin management

**Integrating wetland
conservation and
wise use into river
basin management**



This 3rd edition of the Ramsar handbooks replaces the series published in May 2004. It includes relevant guidance adopted by several meetings of the Conference of the Parties, in particular COP7 (1999), COP8 (2002), and COP9 (2005), as well as selected background documents presented at these COPs.



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Note. This Handbook is based on Resolution VII.18 and its Annex and Resolution IX.1 Annex c(i), but also brings together additional information relevant to this issue. The views expressed in this additional information do not necessarily reflect the views of the Ramsar Secretariat or the Contracting Parties, and such additional materials have not been endorsed by the Conference of the Contracting Parties.

In this edition, additions to and omissions from the text of the original guidelines, required by the results of COP8 and COP9, are shown in square brackets [...].

All decisions of the Ramsar COPs are available from the Convention's Web site at http://www.ramsar.org/index_key_docs.htm#res. Background documents referred to in these handbooks are available at http://www.ramsar.org/cop7/cop7_docs_index.htm, http://www.ramsar.org/cop8/cop8_docs_index_e.htm, and http://www.ramsar.org/cop9/cop9_docs_index_e.htm.



A peat-lined tributary of the Yarghoon River near Lashkargahaz, North West Frontier Province, Pakistan (elevation 3,649 meters). *Photo: Hassan Zaki / WWF Pakistan.*

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Foreword

The Convention on Wetlands formally identified the need to integrate wetlands into river basin management at the 6th meeting of the Conference of the Contracting Parties (COP6) in 1996 through Resolution VI.23 on *Ramsar and water*. This Resolution recognized “the important hydrological functions of wetlands, including groundwater recharge, water quality improvement and flood alleviation, and the inextricable link between water resources and wetlands” and realised the “the need for planning at the river basin scale which involves integration of water resource management and wetland conservation”. The Strategic Plan for 1997-2002, approved at COP6, urged the Contracting Parties to “to integrate conservation and wise use of wetlands into decision-making on land use, groundwater management, catchment/river basin and coastal zone planning”. However, no clear guidelines were available at that time to assist the Parties in this direction until the 7th meeting of the Conference of the Contracting Parties in 1999 which adopted Resolution VII.18 *Guidelines for integrating wetland conservation and wise use into river basin management* and its associated Annex. Following the adoption of Resolution VII.18 and its Annex, the STRP was requested to “review case studies....and prepare additional guidance (as necessary) on integrating wetlands, biodiversity and river basin management” (Strategic Plan 2003-2008: Operational Objective 3.4.3).

The original guidance on river basin management (Annex to Resolution VII.18) provides a basis and the necessary tools for promoting the integration of wetland management into river basin management. The additional guidance contained in Resolution IX.1 Annex C i (Part III of this Handbook) provides more detail on sequencing of the river basin management activities that use these tools. For ease of reference, the two sets of guidance have been brought together, presented sequentially in Parts II and III of this Handbook.

The continuing role and importance of the Ramsar Convention in water-related issues was strongly reaffirmed by Contracting Parties at COP9 (2005), both through the adoption of the guidelines in Part III of this Handbook and other water-related guidance provided in Handbooks 6 and 9 and through the adoption of Resolution IX.3 (included in the Appendix of this Handbook).

Part I

River basin management: the Convention's guidance

Introduction

The move towards the integration of wetlands and wetland water requirements into water sector planning and activities has only really commenced in most countries since the mid-1990s, although the awareness of the need for this has been growing for a long time in the environment and wetlands communities. In response to this awareness, Contracting Parties requested the preparation of guidance on integrating wetlands into river basin management resulting in the adoption of Resolution VII.18 (Part II of this Handbook). That guidance described, in some detail, the different planning and management activities that can support more effective integration of wetlands into river basin management.

Subsequent review of recent experiences of wetland management and protection in the context of river basin management has led to the growing recognition that there is a certain degree of sequencing required between planning and management activities at river basin level and between management and user activities at individual wetland or site level. Difficulties in implementation of wetland management plans often occur when higher-level water resources planning, management and water allocation issues have not been adequately addressed prior to the design and implementation of wetland management plans. It appears that failure or difficulty in implementing wetland management plans, and thus in achieving wise use objectives for individual wetlands, is often due to the failure to resolve critical bottlenecks or gaps in the progressive sequence from planning at basin level to implementation at individual wetland level.

Many countries are still grappling with the policy and regulatory reforms needed to recognize ecosystems as legitimate users of water, which is the first step in formalizing the status of wetland ecosystems in water allocation and management (see also Part II, Section B). Whilst many countries have achieved good results in integrating wetland management and water resources management at the local, site or sub-basin level, successful upscaling of these approaches to the basin level has generally proved difficult, although not impossible.

One of the significant obstacles to successful upscaling is often the lack of attention to wetlands at an early stage in the process of water resources planning at the basin scale. A clear, understandable and sequential process of water resources planning allows much better opportunities for wetland managers to formulate their inputs appropriately and engage with water resource planners and managers. A generic model, or "Critical Path" approach, for such a process is described in the additional guidance on integration of wetlands into river basin management adopted as Resolution IX.1 Annex C i in 2005 (Part III of this Handbook). The exact sequence is perhaps less important than the fact that there is a formal, organized and transparent process established, with which all relevant sectors can engage.

While this Handbook is intended primarily for the Contracting Parties to the Ramsar Convention, it will be of use to anyone with an interest in the 'holistic' approach to the management of wetlands. This approach, recognizing that wetlands are integral parts of ecosystems, requires that managers and planners

focus at the river basin level in developing effective management strategies. The Handbook is intended to provide supporting information and guidance for wetland managers and planners to participate more fully in broader cycles of river basin management, including in water resources planning, allocation and management. In this way, by preparing and providing appropriate wetlands-related information and data at appropriate times, wetland managers and planners can assist river basin managers to better integrate the requirements of wetland ecosystems into their planning and management initiatives.



Tonle Sap, Cambodia. Photo: Taej Mundkur.

Part II

Guidelines for integrating wetland conservation and wise use into river basin management

(adopted as the Annex to Resolution VII.18 by the 7th meeting of the Conference of the Contracting Parties, San José, Costa Rica, 1999)

[Note: Handbook 8, *Water allocation and management*, provides further guidance relevant to the implementation of a number of sections of these guidelines]

I. Introduction

1. Wetlands perform a host of ecological and hydrological functions that benefit humankind. Arguably some of the most important functions of wetlands are their roles in water supply, water purification and flood control. Wetlands also perform many other important socio-economic functions, such as provision of habitat for fisheries and forestry resources, and are critical for the conservation of biological diversity.
2. River basins or river catchments (the land area between the source and the mouth of a river including all of the lands that drain into the river) and coastal and marine systems influenced by catchment discharges, are important geographical units for considering the management of wetlands and water resources. Rapid and unsustainable development of wetlands, and the river basins in which they sit, has led to the disruption of natural hydrological cycles. In many cases this has resulted in greater frequency and severity of flooding, drought and pollution. The degradation and loss of wetlands and their biodiversity imposes major economic and social losses and costs to the human populations of these river basins. Thus, appropriate protection and allocation of water to wetlands is essential to enable these ecosystems to survive and continue to provide important goods and services to local communities.
3. In the coming millennium, demands on water resources will continue to increase, as will the levels of pollutants. In order to achieve the goal of sustainable utilisation of freshwater resources, new approaches to water and river basin management are urgently required. In the past the water resources and wetlands have tended to be the responsibility of separate sectoral agencies, frequently with very different objectives and modes of operation. As a result there have been, and continue to be, regular conflicts over water resource use and river basin management. Regrettably, in these considerations wetlands have not always been given the priority they deserve based on the important functions they perform in contributing to the maintenance of healthy and productive river systems.
4. Considering the important roles that wetlands can play in river management, the integration of wetland conservation and wise use into river basin management, as promoted by the Convention on Wetlands (Ramsar, Iran, 1971), is essential in order to maximise and sustain the benefits they together provide to human populations.

Purpose of these guidelines

5. These guidelines were conceived because, though the need to integrate wetlands into river basin management has been recognized by many governments and global institutions, no clear guidance on how to do so has been prescribed under the Ramsar Convention on Wetlands to this point. Therefore, these guidelines are intended to assist the Contracting Parties with pursuing this goal.

Guidance given by the Convention text and previous decisions of the Conference of the Contracting Parties

6. The critical linkage between wetlands, water and river basin management is emphasized in the text of the Convention on Wetlands and in the decisions of the Contracting Parties to the Convention at the triennial conferences. Notably the second paragraph of the Preamble of the Convention text states: "Considering the fundamental ecological functions of wetlands as regulators of water regimes", and the 6th Conference of the Contracting Parties (COP6) confirmed through Resolution VI.23 on *Ramsar and Water* that Contracting Parties "RECOGNIZE the important hydrological functions of wetlands, including groundwater recharge, water quality improvement and flood alleviation, and the inextricable link between water resources and wetlands, and REALIZE the need for planning at the river basin scale which involves integration of water resources management and wetland conservation."
7. Resolution VI.23 further calls upon Contracting Parties, in promoting the integration of water resource management and wetland conservation, to undertake a range of actions (including the establishment of hydrological monitoring networks on wetlands, studies of traditional water management systems and economic valuation methods), to involve National Ramsar Committees and local stakeholders in river basin management, to support multidisciplinary training, and to work in partnership with water-related organizations.
8. Operational Objective 2.2 of the Strategic Plan 1997-2002 approved at COP6 urges Parties "to integrate conservation and wise use of wetlands . . . into national, provincial and local planning and decision making on land use, groundwater management, catchment/river basin and coastal zone planning and all other environmental management".

II. Institutional frameworks

Integrated river basin management

9. Integrated water resources management is based on the concept of water being an integral part of an ecosystem, a natural resource and a social and economic good, whose quantity and quality determine the nature of its use (Agenda 21, United Nations, 1992). A water source that is reliable, in terms both of its quantity and its quality, is a prerequisite for the survival of human civilization and socio-economic development. Water scarcity, gradual deterioration, aggravated pollution and infrastructure development has increasingly created conflicts over the different uses of this resource. The river basin management approach is an example of an incentive-based

participatory mechanism for solving conflicts and allocating water between competing users, including natural ecosystems.

10. A critical requirement for integrated river basin management is the introduction of land use and water planning and management mechanisms which focus at the river basin scale. There is also a need to include consideration of the ecological requirements of marine and coastal systems that are influenced by catchment discharges. There are many steps involved in promoting the integrated approach of water resources management. One of the key issues identified is the division of management responsibilities for one river basin between different administrative authorities, resulting in fragmented approaches to water resources planning and management. It is important to realise that water resource planning and management is a multidisciplinary process and therefore has to be promoted as a collaborative framework among all the relevant agencies operating nationally and those involved within the river basin itself, as well as local communities.
11. Another key issue is the lack of awareness of the cross-sectoral nature of water problems and the need for a new development paradigm towards integrating the technical, economic, environmental, social and legal aspects of water management. The development of administrative units in water resource management has to coincide with river basins' boundaries instead of political boundaries. The lack, or inadequacy, of water legislation and policies is another stumbling block to integrated management of river basin and optimal use of water resources.
12. The following guidelines should be noted:

Section A

Guidelines for Contracting Parties relating to integrated river basin management

- A1. Identify the key barriers to integrated river basin management and promotion of land and water use planning/management within a river basin and work to overcome them.
- A2. Develop consultative processes which involve the various sectors and institutions responsible for water management, environmental protection and agriculture (at least) and a basin-wide plan for the conservation, utilisation and management of the water resources.
- A3. Integrate wetland conservation into river basin management to benefit management goals, such as water supply, flood management, pollution mitigation and the conservation of biological diversity.
- A4. Promote the protection and restoration of wetland areas, and their biodiversity, within river basins.
- A5. Develop appropriate and socially acceptable cost-sharing mechanisms to cover costs involved in the management of river basins.

A6. Promote the establishment of appropriate mechanisms to bring together all major groups involved in river basin management such as government, municipalities, water regulatory bodies, academic institutions, industries, farmers, local communities, NGOs, etc., to contribute towards the management of the basin.

A.7 Promote appropriate education and public awareness schemes as effective tools for integrated management of river basins. [(See Resolution VIII.31 on the Convention's CEPA Programme, incorporated in Handbook 6.)]

Development and strengthening of policy and legislation for integrated water resources management

See also Handbook 2, National Wetland Policies

13. The shift towards integrated water resources management on a river basin scale requires the support of appropriate legislation and policy instruments, including economic instruments such as water pricing policies (e.g., "user pays" and "polluter pays"). Contracting Parties need to put in place appropriate national water policies and legislation to enable and facilitate the planning and integrated management of water resources. These policies need to be harmonised with related policies where they exist such as National Wetland Policies, National Environment Plans, National Biodiversity Strategies, international agreements and legislative frameworks.

See also Part III, paragraph 41.

14. In view of the fact that adequate policies at national and sub-national levels are essential to guide the proper development, conservation, administration and use of river basins, it is imperative that all Contracting Parties formulate effective overall policies on the following:

- 14.1 Allocation of water for the maintenance of all ecosystems including marine and coastal ecosystems;
- 14.2 Issuance of permits for water abstraction and use;
- 14.3 Domestic and industrial water use, treatment of effluent and the safe discharge of effluent;
- 14.4 Agricultural water use, mitigation of effects of large water management structures, return of water, limitations of pesticide and other agro-chemical use;
- 14.5 Determination of water quality standards for use for various purposes;
- 14.6 Rules and regulations regarding abstraction and use of groundwater;
- 14.7 Tariff policies for drinking water supply, agriculture, industrial and other water uses;
- 14.8 Land and water conservation;
- 14.9 Integration of water and wetland conservation within the national socio-economic development agenda;
- 14.10 Invasive species which have an impact on water.

