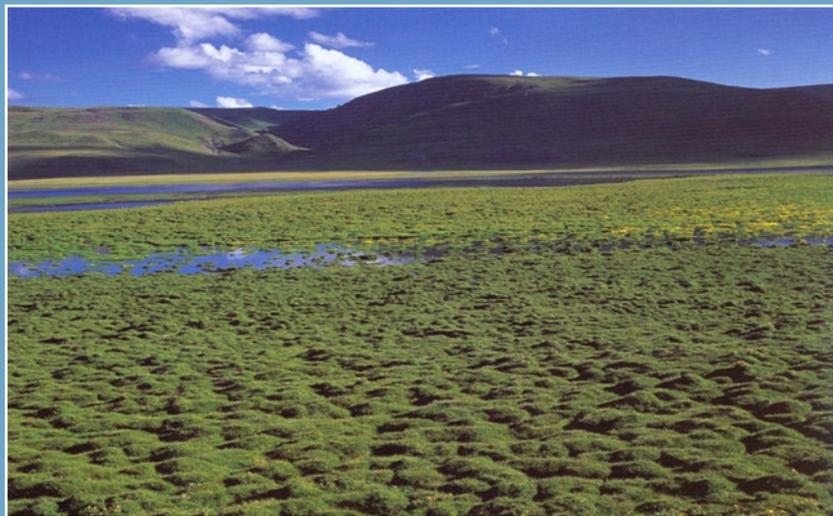


Water-related guidance





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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Ramsar handbooks for the wise use of wetlands
3rd edition, 2007

Handbook 6

Water-related guidance

An Integrated
Framework for the
Convention's water-
related guidance



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 XI.1 and its Annex C, but also brings together other resource materials relevant to the issue of wetland and water management. The views expressed in these additional materials 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 third edition of Handbooks, additions to and omissions from the text of the original guidelines, required by the results of 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.



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(Left) Modern wetland management at a flooded forest, Czech Republic, part of the Morava-Dyje floodplain. Originally, heavy sluices and dikes were constructed to prevent Dyje river floods from inundating the floodplain. However, it was later realised that regular flooding is necessary to sustain the ecosystem functioning of the riverine forests and meadows, producing important economic revenues through high quality timber production and big game hunting, as well as an outstanding harbour for biodiversity (with some of Europe’s best old-growth hardwood forest reserves). Modern thinking changed the hydraulic interventions radically: sluices originally constructed to drain the floodplain area are now functioning the opposite way, retaining floods and providing dry polders with regular inundations.

The transboundary “Trilateral Ramsar Platform” of NGOs in Austria, Czech Republic, and Slovak Republic working for the Morava-Dyje floodplain received the Ramsar Wetland Conservation Award in 2002 for their innovative ideas and cooperative efforts with authorities in all three countries. *Photo: Tobias Salathé / Ramsar.*

Foreword

Since its inception, the Ramsar Convention has recognized “the fundamental ecological functions of wetlands as regulators of water regimes” (preamble to Convention text), but it has only been in the past 10 years that Contracting Parties have begun to pay greater attention to the importance of the inter-relationships between water and wetlands, starting with COP6 Resolution VI.23 “Ramsar and Water” (1996). Since then the Convention has adopted an increasing suite of technical and policy guidance, prepared by its Scientific and Technical Review Panel, to assist Contracting Parties in tackling the increasingly urgent issue of sustainable water resource management, taking account of the critical role that wetlands play in maintaining the global hydrological (water) cycle.

There is considerable mutual benefit in achieving better recognition of the complex role that different types of wetlands play in securing continuing water quantity and quality for both people and biodiversity, through the water provisioning and regulating services they provide. Wetlands by definition depend on water, but making water available to people also depends upon wetlands, and this has yet to be fully understood by the sectoral processes often involved in water management. But it is increasingly clear that maintaining healthy wetlands not only contributes to securing water supplies for people (often, but not only, the poorest communities) but it also maintains the wetland biological diversity which in turn supports the livelihoods of many local communities and indigenous peoples. There is thus a huge ‘win’ to be gained from maintaining the hydrological functions of wetlands.

To achieve this requires better collaboration and understanding between the water management and ‘nature conservation’ sectors of governance and decision-making, since wetland benefits/services are not always obvious or easy to understand or quantify.

With the increasing range and complexity of the guidance documents on water-related issues adopted by the Ramsar Convention, in 2004 the Convention’s STRP recognized that there was a growing need to provide a ‘road-map’ showing when and how to apply each of its components. This framework guidance has been prepared to address this need.

It has also helped the STRP to identify where there are key gaps in the current suite of guidance, and this has informed the future priorities for STRP’s further work on water-related guidance, including on aspects of wetlands and water quality.

This framework is essential reading for all of us involved in water management and in the conservation and wise use of wetlands. It clearly sets out the role of the Ramsar Convention in maintaining the global hydrological cycle, maps out the available tools for achieving this, and identifies the gaps remaining in the guidance which are yet to be filled to help address the issue.

Not only should Ramsar’s community read this framework as a key to their delivery of commitments to the Convention, they must share it with their water resource management colleagues as the basis for better understanding and collaboration in the future, so that the world’s ever decreasing water resources are used to maximum benefit to society . . . and wetlands.

An Integrated Framework for the Ramsar Convention's water-related guidance

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

What is in this document?

This document presents a framework for Ramsar's current and developing suite of water-related guidance. The document:

- establishes and provides background on the links between wetland ecosystems and water resources management, through the hydrological cycle;
- explores how Ramsar's water-related guidance addresses water in the context of the hydrological cycle;
- illustrates Ramsar's role in integrated water resources management;
- explains the linkages between the various elements of Ramsar's water-related guidance (scientific tools, policy and institutional aspects, basin planning and management frameworks); and
- indicates cross-references to other Ramsar guidance related to the conservation and wise use of wetlands.

1. Water and Ramsar – an overview

1.1 Why does the Ramsar Convention need to be concerned about water?

1. The hydrological cycle operates at various levels, from planetary through continental scales to river basins and catchments. Wetland ecosystems, in their many shapes, sizes and characters, are integral components of the hydrological cycle and are critically important in regulating the quantity, quality and reliability of water as it moves in its various forms (vapour, liquid, ice or snow) through the hydrological cycle.
2. Wetland ecosystems evolve and function within particular physical templates, the characteristics of which are determined primarily by the interaction between water and sediment. Water carves out channels, valleys and basins; sediment moves through these, sometimes accumulating, sometimes being flushed out by flowing water. The constant interplay between sediment and water has created and continues to create a diverse range of aquatic habitats, both on the land surface in rivers, estuaries, marshes and lakes, and beneath it in caves and aquifers.
3. Chemistry modifies these habitats, as rocks and sediments are weathered and influence the range of different chemical signatures that water can display in the environment. People and biodiversity find their preferred places in this rich array of physical and chemical combinations, creating links between themselves and their habitat, and then in turn modifying

their habitat or creating new habitats, through various physical, biochemical and ecological processes (such as nitrogen fixation, photosynthesis and decomposition).

4. Over-abstraction of water from wetlands, from the water catchments in which they occur, and pollution of the water which feeds them, can all lead to significant changes in wetland ecological processes. These usually lead to changes in the physical and chemical habitat templates and a resulting, generally irreversible, loss of biodiversity. No amount of careful land management or vegetation management can mitigate these changes. Wetland ecosystems need water, in the right amount, at the right time, and of the right quality.
5. The key message here is: *"No water, no wetlands"*.

