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Principles and guidelines for incorporating wetland issues into Integrated Coastal Zone Management (ICZM)

Adopted by Resolution VIII.4 (2002) of the Ramsar Convention

The purpose of these principles and guidelines

1. These *Principles and guidelines for incorporating wetland issues into Integrated Coastal Zone Management (ICZM)* are intended to increase understanding and recognition of the importance and vital role played by wetlands in the coastal zone throughout the world. They are intended for use by Ramsar's Contracting Parties and others in ensuring that the significance of wetlands, and their values and functions, are more fully taken into account by those responsible for planning and decision-making in the coastal zone, so as to secure their future conservation and wise use.

2. In particular, the guidance is designed to ensure that coastal wetland conservation and wise use are better understood as essential to the sustainable development of the coastal zone, rather than being regarded, as is often the case, as solely a sectoral nature conservation and protected areas issue.

3. It is intended that the *Principles and guidelines* should be used by Contracting Parties as the basis for engaging in dialogue with all those responsible for ICZM implementation in their countries, and that the guidance should be widely disseminated to these people and their organizations.

4. The guidance should be applied in conjunction with other guidance developed by the Ramsar Convention that is relevant to the integration of wetlands into ICZM, notably the *Additional guidance for the implementation of the wise use concept* (Resolution 5.6), *Guidelines for integrating wetland conservation and wise use into river basin management* (Resolution VII.18), *Enhancing the conservation and wise use of intertidal wetlands* (Resolution VII.21), *Guidelines for the allocation and management of water for maintaining the ecological functions of wetlands* (Resolution VIII.1), the *New Guidelines for management planning for Ramsar sites and other wetlands* (Resolution VIII.14), and *Additional guidance for identifying and designating under-represented wetland types as Wetlands of International Importance* (Resolution VIII.11), notably concerning mangroves and coral reefs.

5. These *Principles and guidelines* have been prepared through the work of the Convention's Scientific and Technical Review Panel (STRP) in response to Action 2.2.1 of the Convention's Work Plan 2000-2002: to "gather and make available to Contracting Parties information on land use planning related to wetlands, and . . . coastal zone management in particular." The preparatory work in drafting the principles and guidelines was undertaken with the financial support of the government of the United States of America.

A discussion of the definitions, terminology, and current approaches in use in Integrated Coastal Zone Management can be found in the Appendix 1. Appendix 2 elaborates further the rationale for the Principles.

Background and context

6. The definition of wetland adopted by the Ramsar Convention covers coastal and marine as well as inland wetland ecosystems. Concerning coastal and marine wetlands, the Ramsar definition includes areas "with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres" (Article 1.1 of the Convention).

7. Furthermore, concerning the inclusion of marine and coastal wetlands in the List of Wetlands of International Importance under the Convention, Article 2.1 indicates that "they may incorporate riparian and coastal zones adjacent to the wetlands, and islands or bodies of marine water deeper than six metres at low tide lying within the wetlands."

8. Thus the coverage of the Ramsar Convention and the commitments of its Contracting Parties importantly include coastal and marine ecosystems as well as inland ecosystems.

9. Parties to the Ramsar Convention have recognized the importance of securing the conservation and wise use of wetlands in the coastal zone through full engagement with ICZM processes. Recommendation 6.8 called on Contracting Parties to adopt and apply strategic planning and integrated coastal zone management principles to assist sound decision-making on the conservation and wise use of coastal wetlands, and in Resolution VII.21 the Contracting Parties resolved to review and modify existing policies that adversely affect intertidal wetlands and to seek to introduce measures for the long-term conservation of these areas.

10. In pursuance of more effective incorporation of coastal wetlands and their values and functions in the sustainable development of the coastal zone, the Convention has also developed links through Memoranda of Cooperation with regional seas conventions (notably the Barcelona and Cartagena Conventions) and with the work of the Regional Seas Programme of the United Nations Environment Programme (UNEP), supporting ecologically sustainable development of the coastal zone, particularly through the collaboration of the Convention's Mediterranean Wetlands Initiative (MedWet) with the Mediterranean Action Plan, and the establishment of a Memorandum of Cooperation and joint work plan with the South Pacific Regional Environment Programme (SPREP).

11. Nevertheless, it is evident that many people and organizations responsible for planning and decision-making for the coastal zone, both at national policy and local implementation scales, are not always fully aware of the relevance and importance of coastal wetlands and their government's commitments under the Ramsar Convention, and that wetlands as defined by the Convention cover a large proportion of the land and sea areas in the coastal zone.