15. The following guidelines should be noted:

Section B

Guidelines for Contracting Parties on the development and strengthening of policy and legislation for integrated water resources management

- B1. Incorporate wetland management issues into existing water or river basin management policies and also incorporate water resource management issues into National Wetland Policies and similar instruments (see Resolution VII.6, [incorporated in Handbook 2]).
- B2. Review existing legislation and, as appropriate, develop new legislation to facilitate the implementation of key policy issues such as the establishment of River Boards and Commissions; introduction of economic incentives and disincentives, regulation of activities which may negatively affect water management. (See Resolution VII.7 on Laws and Institutions, incorporated in Handbook 3.)
- B3. Develop a comprehensive National Water Policy or National River Basin Management Policy to regulate activities within river basins and integrate wetland management into the policy and local strategies/action plans.
- B4. Recognizing that socio-economic development is often critically dependent on the protection of aquatic ecosystems, encourage different sectors (such as conservation, water, economic development) to collaborate in allocating or securing sufficient resources to implement policies and legislation for integrated water resources management.
- B5. Develop appropriate incentive measures [(see Resolutions VII.15 and VIII.23)], such as demand management and water pricing strategies to promote water conservation and more efficient and socially acceptable allocation of water resources.

[Editor's note: In addition to guidelines B1-B5 above, Contracting Parties should also ensure that water allocations for wetland ecosystems (environmental flows) are addressed in national water policy and legislation (see Resolution VIII.1 and Handbook 8).]

Establishment of river basin management authorities and strengthening of institutional capacity

See also Part III, paragraph 43.

- 16. The institutional structures in place for land and water use should permit the integrated management of river basins as single units. Fundamental changes in the administrative structure of water resource management can be achieved through a step by step process. The first step is to establish a process of cooperation and collaboration between the agencies responsible for water resources management, environmental protection, agriculture, etc. Subsequently, representatives of these agencies assist in the establishment of a coordinating authority that assumes responsibility for managing water resources and the wetlands of the river basin.
- 17. The following guidelines should be noted:

Section C

Guidelines for Contracting Parties for the establishment of river basin management authorities and strengthening of institutional capacity

- C1. Set standards and objectives to be achieved (such as water quality and quantity, physical efficiencies in water use and healthy wetland ecosystems within a river basin) and determine the options and costs of achieving these objectives.
- C2. Make multi-stakeholder river basin management authorities responsible for preparing river basin management plans.
- C3. Where appropriate, the river basin management authorities should consider the development of cost sharing formulas (such as beneficiaries pay, river basin resident levies, government subsidies, environmental costs of degradation/ "impacter pays", etc.) to raise the funds needed for integrated river basin management, or alternatively seek these resources from the development assistance community.
- C4. Develop mechanisms to facilitate the transfer of resources from downstream beneficiaries to the protection and management of upper catchments and other critical areas.
- C5. Provide training for water/wetland managers at all levels to understand and implement the concepts of integrated water resource and river basin management, including the importance of wetlands.
- C6. Provide adequate financial resources to ensure effective operation of organizations charged with planning and management of water resources, river basin management and wetland conservation and, as appropriate, seek resources from alternative sources, such as debt swap for nature arrangements and the establishment of national or local trust funds.
- C7. Strengthen and maintain the capabilities of local institutions (universities, research institutions and water management agencies) to undertake comprehensive water demand assessments which include ecological water demands.
- C8. Strengthen the protection of the upper catchment and other critical areas elsewhere in the river basin through their inclusion in protected area systems or development of special management strategies.
- C9. Promote the inclusion of staff within river basin management authorities who have expertise in the ecological functions of wetlands.

Involvement of stakeholders, community participation and public awareness

**See also Handbook 5,
Participatory skills**

18. An important element within the concept of integrated river basin management is that planning and management institutions work with and for the entire community of water users in the basin, including wetland users and wildlife, as well as relevant stakeholders outside the river basin. In order to identify the needs and concerns of all water users, public participation in the planning and management of water resources is an important goal.

Additional information

Management of water and wetland resources in the Murray-Darling Basin, Australia

The Murray-Darling Basin covers an area in excess of one million square kilometres, approximately one seventh of the land area of Australia. It forms part of the territorial area of four States and supplies almost three-quarters of all water used for domestic, industrial and agricultural purposes in Australia.

The River Murray Commission was established in 1917 with responsibility for building, operation and management of water storages, weirs and locks within the Murray River system, in order to regulate the river as a basis for further development of agriculture and commerce in inland Australia. In the 1960s, concerns developed about other resource management issues across the Basin and this led to the establishment, in 1985, of the Murray-Darling Basin Ministerial Council. The Council includes Ministers of the various State Governments and the Commonwealth Government responsible for water, land and the environment in the Basin. It sets policy and broad directions for planning and management of the land, water and environmental resources of the Basin.

The Council established a 21-member Community Advisory Committee to provide independent advice from the various communities across the Basin on natural resource management programmes and issues. The members of this Advisory Committee are drawn from representatives of regional and special interest groups, including catchment management groups, environment and conservation groups, and other community organizations.

The executive arm of the Ministerial Council is the Murray-Darling Basin Commission, an autonomous organization with responsibilities to each of the participating Governments. Two Commissioners are provided from each of these Governments, normally representing the relevant departments responsible for land, water and environment management for each of the jurisdictions. The Commission is responsible for providing administrative support and advice to the Ministerial Council, managing the distribution of River Murray waters to each of the States according to the agreed sharing principles, and administering various approved strategies for resource management within the Basin. Specific water responsibilities of the Commission include regulation of the Murray River, water quality monitoring, coordination of river management throughout the Basin, and encouragement of practices to improve land use, water quality and waste treatment.

Major recent policy initiatives of the Ministerial Council include the establishment of a cap on water diversions and a Sustainable Rivers Audit, the setting of environmental flow and water quality objectives for the River Murray, and the development of a series of strategies addressing specific issues across the Basin such as floodplain management, salinity management, and wetland management.

In response to the loss and degradation of wetlands in the Basin, the Ministerial Council has developed a Floodplain Wetlands Management Strategy. The goal of this Strategy is "to maintain and, where possible, enhance floodplain wetland ecosystems in the Murray-Darling Basin for the benefit of present and future generations".

This text is based on the case study 'Optimising the use of wetland benefits in river basin management: a case study from the Murray-Darling Basin, Australia' by K. A. Ritchie and R. F. James; the last two paragraphs have been added in this edition to reflect the current situation. The full text of the original case study is available from the Ramsar Convention's Web site: http://ramsar.org/wurc_index.htm.

**See also Handbooks
4, Wetland CEPA, and
5, Participatory skills**

**See also Part III,
paragraph 47**

19. Until relatively recently there was little consultation on river basin and water resource planning in many countries. A management shift has taken place with a greater role being provided for civil society, with recent experience showing that effective collaboration between agencies and local people increases the chance of success in achieving effective river basin plans. Early consultations with the public can also help identify previously unknown uses and values of resources in the basin and help determine the relative importance of different values.
20. The local community can play an important role in managing and monitoring wetlands and rivers. Several programmes to involve community groups in wetland and river basin management already exist. For example, the Global Rivers Environmental Education Network (GREEN) [<http://www.earthforce.org/section/programs/green/>] promotes an action-oriented approach to education based on a successful watershed (river basin) education model. It works closely with business, government, community and educational organizations across the United States and Canada and with GREEN Country Coordinators in 135 countries around the globe. The network aims to promote and improve the levels of public knowledge through a global education network that promotes sustainable management of river basins. It also supports community-based education through regional partnership activities. Refer to the Convention's CEPA Programme [(Resolution VIII.31, incorporated in Handbook 4, 3rd Edition)] for further consideration of this approach.
21. The following guidelines should be noted:

Section D

Guidelines for Contracting Parties relating to the involvement of stakeholders, community participation and public awareness

[(Refer also to Resolutions VII.8 and VIII.31)]

- D1. Establish mechanisms to identify and involve stakeholders in planning and management of river basins and their wetlands, including a review of the land tenure arrangements within the river basin.
- D2. Facilitate the active participation of stakeholders, responding to their particular needs, and sharing of authority and responsibility for resource management according to arrangements that are agreed by all parties.
- D3. Provide fora for open discussion on river basin management between water management agencies and stakeholders, particularly local communities, to identify the issues, needs and problems of the community.
- D4. Document and promote sustainable wetland and river basin management practices developed through traditional knowledge and skills.
- D5. Support capacity building of community-based organizations and NGOs to develop skills for monitoring or management of resources within river basins, such as through the Global Rivers Environmental Education Network (GREEN) model and programme.

- D6. Develop and implement management plans which take into account the goals and aspirations of the local stakeholders, including the consideration of fair and equitable sharing of benefits, as the success of such plans depends on the effectiveness of public participation and support.
- D7. Identify, design and implement community-based demonstration projects and provide additional economic incentives to the local communities.
- D8. Design and implement communication, awareness and education programmes on the importance of wetland conservation to support water resources management, consistent with the guidelines set out in the [*Convention's CEPA Programme* (Resolution VIII.31), incorporated in Handbook 4].
- D9. Develop awareness campaigns to minimise those activities leading to the degradation of river systems, such as excessive and incorrect use of inappropriate pesticides and fertilisers, poor sanitation, drainage of wetlands, and clearance of forests in the catchment.

III. Assessment and enhancement of the role of wetlands in water management

Hydrological functions

- 22. As indicated previously, wetlands perform a host of ecological and hydrological functions. These include mitigating the impacts of floods, reducing erosion, recharging groundwater and maintaining/improving water quality. As such, wetlands can be managed to secure a range of objectives in water resources management, such as to maintain water supply and quality, to recharge groundwaters, to reduce erosion, and to protect the human population from floods.

Assessment of functions

See also Handbooks 10, Coastal management, and 9, Groundwater management, and Ramsar Technical Report 3, Valuing wetlands.

- 23. In order to maintain or enhance the role of wetlands in water resource management, it is necessary first to identify and assess the benefits which a particular wetland provides. Three steps are needed in this process:
 - 23.1 inventory and description of the wetlands [(refer to Resolution VIII.6, Ramsar COP8)];
 - 23.2 identification of the particular attributes and functions that may play a role in water management;
 - 23.3 quantification of such functions.
- 24. While it may be desirable to have long-term and detailed studies, it is often more appropriate to use rapid assessment techniques to determine the relative importance and functions of wetlands within a river basin. Initial functional assessment is a process whereby the general physical and biological characteristics of wetlands are used to predict which functions are most likely to be present at a site. This assessment should be carried out together with an initial inventory of wetlands. The assessment is neither definitive nor quantitative. Initial assessments put wetlands on relative scales with respect to particular functions. Initial functional assessment is necessary to estimate the capacity and opportunity of wetlands to meet

Additional information

Task Force on Integrated River Basin Management for the Yangtze River

The Yangtze is the third longest river in the world, with a length of 6,300 kilometres and a catchment of 1.8 million km². It runs through eleven provinces of China, and more than 400 million people depend upon it for their livelihoods and well-being.

Nonetheless, the Yangtze is undergoing serious threats from a number of directions. The key issues include the loss of natural wetland functions due to fragmentation and degradation; upstream erosion leading to accelerated downstream siltation; lack of knowledge amongst decision-makers about the functions and values of wetlands; the failure of development and land-use policies; and various institutional conflicts.

After the devastating floods of 1996 and 1998 (in 1998 alone, more than 4,000 people lost their lives and damage reached an estimated US\$ 25 billion), the Chinese government issued the so-called '32 character policy' aimed at reducing flood threats by working with nature rather than fighting it. Interventions include:

- A ban on logging in the upper catchments;
- Returning cultivated steep slopes to forest;
- Relocating settlements from flood-prone areas to higher ground safe from flooding;
- Restoring wetlands in the Yangtze floodplain;
- Reinforcing embankments;
- Maintaining river courses, e.g. by dredging.

River systems are by nature integrated systems, but too frequently they have been managed by many isolated stakeholders. Cross-sectoral and cross-boundary



Ensuring the wise use of the montane Sanjiangyuan Wetlands, pictured here, one of several sources of water for the Yangtze river, will contribute to the integrated management of the Yangtze Basin.

Photo: Yang Xing.

conflicts are often the main obstacles to river basin management. The Yangtze is a good example, because there are four river-wide authorities: the Yangtze River Resource Commission, the Yangtze Fishery Management Commission, the Yangtze Navigation Commission, and the Yangtze Water Resource Protection Bureau.

In order to remedy this situation, in 2002 the Government of China established an Integrated River Basin Management Task Force for the purpose of promoting the public welfare of river basins in China through better governance of water resources, ecosystem management and biodiversity conservation, and environment management through information sharing, demonstration and public participation.

The IRBM Task Force, composed of six national and six international experts in relevant subjects, was given a number of priority tasks intended to reach this goal – 1) assess existing laws and regulations and make recommendations to state legislation authorities; 2) review existing river basin management practices and assess their coordination, and report both at the national level and on the Yangtze River basin in particular; 3) promote relevant economic tools such as water rights, water pricing, subsidies, compensation, tradable permits, and green taxation; 4) promote stakeholder participation and community involvement; 5) provide a platform for information sharing, and finally, 6) establish and promote communication tools including workshops and publications.

The approach to coordination that emerges from this IRBM Task Force will be an important test of China's capacity for institutional change. Elsewhere in the world IRBM has been a decades-long undertaking to break down institutional barriers and address system-wide management needs, and most countries are just beginning to take the kind of ecosystematic approach being encouraged by this Task Force. This is a path-breaking effort within China, and hopes are very high for its success.

At the end of 2004, the task force concluded its mission by making four recommendations to the State Council calling for: institutional and legislative development; public participation in decision-making; financial incentives; and innovation in technology development. To facilitate the implementation of the recommendations, the Yangtze Forum was established. This provides a platform for all major stakeholders to consult with each other on the recommendations as well as to share information and knowledge on the development of the river basin.

specific needs. These evaluation assessments can be conducted on wetlands to identify their potential roles in flood control, improving water quality, sediment retention and input into groundwater supply.

25. Examples of such functional assessment techniques include The Wetland Evaluation Technique (WET) and Functional Capacity Index, both used by the US Army Corps of Engineers, and the Functional Analysis of European Wetland Ecosystems (FAEWE) method developed in Europe. These techniques incorporate a number of elements including:
 - 25.1 establishment of a database from desk and field studies;
 - 25.2 functional assessment procedures including quantitative and qualitative assessment, assessment of susceptibility to impacts and economic evaluation of functions; and
 - 25.3 modeling and monitoring procedures.