1.2 Why do water managers need to be involved with the Ramsar Convention?

6. Most of the water which is utilised to meet human needs is extracted in the liquid form from surface water resources and groundwater bodies. While some fresh water is obtained through techniques such as fog harvesting and desalination, this currently serves only a small percentage of people's needs. The quantity, quality and reliability of fresh surface water and groundwater supplies are determined by the nature of the wetland ecosystems within which that water is found.
7. Changes to wetland ecosystems, particularly to their structure and function, can lead to significant changes in the flow patterns and chemical and microbiological signatures of water resources. Changes in water resources, particularly in their predictability, can have profound impacts for the people who depend on those resources for basic drinking water, sanitation, food production, economic production and maintenance of social and cultural integrity.
8. If water managers are to be able to provide water and water-related benefits/services to the people of the world on a sustainable basis, then water resources need to be managed and protected in a way that recognises these resources as an integral part of the complex ecosystems that sustain them.
9. Wetland ecosystems are the primary resources from which water and all its benefits for humans are derived, and they are a major and critical component of the hydrological cycle which keeps us supplied with water. Protecting wetland ecosystems is as essential to people's survival as is wise utilisation of the water and water-related benefits that wetland ecosystems provide.
10. While the Ramsar Convention does not directly address all of the components of the hydrological cycle (such as atmospheric, terrestrial and marine), the Convention's scope certainly includes those components (surface and subterranean aquatic ecosystems) that are most important for ensuring water for people. Since its establishment in 1971, the Ramsar Convention has provided an array of practical tools and guidance that are intended to support the protection and wise use of wetland ecosystems, and through this to underpin the protection and wise use of water resources.

11. The key message here is: *"No wetlands, no water"*.

1.3 Why do wetland managers need to be involved in water management?

12. In order to maintain a desired level of ecological health and function, wetlands require sufficient water of adequate quality, at the right time and in the right pattern. This means that the water requirements of wetlands, whether these requirements are to be met from surface runoff or groundwater, must be taken into account in any plan for abstraction of water from a river basin or discharge of water or waste into a river basin.
13. Water users may have water requirements that conflict with those of wetlands; alternatively, water users' needs may be dependent on the maintenance of wetland ecological character. There may be opportunities for achieving significant ecological, social and economic benefits as a result of negotiating tradeoffs and different ways of sharing the benefits of water (including ecosystem services), rather than sharing just the water itself.
14. If the needs of wetlands are to be adequately integrated into water resources management planning and implementation, then wetland managers must enter the "water debate" and get involved, through cooperative planning and management processes, in water allocation and water management decision-making.

2. Ramsar's suite of resolutions and guidance in relation to the hydrological cycle

15. The Ramsar Convention has always recognised the interdependence between people, water resources and wetland ecosystems. The preambular text of the Convention refers to "the fundamental ecological functions of wetlands as regulators of water regimes". Article 2 of the Convention text states that "international significance in . . . hydrology" is one of the criteria on which wetlands should be selected for the List of Wetlands of International Importance (Ramsar sites).
16. The Convention has addressed water issues indirectly since its establishment in 1971, primarily through resolutions and guidance related to maintaining the ecological character of wetlands. However, until COP6 in 1996, water for maintaining wetland ecosystem functions and ecological character was treated as an external factor, seen as beyond the scope of the Convention and generally outside the control or influence of wetland managers.
17. The adoption of Resolution VI.23 *"Ramsar and Water"* by the Contracting Parties at COP6 in 1996 marked a significant step forward, for the first time making explicit the recognition that:
 - a) water resources management is dependent to a large degree on the hydrological functions of wetlands; and
 - b) wetland ecosystems need a certain amount of water allocated for maintenance of ecological character, in order to maintain these hydrological functions.

18. In order to support the development of policy and practice for implementing this perspective, the Ramsar Convention needed to become “an audible voice in water debates” at community level, at national level and at global level. To ensure that Ramsar’s voice is not only audible, but practical, realistic and based on sound science, a growing suite of guidance related specifically to water issues has been adopted by the Contracting Parties and is planned for the future.
19. However, it is worth noting that almost all of Ramsar’s resolutions and guidance have addressed water issues in some way, whether directly, indirectly or peripherally, since wetlands and water cannot be separated. The major cross-linkages are indicated in section 6 of this document, which provides a framework for the relationships amongst the various sets of guidance.
20. It is important to note that Ramsar’s water-related guidance is not intended to lead or drive the formulation and implementation of core water sector policy regarding water benefits/services and water resources management. Rather, the intention is to provide guidance primarily for agencies and organisations responsible for management of wetland ecosystems, but in the context of the “water debate”.
21. Such guidance should promote improved understanding of water sector issues by the wetlands sector, and *vice versa*, and should support collaboration between the water and wetlands sectors.
22. The goal of improved understanding and collaboration between the two sectors should be twofold: protection and wise use of wetland ecosystems, as well as protection and maintenance of a range of ecosystem-dependent benefits/services from water resources.
23. Ramsar’s scope and mandate does not include all components of the hydrological cycle (i.e., atmospheric, terrestrial, aquatic, subterranean and marine), being limited to aquatic, subterranean and coastal marine wetland ecosystems. However, Ramsar’s water-related guidance does need to take cognisance of, and ensure integration with, other conventions, frameworks, initiatives and activities that affect the hydrological cycle in some way.

3. Water in the environment

3.1 The hydrological cycle supports and links all components of the environment

24. The broader biophysical environment is composed of the marine environment, the terrestrial environment (which includes the unsaturated zone of the soil horizon), the aquatic environment, the subterranean environment (which includes aquifers, cave systems, and the saturated zone of the soil horizon) and the atmospheric environment.
25. The hydrological cycle (Figure 1) links all these components of the broader environment, and this means that water resources are linked, via the water itself, to all the other components of the broader environment (such as soil, biota, vegetation, air).