12. Achieving sustainable management in the coastal zone poses particularly great challenges, since the pressures of increasing human population, multiple development pressures, pollution from land-based sources, and unsustainable exploitation of natural resources are particularly high on many parts of the world's coasts. It has been estimated that at least

60% of the world's human population live in the coastal strip from the shoreline to 60 km inland. Furthermore many coastal zones are attracting economic development faster than many inland areas, and this is placing immense pressure on coastal wetlands from land-claim for housing, industry, port-related development, tourism, increasing pollution loads, and depletion of natural resources.

13. Conflicts in coastal areas often result from competition over the allocation of coastal resources, including space. Typical conflicts occur over the access to the coastline; incompatibility of sectoral uses which cannot coexist in juxtaposition; private ownership which prevents public use of or access to coastal resources; long-term sustainable use goals inhibiting short-term economic gains; and the provision of coastal protection infrastructure.

14. In addition, the sustainable use of coastal resources can be seriously affected by both human-made and natural perturbation of coastal processes, including cumulative impacts generated by both large and small development projects; gradual alterations such as climate change and sea-level rise; sudden natural episodic events such as storms and flooding; and sudden man-made disasters, such as major oil spills. Often human-made and natural factors combine to strengthen the impact on the natural functions and processes in coastal areas.

15. In the last decades of the 20th century, there has been increasing global recognition, notably through Chapter 17 of Agenda 21 adopted by the Rio 1992 United Nations Conference on Environment and Development (UNCED), of the need to develop more effective integrated management of coastal zones. This recognizes that there is a wide range of stakeholders in the coastal zone and that there is particular complexity of governmental institutions and agencies with legislative responsibilities for different sectors of marine, coastal intertidal and terrestrial planning and decision-making.

16. Issues concerning stakeholders in the coastal zone can be grouped into three categories, for which different responses are necessary:

    i) those issues which are the responsibility of a particular stakeholder, for example a port authority, often carrying out a statutory legal duty;

    ii) those issues which are the responsibility of a particular stakeholder, or several stakeholders, who would benefit from the exchange of information to increase understanding and awareness; and

    iii) those issues, for example the impacts of climate change, which can affect all stakeholders but are the responsibility of none, and for which it is advantageous to develop responses through an ICZM approach.

17. An increasing range of initiatives have been developed which are designed to establish and implement ICZM through planning and decision-making that involves full participation of all stakeholders, including local communities and indigenous peoples. In support of these ICZM initiatives, a substantial body of policy guidance and implementation guidelines has also been prepared.

18. However, a review of available guidance by the STRP in 2000 found that it seldom fully recognizes or incorporates guidance on the vital role played by wetlands, and their values and functions, in the coastal and nearshore marine zone. Furthermore, most guidance affords little or no recognition of the relevance of the Ramsar Convention and countries' commitments to the conservation and wise use of coastal zone wetlands.

19. Available guidance seldom provides a specific definition of coastal wetlands, and they are generally, at most, mentioned only as a generic type of coastal environmentally sensitive areas. However, in several ICZM guidelines, notably those prepared by the UN Food and Agriculture Organization (FAO), there is a more specific reference to coastal wetlands, but mainly in the context of integration of agriculture and fisheries into ICZM. These guidelines refer chiefly to those coastal and marine wetland types of significance to aquaculture and fisheries: mangroves, sea grass systems, coral reefs, sandy beach systems, and lagoons and estuaries.

20. A similar finding has been reported to the 6th meeting of the Conference of the Parties to the Convention on Biological Diversity (COP6, April 2002) concerning recognition of the importance of marine and coastal biological diversity in existing ICZM guidance.

21. In support of the principles and guidelines that follow, further background information on current approaches to development and implementation of ICZM and its commonly used definitions and terms is provided in Appendix 1.

Principles and guidelines for incorporating wetland issues into ICZM

22. The following eight guiding principles are divided into four sections:

    A. Recognizing the role and significance of the Ramsar Convention and wetlands in the coastal zone;
    B. Ensuring full awareness of the values and functions of wetlands in the coastal zone;
    C. Using mechanisms for securing the conservation and sustainable use of wetlands in the coastal zone; and
    D. Addressing the integration of the conservation and sustainable use of wetlands in broad-scale integrated ecosystem management

23. These principles set out the key issues that provide the basis for ensuring that ICZM fully incorporates the conservation and wise use of coastal wetlands through the Ramsar Convention. For each principle, guidelines are provided for their application by Ramsar Contracting Parties through specific actions that should be undertaken to operationalise the principles.