Enhancement of functions

**See also Handbook 8,
Water allocation and
management, and
Resolution VIII.2.**

26. Once the functions have been determined, it is possible to assess the role that the wetlands could play in the management of water resources within a river basin. Numerous studies throughout the world have shown that it is almost always more cost-effective to maintain natural wetlands than to drain or convert the wetlands to other (often marginal) uses, and then to try to provide the same services through structural control measures such as dams, embankments, water treatment facilities, etc. In many cases it has also been found cost-effective to restore or even create wetlands to provide these functions rather than create expensive engineering structures.
27. The following guidelines should be noted:

Section E

Guidelines for Contracting Parties relating to assessment and enhancement of the role of wetlands for water management

- E1. Information on functional and biodiversity assessment methodologies and the means for their integration for wetland management should be compiled by the Scientific and Technical Review Panel (STRP) of the Convention and disseminated to Contracting Parties, for their adaptation to local situations.
- E2. Undertake studies to identify the functions and benefits to water management which are provided by the wetlands within each river basin. Based on these findings, Contracting Parties need to urgently protect, through appropriate actions, the remaining wetland areas which contribute to water resource management.
- E3. Consider the rehabilitation or restoration of degraded wetlands, or the creation of additional constructed wetlands within river basins, to provide services related to water management [(refer to Resolutions VII.17 and VIII.16)].
- E4. Ensure adequate consideration in river management programmes of non-structural flood control methods which take advantage of the natural functions of wetlands (for example, restoring floodplain wetlands or creating flood corridors) to supplement or replace existing flood control infrastructure.

Identification of current and future supply and demand for water

28. An essential component of river basin management is knowledge of both current and future supply and demand upon water resources in a river basin, taking into consideration the possible impacts of climate change. Current and future assessments of the resource need to focus on the human uses of water (such as irrigation, hydro-electricity and domestic or industrial water supply) as well as the ecological needs for water within different parts of a river basin. In this respect, water demands should not only be defined in terms of water quantity but also water quality. Ecological water demands are less obvious and more difficult to quantify and consequently have often been ignored or underestimated in terms of water demand. Ignoring such requirements may lead to major environmental and social problems such as collapse of fisheries or downstream saline intrusion.

It is also important to recognize that the greatest damage to the environment may occur during extreme events rather than the average situation.

29. Socio-economic systems are constantly changing and therefore it is often necessary to develop a range of future demand scenarios and develop flexible sustainable use strategies which can be adapted to a range of circumstances. Linked to the assessment of water demands is the identification and resolution of the significant water-related problems arising from the demand patterns identified in the scenarios. These problems should not be restricted to issues related to human activities but should also include ecological problems such as adaptation to reduced water supply or quality within certain ecosystems.
30. Water demand is mainly determined by the economic incentives for water and wetland use. Provision of incentives for practising environmentally sustainable water use can minimise the impacts on wetland areas. It is critically important to impose water prices that reflect the true cost of supplying water which will encourage the optimisation of water use, ensuring that in so doing there is recognition of the economic value of other services from wetlands. Within a sectoral policy context, incentives for sustainable use of freshwater resources need to be provided. Equally, environmentally unsound or inequitable incentives which are encouraging practices that are unsustainable need to be identified and removed. (Refer to Resolution VII.15, Ramsar COP7.)
31. The following guidelines should be noted:

**See also Part III,
paragraph 62.**

Section F

Guidelines for Contracting Parties relating to the identification of current and future supply and demand for water

- F1. Undertake assessments of current and potential future water supply and demand for water resources within the river basin to meet both ecological and human requirements and identify areas of potential shortage or conflict.
- F2. Undertake assessments to establish the economic and social costs which are likely to result if the ecological water demands are not met.
- F3. Based on the above assessments, develop mechanisms to solve problems and conflicts over water quantity and quality at both national and river basin levels within the country.
- F4. Develop appropriate demand management and water pricing strategies to assist in sustaining the ecological functions and values of water resources and wetlands.
- F5. Review relevant incentive/perverse incentive measures and consider removing those measures which lead to destruction/degradation of wetlands; introduce or enhance measures which will encourage restoration and wise use of wetlands. [(Refer to Resolutions VII.15, VII.17, VIII.16 and VIII.23.)]

Additional information

Water Resources eAtlas: Watersheds of the world CD

The *Water Resources eAtlas* presents information about issues in water resources management in an easy and comprehensible way. Produced in 2003 by IUCN, the International Water Management Institute (IWMI), the Ramsar Convention Secretariat and the World Resources Institute (WRI), it was launched at the 3rd World Water Forum in Japan.

The CD, available on-line and in hard copy, provides vital water resources information for 154 basins and sub-basins around the world. You can select individual basins by continent, each continental menu providing access to interactive maps and lists of basins per continent through which you can access individual basin profiles. These profiles include **land cover and land use variables** (such as percentage cover of wetlands, forests, irrigated cropland, urban and industrial areas etc.), **basin indicators** (such as basin area, average population density, number and size of dams etc.) and **biodiversity information and indicators** (such as number of Ramsar Sites, number of fish species, number of endemic bird areas, percent protected area etc.).

Twenty global maps are provided, portraying relevant water resources issues such as freshwater fish species richness, endemic bird areas, forest cover, protected areas, cropland area, environmental water scarcity, Ramsar sites - and much more. All global maps and basin profiles can also be downloaded as PDFs.

The CD is available on-line here: <http://www.iucn.org/themes/wani/eatlas/> and can be purchased in hard copy here: <http://www.iucn.org/themes/wani/eatlas/html/order.html>.



IV. Minimising the impacts of land use and water development projects on wetlands and their biodiversity

Impacts of land use and development projects

32. Almost all land uses and development projects through their use of water, or their production of pollutants, will have some impact on water quantity and quality in the river basin, and hence have an impact on riverine wetlands. Water development projects also have a significant impact and these are dealt with in the following section.
33. The land uses which can impact most significantly on rivers and wetlands are forestry, agriculture, mining, industry and urbanisation. Inappropriate forestry practices, especially in the upper watershed, can lead to increased soil erosion and reduced water retention capacity. Agricultural activities can also cause significant levels of pollutants from agro-chemicals and agricultural wastes. Upland agriculture through land clearing and subsequent operation can have a major negative impact on water quality and also lead to significant changes in flood and dry season flows. Lowland agriculture can lead to the drainage or conversion of floodplain wetlands leading to loss of biodiversity and natural functions and benefits. In many

developing countries, irrigation is the main justification for abstracting water from rivers.

34. The impact of mining and industrial activities is mainly through the release of pollutants, some of which may be highly toxic (for example, mercury). In addition, industrial activities or mining can instantly jeopardise entire river basins and all the associated wetlands and biodiversity through accidental spills. Urban areas have impacts through encroachment on wetlands, either directly or through associated infrastructure such as roads, ports, water supply and flood control. In addition the human populations they support lead to increased demands on resources and direct pollution.

Assessing and minimising impacts

35. The impact of existing land uses on river systems and associated wetlands needs to be monitored and controlled through the integration of regulations and guidelines on forestry, agricultural, mining or urban waste management. In many cases the implementation of such guidelines may lead to advantages for the land users themselves – for example, reforestation and good forest practices enhance the long-term timber yields; better agricultural practices reduce soil erosion and retain water for the dry season; better waste management improves quality of life and health for urban residents. However, there is normally a need to have a proper monitoring and enforcement mechanism to ensure effective use of the regulations.
36. In terms of control of new development activities, various mechanisms can be used to minimise environmental impacts. The first is environmental assessment and zoning, whereby the land use and natural resources of the river basin are surveyed, and the basin is zoned according to the different types of land use that may be permitted in each zone without having a significant impact on other zones or the river or wetland systems. There may also be restrictions on particular activities within a zone in order to ensure sustainability.
37. The second measure that is more applicable to proposed new development projects is Environmental Impact Assessment (EIA). EIA provides a framework for assessing the implications of development options on the environment (including wetlands).
38. Thirdly, Cost-Benefit Analysis (CBA) is a tool to calculate the net impact of a project on the economic welfare of society by measuring all the costs and benefits of the project. Although most CBA results can be expressed in monetary terms, some costs such as those arising from the displacement of people and loss of wetland species may be difficult to express in that way. Appropriate decision-making requires an analysis of the economic, social and environmental costs and benefits of water management plans through EIA and CBA.
39. It is important that multidisciplinary teams conduct the processes mentioned above and seek to engage the stakeholders at an early stage.
40. The following guidelines should be noted:

**See also Handbook 11,
Impact assessment**

**See also Part III,
paragraph 62.**

Section G

Guidelines to assist Contracting Parties to minimise the impacts of land use and development projects on wetlands and their biodiversity

- G1. Develop integrated land use plans for each river basin as a means to minimise the impact of different activities and land uses on the river and wetland systems as well as local residents.
- G2. Develop and enforce appropriate regulations to control land uses, especially forestry, agriculture, mining or urban waste management, so as to minimise their impact on river and wetland ecosystems.
- G3. Carry out Environmental Impact Assessment (EIA) and Cost Benefit Analysis (CBA) studies for development projects which may have significant impacts on rivers and wetlands using independent multidisciplinary teams, and in consultation with all stakeholders, and consider alternative proposals including the no-development option.
- G4. Disseminate the findings of any EIA and CBA in a form which can be readily understood by all stakeholders.
- G5. Ensure that there are adequate control and mitigation measures to minimise, or compensate for impacts if development projects are allowed to proceed.

Minimising the impacts of water development projects

- 41. Water resource development projects are generally aimed at modifying the natural water flows in a river basin for purposes such as storing water through drought periods, preventing floods, transferring water to irrigated agricultural areas, industrial and domestic water supply, improving navigation and generating electricity. Such projects have frequently been developed through the construction of engineered structures such as dams, diversion canals, channelisation of rivers, flood levees, etc. Many such projects, by modifying the natural conditions which have allowed wetlands to develop, have had a significant negative impact on wetlands and associated biodiversity.
- 42. Some of the most significant impacts of such projects include: reduction in river flows, blocking of pathways for migratory fish and other aquatic species, increased water pollution levels, disruption of timing of natural floods which maintain wetlands; reduction of sediment and other nutrient input into floodplain wetlands, drainage or permanent inundation of riverine wetlands, and salinisation of surface and groundwater.

Assessment and mitigation

**See also Handbook 11,
Impact Assessment**

- 43. In a number of cases it has been found that the social and economic losses as a result of the degradation of the downstream wetlands have been significantly greater than the benefits gained from the water development project itself. Various methodologies have been developed to help identify potential social and environmental costs consequent upon development activities. These include EIA, CBA, Social Impact Assessment (SIA) and Participatory Rural Appraisal (PRA).

Additional information

A Coordination Committee for the Upper River Paraguay Basin in Bolivia

By Willy Landivar, WWF Bolivia

The Upper River Paraguay Basin is shared by Brazil, Bolivia, and Paraguay. The Bolivian part covers 82,607 km² within three ecoregions recognized by the World Wildlife Fund (WWF) as being of conservation priority: Chiquitano Dry Forest, the Cerrado Woodlands and Savannas, and the Pantanal Flooded Savannas, the latter being one of the largest wetland complexes in the world.

Although it includes activities in all three ecoregions, in an area comprising eight municipalities and a population of 256,000, WWF Bolivia's Pantanal Program, in conjunction with its local partner CEPAD (Center for Participation and Sustainable Human Development), has focused its attention on the Bolivian portion of the Pantanal (33,600 km²), an area made up of three municipalities and approximately 50,000 inhabitants.

These municipalities, in the eastern part of Santa Cruz department, face a permanent dilemma of developing their natural resources or conserving them. The area contains a good share of two protected areas in the region, with well-preserved samples of all three ecoregions, but pressure for development is very high, as infrastructure is being built (roads, a waterway, gas pipelines, industries) and different economic activities advance: agriculture, cattle ranching, mining, colonization, tourism. This situation is particularly critical because it develops with no environmental planning and with very low institutional presence.

In this context, WWF urged municipal governments of the Bolivian Pantanal to create a committee for the management of the Upper River Paraguay Basin, including both government and non-government stakeholders, which would safeguard, plan, manage and monitor the basin in order to promote the conservation and continuity of hydrological and ecological processes in the long term.

As a necessary step before the formation of such a committee, CEPAD identified the need to organize Local Economic Development Commissions (CODEL) in the three municipalities. Work through the CODELs assured a high and representative participation of different actors in the region, some of whom would not have participated were it not for the CODELs' preparatory actions.

The CODELs then decided to create a Bolivian Pantanal Coordination Committee, the role of which would be to promote and facilitate the adequate management of natural resources in the Pantanal, integrating other initiatives of sustainable development in neighboring Brazil and Paraguay. The Committee was constituted officially on 29 May 2003 in Puerto Quijarro.

The Committee subsequently elaborated the document "Bases for a Sustainable Development Plan of the Bolivian Pantanal", which underlines the following priorities for action:

- Institutional strengthening of CODELs and Bolivian Pantanal Coordination Committee
- Strengthening of the national system of protected areas
- Strengthening of the municipal forest divisions
- Creation of the environmental municipal divisions
- Creation of an information center
- Creation of a center for agricultural development

The Coordination Committee is the ideal forum for sound development planning and resource management in the basin. It meets officially every month and coordinates activities with national and regional authorities as well as with cooperation agencies.

[Editors' note: this case study has not been updated since the 2nd Edition.]

**See also Part III,
paragraph 62.**

44. However, several of these standard assessment procedures are not so easily applied to water development projects, or to predicting the impacts on complex river-wetland ecosystems. In recent years some specific procedures have been developed for wetland/water resource projects such as Howe et al, *EIA Scoping Manual for Tropical Wetlands*¹ and the Inter-American Development Bank *Manual on Integrating Freshwater Ecosystem Function and Services with Water Development Projects*². Since the wetlands and associated biodiversity to be impacted are often of significance to a broad range of local users, it is important that a mechanism for stakeholder consultation is established early in the project cycle.
45. As discussed in the preceding section, natural wetlands often play an important role in river management and can often be rehabilitated or restored to provide an alternative to generally more costly, engineering solutions to flood control, groundwater recharge and water quality improvements. Alternatives to irrigation and industrial/domestic water supply schemes include water conservation, treatment or recycling and development of alternate crops or industries to suit natural water availability.
46. The following guidelines should be noted:

Section H

Guidelines for Contracting Parties relating to reducing the impact of water development projects on wetlands

- H1. Ensure that proposals for water development projects are carefully reviewed at their initial stages to determine whether non-structural alternatives may be feasible, possible and desirable alternatives.
- H2. Take all necessary actions in order to minimise the impact of water development projects on biodiversity and socio-economic benefits during the construction phase and longer-term operation.
- H3. Ensure that the project design/planning process includes a step by step process to integrate environmental issues, especially initial biodiversity/resource surveys and post-project evaluation and monitoring.
- H4. Incorporate long-term social benefit and cost considerations into the process from the very initial stages of project preparation.