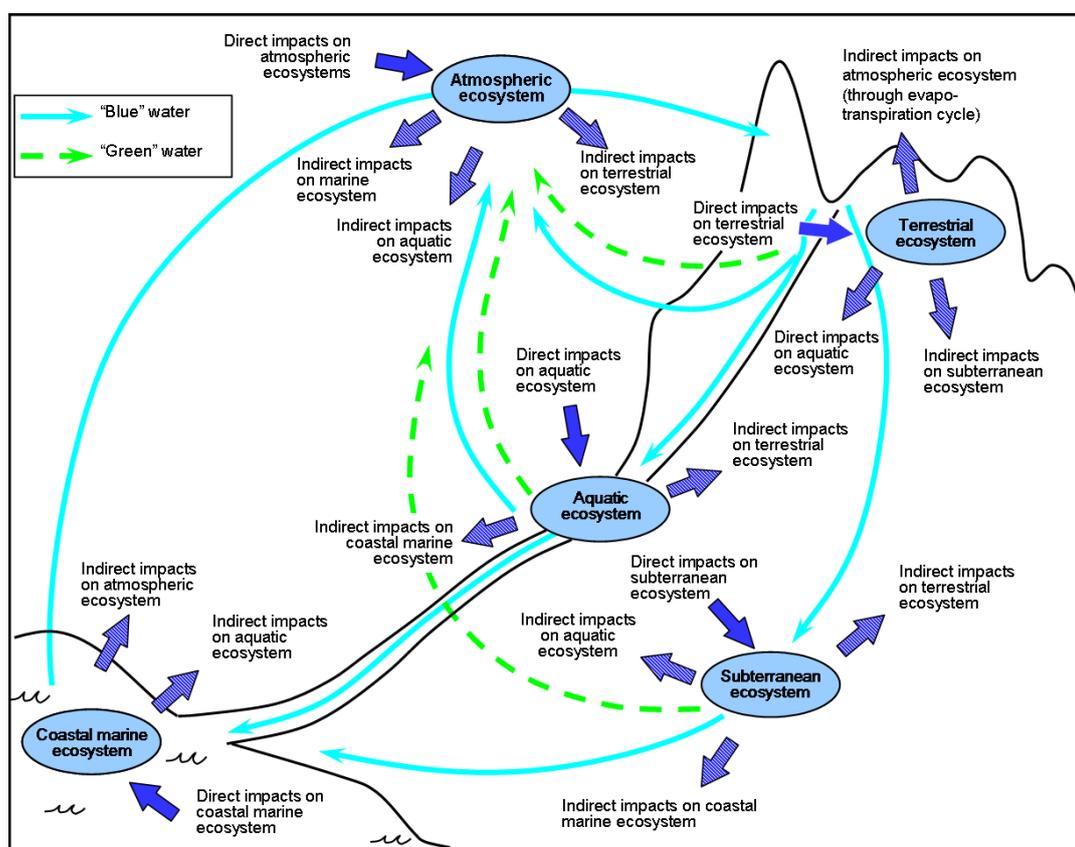


Figure 1: Phases of the Hydrological Cycle, showing the inter-relationships between environmental components and the so-called “blue” and “green” water components of the hydrological cycle, where “blue water” refers to all water that is controlled by physical processes and “green water” is the water that is influenced by biological processes such as evapo-transpiration by vegetation. Note that aquatic ecosystems include all surface water aquatic systems, i.e. riverine, palustrine, marsh and estuarine ecosystems as well as subterranean systems. From WRC (2004)¹.

26. Water itself appears in various forms in the environment, reflecting the different phases of the hydrological cycle:
- In atmospheric ecosystems, water is generally found in the vapour or liquid form, or may occur temporarily in the solid form as hail or snow.
 - In terrestrial ecosystems, water may be found in vegetation and/or the unsaturated zone of the soil horizon and be part of the evapo-transpiration cycle – the term “green water” has been recently adopted to describe water in this aspect².
 - Water in aquatic, marine and subterranean ecosystems appears in its liquid form, where it is usually termed “blue water” – this includes

1 WRC (2004). Investment Strategy for the Crosscutting Domain: Water and the Environment. Water Research Commission Report No. KV148/04. Pretoria, South Africa. 12pp + appendices. Also available at <http://www.wrc.org.za>

2 Falkenmark, M. (1999). Competing freshwater and ecological services in the river basin perspective - an expanded conceptual framework. In: *Proceedings of the SIWI/IWRA Seminar "Towards Upstream/Downstream Hydrosolidarity"*. Swedish International Water Institute, Stockholm.

water held in aquifers, or in the saturated zone of the soil horizon. In the context of this background paper, aquatic ecosystems are those in which water is generally fresh or brackish (but may include hypersaline inland systems). Coastal marine ecosystems include the estuarine and nearshore marine aspects of water, while the offshore marine ecosystem's primary influence on the hydrological cycle is through global, continental and regional weather patterns.

- Water as ice tends to be common to terrestrial and aquatic ecosystems, and when held in glaciers and ice sheets forms a kind of bridge between terrestrial and aquatic ecosystems.

3.2 The hydrological cycle is regulated by ecological processes

27. There are biophysical, biochemical and ecological links within and between each of the components comprising the hydrological cycle. Ecological processes play a critical role in regulating the hydrological cycle, and they are themselves affected by biophysical and biochemical processes occurring within the hydrological cycle. Here, the structural, functional and compositional aspects of biodiversity play a variety of roles, at several different scales, in governing linkages within and between the components of the hydrological cycle. In addition, ecological functions and processes occurring within the hydrological cycle both affect the humans who are part of the associated social system, and are affected by human activities.

3.3 Changes in the broader environment affect water

28. Water in the hydrological cycle is also affected by natural and human-induced processes of change to land, water and wetlands. These can be due to changes in the topography and morphology of the landscape, which primarily affect the "blue water" component of the hydrological cycle, or due to changes in vegetation and land cover, which primarily impact on "green water" through affecting infiltration and evapotranspiration rates and patterns.
29. Changes in land and water environments affect the rates and pathways by which water moves within the hydrological cycle, and also affect the quality of the water in its various forms and places.

3.4 Impacts on ecosystems in one part of the hydrological cycle can be propagated to others - often with unforeseen results

30. The point of the rather simplistic breakdown in Figure 1 of the hydrological cycle into different components (atmospheric, marine, aquatic, terrestrial, and subterranean) is that a disturbance or perturbation in one component of the hydrological cycle, whether natural or as a result of a direct human-induced impact, can be propagated via indirect impacts to terrestrial, aquatic and marine components. Figure 1 indicates this, without showing the real-life complexity of feedback loops and higher-order effects.
31. The connections between the hydrological cycle and the broader environment are bi-directional, in that direct impacts on the non-water aspect of the environment can affect water, while direct impacts on water (such as abstraction or waste discharge) can affect the broader environment as well.

4. Water resources management in the context of the hydrological cycle

4.1 Water: an integral part of ecosystems

32. In most countries, the conventional water sector deals with water primarily as a commodity. From this point of view, water, while it may be provided by and is integral to an ecosystem, is usually delivered to people through some kind of infrastructure such as dams, pumps and pipes. The water is often utilised for agricultural production, industrial production, energy production or human consumption outside the ecosystem from which it was derived.
33. The problem with the conventional approach to management of water as a commodity is that many of the values which humans place on water, aside from just having an adequate supply when they turn on a tap, are dependent on that water being a component of a healthy, functional ecosystem. Thus better connections need to be made between water supply and the water resources which are the origin of that supply.

4.2 Sufficient and reliable supplies of good quality water depend on healthy, functioning ecosystems

34. In addition to water supply for offstream use, humans have many uses for water as an integral part of ecosystems. These include maintenance of a supply of food, fibre and timber products, transport, recreation, support of cultural and spiritual practices, purification and removal of some kinds of wastes.
35. Ecosystems, particularly those in which water is a critical component or the main component, are resilient and can withstand a certain degree of impact, including abstraction of water, abstraction of food and fibre resources, discharge of waste or modification of the biophysical and biochemical template.
36. However, such disturbances have finite limits. Exceeding these limits changes the structure and function of an ecosystem irreversibly, leading to irreparable changes in the range, availability and quality of the benefits/services which the ecosystem formerly provided, such as a predictable supply of water of good quality, or a certain stock of fish resources.
37. Such changes in ecosystem benefits/services can be irreversible and very challenging to manage.
38. Given that wetlands also depend on water, information is required on the quantity and quality of water necessary to sustain the ecological functioning of the wetland.

4.3 Water resources management needs cross-sectoral policy, governance and institutional processes

39. Human activities impact ecosystems at different places in the hydrological cycle, and thus impact water itself. Hence the water sector needs to manage water resources in the context of ecosystem management, in order to sustain the benefits/services of water for both instream and offstream uses.