24. A more detailed rationale and background for each of the principles is provided in Appendix 2.

A. Recognizing the role and significance of the Ramsar Convention and wetlands in the coastal zone

Principle 1. The Ramsar Convention is the global intergovernmental treaty that specifically addresses the conservation and wise use[1] of coastal zone ecosystems.

25. The Convention on Wetlands (Ramsar, Iran, 1971) is the only global intergovernmental treaty that focuses on a specific ecosystem – wetlands. Under the Convention's definition of wetland all parts of the intertidal and near-shore marine coastal zone are included along with inland wetlands – many types of which occur in the terrestrial part of the coastal zone. This coastal and marine coverage by the Convention is not always fully understood or recognized.

Guideline No. 1 – Ensuring the delivery of Contracting Parties' commitments under the Ramsar Convention through ICZM

1.1 Ensure that awareness is raised of governmental commitments as Parties to the Ramsar Convention in those parts of government and government agencies and other institutions with responsibilities for management and decision-making in the coastal zone.

1.2 Ensure that national policy frameworks for ICZM incorporate and are consistent with national wetland policies and strategies, including where these are included in national biodiversity conservation policies, strategies and plans, utilising the Ramsar *Guidelines for developing and implementing National Wetland Policies* (Resolution VII.6) for this purpose.

1.3 Invite those parts of government responsible for ICZM to participate in national wetland or Ramsar committees, where these have been established.

1.4 Consider the preparation of brochures and publications that highlight the Ramsar Convention in the coastal zone, and disseminate these widely.

1.5 Seek recognition with those parts of government responsible for the Convention on Biological Diversity (CBD) of the joint work and implementation responsibilities of the Ramsar Convention with regard to biodiversity conservation.

1.6 Ensure that the Convention's *Guidelines for international cooperation under the Ramsar Convention* (Ramsar Handbook No. 9) are made available as tools and assistance to those seeking to implement ICZM in a transboundary context.

Principle 2. The full incorporation of wetland conservation and wise use issues into ICZM is essential for a successful sustainable coastal management process.

26. Coastal areas are of ever-growing importance for the human population worldwide. Human activities are directly or indirectly responsible for many stresses affecting sustainability in the coastal zone, such as loss of habitat and ecological and hydrological functions, increased pollution of, and increased amounts of nutrients in, near shore environments, accelerated sea-level rise, and interception and interruption of flow of water and sediments. Many of these problems seriously affect coastal wetlands and their capacity to continue to provide vital values and functions for people and biodiversity in the coastal

[1] "Wise use" was defined in 1987 by Ramsar COP3 as "sustainable utilization for the benefit of humankind in a way compatible with the maintenance of the natural properties of the ecosystem".

zone, since (as established in Principle 1) wetlands under the Ramsar Convention definition cover a very substantial part of the world's coasts.

Guideline No. 2 – Ensuring full incorporation by Contracting Parties of wetland conservation and wise use issues into ICZM, as essential for a successful sustainable coastal management process

2.1 Identify key barriers to incorporating wetland issues effectively into ICZM and to promoting the importance of wetland values for coastal zones; and work to overcome them in association with coastal managers and others responsible for ICZM.

2.2 Develop consultative processes which will involve wetlands managers and help them to understand better the functioning of ICZM processes.

2.3 Assess the economic benefits of wetland protection, conservation and wise use, and stimulate their consideration as an equal sector in ICZM.

2.4 Promote the establishment of appropriate mechanisms to bring together all major groups involved in ICZM, and encourage actions towards better understanding that coastal wetlands have to be effectively incorporated into ICZM.

2.5 Increase educational efforts and raise public awareness on the benefits of wetland management as an active ingredient of ICZM.

2.6 Promote the use of various tools and techniques, such as strategic environmental assessment (SEA), environmental impact assessment (EIA), economic and other management instruments, in order to improve the understanding of coastal wetlands as an economically and ecologically critical element of coastal areas.

2.7 Encourage the creation of a coastal management authority that will bring together all the sectors and institutions involved in ICZM, including coastal wetland managers.

2.8 Stimulate preparation of integrated coastal area management plans, projects and programmes of actions that fully include coastal wetland issues and concerns.

2.9 Promote the use of conflict resolution techniques in order to manage disputes that may arise among coastal resource users, including for coastal wetlands, and seek their integration into the ICZM processes.