1 C P Howe, G F Claridge, R Hughes and Zuwendra, 1991: *Manual of Guidelines for Scoping EIA in Tropical Wetlands*: PHPA/AWB Sumatra Wetland Project Report No. 5
2 M I J Braga, 1998: *Integrating Freshwater Ecosystem Function and Services with Water Development Projects*: Final Draft Presented to the Inter-American Development Bank

V. Maintenance of natural water regimes to maintain wetlands

See also Handbook 8, Water allocation and management, and Resolution VIII.2. See also Part III, paragraph 58.

47. Wetland ecosystems depend on the maintenance of the natural water regimes such as flows, quantity and quality, temperature and timing to maintain their biodiversity, functions and values. The natural flow regime can be considered THE most important variable that regulates the ecological integrity of riverine wetland ecosystems. The construction of structures that prevent the flow of water, and of channels that carry water out of the floodplain faster than would occur naturally, result in the degradation of natural wetlands and eventual loss of the services they provide. In response to these concerns, a number of countries have introduced legislation and guidelines to ensure adequate allocation of water to maintain natural wetland ecosystems.
48. In cases where structural changes are necessary, water development projects involving the alteration of natural flow regimes should adhere to the following guidelines in order to protect or restore wetland ecosystems.
49. The following guidelines should be noted:

Section I

Guidelines for Contracting Parties relating to the maintenance of natural water regimes to maintain wetlands

- I1. Undertake studies to determine the minimum and ideal flows and flow regimes (including seasonal modulation) required to maintain natural riverine wetland ecosystems.
- I2. With this information (I1. above), establish the optimum flow allocations and regimes to maintain key wetlands and other key ecological functions of river basins.
- I3. In situations where available information on biological parameters and physical habitat is inadequate for a definitive decision on the required optimum flow, use the precautionary principle to maintain the natural situation as closely as possible.
- I4. Develop sustainable water allocation plans for the various resource users within the river basin, including allocating water to maintain wetlands.
- I5. Regulate and monitor the impacts of major infrastructure developments (levees, embankments, roadways, weirs, small dams and cuttings) undertaken within river and flood corridors.

Protection and restoration of wetlands, and their biodiversity, in the context of river basin management

50. The protection and restoration of wetlands is an important strategy within each river basin, not only because the wetlands provide services which can assist with water management, but also because wetlands are critical ecosystems that deserve protection and restoration in their own right. [(Refer also to Resolutions VII.17 and VIII.16.)]

51. Many wetland-dependent species, especially fish and amphibians, require management in the river basin context to ensure their survival. In most countries, the protection of habitats and wildlife is conducted according to administrative boundaries and not river basin boundaries. This can lead to protection measures for one site or species being nullified by activities elsewhere in the river basin which, for example, block migration of the fish species or water flow to the wetland site. The restoration of degraded wetlands is one of the most important possibilities for reversing the trend of declining biological diversity within river basins.
52. The following guidelines should be noted:

Section J

Guidelines for Contracting Parties for the protection and restoration of wetlands and their biodiversity

- J1. Assess the status of wetlands and their biodiversity in each river basin and, where indicated, undertake the actions needed to provide better protection measures.
- J2. In assessing the status of wetlands in each river basin, consider the inclusion of key sites in the List of Wetlands of International Importance (Ramsar List).
- J3. Ensure that management plans for Ramsar sites are prepared taking into consideration potential off-site impacts from within the river basin, as well as the site-specific issues. (Refer to Resolution 5.7, Ramsar COP5.)
- J4. Review and, where necessary, adjust regulations and procedures for conservation of wetland-related biodiversity, especially for fish and other aquatic species, to protect rare species and prevent over-exploitation of more common species.

VI. International cooperation

Special issues related to shared river basin and wetland systems

53. In cases where a river basin is shared between two or more Contracting Parties, the Ramsar Convention's Article 5 makes it clear that these Parties are expected to cooperate in the management of such resources.
54. The declaration of the Second World Water Forum in Paris, in March 1998, emphasized that riverine countries need to have a common vision for the efficient management and effective protection of shared water resources. One option to consider in achieving such outcomes is the establishment of international river commissions, created by several riverine countries to facilitate consultation and broad coordination.
55. Countries sharing a drainage basin are encouraged to establish frequent specific contacts in order to exchange information on the water resource and its management. Options for this include:

Additional information

Implementation of the Ramsar Convention at basin scale: building a partnership to save Lake Chad Basin

Lake Chad is located in the eastern part of the Sahel region of Africa at the southern edge of the Sahara desert. The lake and its active hydrological basin constitutes an immensely important freshwater resource, being Africa's fourth largest lake (in surface area) after Lakes Victoria, Tanganyika and Nyassa, and its importance for human development is intensified by the fact that the lake lies in a dry area with temperatures exceeding 45°C from April to June in some parts of the basin.

Since 1972, due to the drought in the Sahel, there has been a serious reduction in the size of the lake, with devastating consequences for the Lake Chad ecosystem which have yet to be fully assessed.

Fortunately, right after the independence of the countries sharing the Basin, the Lake Chad Basin Commission (LCBC) was created by the Fort Lamy (now N'Djamena) Convention signed on 22 May, 1964, by the Heads of State of the four countries which share the lake, namely Cameroon, Chad, Niger and Nigeria. In 1994 and 2000, the Member States increased to five and six with the admission of Central African Republic and Sudan respectively. The major purpose of the Lake Chad Basin Commission is to promote an integrated management of the resources of the basin through continued support of regional cooperation, coordination of regional programmes, planning, mobilization and follow-up of national projects with regional implications.

Integrated Management Solution of the Lake Chad Basin Ecosystem

As part of its mandate of fostering regional cooperation through ensuring the wise, efficient and sustainable exploitation of the resources of the conventional basin, the LCBC has embarked on a number of projects in partnership with international organizations and national and local stakeholders aimed at integrated management of the Lake Chad Basin. The project of the Global Environment Facility (GEF) on the "Reversal of Land and Water Degradation Trends in the Lake Chad Basin", beginning in September 2003, offers opportunities for the enhancement of integrated river basin management efforts in the Lake Chad basin and perhaps a model for other regional initiatives.

In addition, the agreed "Lake Chad Vision 2025" is consistent with the "Action Plan for Managing Africa's Wetland" as part of the Environmental Initiative of New Partnership for Africa's Development (NEPAD). In order to help in realizing this Vision, in November 2002 the LCBC signed a Memorandum of Cooperation with the Secretariat of the Ramsar Convention that will advance the decision of the Tenth Summit of the LCBC Heads of State in July 2000, to designate the entire Lake Chad as a transboundary Wetland of International Importance under the Ramsar Convention in a partnership between the LCBC, Ramsar, and WWF Global Freshwater Programme.

The progress of the LCBC shows a sophisticated recognition of the interdependence between the sustainable use of freshwater resources and the conservation and sustainable management of freshwater ecosystems (wetlands), one which may provide a model for the work of other basin commissions in Africa and beyond.

For more information, visit: <http://www.cbilt.org/>.



The Lake Chad Basin Commission was established in 1964 under an agreement between the four riparian States, Cameroon, Chad, Niger and Nigeria.

Additional information

The Danube Commission and its River Basin Management Expert Group

The Danube River is a source of life for 83 million people living in its 800,000 sq km basin, covering 18 European countries. The river irrigates the fields along its course, feeds the surrounding population on fish, and carries people and goods along its 2,857 km long course. Its natural beauty inspires poets, painters and composers – for centuries, it has attracted conquerors and influenced the course of history. However, recent times have been dominated by cooperation. On the basis of the UN-ECE Convention on the Protection and Use of Transboundary Waters (Helsinki Convention), a corresponding agreement, the Danube River Protection Convention (DRPC), was developed and signed in Sofia in 1994. DRPC was designed to encourage the Contracting Parties to intensify their water management cooperation in the field of water protection and use. It became the overall legal instrument for cooperation and transboundary water management in the Danube River basin.

With the entry into force of DRPC in 1998, the International Commission for the Protection of the Danube River (ICPDR) was established as the main decision-making body under the Convention. It represents a common platform for the sustainable use of the basin's resources in relation to its aquatic ecology and for a coherent and integrated river basin management. Currently the ICPDR, through its River Basin Management Expert Group, is coordinating the development of a comprehensive management plan for the entire Danube river basin using the principles of the EU Water Framework Directive (see page 32). Of the 13 main Danube states, eight are currently EU Member States and one has applied for accession (Croatia); they cooperate with four additional states in the lower Danube basin, thus assuring the best ways of transfer and exchange of technology and know-how. ICPDR is providing a basin-wide platform for the coordination necessary to develop a River Basin Management Plan (RBMP) which provides a programme of measures to ensure that environmental objectives (such as the achievement of good water status by 2015) are met on time. The RBMP will have to be completed by the end of 2009. To this end, the Roof Report, containing information on issues of multilateral importance and the basin-wide coordination arrangements, was submitted to the EC in 2004 and an analysis of river basin characteristics, pressures and impacts in 2005. 'Currently, a road map is under preparation identifying the milestones and major implementation steps to accomplish the tasks required by the Directive by March 2010.

In 2000, the ICPDR established an Ecological Expert Group to support activities related to the conservation and sustainable management of riverine ecosystems in the Danube basin, as



The Ecological Expert Group of the ICPDR supports activities related to the conservation and sustainable management of riverine ecosystems in the Danube basin, as well as those terrestrial and wetland ecosystems directly depending on them. Some members of the Expert Group are pictured here on a visit to the Danube Floodplain National Park, Austria, 2002, during the 5th meeting of the group. Photo: Tobias Salathé/Ramsar.

well as those terrestrial and wetland ecosystems directly depending on them. Some of the ecological experts participating in this group are also Ramsar focal points at national level. Where this is not the case, mutual exchange of information between the Danube experts, often coming from the water management sector, and Ramsar focal points, often representing the nature conservation sector, is crucial. It has identified local wetland pilot projects to be submitted to the UNDP/GEF Danube Regional Project and raised awareness among local NGOs about available grants and training material. With the reorganization of work of the ICPDR in 2006, the Ecological Expert Group's mandate was not renewed. It is therefore important that the River Basin Management Expert Group fully integrates the ecological and wetland aspects in their work; the Ramsar National Focal Points in Danube basin countries need to engage actively with them. Furthermore, experts of WWF International's Danube-Carpathian Programme, the International Association for Danube Research (IAD), and others support the work of the national experts substantially.

For more information visit www.icpdr.org.

- 55.1 establishing networks for monitoring and exchanging data on the water quality and quantity in the basin,
 - 55.2 a joint analysis of information on the quantity and type of water used for various purposes in each country;
 - 55.3 exchange of information on protection measures for groundwater, upper catchments and wetlands;
 - 55.4 sharing of information on structural and non-structural mechanisms for regulating flow for navigation and flood prevention.
56. The aim should be the preparation of technical reports on the river basin, including information on the needs of the local inhabitants in each part of the basin, as well as existing or potential problems in parts of the river basin that require separate or collaborative efforts to deal with them.
57. The following guidelines should be noted:

Section K

Guidelines for Contracting Parties for the management of shared river basins and wetland systems

- K1. Identify and describe shared river basins, document the key issues of common concern in the basin (diagnostic study), and develop formal joint management arrangements or collaboration for development and implementation of action plans to deal with such issues.
- K2. Where appropriate, establish or strengthen bi- or multi-state river basin management commissions to promote international cooperation for shared water resources and wetland management.
- K3. With regard to shared river basins, Contracting Parties should inform the Ramsar [Secretariat] of the establishment of any joint management arrangements and also of actions by other party or non-party states which may lead to changes in the ecological character of sites included in the List of Wetlands of International Importance (Ramsar List) in their own portion of the basin.

Additional information

A single system of water management in the European Union: the Water Framework Directive

On 23 October 2000, the European Union (EU) adopted its operational tool for a modern water policy: Directive 2000/60/EC, commonly referred to as the “Water Framework Directive” (WFD). The Directive has the following key aims:

- expanding the scope of water protection to all waters, surface waters and groundwater,
- achieving “good status” for all waters by a set deadline,
- water management based on river basin management,
- “combined approach” of emission limit values and quality standards,
- getting the prices right,
- getting citizens involved more closely,
- streamlining legislation.

Since these objectives must be integrated for each river basin, the coordination of a number of existing measures to tackle particular pollution problems at EU level is required. To this end, detailed objectives are established for the river basin. Subsequently, an analysis of human impact is conducted so as to determine how far from the objectives each body of water is. At this stage, if full implementation of the existing legislation will solve the problem, the objective of the WFD is attained. If it will not then the Member State must identify additional measures to satisfy all established objectives. These might include stricter controls on polluting emissions from industry and agriculture, or urban waste sources.



Floodplain restoration along the Isar River, Germany, pictured here, was carried out by the Bavarian Water Management Agency and is very much in line with the aims of the EU Water Framework Directive. Photo: Tobias Salathé / Ramsar

Historically, there has been a dichotomy in approach to pollution control, with some controls concentrating on what is achievable at source, through better technology, and some dealing with the needs of the receiving environment, in the form of water quality standards. A consensus has developed that both are needed in practice. The WFD formalizes this combined approach. It requires all source-based controls to be implemented as a first step, and sets out a framework for developing further such controls. On the effects side, the WFD coordinates all the environment objectives in existing legislation and provides the new overall objective of good status for all waters. In some cases this may require additional measures. All the elements of this analysis must be set out in a detailed account of how the objectives for the river basin (ecological, quantitative and chemical water status, protected area objectives) are to be reached within the required timescale.

The River Basin Management Plan will include the results of the above analysis, specify the river basin's characteristics, and provide a review of the impact of human activity on the status of waters in the basin, as well as an estimation of the effect of existing legislation to meet the "good quality" objectives, and a set of additional measures, where needed. An economic analysis of water use within the river basin must be carried out. This is to enable a rational discussion on the cost-effectiveness of the various possible measures. Member States are required to ensure that the price charged to water consumers reflects true costs, although in less-favoured areas, deviations from this may be possible so that basic services are provided at an affordable price.