40. From both government and governance points of view, this requires either removal of the artificial boundaries between the environment sector, the water sector and other relevant sectors, or very close cooperation between environment, water and related sectors. This is where the issue of cooperative governance becomes so important: the responsible agencies must share common objectives for the management of water throughout the hydrological cycle, and must act accordingly; otherwise, their interventions will, at best, be less effective than they could, and at worst, may even be in conflict.
41. These common objectives should be largely defined by the people and societies dependent on the water resources, which requires that governance of water resources be underpinned by institutional structures and processes which ensure that the voice of civil society is integral to planning and decision-making on water issues.

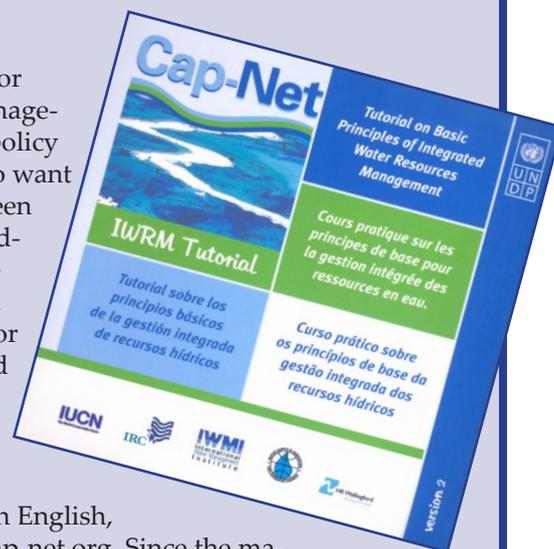
4.4 Ramsar's role in integrated water resources management

42. The initial focus of the Ramsar Convention was perceived to be, as its full original title indicates, on protecting "wetlands of international importance especially as waterfowl habitats". However, the Convention already recognised, in its original text, the "interdependence of Man and his environment . . . the fundamental ecological functions of wetlands as regulators of water regimes", and that "wetlands constitute a resource of great economic, cultural, scientific and recreational value".
43. Over time, the role and scope of the Ramsar Convention has evolved, building on this recognition of the fundamental linkages between human well-being, wetland ecosystem functions and water. This is reflected in the provision, through the Convention, of a rich array of knowledge and guidance related to the principle of "wise use" of wetlands, and also in the more recent initiatives (since COP6 in 1996) to move beyond viewing a few individual wetlands on the Ramsar List as self-contained ecological units, towards a view that all wetlands, wherever they occur in the hydrological cycle at planetary, continental, supranational and basin scales, ultimately are important and have a role to play in regulation of the hydrological cycle and provision of benefits to human society.
44. This approach is being widely promulgated in the Commission for Sustainable Development, as an underpinning aspect of Integrated Water Resources Management (IWRM), of which river basin management (RBM) is a primary component. In addition, IWRM is a target of the Johannesburg Plan of Implementation (paragraph 25) adopted at the 2002 World Summit on Sustainable Development, to "develop integrated water resources management and water efficiency plans by 2005".
45. In principle, IWRM is an approach wherein a balance is sought between protection of the resource base for long-term sustainability on the one hand and, on the other hand, utilisation of the benefits/services provided by the resource base in order to meet short- to medium-term social and economic development imperatives.
46. In the IWRM approach, it is accepted that the benefits of utilisation of water resources are not limited just to abstraction of water for offstream use,

Additional information

Cap-Net – communicating IWRM

What is IWRM? Cap-Net, an international network for capacity building in Integrated Water Resources Management (IWRM), has developed an online tutorial for policy makers, water managers, trainers and educators who want a basic understanding of IWRM principles. Each screen presents users with just the basic facts for understanding of the issue but also offers the opportunity, at the click of a button, to read more. In addition, users can access more information about what IWRM means for the Environment, Agriculture, and Water Supply and Sanitation sectors. All of this material is well illustrated. Access the online tutorial here http://www.cap-net.org/iwrn_tutorial/mainmenu.htm.



This tutorial is also available, free of charge, on CD in English, French, Spanish and Portuguese by emailing info@cap-net.org. Since the materials have been prepared in PowerPoint, they can be modified to reflect local circumstances and there are instructions on the CD on how to make such changes. This format also presents the opportunity to translate the materials into other languages.

Cap-Net is a partnership of autonomous international, regional and national institutions and networks committed to capacity building in the water sector. Many regional and country networks have been established for scaling up delivery of capacity building on IWRM and bringing together experienced educators, trainers and researchers in water related fields. Their Web site provides information on these networks and offers a wide-range of resource materials on training courses, water management tools, and network management tools.

To learn about Cap-Net, visit their Web site at <http://www.cap-net.org>.

but include many other benefits/services that are dependent on healthy, functional aquatic ecosystems. These aquatic ecosystems need to be supported within a hydrological cycle whose other component ecosystems (atmospheric, terrestrial and marine) are also healthy and functional. Thus IWRM should be seamlessly connected to approaches and initiatives for planning and management in the atmospheric, terrestrial and marine components.

- See also Handbook 10, Coastal management**
47. At the freshwater-marine interface, this means dovetailing IWRM approaches with Integrated Coastal Zone Management (ICZM) to ensure that coastal wetlands are managed and used in ways that recognise their importance as a critical link in the hydrological cycle.
 48. Coastal wetlands are an especially important component of the hydrological cycle, since both marine and freshwater ecosystems are often dependent on the health and ecological character of coastal ecosystems.

49. Protection of wetland ecosystems and their benefits/services is essential to ensuring the sustainability of utilisation of water resources for human benefits. An IWRM approach recognises the importance of achieving the difficult and dynamic balance between protection and utilisation. Water resource protection strategies and water resource utilisation strategies are interdependent, and need to be equally effective and efficient in order to optimise and sustain benefits/services.
50. The Ramsar Convention provides a range of mechanisms and technical guidance aimed at the effective maintenance of functional wetland ecosystems, thus contributing a valuable foundation for the ecological side of the IWRM balance

4.5 Principles for development and implementation of Ramsar's water-related guidance

51. A set of seven principles was set out in the guidance annexed to Resolution VIII.1 on water allocation and management for maintaining the ecological functions of wetlands. These principles have been defined not only through analysis of previous policy documents adopted by the Ramsar Convention, but also by reference to IWRM principles developed by other international organizations and initiatives.
52. These principles are applicable to the full suite of Ramsar's water-related guidance, and are set out in Box 1.

Box 1: Principles for development and implementation of Ramsar's water-related guidance

Sustainability as a goal. Adequate water has to be provided to wetlands to sustain the functioning of these ecosystems, respecting their natural dynamics for the benefit of future generations.

Clarity of process. The process by which decisions are made on the allocation and management of water and wetlands should be clear to all stakeholders.

Equity in participation and decision-making factors. There should be equity for different stakeholders in their participation in water allocation and water management decisions related to wetlands.

Credibility of science. Scientific methods used to support water allocation and water management decisions related to wetlands should be credible and supported by review from the scientific community.

Transparency in implementation. Once procedures for water allocation and water management decisions related to wetlands have been defined and agreed, it is important that they be seen to be implemented correctly.

Flexibility of management. Like many ecosystems, wetlands are characterized by complexity, changing conditions, and uncertainty. It is essential that an adaptive management strategy be adopted, which requires plans that can be changed as new information or understanding comes to light.

Accountability for decisions. Decision-makers should be accountable.