2.10 Establish mechanisms to monitor and evaluate the progress of the implementation of ICZM processes, particularly in relation to the conservation and wise use of coastal wetlands.

2.11 Ensure that those responsible for ICZM policy and implementation are fully aware of the national government commitments under the Ramsar Convention, including through their participation in national Ramsar or wetland committees.

B. Ensuring full awareness of the values and functions of wetlands in the coastal zone

Principle 3. Coastal wetlands have important values and functions and provide multiple goods and services of high economic value.

The overall role of coastal wetlands in providing goods and services, values and functions

27. Coastal wetlands have major and varied biological, socio-economic and cultural values through their provision of a wide range of goods and services to people and their livelihoods, as well as through their contribution to the maintenance of biological diversity. In addition to the services they provide in relation to storm and flood control and related issues of water management, goods provided by coastal wetlands which can be vital for the health, safety and welfare of local populations include fruit, fish and shellfish, waterbird, deer, crocodile and other meats, resins, timber for building, fuel wood, reeds for thatching and weaving, fodder for animals, medicinal plants, fertile land for agriculture, agricultural products, water supply, and water transport.

Guideline No. 3 – Ensuring full recognition of the multiple goods and services of high economic value provided by coastal wetlands

3.1 Identify the most appropriate tools, such as economic valuation methods, multi-criteria analysis, and environmental and strategic environmental assessment (EIA and SEA), that will permit the full assessment of all social, cultural and environmental values of coastal wetlands, and ensure that these are recognized and applied by coastal managers in implementing ICZM.

3.2 Create improved awareness among all major stakeholders of the full range (direct and indirect) of economic values of goods and services provided by coastal wetlands.

3.3 Ensure that Ramsar's *Guiding Principles for taking into account the cultural aspects of wetlands for the effective management of sites* (Resolution VIII.19) are taken into account in assessing the cultural significance of coastal wetlands through ICZM processes.

The role of coastal wetlands in coastal processes

28. Naturally-functioning coastal wetlands are maintained by coastal processes and in turn contribute to coastal process management. The pivotal role of wetlands in coastal processes should be recognized and strengthened. Since wetlands have highly interlinked physical, biological, and chemical processes, an alteration of one element can affect the whole coastal process. Sound and sustainable management of coastal wetlands to maintain or enhance their functions in coastal processes is a key part of ICZM.

Guideline No. 4 – Ensuring the recognition by Contracting Parties of the key role of wetlands in coastal processes

4.1 Undertake studies to identify the role wetlands play in coastal processes. Based on these findings, Contracting Parties should undertake measures to prevent all activities that have harmful effects on wetlands, including the safeguard and management of the most important wetland areas.

4.2 Consider the rehabilitation or restoration of degraded coastal wetlands in order to re-activate their positive role in coastal processes.

4.3 Undertake measures in upstream river areas that will prevent harmful practices or developments affecting coastal wetlands, such as construction of dams, pollution discharges and excessive water abstraction (see also Principle 7).

The role of coastal wetlands in mitigating impacts of natural hazards, pollution, and flooding

29. Maintenance of natural coastal shorelines can help to absorb the energy of storm-driven waves before they force inland and cause destruction of property and human life. Shoreline stabilization and storm protection functions of coastal wetlands operate by reducing wind, wave and current energy through the physical presence of shallow intertidal and subtidal systems such as coral reefs, mangroves, tidal flats, and saltmarshes.

30. Without full maintenance of the hydrological and related functions of coastal wetlands, the success of sustainable coastal development is uncertain. Effective integration and maintenance of the hydrological functions of coastal wetlands into ICZM can contribute to improving the coastal waters' quality, reducing the risk to human health and loss of human life and property, increasing the economic value of the coastal land, and maintaining coastal biodiversity.

Guideline No. 5 – Ensuring the recognition by Contracting Parties of the role of coastal wetlands in regulating water flows and water quality

5.1 Undertake studies to identify the functions of and benefits provided by coastal wetlands in relation to flood and natural hazard management and ensuring water quality in coastal areas. Based on these findings, Contracting Parties should ensure that the functions and values of wetlands are recognized and incorporated into planning decisions in the coastal zone.

5.2 When protection of coastal wetlands from degradation or destruction has not been possible, first review opportunities for the rehabilitation or restoration of degraded coastal wetlands, and secondly consider the creation of additional constructed wetlands within coastal areas, to provide services related to flood and natural hazards control and ensuring water quality in coastal areas.