It is essential that all interested parties are fully involved in preparatory discussions and in the preparation of the River Basin Management Plan. The greater the transparency in the establishment of objectives, imposition of measures, and reporting of standards, the greater the care Member States will take to implement the legislation in good faith.

The Water Framework Directive rationalizes the EU water legislation by replacing earlier Directives on a broad range of water issues. For more information, visit http://ec.europa.eu/environment/water/index_en.htm. An example of implementation is provided on pages 30-31.

Partnership with relevant conventions, organizations and initiatives

58. In order to undertake an effective approach to promoting the integration of wetland conservation and wise use into river basin management, it is important that the Contracting Parties to the Ramsar Convention are aware of, and take into consideration, the related activities of other international conventions, organizations and initiatives.
59. The sustainable use of freshwater has been identified as a critical component of Agenda 21 and as such has been the focus of a series of meetings under the auspices of the United Nation's Commission on Sustainable Development and other UN agencies. Three other international initiatives should be mentioned:
 - 59.1 creation of the Global Water Partnership to act as a framework to coordinate efforts to promote integrated water resource management, especially in developing countries;
 - 59.2 the development of the Vision for Water, Life and the Environment through the Global Water Commission under the auspices of the World Water Council; and
 - 59.3 the establishment by the World Bank and IUCN-The World Conservation Union of the World Commission on Dams.
60. It is important that these and other appropriate guidelines and activities under the framework of the Ramsar Convention serve as a linkage and input to these other initiatives at the international level.
61. In terms of other conventions and agreements, the most relevant in terms of these Guidelines at the global level are as follows:
 - 61.1 the Convention on Biological Diversity (CBD) which has identified the conservation of the biodiversity of inland waters as a particular priority. COP4 of the CBD adopted a Joint Work Programme with the Ramsar Convention to address this matter;

61.2 the Convention on the Law of the Non-Navigational Uses of International Watercourses (New York, 21 May 1997: not yet in force) which requires states to avoid, eliminate or mitigate significant harm to other watercourse states and establishes detailed rules with regard to the changes in use of any international watercourse. Issues covered include EIA, consultation, joint protection of watercourse ecosystems, pollution control, introduction of alien species, prevention of erosion, siltation, and salt-water intrusion; and

61.3 the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA).

62. At the regional and river basin level there are over 200 agreements which provide a basis for cooperation in the management of shared water resources.

63. The following guidelines should be noted:

Section L

Guidance for Contracting Parties on partnership with relevant conventions, organizations and initiatives

- L1. Ensure that these guidelines, and other related guidelines under the Ramsar Convention, are brought to the attention of the relevant international conventions, organizations and programmes, with a view to ensuring that the aspirations of the Ramsar Convention are reflected in the activities of these other initiatives.
- L2. Ensure close coordination at the national level between the Ramsar Administrative Authorities and the focal points for other international conventions and agreements related to these subjects.
- L3. Ensure, as appropriate, adequate consideration of wetland related issues in the operation of any regional agreements related to shared river basins and water resources.

Section III

River basin management: additional guidance and a framework for the analysis of case studies

(adopted as Annex C i to Resolution IX.1 by the 9th meeting of the Conference of the Contracting Parties, Kampala, Uganda, 2005)

I. Introduction: Challenges for integrating wetlands into river basin management

1. It has long been recognized, and is incorporated in all of Ramsar's guidance on wetland management planning (notably through Resolution VIII.14 and Ramsar Wise Use Handbook 16), that land uses in and around a wetland must be managed and planned to be consistent with wise use objectives for the wetland.
2. Until recently, however, the equivalent water uses in, upstream of, and downstream of, a wetland have not always been given sufficient attention, and rather have been considered an external driving force more or less beyond the control of wetland managers.
3. Management and development of wetlands must be undertaken within the context of their larger surrounding "waterscape" (the river basin or catchment, including the hydrological processes and functions within the basin or catchment) as well their larger surrounding landscape.
4. It is not sufficient to integrate wetland management objectives into land use management plans; they must also be integrated into water resource management plans. Water-related management objectives for wetlands in a river basin should preferably be "hard-wired" into the business plans and operational plans of the relevant water management agencies, to ensure that wetland objectives are fully realized.
5. The aim should be to match water resources strategies with land use strategies, so that these can be implemented jointly to support the maintenance of healthy, functional wetlands that provide a full range of benefits/services for people (including water supply). Yet land use management and water management are generally the responsibilities of different agencies or authorities, resulting in a lack of alignment of objectives or priorities, which in turn leads to one or other of the land or water aspects of wetlands not being adequately protected or managed.
6. To improve the integration of wetlands into river basin management, attention needs to focus on three major areas of activity, each of which is described further below:
 - i) Communication of policy and operational needs and objectives across different sectors, primarily the water and wetlands sectors;
 - ii) Cooperation between sectors and sectoral institutions, ranging from informal collaboration to formal cooperative governance; and

- iii) Sequencing and synchronization of planning and management activities in different sectors, including land, water and wetlands.

1.1 Communication between water and wetlands sectors

7. The Ramsar guidance, particularly on river basin management and water allocation and management (Ramsar Wise Use Handbooks [7] and [8]) and environmental water requirements (Ramsar Technical Reports, in prep.), has its origins in the environment/wetlands interest sector. It is aimed at providing supporting material for the Ramsar implementing authorities in each Contracting Party to use in persuading or influencing the water sector to change the way they do, or have done, river basin management so as to better maintain wetland ecosystem benefits/services.
8. However, most wetland managers at site or country level may not be fully familiar with such daily operational practices of river basin management, and so will have difficulty assisting the water managers to integrate the water requirements of wetland ecosystems into water resources planning and to implement these requirements in water management practices.
9. Frequently the two sectors fail to find common ground due, not to a mismatch in values or intentions, but rather to an inability to describe, quantify and communicate interests, objectives and operational requirements. In order to ensure understanding and foster collaboration and cooperation between sectors, wetland managers and water resource managers must find a common language in which to set shared objectives for water resources and wetlands.
10. Bridging this particular communication gap between sectors often requires specialist communication, education and public awareness (CEPA) efforts at technical and policy levels, in addition to ongoing CEPA initiatives aimed at general awareness amongst the public and broad stakeholder groups.
11. Wetland managers need sufficient understanding of the technical and operational aspects of water resources management to understand:
 - i) first, how to articulate and quantify the requirements of wetland ecosystems in the operational currencies of river basin management; and
 - ii) second, how to work with water managers to develop basin operating rules and flow regimes that represent the optimal allocation of water between multiple uses, including ecosystem maintenance.
12. Similarly, water managers, particularly those working at the river basin scale, require knowledge and quantitative understanding not only of the water resource functions (benefits/services) of wetland ecosystems, and how to deliver the water required to maintain these benefits/services, but also of the operational currencies in which ecosystem water requirements are generally described. The supplemental guidance on environmental water requirements being prepared [during the 2006-2008 triennium] by the Scientific and Technical Review Panel (STRP) as Ramsar Technical Reports [will provide] more detail and examples of these issues.

**See also Handbook 4,
Wetland CEPA**

I.2 Cooperation and cooperative governance between the water and wetlands sectors

13. Providing an enabling environment for collaboration, integration and joint planning between the water and wetlands sectors, and indeed with other sectors such as agriculture and land use, requires attention to the policy and regulatory context in all related sectors.
14. It is not always necessary to formally review and to harmonise policy and legislation across sectors. But at the very least conflicting policy objectives should be resolved and mechanisms provided in the policies and regulations of each sector to allow better integration of decision-making and operational procedures, whether through consultative or statutory processes.
15. Institutional change can also help to improve cooperation and collaboration. River basin organizations can be potential focal points for achieving both the necessary vertical integration from basin level down to site level, as well as the horizontal integration between different agencies, land and water users and interest sectors.
16. However, significant institutional reform or restructuring is not a prerequisite for ensuring effective cross-sectoral cooperation, since much can be achieved through less formal means such as the facilitation of cross-sectoral communication and agreement between different sectors on how overlapping responsibilities will be shared or assigned.

I.3 Upscaling to the basin level – sequencing and synchronisation of planning and implementation activities

17. The move towards the integration of wetlands and wetland water requirements into the water sector has only really begun in most countries since the mid-1990s, although the awareness of the need for this has been growing for a long time in the environment and wetlands communities.
18. Many countries are still grappling with the policy and regulatory reforms needed to recognize ecosystems as legitimate users of water, which is the first step in formalizing the status of wetland ecosystems in water allocation and management.
19. Whilst many countries have achieved good results in integrating wetland management and water resources management at the local, site or sub-basin level, successful upscaling of these approaches to the basin level has generally proved difficult, although not impossible.
20. One of the significant obstacles to successful upscaling is often the lack of attention to wetlands at an early stage in the process of water resources planning at the basin scale. A clear, understandable and sequential process of water resources planning allows much better opportunities for wetland managers to formulate their inputs appropriately and engage with water resource planners and managers.
21. Although there appears to be a general sequence of planning and management activities that can promote effective integration of wetlands into river basin management (as set out in the “Critical Path” approach, described below), the exact sequence is perhaps less important than the fact

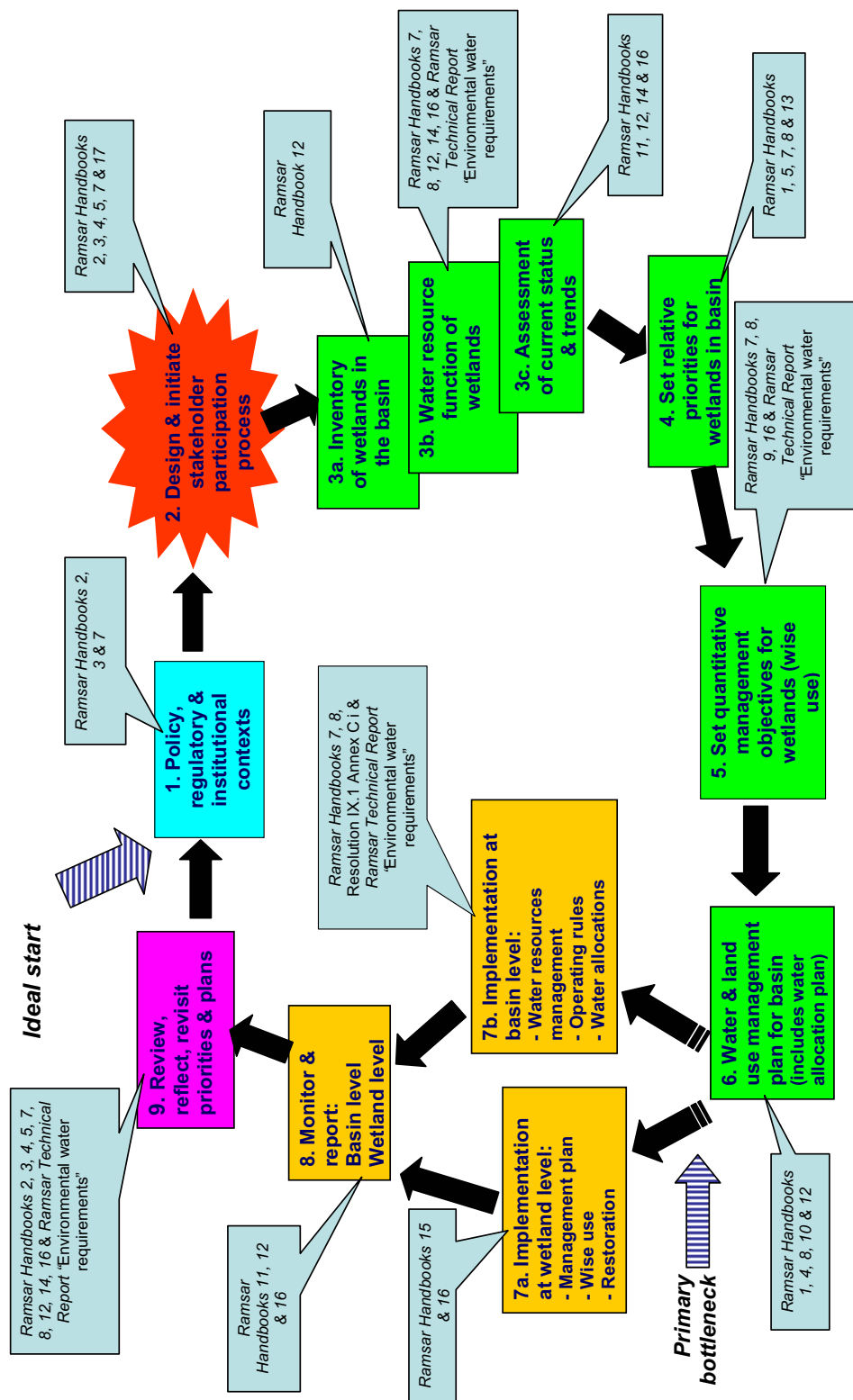
that there is a formal, organized and transparent process established, with which all relevant sectors can engage.

II. The “Critical Path” approach

22. A generic version of the “Critical Path” is provided in Figure 1, and described in more detail in the following text. For further information, the original version of the Critical Path provides an example of specific details designed to suit the South African situation and is available in Dickens *et al.* (2004)³.
23. The Critical Path approach to integrating wetlands into river basin management evolved out of many experiences of the bottlenecks and obstacles to implementation of the protection, management and wise use of individual wetlands at site level.
24. Additional experience from implementation of environmental flows concepts and policies has also brought the recognition that there is a certain degree of sequencing required, between planning and management activities at river basin level and between management and user activities at individual wetland or site level. Activities need to be progressively initiated and completed, in time and through scales from basin scale down to site scale, in order to ensure the successful management and wise use of wetlands.
25. These obstacles and issues are common to many countries and many wetland situations. Bottlenecks have often occurred when higher-level water resources planning, management and water allocation issues had not been adequately addressed prior to the design and implementation of wetland management plans. It appears that failure to implement management plans, and thus to achieve wise use objectives for individual wetlands, is often due to the failure to resolve critical bottlenecks in the progression from planning at basin level to implementation at individual wetland level.
26. The Critical Path approach (see Figure 1) provides a “road map” which helps to navigate through:
 - i) progressive planning, survey and decision-making activities related to water resources (Steps 1 to 6);
 - ii) on to implementation of wetland management objectives (Steps 7a and 7b); followed by
 - iii) strategic steps of monitoring, reporting and review of objectives and plans (Steps 8 and 9).
27. The critical path approach is a cyclical one, because it is also an adaptive approach to management: learning and new understanding gained in the first application of the approach should be fed back into improving performance in future application.