5. A framework for Ramsar's water-related guidance

See also Handbook 1, Conceptual Framework for wise use

53. Almost all Ramsar's adopted guidance fits comfortably into the overarching framework of the wise use of wetlands, one of the three main pillars of the Convention (see also Resolution IX.1 Annex A "*A Conceptual Framework for the wise use of wetlands and the maintenance of their ecological character*").
54. The overall suite of Ramsar's technical guidance can be rather simplistically divided into 1) core water-related guidance and 2) other Ramsar guidance relevant to water or containing water-related provisions. (Although this approach takes a very "water-centric" view of Ramsar, it is not intended that this view should in any way detract from the individual and collective importance of all the various available technical guidance documents and their purposes.)
55. The suite of water-related guidance addresses three main themes:
 - i) scientific and technical tools needed to assist in management of those aspects of wetland ecosystems directly related to water (including indigenous knowledge systems);
 - ii) policy, governance and institutional aspects of water management, since these factors generally determine and influence the nature of people's interactions with water where it is found in wetland ecosystems; and
 - iii) integrating frameworks, such as planning and management frameworks at various scales from regional through river basin to local catchment level, that promote the integration of human society's needs, values and aspirations into processes which utilise the best available knowledge to support the wise use of wetlands and hence the sustainability of water resources.
56. These three themes are also addressed to a lesser degree, or indirectly, in several other Ramsar guidance documents that address wider wetland issues and that mention water. For example, the hydrological regime of a wetland is part of the definition of the wetland's ecological character, hence guidance related to ecological character has several relevant references to water-related aspects of wetlands.
57. Box 2 shows the core water-related guidance documents currently available, including those guidances adopted by COP9, those being prepared by the STRP as Ramsar Technical Reports, and those identified as gaps in the current suite of guidance and [are] priorities for future STRP work.

6. Ramsar Resolutions and guidance related directly to water

58. The proposed full suite of water-related guidance is presented diagrammatically in Figure 2a. The set of currently available water-related guidance (blue boxes in Figures 2a and 2b) has notable gaps, as the STRP programme of work in this field has been very much determined by the availability of resources and funds to undertake priority tasks. Some of the gaps will be addressed by new guidance to be tabled at COP9 (green boxes in Figures 2a and 2b). Possible future priorities for STRP attention (orange

Box 2: Development of Ramsar's suite of specific water-related guidance

COP Resolutions and guidance already adopted

Several resolutions and guidance related specifically to water management have already been adopted, that build on the vision of *Resolution VI.23: Ramsar and Water* (Brisbane, 1996) These are:

- *Resolution VII.18: River basin management* (COP7, San Jose, 1999).
- *Resolution VIII.1: Allocation and management of water* (COP8, Valencia, 2002).
- *Resolution VIII.2: World Commission on Dams* (COP8, Valencia, 2002).
- *Resolution VIII.40: Use of groundwater and wetland conservation* (COP8, Valencia, 2002).

Guidance adopted at COP9 (Kampala, 2005)

The STRP prepared the following new guidance which was adopted at COP9:

- *A framework for Ramsar's water-related guidance* (Resolution IX.1 Annex C - this document).
- *River Basin Management: Additional guidance and a Framework for the analysis of case studies* (Resolution IX.1 Annex C i.), which addresses sequencing of activities from planning at river basin level to management at wetland site level.
- *Guidelines for the management of groundwater to maintain wetland ecological character* (Resolution IX.1 Annex C ii.).

Detailed technical guidance being issued as Ramsar Technical Reports

- *Review of methodologies for the determination and implementation of environmental water requirements for wetlands*, for rivers; non-riverine inland wetlands; and estuaries and near-shore environments, which will provide more operation detail than in Resolution VIII.1, and will also address specific wetland types.

Guidance for future development by the STRP

Other water-related issues considered by the STRP [and COP9] to be important for attention in the 2006-2008 triennium (see Resolution IX.2 Annexes 1 and 2) are:

- *Guidance for management of water quality* to maintain wetland ecosystem functions.
- *Guidance for the implementation of environmental water requirements for wetlands*, developed from the detailed methodological reviews being issued as a *Ramsar Technical Report*.
- *Detailed technical and operational guidance on management of groundwater* associated with wetland ecosystems.
- *Case studies and worked examples of the full cycle of determination and implementation of environmental flows* for wetland ecosystems.
- *Case studies of integration of wetlands into river basin management and planning*. This may require identification of suitable emerging case studies which can be tracked and updated as they progress over the next two to three triennia.
- *More detailed guidance on development of core water sector policy and legislation* that promotes integration of the protection, conservation, management and wise use of wetlands, with particular attention to legal instruments related to water allocations for wetland ecosystems.

Further possible guidance, which may be deferred for preparation to post-COP10 (2008), depending on priorities and resources

- Preparation of a single, integrated Handbook which brings together all Ramsar's core water-related guidance.
- Detailed guidance on *managing water-related aspects of wetlands under conditions of climate change and desertification*.
- Additional guidance on *cross-sectoral policy and legislation (including all the water use sectors)* for addressing water-related aspects of wetland management.

boxes), that should fill the major gaps in the suite of water-related guidance, are also indicated in Figures 2a and 2b.

59. The water-related guidance should also be consistent with the rest of Ramsar's technical guidance materials, and Figure 2b indicates where water is currently addressed indirectly in other guidance documents, and where other guidance documents may need to be updated or revised to ensure consistency in the way in which water issues are addressed within the full suite of Ramsar guidance.

6.1 Brief descriptions of water-related resolutions and guidance documents

60. Resolutions and Recommendations adopted previously, along with the supporting technical guidance materials, are briefly described below. Guidance adopted at COP9 and possible future guidance still to be developed are also indicated in Figures 2a and 2b. It is envisaged that this list will be regularly updated as new resolutions and guidance are adopted and made available to the Contracting Parties.

A. Strategic resolutions and guidance

61. Current strategic resolutions and guidance (including that adopted by COP9) are:
- *Resolution VI.23: Ramsar and water* (Brisbane, 1996), which addresses the need for collaboration between the water sector and the wetland conservation and management sector, notably through promoting integration of conservation and wise use of wetlands into decision-making on land use, groundwater management, catchment/river basin and coastal zone planning. This Resolution identified the reconciliation of water management and wetland conservation as a key challenge for the Ramsar Convention in the 21st Century. Efforts to develop and expand Ramsar's water-related guidance all derive from Resolution VI.23.
 - *Resolution VII.18: River basin management* (San José, 1999), which provides guidance on integrating wetland conservation and wise use into river basin management, and follows on from Resolution VI.23. The Annex to this resolution provides guidance related to various relevant components of river basin management, including institutional arrangements, policy and legislation, basin-level assessments, water resources planning, maintenance of natural water regimes, and land use management. This is a key resolution in the suite of water-related guidance, and it is suggested that more detailed operational guidance on a number of its individual components should be developed in the future (see Figures 2a and 2b).
 - *Resolution VIII.4: Integrated Coastal Zone Management* (Valencia, 2002), which consolidates previous resolutions and recommendations related to intertidal wetlands, coral reefs and associated ecosystems, coastal zone management and mangrove ecosystems. The guidance annexed to this Resolution includes a set of principles and guidelines for ensuring that the values, functions and roles of coastal wetlands

**Incorporated in
Handbook 7**

**Incorporated in
Handbook 10**

are recognised, quantified where possible, and fully integrated into coastal zone management. Aspects covered in the guidance include planning processes, legal and institutional frameworks, stakeholder participation, and the linkages between coastal wetlands and river basin management on the one hand, as well as oceans and fisheries management on the other.