5.3 Undertake assessments to establish the economic and social costs likely to result if the natural functions of wetlands in relation to flood and natural hazards control and water quality are not maintained or are seriously affected or destroyed.

5.4 Ensure adequate consideration of the hydrological value of coastal wetlands by improving the awareness of coastal managers of these values and by raising the public awareness of this issue.

5.5 Encourage the development of appropriate methods of integration of flood and natural hazards management and water quality control through maintaining natural coastal wetland processes in all phases of the ICZM.

The role of coastal wetlands in mitigation of, and adaptation to, impacts of climate change and sea-level rise

31. A number of coastal wetland types, notably coral reefs, atolls, and mangroves, are considered to be especially vulnerable to the effects of climate change and sea-level rise owing to their limited adaptive capacity, and are likely to undergo significant and irreversible damage (for further information on wetlands and climate change see Resolution VIII.3 and the information papers COP8 DOC. 11 and COP8 DOC. 40). Such effects may lead to serious diminution in the capability of coastal wetlands to provide their goods and services, values and functions. At worst, major parts of some low-lying countries and islands may become wholly or largely inundated by rising sea levels. Elsewhere, where natural landwards movement of coastal wetlands in response to rising sea levels is impeded by development, coast protection and flood defense, this 'coastal squeeze' will severely restrict the size and width of coastal wetlands and their adaptive capacity.

32. There are a number of potential adaptation options that can contribute to the conservation and sustainable use of coastal wetlands to mitigate the impacts of climate change and sea-level rise. These include: managed landwards reinstatement of coastal wetland habitats through removal of sea defence structures, designing multiple-use reserves and protected areas which incorporate corridors that would allow for migration of organisms as a response to climate change; expanding aquaculture that could relieve stress on natural fisheries; specific management in some ecosystems; and integrated resource management.

Guideline No. 6 – Ensuring the recognition by Contracting Parties of the role of coastal wetlands in mitigating impacts of climate change and sea-level rise

6.1 Ensure that climate change predictions and possible responses involving coastal wetlands are fully recognized in ICZM initiatives and their implementation.

6.2 Stimulate assessment of the implications and vulnerability of coastal wetlands in relation to climate change and sea-level rise, including from local and traditional knowledge; assess options for maximising their benefits in mitigating climate change and sea-level rise impacts; and ensure that this information is made available to ICZM processes.

6.3 Assess the feasibility of adaptation options for coastal wetlands in relation to climate change and sea-level rise scenarios.

6.4 Ensure that institutional mechanisms through ICZM are in place for the implementation of adaptation options, including restoration of coastal wetlands, and establish monitoring systems for adaptation programmes.

The role of coastal wetlands as important reservoirs of high species biological diversity, including migratory and non-migratory species and threatened species

33. Nutrient capture and retention makes many coastal wetlands amongst the most productive ecosystems recorded. Coastal wetlands are major reservoirs of biodiversity, and their high productivity often supports not only a high species diversity but also large abundance of many wetland-dependent species, which contribute to the high values and functions of coastal wetlands.

34. The Ramsar Convention includes commitments to species conservation and wise use measures as well as those at the habitat and ecosystem levels. The Convention pays particular attention to migratory species, notably migratory waterbirds and fish and globally and nationally threatened species, and many Ramsar sites have been selected for designation for their importance for these species (see also Principle 6).

Guideline No. 7 – Ensuring the recognition by Contracting Parties of the role of coastal wetlands for wetland-dependent migratory and non-migratory species and threatened species

7.1 Ensure that the species components of biological diversity, and the international commitments to their conservation and wise use through the Ramsar Convention and other agreements, are fully recognized and taken into account in decision-making through ICZM processes.

7.2 Ensure that ICZM and coastal managers recognize the particular importance of coastal zone wetlands for supporting many globally and nationally threatened species, and that ICZM processes will assist in the continued survival of such species.

7.3 Ensure that the particular requirements for the survival of migratory species, including fish, turtles, marine mammals, and migratory waterbirds, and the international commitments to the maintenance of flyway-scale site networks, are fully recognized in ICZM policies and implementation and in other legislation concerning the coastal zone.

C. Using mechanisms for securing the conservation and sustainable use of wetlands in the coastal zone

Principle 4. Mechanisms to resolve jurisdictional overlap in the coastal zone must fully include the legal and institutional frameworks for wetlands.