3 Dickens C., Kotze D., Mashigo S., MacKay H. & Graham M. (2004). *Guidelines for integrating the protection, conservation and management of wetlands into catchment management planning*. Water Research Commission Report Number TT220/03, Pretoria, South Africa. Available on request from the Water Research Commission www.wrc.org.za.

Figure 1 from Resolution IX.1 Annex C i: Generic version of the “Critical Path” approach. Note that stakeholder participation and other CEPA tools should continue throughout the entire cycle.



28. Ideally, the cycle should be started at the beginning (Step 1) and completed in full and in sequence, but basins and situations are different and flexibility should be promoted. In many cases, water management at basin level and wetland management at site level may have been going on in parallel and more or less independently for a long time and will probably not be synchronized. Hence the most practical approach is to identify where each sector is in their planning and management cycle, and start from there in a process of gradual integration and synchronisation.
29. In summary, implementation of wetland management plans will continue to be difficult until broader land use and water resources management plans at river basin level fully integrate the management and wise use objectives for the wetlands in question. This is the primary bottleneck to implementation progress, represented by the hatched arrow in Figure 1. Without this bottleneck being resolved, wetland management plans will tend to repeatedly fail in implementation, or the wetland management objectives may not be fully realized.
30. Ramsar's COP7 guidance on river basin management [Part II of this Handbook] provides a basis and the necessary tools for resolving the primary and secondary bottlenecks and obstacles to the integration of wetland management into river basin management. This additional guidance provides more detail on sequencing of the activities that use these tools. Figure 1 shows the cross-references from steps in the critical path to existing, more detailed Ramsar guidance.

III. Description of Critical Path activities

31. This section provides an overview of each of the major components of the Critical Path (planning Steps 1 to 6, implementation Steps 7a and 7b, and strategic activities Steps 8 and 9). Some additional detail is then also provided on many of the individual steps.

III.1 The planning phase (Steps 1 to 6)

32. The activities in Steps 1 (policy, regulatory and institutional contexts), 2 (stakeholder participation process), 3 (inventory, assessment and technical studies), 4 (setting priorities) and 5 (setting objectives) are arranged in a general sequence of initiation. However, in practice most of these steps can be undertaken in parallel, as long as all are at an adequate level of completion prior to Step 6 (water and land use management plan for the basin).
33. A bottleneck can occur if the activity of agreeing on, and setting priorities for, wetlands in a basin (Step 4) does not include all the relevant stakeholders, including water and land users, as well as responsible agencies or authorities, in a legitimate decision-making process. Thus it is essential that policy, regulatory and institutional issues be resolved such that the relevant authorities can work together, and that a credible, inclusive stakeholder participation process is well under way (with stakeholders having been helped to understand the relevant technical and strategic issues).
34. Inventories and specialist desk and field studies, covering ecological, hydrological, economic and social aspects (Step 3), can commence at an

early stage in the process. However, it should be recognized that the level of detail and resolution required in these studies will be influenced by the process of determining quantitative objectives, which in turn will require a certain degree of numerical confidence, depending on the sensitivity and importance of the wetlands and the associated water resources. Hence there can be some iteration required between Steps 3, 4 and 5.

35. If some or all of Steps 1 to 5 have not been addressed sufficiently before commencing the development of a management plan for the basin in Step 6, then it is likely that wetland requirements, particularly for water quantity and water quality, will not be recognized adequately. The implementation of wetland management plans at site level could then be compromised.
36. This bottleneck can be resolved by returning to undertake Steps 1 to 5 and then coming back to Step 6. However, this does not necessarily mean stopping the whole planning process in order to fill in the missing steps: rather, the missing steps can be addressed by relatively rapid desktop studies or scoping exercises, on the understanding that the necessary detail can and will be provided in the next iteration of the Critical Path cycle.

Step 1: Policy, regulatory and institutional contexts

37. Refer to Ramsar Handbooks 2, 3 and [Part II of this Handbook] for further detailed guidance.
38. It is generally necessary to ensure that the policy, regulatory and institutional arrangements are supportive of efforts to integrate wetland management into river basin management. Reviewing policy and legislation can be a lengthy process, and although it can be undertaken in parallel with the other implementation steps 1 to 5, implementation (Steps 7a and 7b) will definitely be compromised if this step is not sufficiently advanced, and preferably substantially completed, by the time implementation begins.
39. A specific bottleneck can occur in relation to the legal status of water allocations and entitlements, since water allocations for wetland ecosystems are unlikely to be implemented until given some status in law, whether this is in statutory or customary law.
40. Complete revision of existing laws and policies is not always necessary, and also can be difficult and very slow if not supported at the political level. It is often sufficient to identify and analyse:
 - i) policies and laws from various national sectors (such as water, agriculture, environment, economic development, social development) that positively support the integration of wetland management with river basin management, and that generally contain shared principles and objectives;
 - ii) policies, laws and regulations from various national sectors that conflict with the objectives of integrating wetland management and wise use into river basin management, and where revision or reform may be necessary; and

See also Part II, Section B (Guidelines for Contracting Parties on the development and strengthening of policy and legislation for integrated water resources management)

Additional information

New trends in water legislation

South Africa

In 1994, South Africa embarked on a process of major reform of the water sector, including water services as well as water resources management. The National Water Act of 1998 has far-reaching implications for the protection and management of wetlands, as does the legislation. South African water law recognizes riverine, wetland, estuarine and groundwater ecosystems, which must be protected in order to ensure maintenance of the desired goods and services which water resources can provide.

A key legal measure for protection of water resources and their associated aquatic ecosystems is the Reserve – defined in the National Water Act as the quantity and assurance of water, as well as the quality of water, required to fulfill basic human needs and protect aquatic ecosystems to secure ecologically sustainable development. The water required to meet the Reserve is the only right remaining under South African law – all other water use is authorized through schedules, general authorizations, or limited-period licenses with various conditions attached. The Reserve for a water resource must be determined and taken into account before any water use can be considered for authorization.

For the protection of wetlands, the South African water legislation provides an immensely valuable tool which complements environmental and conservation policy by ensuring



South Africa's water law recognizes the need to use water resources sustainably for the benefit of people; subsistence cultivation at the Kosi Bay Ramsar Site in South Africa. *Photo: Donovan Kotze*

priority and protection for the water-related aspects of wetlands, and by formally recognizing the important role that wetland ecosystems play in maintaining the full suite of goods and services associated with water, not just water for abstraction and offstream use.

(Contributed by Heather MacKay, Water Research Commission, South Africa)

Tanzania

Tanzania's National Water Policy of 2002 details the national strategy for sustainable management of water resources and provision of water services. It includes among its objectives the improved management of ecosystems and wetlands, integrated planning and management of water resources, environmental flows, and the need for these in order to maintain riparian biodiversity, wetland systems and aquatic life. Water is first allocated to basic needs, followed by the environment and then the economy.

(Contributed by Petro Masolwa, WWF-Tanzania Programme Office)

Scotland

The Scottish Parliament from its inception has had a keen interest in the water environment, and an awareness of the need to reform various aspects of water law. In approaching the Transposition of the EU Water Framework Directive (WFD), two particular issues were the lack of any statutory or comprehensive framework for river basin management, and the lack of any comprehensive abstraction control regime. The overall objective of the WFD is to achieve "good" water quality, as defined, with the focus on ecological water quality as well as chemical water quality.

The Scottish Environment Protection Agency (SEPA) is the environmental regulator and the lead authority charged with taking forward the RBM process in Scotland, and there was a view within SEPA that Scotland could and should be at the forefront of implementing the WFD. It was decided to use primary legislation to implement the WFD, not Ministerial regulation as has happened in England, and also to take the opportunity to reform water pollution control legislation and to move towards a "state of the art" regime. All uses of the water environment – abstractions, impoundments, discharges, and river works – are now controlled in one set of integrated rules, the Water Environment (Controlled Activities) (Scotland) Regulations 2005 (CAR). The definition of "the water environment" in Scots law includes wetlands. This will mean that water uses affecting wetlands will be controlled by CAR, just as they will where they affect surface and ground waters.

(Contributed by Sarah Hendry, University of Abertay Dundee, Scotland) '

- iii) policies, laws and regulations that can be used for sanctions or enforcement purposes during the implementation phase if necessary, such as pollution prevention, land use planning controls, resource exploitation limitations.
41. Policies and laws can be formal and based in the statutory legal system of a country, or they can be customary and based in particular community systems of practice and law. The principles of identifying the supporting and conflicting elements of policy and law apply equally to statutory as to customary law, although the challenges of integrating statutory and customary systems, and providing for a pluralistic legal environment, can be significant.

- 42. New institutional arrangements, at international, national or local levels, are likewise sometimes politically difficult to implement from scratch, and it is necessary and generally better to begin working with the existing range of responsible and interested institutions.
- 43. Memoranda of cooperation, or cooperative policy, can be used to formalize relationships when necessary. As relationships and understanding grow, the structure and function of new institutions that would be more appropriate to the task should emerge, and institutional reform and restructuring will then have more support.

See also Part II Section C (Guidelines for Contracting Parties for the establishment of river basin management authorities and strengthening of institutional capacity)

Step 2: Stakeholder participation process

- 44. Refer to Ramsar Handbooks 2, 3, [4, 5, 17 and Part II of this Handbook] for further detailed guidance.
- 45. Although, for convenience, this is noted as a single discrete step in Figure 1, in fact participation of interested, affected and accountable stakeholders is a process that should continue throughout the cycle of the Critical Path.
- 46. At different steps, different stakeholders may need to be involved, and the process may take various forms from awareness-raising, through participatory appraisal, consultation, participation and formal negotiation.
- 47. Participation is included as Step 2 because the participatory process must be designed early in the cycle and properly resourced. Training, as well as the preparation of information and learning materials, may be needed well ahead of the key planning step of setting priorities (Step 4). In addition, it is important to allow enough time to identify all the relevant stakeholders, well before key implementation decisions are taken.

See also Part II, Section D (Guidelines for Contracting Parties relating to the involvement of stakeholders, community participation and public awareness)

Step 3: Technical studies (inventory, assessment and hydrological function)

- 48. Refer to Ramsar Handbooks [8, 12, 14, and 16] and Ramsar Technical Report (in prep.) "Reviews of environmental flow methodologies for wetlands" for further detailed guidance.
- 49. This is a step that can be initiated early in the process, and it can run in parallel with policy and institutional development as well as participatory and consultation efforts. The scope of work and the level of technical detail required for these studies is partly influenced by priority-setting in Step 4; it may be necessary to undertake more detailed or intensive field studies on wetland ecosystems which are considered priorities due to importance or sensitivity. Nevertheless, Step 3 can begin with desktop studies, later progressing to much more detailed field work, according to a fieldwork and measurement programme which is informed by planning priorities.

Step 4: Setting agreed priorities for wetlands in the basin

50. Refer to Ramsar Handbooks 1, 5, [8, 13, and Part II of this Handbook] for further detailed guidance.
51. It is vitally important that this step includes all stakeholders, and that it is well structured and formalized, with appropriate records of decision on the relative priorities of all wetlands in the river basin.
52. Some wetlands may be afforded a higher protection status than others, due to their importance in conservation, economic, social or cultural terms, their sensitivity, or the dependence of local populations upon their benefits/ services.
53. The List of designated Ramsar sites provides a tool for recognizing and agreeing on wetlands of international importance, which in turn will convey a high protection status in the river basin management plan, but similar tools are needed to recognize wetlands of regional, national or local importance, or those of hydrological importance within a basin. Note also that not all wetlands which qualify as internationally important have as yet been designated by Contracting Parties, and the importance of any such sites not yet designated should also be taken into account.
54. Ensuring that this step is formalized, participatory and well-informed will greatly assist in prioritizing implementation actions later, including the use of financial resources as well as the allocation of water.

Step 5: Setting quantitative management objectives for wetlands in the basin

55. Refer to Ramsar Handbooks [8, 16, and Part II of this Handbook], and Ramsar Technical Report (in prep.) “Reviews of environmental flow methodologies for wetlands” for further detailed guidance.
56. This is primarily a scientific task, but it still requires the participation of responsible agencies as well as affected stakeholders.
57. The agreed priorities assigned in Step 5 must be translated into practical, measurable, implementable and enforceable management objectives. These objectives need to then be integrated into the business planning of the responsible land, water and environmental management agencies, as well as into any community or customary use agreements.
58. These objectives also form a very important baseline against which to assess environmental impacts at later stages.

See also Part II, Section E in relation to Steps 3, 4 and 5 (Guidelines for Contracting Parties relating to assessment and enhancement of the role of wetlands for water management), and Section I (Guidelines for Contracting Parties relating to the maintenance of natural water regimes to maintain wetlands)

Step 6: Integrated land and water management plan for the basin

59. Refer to Ramsar Handbooks 1, [4, 8, 10, 12, and Part II of this Handbook] for further detailed guidance.
60. This is a very important step in the cycle, and one at which it is essential that the different sectoral planning and management processes are synchronized and integrated.

61. Whether this is an initial concept plan (based on desktop studies and containing limited detail) or a comprehensive operational plan for land, water and wetland management in the basin, ideally there should be a formal plan, signed off by all the responsible agencies, and with one agency formally accepting the lead role in implementation.
62. There is no single best way to set out such an integrated plan, and each country or basin should consider what format and structure would be most appropriate for their own situation.

III.2 The implementation phase (Step 7)

Steps 7a and 7b: Parallel and integrated implementation at wetland and basin level

63. Refer to Ramsar Handbooks [8, 13, 15, 16, and Part II of this Handbook] , and Ramsar Technical Report (in prep.) “Reviews of environmental flow methodologies for wetlands” for further detailed guidance.
64. Countries or basin authorities may have considerable experience in implementing either site-level wetland management plans or basin-level water resource management plans. However, the challenge generally lies in the implementation of these two instruments in parallel, while ensuring integration, consistency and synchronization at particular times and places.
65. Spatial and temporal planning scales are often very different, depending on the sector and the objectives; separate agencies may be responsible for the lead in each case; business planning cycles may not be matched; effective communication channels for data, information, policy and problems may not have been established.
66. Sometimes the problems of working in parallel can be addressed through a joint working group which is fully inclusive of the various agencies and interest groups. This could have the status of, for example, the governing board of a basin authority, or it may be a much less formal working group of technical officials who meet often to discuss and resolve operational problems.
67. Whatever the level at which the joint working group is established, it needs political support from the highest levels of all the organizations and agencies that are members of the working group. If this political support is not forthcoming, then committed technical field officials can often address most operational problems, but their work can be greatly hampered by legal challenges (for example, related to water allocations) and lack of organizational policy guidelines.