- *Resolution VIII.35: Natural disasters, particularly drought* (Valencia, 2002), which addresses the need for planning and providing water for wetland ecosystems in times of drought and other natural disasters, to ensure that these ecosystems continue to provide values and functions for people and biological diversity. Protocols for allocating water to wetland ecosystems in drought conditions are essential elements of river basin planning and operations. COP9 adopted a further Resolution (Resolution IX.9) on “The role of the Ramsar Convention in the prevention and mitigation of impacts associated with natural phenomena, including those induced or exacerbated by human activities.”
- *Resolution VIII.34: Agriculture, wetlands and water resource management* (Valencia, 2002), which highlights the interdependencies between agricultural activities and the wise use of wetlands and notes the need to balance potential benefits and impacts of one on the other, within an integrated catchment planning approach. This is equally true of other land use activities, but generally agriculture is the most significant activity of those directly linked to wetland ecosystems. COP9 adopted a similar Resolution (Resolution IX.4) on the interdependencies between the wise use of wetlands and the conservation and sustainable use of fish resources.
- *An integrating framework for Ramsar’s water-related guidance* (this document, adopted by COP9 as Resolution IX.1 Annex C).

B. Scientific and technical tools

62. Current scientific and technical tools in the Ramsar ‘toolkit’ (including those adopted by COP9) are:

- *Resolution VIII.1: Allocation and management of water for maintaining the ecological functions of wetlands* (Valencia, 2002), which deals very specifically, in its Annex and the supporting Technical Paper, with the determination of water requirements for maintenance of wetland ecosystems, and addresses the allocation of water for this purpose. Implementation (for example, design of operating rules for environmental water releases from dams) is not addressed in detail, but is the subject of additional guidance [being prepared for COP10]. Although the emphasis is on determination, allocation and management of water for wetland ecosystems, this cannot be achieved without also addressing the necessary supporting institutional arrangements, policy and legislation, and decision-making frameworks, and so the guidance includes some discussion of these supporting factors.

**Incorporated in
Handbook 8**

**Incorporated in
Handbook 9**

- *Resolution VIII.40: the use of groundwater and the conservation of wetlands* (Valencia, 2002), which recognises the often critical hydrological and ecological linkages between groundwater bodies and wetland ecosystems, and highlights the impacts that groundwater exploitation and use can have on wetlands. This Resolution has led to the development of the guidelines on groundwater management which were adopted by COP9 (Resolution IX.1 Annex C.ii). Preparation of additional technical guidance related to groundwater and wetlands is seen as a priority STRP task for the 2006-2008 triennium (see Figure 2a).
- *Resolution VIII.2: Report of the World Commission on Dams* (Valencia 2002), which addresses the role of dams, both positive and negative, in water management and wise use of wetlands; highlights the need for integrated water resources planning frameworks that balance the commissioning and operation of dams with wise use of wetlands; notes the report of the World Commission on Dams as a valuable source of technical guidance and “advisory tools” to support decision-making related to large dams. These tools are seen as complementary to Ramsar’s current suite of water-related guidance, contributing a component of the guidance that is specifically focused on dams.



Careful allocation of water resources is especially important in arid areas, as at this High Andean Ramsar site in Chile, the Salar del Huasco. *Photo: Luis Sanchez A.*

C. Policy, governance and institutional aspects

63. Current guidance (including that adopted by COP9) on policy, governance and institutional aspects of wetlands and water are:

Incorporated in Handbook 7

- *Resolution VII.18: Guidelines for integrating wetland conservation and wise use into river basin management* (San José, 1999), which is the primary source of guidance on relevant policy, governance and institutional aspects of water resources management, providing an overall framework for addressing these aspects. Additional operational detail may be required in future (see Figure 2a) on options for the content of revised water sector policy and legislation to support determination and implementation particularly of water allocations for wetland ecosystems.

Incorporated in Handbook 8

- *Resolution VIII.1: Guidelines for the allocation and management of water for maintaining the ecological functions of wetlands* (Valencia, 2002) and its supporting technical paper, which provide guidance on policy, legislation and institutional arrangements specifically related to determination and allocation of water for maintaining wetland ecosystems. Additional detail on options for policy and legislation related to water entitlements may be required in future (see Figures 2a and 2b), and could be integrated into a revised version of the current guidance contained in the Annex to Resolution VII.7 on reviewing laws and institutions, or could be a stand-alone element of the water-related guidance suite.

Incorporated in Handbook 3

- *Resolution VII.7: Reviewing laws and institutions to promote the conservation and wise use of wetlands* (San José, 1999), which provides guidance on processes for review of legislation and institutional arrangements. While the focus is on legal and institutional provisions for general wetland conservation and management, the processes described in the guidance annexed to this resolution are quite generic and provide a valuable template for similar processes to review laws and institutions in the water sector, thus complementing Resolutions VII.23 and VIII.1, which provide information on content and composition of water-related laws and institutions.

Incorporated in Handbook 2

- *Resolution VII.6: Developing National Wetland Policies* (San José, 1999), which deals with the development of wetland policy and does not address water sector policy in any detail. However, the advice related to the policy development process, described in the guidance annexed to this Resolution, could provide useful pointers for review of water sector policy in order to better integrate the protection, conservation, management and wise use of wetlands. Additional detail on appropriate wetland-specific content of water sector policy may be required in the future (see Figures 2a and 2b).

D. Basin planning and management frameworks

64. Current planning and management frameworks for the basin scale (including those adopted by COP9) are:

Incorporated in Handbook 7

- *Resolution VII.18: River basin management* (San Jose, 1999) and its Annex, which are the key documents related to planning frameworks at river

basin level. *Additional guidance* on integration of wetland conservation and management into river basin management planning and decision-making (Resolution IX.1 Annex Annex C i) was adopted at COP9 (Kampala, 2005). The additional guidance is focused on sequencing of the primary activities and issues covered in the guidance adopted in Resolution VII.18. This sequencing, presented as a “Critical Path”, is intended to provide a template for selection, recording, analysis and presentation of *river basin management case studies*, considered by the STRP to be a priority task for the 2006-2008 triennium.