See also in Part II:
Section F (Guidelines for Contracting Parties relating to the identification of current and future supply and demand for water);
Section G (Guidelines to assist Contracting Parties to minimize the impacts of land use and development projects on wetlands and their biodiversity);
Section H (Guidelines for Contracting Parties relating to reducing the impact of water development projects on wetlands)

III.3 The strategic phase (Steps 8 and 9)

Step 8: Monitoring and reporting at wetland and basin level

68. Refer to Ramsar Handbooks [11, 12, and 16] for further detailed guidance.
69. Sustainable adaptive ecosystem management approaches generally rely on the inclusion of explicit monitoring and reporting steps to close the cycle. This step provides the “glue” which holds the whole Critical Path together. Yet monitoring and reporting activities are often those for which the least time and money is budgeted, and they are often the first to be cut back when budgets are tight.
70. Monitoring programmes need to be designed against the priorities and objectives set in Steps 4 and 5. There is little value in monitoring if the resulting information cannot be used to assess achievement of or progress towards the agreed management objectives for the river basin and for the wetlands within the basin.
71. It is likely that some of the management objectives will be social or economic, related to livelihood protection and enhancement. For these, the monitoring programme will then also need to provide information to track progress on these objectives, as well as on more widely-understood hydrological and ecological objectives. Performance criteria against which to evaluate the progress and management of planning and implementation activities are also necessary.
72. Information on status, trends and progress may need to be packaged in different ways for different audiences such as politicians, agency managers, stakeholders, and community interest groups.

Step 9: Review, reflect and revisit plans and priorities

73. Refer to Ramsar Handbooks 2, 3, 4, 5, [8, 12, 14, 16, and Part II of this Handbook] and Ramsar Technical Report (in prep.) “Reviews of environmental flow methodologies for wetlands” for further detailed guidance.
74. Like monitoring, this is a critical strategic step whose importance is generally greatly underestimated. There are two levels of review:
 - i) At the operational level, monitoring results can feed back very quickly into refined management objectives or remedial actions, without necessarily requiring substantive review of the formal basin and wetland management plans;
 - ii) Formal strategic review of wetland and basin management plans should be conducted on a regular basis (5 to 10 years is an appropriate time period, but it can be matched to business planning cycles). As a result of this review, management priorities and objectives may be substantively revised (rather than just refined) to take account of changing ecological, social or economic conditions.
75. If carried out properly at both operational and strategic levels, this review step closes the Critical Path cycle and ensures effective “learning-by-doing”, which is the foundation principle of adaptive management of ecosystems.

Additional information

A century of managing the Grand River Basin

“The scope and thrust of watershed management has evolved significantly since Ontario’s first conservation authorities were created in the late 1940s. In the 1950s, ‘watershed management’ usually meant single-issue flood management programs. Today, ‘watershed management’ means integrated, ecosystem-based watershed management initiatives that include consideration of stream morphology, groundwater, terrestrial habitat, wetlands, woodlots, and environmentally significant or sensitive areas” (Conservation Ontario, 2003).

A timeline of events in the Grand River catchment is presented below, showing some of this evolution.

Early 1900’s: Severe water problems associated with flooding, drought and degraded water quality experienced in southern Ontario, particularly in Grand River basin.

Grand River Improvement Association formed as flood prevention alliance and lobby group to appeal to province for aid in controlling river.

1930s: Report on Grand River Drainage (Finlayson Report) recognizes low flow as health hazard and considers problems of water supply, sewage disposal and flood control.

Grand River Conservation Commission (GRCC) formed, to carry out studies and undertake projects to ensure sufficient supply of water for municipal, domestic and manufacturing purposes and to control floods.

1940s: Province of Ontario passes Conservation Authorities Act, which states that best unit for conservation work is watershed. Grand Valley Conservation Authority (GVCA) formed, composed of 69 watershed municipalities which focus on activities not covered by GRCC (e.g. land acquisition, stewardship programmes, reforestation, erosion control, etc.)

1950s: *The Grand River Conservation Report - Hydraulics* produced, a watershed-wide management plan

1960s: Grand River Conservation Authority (GRCA) results from amalgamation of GRCC and GVCA. Adopts resource management plan to integrate land and water projects, with initial emphasis on water control through multi-purpose dams and channel works.

1970s: Ontario Treasury Board report – “Review of Planning for the Grand River Watershed” – helps further cooperative watershed management among provincial ministries, agencies and municipalities and recommends carrying out comprehensive water management plan.

Ontario Ministry of the Environment leads multi-agency team to deal with water quality, water supply and flooding issues in Grand River basin.

1980s: Grand River Basin Water Management Plan complete. Cooperative planning project so successful that municipalities and Conservation Authority fully implement plan, resulting in 75% reduction in average annual flood damages, return of self-sustaining sport fishery to the river, and a water supply strategy.

Review of Conservation Authorities Program in Ontario recognizes overlapping responsibilities among provincial agencies and Conservation Authorities, without recommending substantive changes.

1990-1993: Participatory process produces *The Grand Strategy for Managing the Grand River as a Canadian Heritage River*. Advocates adaptive, on-going and flexible collaborative approach, based on consensus, commitment, co-operation and community involvement.

Provincial funding cuts announced.

Association of Conservation Authorities produces discussion paper acknowledging fragmented nature of resource management in Ontario and need to reduce overlapping institutional structure. Recommends that Province focuses on strategic planning aspects of resource management, and that Conservation Authorities coordinate and implement integrated watershed management.

1994-1997: *The Grand Strategy* accepted by Canadian Heritage Rivers Board making Grand River a Canadian Heritage River. Strategy's initial focus on management of human heritage features and recreation broadens to more holistic approach to address pressing watershed resource issues.

Given political realities, GRCA commences organizational and administrative restructuring reducing general membership to 26, leading to better direction for Conservation Authority activities, and greater participation and communications among municipalities. Strategic planning process also undertaken, keeping with *The Grand Strategy* values, beliefs and principles and focusing on improving watershed health and addressing cross-boundary issues.

Province reduces its funding support to Conservation Authorities by 70% following elections of Progressive Conservative Party.

1997-2002: Under umbrella of *The Grand Strategy*, GRCA works with partners to address approaching issues and determine priorities for action, including pollution, wastewater treatment, wise use of water, groundwater protection, Fisheries Management Plan, community-based plans for forest, wildlife and natural heritage management, etc.

Today, the Grand River watershed is one of the fastest growing areas in Canada. Associated threats are rising costs for treating wastewater, agricultural intensification and industrialization leading to diminishing health and resiliency of the natural environment.

To deal with these critical issues, *The Grand Strategy* has evolved into a collaborative process that identifies problems, develops creative solutions, pools resources, implements action, monitors results and evaluates progress on an ongoing basis. It includes participation from federal and provincial governments, municipalities, First Nations, business, organisations, educational institutions and the general public. While the issues of fragmented jurisdictions and funding still exist, a spirit of cooperation and joint problem solving assists in surmounting institutional barriers and making things happen "on the ground". Within *The Grand Strategy* network, information is shared and resources are pooled. Progress is documented and celebrated through monthly newsletters, special events and an annual Registry of Accomplishments.

Based on:

Conservation Ontario. 2003. *Watershed Management in Ontario: Lessons Learned and Best Practices* see http://www.conservation-ontario.on.ca/projects/watershed_pp1.html.

Veale, Barbara. 2004. "Watershed Management in Grand River Watershed" in *Towards a Grand Sense of Place: Writing on changing environments, land-uses, landscapes, lifestyles and planning of a Canadian Heritage River*. pp. 261-276. Gordon Nelson (ed.), Environments Publications: Heritage Resources Centre, University of Waterloo, Waterloo, Ontario. 331 pages.

III.4 Crosscutting issues and points to note

76. A number of key issues are not linked to any specific step, but can cause problems anywhere in the Critical Path if they not attended to. These include:
- i) **Ensuring adequate technical, institutional and infrastructural capacity**, in good time to prevent bottlenecks. This includes specialist hydrological and ecological expertise, as well as expertise in policy, legal and institutional matters. Institutional capacity may be needed in the form of budgets, if not actual delegations, secondments or assignments of responsible staff where no institutions at all exist to initiate the process.
 - ii) **The value of sustained, credible leadership**. This often comes down to a single, committed individual with strong leadership skills and the ability to mobilize people into integrated teams. Political leadership of this kind is just as important as the facilitation-style leadership of the person or group who manages to get all the stakeholders, agencies and interested groups to reach consensus at various stages of the process.
 - iii) **Providing a continual flow of information into the process**. Integrated, adaptive approaches, such as the Critical Path approach described here, are being applied in many different situations around the world. Ensuring a continual flow of information on best practices, new developments and new scientific tools and techniques, will improve application “on the ground”.
 - iv) **Ensuring a continual flow of information out of the process**. The importance of communication and awareness initiatives, at various levels from policy and technical through to the general public, cannot be overestimated. A free flow of information, appropriately packaged, greatly reduces resistance to change and helps people to see the benefits of working towards multiple social, environmental and economic objectives in a river basin.

IV. “Start anywhere; just get started”

IV.1 The Critical Path as an analytical tool

77. Although it appears to be a strongly sequential and thus constraining process, in fact the maxim of the Critical Path is **“Start anywhere, just get started”**. The value of applying this approach is that, even when a specific implementation process seems to have broken down completely at wetland level, the Critical Path can be used as an analytical tool to identify gaps, obstacles and bottlenecks related to water or river basin management issues, solve the most acute of these, and hopefully get implementation back on track and progressing again.

IV.2 Key places to resolve bottlenecks

78. If the process seems blocked, perhaps due to inability of stakeholders to agree on priorities, or unwillingness to trade off other values in order to

meet wetland needs for water, then two key places to revisit are Steps 2 and 4.

79. In these steps, the legitimacy and feasibility of the priorities for wetlands are decided. If the stakeholder process has not been sufficiently inclusive or participatory, this could lead to perceived failure of the legitimacy of objectives. If the priorities that are set for wetlands in a basin are not practical or feasible, for example in terms of the amount of water that must be released from a dam, then this will probably lead to failure to recognize the wetland objectives and hence failure to implement them.

IV.3 Synchronisation with other sectoral planning and management cycles

80. Deciding where to start is also influenced by the status of the larger water resources and land planning processes which may already be ongoing in a river basin.
81. The Critical Path approach is focused on wetlands and their role in a basin: this wetlands-focused cycle should be recognized as being nested within or closely linked to other [spatial and economic] planning and management cycles. Understanding the status and progression of these other cycles, particularly the water resources cycle, assists in synchronizing the wetlands cycle with these other cycles and avoiding duplication of work.
82. For example, Step 3 in the Critical Path requires technical studies related to wetlands. If this is carried out at the same time that water managers are undertaking a water resources situation assessment and yield analysis for the basin, much information and data can be shared between the two cycles.
83. Step 4 in the Critical Path for wetlands should ideally be synchronized with the participatory process led by the water sector to decide on water allocation priorities.
84. Specialist CEPA initiatives from the wetlands sector can support the building of links and synchronization between the wetlands Critical Path and other sectoral processes. If the other sectoral processes are not well-structured, then focused CEPA initiatives could help to identify and clarify current processes in other sectors, in order for the wetlands sector to link with them.
85. If the other sectoral processes are well-structured but perhaps well ahead of the wetlands sector planning and management process, then rapid or desktop execution of steps in the Critical Path should be considered in order for the wetlands sector to “catch up” and at least get wetland needs and values on the water agenda in the basin. Critical Path steps can be executed more fully in the second iteration of the cycle.

Relevant Resolutions

Resolution VII.18

(adopted by the 7th meeting of the Conference of the Contracting Parties, San José, Costa Rica, 1999)

Guidelines for integrating wetland conservation and wise use into river basin management

1. RECALLING Operational Objective 2.2 of the Strategic Plan 1997-2002, which urges Contracting Parties “to integrate conservation and wise use of wetlands . . . into national, provincial and local planning and decision making on land use, groundwater management, catchment/river basin and coastal zone planning, and all other environmental management”;
2. FURTHER RECALLING Resolution VI.23 on *Ramsar and Water* which calls on Contracting Parties, in promoting the integration of water resource management and wetland conservation, to undertake a range of actions including the establishment of hydrological monitoring networks on wetlands, studies of traditional water management systems and economic valuation methods, to involve National Ramsar Committees and local stakeholders in river basin management, to support multi-disciplinary training, and to work in partnership with water-related organizations;
3. AWARE that wetlands, because of their ecological and hydrological functions, are an intrinsic part of the overall water resource system and should be managed as a component of such, as well as being rich centres of biological diversity and related productivity; and contribute as such to the economic, ecological and social security of local people and other major groups;
4. WELCOMING the Memorandum of Cooperation with the Convention on Biological Diversity (CBD) and the associated Joint Work Plan through which the role of the Ramsar Convention as the lead partner on actions directed at the conservation and wise use of wetlands, and particularly inland water ecosystems, is to be pursued (Resolution VII.4);
5. ALSO AWARE of the increasing demands being placed upon freshwater resources in many parts of the world, as presented to this Conference through the Technical Session I presentation entitled *Defining Ramsar’s role in the response to the global water crisis*;
6. NOTING the importance placed on freshwater resources in the United Nations Special Session of the General Assembly to Review and Appraise the Implementation of Agenda 21 (June 1997), and the subsequent Commission on Sustainable Development meeting in May 1998, which as part of its report relating to Strategic Approaches to Freshwater Management recommended support for implementation of the Ramsar Convention;
7. NOTING ALSO the current initiatives of the World Commission on Dams as well as those activities of the World Water Council, the Global Water Partnership, and other water sector-related organizations designed to promote integrated water resource management;
8. RECOGNIZING that through Technical Session I, this Conference has considered and discussed in detail the *Guidelines for integrating wetland conservation and wise use into river basin management*;
9. REALIZING that this Conference, through a number of related decisions, has adopted guidance for the Contracting Parties on wetland policy formulation (Resolution VII.6), reviewing laws and institutions (Resolution VII.7), involving local communities and indigenous people in wetland management (Resolution VII.8), promoting communication, education and public awareness related to wetlands and waterways (Resolution VII.9),

designation of karst and other subterranean hydrological systems (Resolution VII.13), incentives (Resolution VII.15), impact assessment (Resolution VII.16), wetland restoration as part of national planning (Resolution VII.17) and international cooperation under the Ramsar Convention (Resolution VII.19), of all which are closely related to and serve to inform the more generic subject of integrating wetlands into river basin management; and

10. GRATEFUL to those who contributed their information and other experiences to assist the authors, the Global Environment Network, with the preparation of the annexed Guidelines and the associated case studies and lessons learned;

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11. RECOMMENDS the *Guidelines for integrating wetland conservation and wise use into river basin management* as annexed to this Resolution and URGES all Contracting Parties to give priority to their application, adapting them as necessary to suit national situations;
12. CALLS UPON the Contracting Parties to reinforce and increase their efforts to implement Resolution VI.23 and Operational Objective 2.2 of the Strategic Plan 1997-2002 and to do so through implementing the annexed Guidelines;
13. FURTHER URGES Contracting Parties, when implementing the annexed Guidelines, to take account of, and apply through integrated approaches, the guidance on related issues identified above and as adopted by this Conference;
14. DIRECTS the Ramsar Bureau, as funds and resources allow, to make these and the associated guidelines adopted by this Conference available to the secretariats, expert and technical bodies, relevant regional institutions, river basin authorities and focal points of all other relevant environment conventions as well as interested parties and organizations, and, in particular, to those bodies identified above with a recognized direct interest in water management;
15. FURTHER DIRECTS the Ramsar Bureau and Scientific and Technical Review Panel (STRP), subject to the availability of budgetary resources, to follow and participate actively in the programme of the World Commission on Dams (WCD), providing input on themes of relevance to Contracting Parties, and to report back to Ramsar COP8 concerning the findings of WCD and their implications for the future;
16. ENCOURAGES in particular those Contracting Parties which are also signatories to the Convention on Biological Diversity to note and support the partnership approach being taken between the Conventions in the further development of tools in the areas of incentives (Resolution VII.15) and impact assessment (Resolution VII.16), which are key elements of the annexed Guidelines;
17. INVITES those Contracting Parties which share river basins to pursue, as appropriate, the application of the annexed Guidelines in a cooperative way with their neighbouring States in accordance with Article 5 of the Convention and the *Guidelines for international cooperation under the Convention* (Resolution VII.19);
18. COMMENDS these Guidelines for consideration by all multilateral and bilateral donors to assist and guide their planning, project assessments and decision-making in terms of integrated water resource management, taking into account the special circumstances and constraints of the concerned countries;
19. INSTRUCTS the STRP, as funds and human resources allow, to review the current state of knowledge in the area of allocation and management of water to maintain wetland ecosystem

functions, and to report to Ramsar COP8 on the findings, and if possible to provide guidance for the Contracting Parties on this subject;

20. FURTHER ENCOURAGES Contracting Parties and other interested parties to develop pilot activities or projects to promote and implement the guidelines in their countries, and to report to Ramsar COP8 and other relevant fora (such as CBD) on the successes achieved and lessons learned from these activities.



Benefits of well-managed wetlands: fish harvest drying near the Coppename Monding Ramsar site in Suriname, 2007. Photo: Margarita Astrálaga / Ramsar.

Resolution IX.1

(adopted by the 9th meeting of the Conference of the Contracting Parties, Kampala, Uganda, November 2005)

Additional scientific and technical guidance for implementing the Ramsar wise use concept

1. AWARE of the suite of technical and scientific guidelines and other materials prepared by the Scientific and Technical Review Panel (STRP) to support Contracting Parties in their implementation of wetland conservation and wise use;
2. NOTING that the 8th Meeting of the Conference of the Contracting Parties (COP8) instructed the STRP to prepare further advice and guidance for consideration by Contracting Parties at COP9 on topics including, *inter alia*, inventory and assessment, wise use, water resource management, Ramsar site designation and management, and assessing the effectiveness of the implementation of the Convention;
3. THANKING the STRP for its work in preparing the advice and guidance annexed to this Resolution, as well as for the supporting technical reviews and reports being made available to Contracting Parties and others as Ramsar Technical Reports; and
4. ALSO THANKING the Government of Sweden and IUCN, WWF, the World Fish Centre, and the Water Research Commission (South Africa), which have provided financial support to the Panel and its Working Groups for the preparation of this advice and guidance and technical reports, and EXPRESSING GREAT APPRECIATION to the many organizations that have provided significant in-kind support to the work of the Panel;

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5. APPROVES the *Conceptual Framework for the wise use of wetlands and the maintenance of their ecological character* (Annex A to this Resolution) and its updated definitions of “wise use” and “ecological character”, and CONFIRMS that these supersede all previous definitions of these terms;
6. ALSO APPROVES the revised *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Annex B to this Resolution), INSTRUCTS the Ramsar Secretariat to introduce these changes in the preparation of a new edition of Ramsar Wise Use Handbook 7, including revisions to the Information Sheet on Ramsar Wetlands (RIS), and URGES all Contracting Parties preparing a RIS for the designation of a new site for the Ramsar List and for updating the RIS for an existing site to submit the information to the Ramsar Secretariat in this revised format;
7. WELCOMES the frameworks, guidelines and other advice provided as annexes C, D, and E to this Resolution and URGES Contracting Parties to make good use of them as appropriate, adapting them as necessary to suit national conditions and circumstances and within the frameworks of existing regional initiatives and commitments and in the context of sustainable development;
8. URGES Contracting Parties to draw these frameworks, guidelines and other advice to the attention of all relevant stakeholders, including *inter alia* government ministries, departments and agencies, water and basin management authorities, non-governmental organizations, and civil society; and FURTHER URGES Contracting Parties to encourage these stakeholders to take these guidelines into account, together with those of the Ramsar ‘Toolkit’ of Wise Use

Handbooks 2nd edition, in their decision-making and activities which relate to the delivery of the wise use of wetlands through the maintenance of their ecological character; and

9. INSTRUCTS the Ramsar Secretariat to disseminate widely the frameworks and guidelines annexed to this Resolution, including through amendment and updating of the Ramsar 'Toolkit' of Wise Use Handbooks.



Children learning about wetlands -- World Wetlands Day 2007 in Portugal.
Photo: courtesy Instituto da Conservação da Natureza.

Resolution IX.3

(adopted by the 9th meeting of the Conference of the Contracting Parties, Kampala, Uganda, November 2005)

Engagement of the Ramsar Convention on Wetlands in ongoing multilateral processes dealing with water

1. ACKNOWLEDGING the United Nations “World Water Development Report”, showing the worsening water crisis due to water mismanagement and RECOGNIZING that global climate change and variability are likely to exacerbate this crisis;
2. RECALLING the commitments made by governments in the United Nations Millennium Declaration and at the 2002 World Summit on Sustainable Development to reduce by half by the year 2015 the proportion of people who are unable to reach or to afford safe drinking water and the proportion of people without access to basic sanitation; to develop by 2005 integrated water resources management and water efficiency plans; and to achieve by 2010 a significant reduction in the current rate of loss of biological diversity;
3. ALSO ACKNOWLEDGING the vital contribution that wetlands make to the protection, purification, retention and provision of water resources for water and food supplies and their key role in groundwater recharge and flood control on which the well-being of people and their livelihoods depend, and AWARE of the decision adopted by the Commission on Sustainable Development at its 13th session (CSD13) in April 2005, which emphasized the same themes;
4. FURTHER ACKNOWLEDGING that CSD13 decided on a follow-up on water and sanitation by devoting, in 2008 and 2012, a separate segment of CSD review sessions to monitoring and following up the implementation of decisions taken at CSD13 on water and sanitation and their interlinkages;
5. AWARE of the Global Water Partnership and the range of tools and technical guidance it provides on integrated water management;
6. WELCOMING the outcome of the FAO-Netherlands conference on “Water for Food and Ecosystems – Make it Happen” on the implementation of actions for an integrated approach to balancing water resources for food production and proper ecosystem functioning, which highlighted the necessary components of such an approach, *viz.* scientific knowledge base, enabling environments, and valuation methodologies for water ecosystem benefits/services;
7. AWARE of the findings of the Millennium Ecosystem Assessment (MA) that global wetlands account for almost half of the total value of all ecosystems combined, but that wetland ecosystems seem to be deteriorating at a faster rate than any other ecosystem, and aware of the MA conclusions that the survival of wetlands and related ecosystems and their important contributions to global development depend upon the achievement of a balance between the human need for ecosystem benefits/services and the need for continued functioning of wetland ecosystems;
8. RECOGNIZING that wetland ecosystems play a critical role in water management;
9. RECOGNIZING the crucial role wetlands play in relation to poverty reduction and natural disaster preparedness, mitigation and adaptation as reflected in Resolutions IX.9 and IX.14;
10. RECALLING the analysis of all regional COP9 preparatory meetings of the Parties to the Ramsar Convention of the possibilities and limitations for regional cooperation in the management of transboundary / cross-border water resources and of Ramsar sites and the migratory species and populations which depend upon them;

11. RECOGNIZING the momentum provided by the international organizations associated globally with the Ramsar Convention, whose initiatives aim at achieving the wise use of wetlands with the involvement of all sectors; and
12. ALSO RECOGNIZING the contributions to the global and regional water debates/meetings/sessions of the three World Water Forums held in Marrakech, Den Haag and Kyoto, and PLEASED by the prospective celebration of the Fourth Water Forum in Mexico in March 2006;

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13. AFFIRMS that the conservation and wise use of wetlands is critical for the provision of water for people and nature, and that wetlands are a source, as well as a user, of water, in addition to supplying a range of other ecosystem benefits/services;
14. ALSO AFFIRMS that priorities for water management should reflect the goals of safekeeping and maintaining water resources, as well as maintaining the ecological character of wetlands;
15. CALLS on Contracting Parties to bring Resolutions VI.23, VII.18, VIII.1, and COP9 Resolution IX.1 Annex C and its appendices and the *"Guidelines for the allocation and management of water for maintaining the ecological functions of wetlands"* (Ramsar Handbook 12) to the attention of national, regional and local authorities in charge of water management for their integration into, and their multisectoral implementation through, national Integrated Water Resources Management plans so as to include an ecosystem approach consistent with the Ramsar Convention;
16. UPHOLDS the principle that governments should commit to informing and organizing the meaningful participation of all sectors of society in decision-making on the conservation, distribution, use and management of water at local, regional and national levels;
17. RENEWS its call to governments and institutions at all levels to ensure that the maintenance of wetlands and their functions are fully taken into account in the design, planning and implementation of water-related projects, poverty reduction strategy papers, and coastal zone planning;
18. CONFIRMS the need to consider an enhanced focus on collaboration amongst Contracting Parties to the Ramsar Convention on the issue of wetland conservation for the wise management of water resources;
19. REQUESTS the Ramsar Secretariat to cooperate with the Secretariat of the Fourth World Water Forum (Mexico, 2006) and other relevant global and regional water initiatives in the future in order to ensure that the importance of wetland ecosystem benefits/services is recognized in the Forum outputs as a key element to effectively managing water resources whilst maintaining the ecosystem functioning of wetlands;
20. INSTRUCTS the Ramsar Secretariat to promote and implement, with Contracting Parties, relevant and key elements of the decision taken at CSD13 on Integrated Water Resources Management, including *inter alia* enhancing the sustainability of ecosystems that provide essential resources and benefits/services for human well-being and economic activity and developing innovative means of financing their protection; protecting and rehabilitating catchment areas for regulating water flows and improving water quality, taking into account the critical role of ecosystems; and supporting more effective water demand and water resource management across all sectors, especially in the agricultural sector; and ALSO INSTRUCTS the Secretariat to report to the 34th meeting of the Standing Committee on an action plan for the Convention in promoting these themes in order for the Standing Committee through the Secretary General to provide input to the CSD report-back session in 2008; and
21. FURTHER INSTRUCTS the Secretariat to prepare a report for COP10 on the Convention's activities in promoting these themes.

The Ramsar Convention ‘toolkit’ for the conservation and wise use of wetlands	
<i>Convention pillar 1: Wise Use</i>	
Wise use of wetlands	
Handbook 1	Conceptual Framework for the wise use of wetlands
Wetland policies and legislation	
Handbook 2	National Wetland Policies Developing and implementing National Wetland Policies
Handbook 3	Laws and institutions Reviewing laws and institutions to promote the conservation and wise use of wetlands
Wetlands and people	
Handbook 4	Wetland CEPA The Convention’s Programme on communication, education and public awareness (CEPA) 2003-2008
Handbook 5	Participatory skills Establishing and strengthening local communities’ and indigenous people’s participation in the management of wetlands
Wetlands and water	
Handbook 6	Water-related guidance An Integrated Framework for the Convention’s water-related guidance
Handbook 7	River basin management Integrating wetland conservation and wise use into river basin management
Handbook 8	Water allocation and management Guidelines for the allocation and management of water for maintaining the ecological functions of wetlands
Handbook 9	Managing groundwater Managing groundwater to maintain wetland ecological character
Wetlands and spatial planning	
Handbook 10	Coastal management Wetland issues in Integrated Coastal Zone Management
Wetland inventory, assessment, and monitoring	
Handbook 11	Inventory, assessment, and monitoring An Integrated framework for wetland inventory, assessment, and monitoring
Handbook 12	Wetland inventory A Ramsar framework for wetland inventory
Handbook 13	Impact assessment Guidelines for incorporating biodiversity-related issues into environmental impact assessment legislation and/or processes and in strategic environmental assessment
<i>Convention pillar 2: Ramsar sites designation & management</i>	
Wetlands of International Importance	
Handbook 14	Designating Ramsar Sites Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance
Handbook 15	Addressing change in ecological character
Managing wetlands	
Handbook 16	Managing Wetlands Frameworks for managing Ramsar sites and other wetlands
<i>Convention pillar 3: International cooperation</i>	
International cooperation	
Handbook 17	International cooperation Guidelines for international cooperation under the Ramsar Convention on Wetlands

River basin management



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