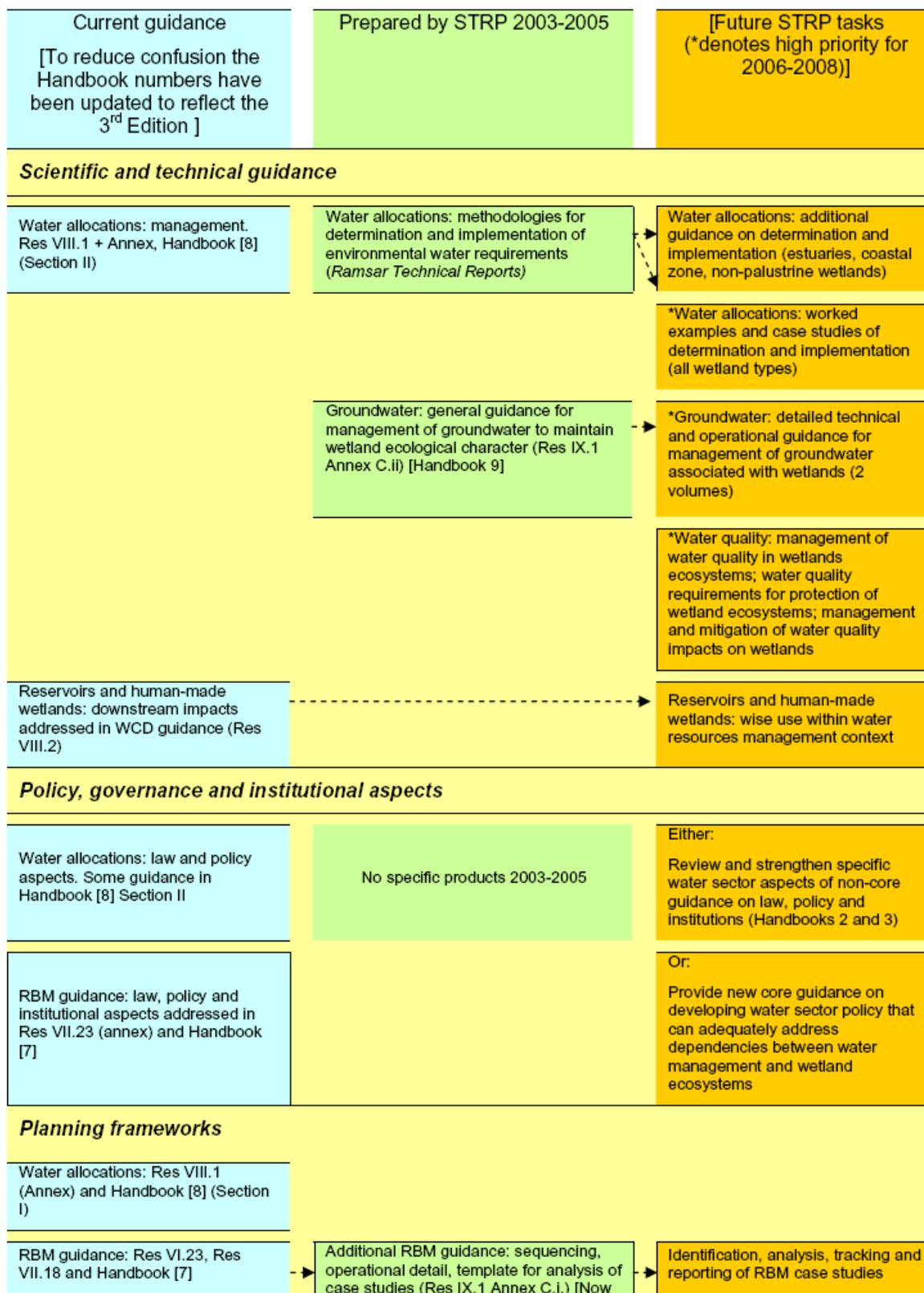
**Incorporated in
Handbooks 14 and 16**

- Less detailed guidance on river basin management, related specifically to water allocations for wetlands, is contained in the Annex to Resolution VIII.1. Similarly, some guidance on river basin planning and strategic environmental assessment related to dams and water resources is to be found in the report of the World Commission on Dams, which is the subject of Resolution VIII.2.
- *Ramsar Wise Use Handbook [14 (3rd edition, 2006): Designating Ramsar sites)* contains references to identification of hydrological functions of wetlands and linkages of wetlands with surface and groundwater resources, a necessary task in planning at river basin level as well as at site level. Likewise *Ramsar Wise Use Handbook [16 (3rd edition, 2006): Managing wetlands)* contains brief guidance related to integration of wetland management planning with river basin management planning, though like Handbook 7, its primary focus is at site or sub-basin level.

7. Ongoing development of the framework for water-related guidance

65. The integrating framework described in this document is intended to provide, when fully developed, a “road-map” of the various elements of Ramsar’s suite of water-related guidance, and to indicate linkages between water-related guidance and other Ramsar guidance related to protection, management and wise use of wetland ecosystems. Detailed technical appendices would be added to the set over time, and individual appendices might be replaced by updated or more detailed versions as new knowledge and information becomes available. Identified gaps or areas in the suite requiring more detailed attention would be addressed in the STRP’s programme of work (see Resolution IX.2 Annexes 1 and 2).
66. It is envisaged that the framework (this document) should be updated regularly as additional resolutions and pieces of water-related guidance are prepared for adoption by the Contracting Parties, depending on the priority tasks taken up by the STRP in each triennium.

Core water-related guidance



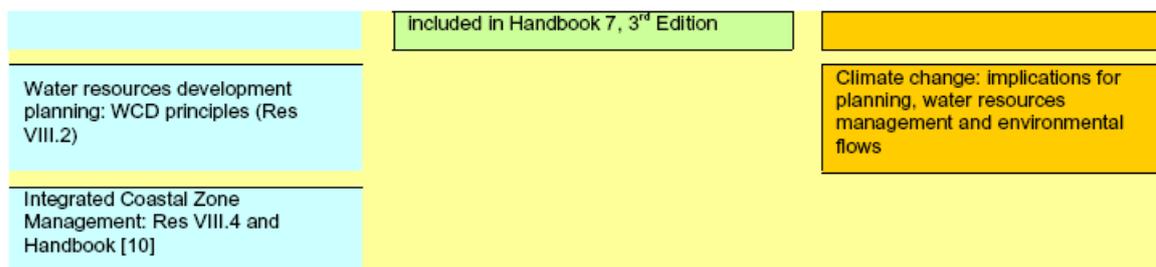
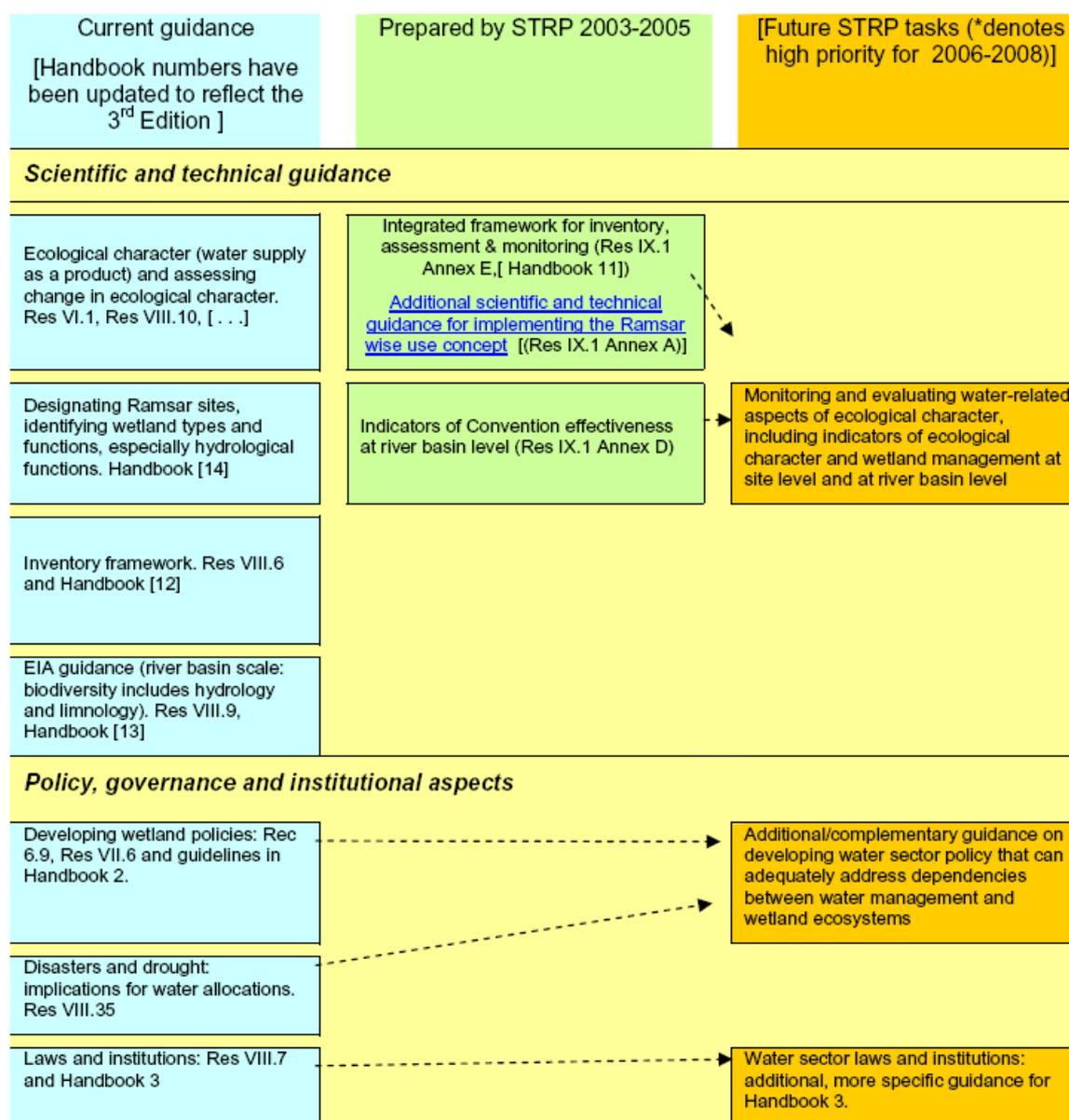


Figure 2a: Core water-related guidance in the Ramsar 'toolkit'. Blue boxes indicate currently available guidance; green boxes indicate guidance prepared during 2003-2005 (and adopted by COP9 or being published as Ramsar Technical Reports); orange boxes indicate proposed future guidance to be developed as part of the suite of water-related guidance.

Other relevant Ramsar guidance



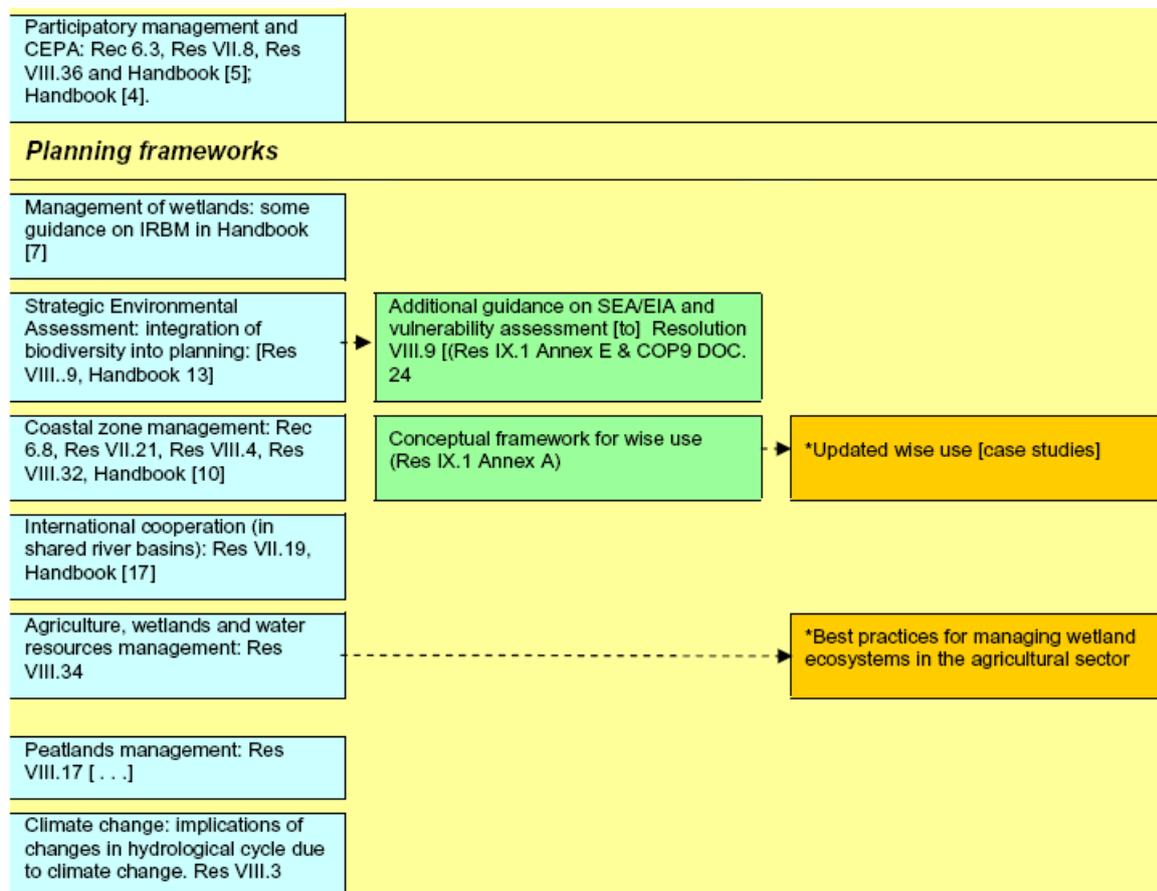


Figure 2b: Other Ramsar guidance containing relevant references to water. Blue boxes indicate currently available guidance; green boxes indicate guidance adopted by COP9; orange boxes indicate proposed areas for refinement of guidance to ensure consistency with core water-related guidance.

Relevant Resolution

Resolution IX.1

(adopted by the 9th Conference of the Contracting Parties, Kampala, Uganda, 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;

THE CONFERENCE OF THE CONTRACTING PARTIES

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

Ramsar handbooks for the wise use of wetlands, 3rd edition

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.

The Ramsar Convention 'toolkit' for the conservation and wise use of wetlands

Convention pillar 1: Wise Use

Wise use of wetlands

Handbook 1	Conceptual Framework for the wise use of wetlands
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Wetland policies and legislation

Handbook 2	National Wetland Policies Developing and implementing National Wetland Policies
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Handbook 3	Laws and institutions Reviewing laws and institutions to promote the conservation and wise use of wetlands
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Wetlands and people

Handbook 4	Wetland CEPA The Convention's Programme on communication, education and public awareness (CEPA) 2003-2008
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Handbook 5	Participatory skills Establishing and strengthening local communities' and indigenous people's participation in the management of wetlands
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Wetlands and water

Handbook 6	Water-related guidance An Integrated Framework for the Convention's water-related guidance
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Handbook 7	River basin management Integrating wetland conservation and wise use into river basin management
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Handbook 8	Water allocation and management Guidelines for the allocation and management of water for maintaining the ecological functions of wetlands
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Handbook 9	Managing groundwater Managing groundwater to maintain wetland ecological character
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Wetlands and spatial planning

Handbook 10	Coastal management Wetland issues in Integrated Coastal Zone Management
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Wetland inventory, assessment, and monitoring

Handbook 11	Inventory, assessment, and monitoring An Integrated framework for wetland inventory, assessment, and monitoring
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Handbook 12	Wetland inventory A Ramsar framework for wetland inventory
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Handbook 13	Impact assessment Guidelines for incorporating biodiversity-related issues into environmental impact assessment legislation and/or processes and in strategic environmental assessment
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Convention pillar 2: Ramsar sites designation & management

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
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Handbook 15	Addressing change in ecological character
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Managing wetlands

Handbook 16	Managing Wetlands Frameworks for managing Ramsar sites and other wetlands
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Convention pillar 3: International cooperation

International cooperation

Handbook 17	International cooperation Guidelines for international cooperation under the Ramsar Convention on Wetlands
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Water-related guidance



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