35. Management problems in the coastal zone can often arise from:

i) complex and unclear jurisdictional powers of sectoral managers and decision-makers;
ii) unclear definition of respective tasks of coastal resources managers;
iii) lack of adequate or contradictory legislation regulating sectoral management in ICZM;
iv) lack of an adequate institutional arrangement that guides the ICZM process;
v) the sectoral position taken by each management sector vis-à-vis other sectors;
vi) too narrowly focused management objectives; and
vii) lack of knowledge or capacity in those authorities, often local government, responsible for ICZM implementation.

36. It is important that those responsible for wetlands and the Ramsar Convention become fully aware of which institutional and legislative frameworks concerning the coastal zone apply in their country, and that these arrangement are reviewed, and as necessary amended, so as to ensure that they fully incorporate and are consistent with the wetland commitments under the Ramsar Convention. This has already been called for in Action

2.1.2 of Ramsar's Strategic Plan 1997-2002, and specifically for intertidal wetlands in Resolution VII.21.

Guideline No. 8 – Resolution of issues related to the legal and institutional frameworks and jurisdictional overlap in the coastal zone

8.1 Define clearly the roles of coastal resource and wetland managers in ICZM, and identify appropriate mechanisms for their effective collaboration.

8.2 Review existing legislation on integrated coastal management in relation to that for wetlands, and as necessary, develop new legislation to facilitate the integration of wetlands in the implementation of ICZM processes.

8.3 Review existing institutional arrangements for integrated coastal management and as necessary propose new institutional frameworks designed to avoid jurisdictional conflicts and overlaps in the coastal zone and include the integration of wetland-related issues in the implementation of ICZM.

8.4 Provide training and awareness-raising for coastal resources and wetland managers at all levels in order to increase understanding of the importance of coastal wetlands in the implementation of ICZM.

8.5 Seek to secure adequate financial resources to ensure effective operation of organizations and institutions charged with undertaking integrated coastal zone management.

Principle 5. Many stakeholders use coastal wetlands and must participate fully in their management.

37. Stakeholders' involvement is a vital and important element in ICZM. The process requires a high level of participation, because people who live in the coastal area (including local communities and indigenous peoples) will be greatly affected by the decisions taken within the ICZM process. Therefore, their support greatly increases the chances for the long-term sustainability of the ICZM process. A stakeholder analysis should be a vital early step in the ICZM process, as the basis for identifying and engaging all stakeholders who should be involved.

38. Participation of local communities and indigenous peoples in ICZM is particularly important where they have customary rights or tenure in the coastal zone. The Ramsar Convention has adopted guidance on the involvement of these communities in the participatory management of wetlands (Resolution VII.8). Guidance on wetland education and public awareness has also been adopted by the Convention as its Communication, Eduation, and Public Awareness Programme (Resolution VIII.31).

Guideline No. 9 – Ensuring stakeholder participation in the conservation and wise use of coastal wetlands

9.1 Establish mechanisms to identify and involve stakeholders in the planning and management of coastal areas and coastal wetlands, including the adoption of relevant legislation that will facilitate the stakeholders' participation process, by applying *inter alia*

Ramsar's *Guidelines for establishing and strengthening local communities' and indigenous people's participation in the management of wetlands* (Ramsar Handbook 5).

9.2 Pay particular attention to the full involvement in ICZM from its earliest stages of local communities and indigenous peoples that have customary rights or tenure in coastal wetlands.

9.3 Facilitate the active participation of stakeholders, responding to their particular needs and sharing authority and responsibility for coastal wetlands' management, in coordination with other coastal resource management systems.

9.4 Support capacity building of all civil society groups (local communities, women and youth, NGOs, professional associations, local authorities, private sector) in order to develop skills for management of resources within coastal areas.

9.5 Develop and implement integrated participatory coastal management plans in which the needs and objectives of coastal wetlands management are fully incorporated.

9.6 Identify, design and implement community-based demonstration projects and provide additional economic incentives to local communities for coastal wetlands' protection, conservation and sustainable use.

9.7 Design and implement educational programmes that would increase the understanding of the need to protect and conserve coastal wetlands, and their values and functions, and the need for ICZM, including through implementation of the Convention's Communication, Education, and Public Awareness Programme.

Principle 6. The designation and management of Wetlands of International Importance in the coastal zone provides a global mechanism for the identification and recognition of critically important parts of coastal zone ecosystems, as the basis for their sustainable management.

39. The designation by Ramsar Contracting Parties of appropriate sites for inclusion in the List of Wetlands of International Importance provides a strong mechanism for identifying and recognizing critically important areas of the coastal zone for wetland biodiversity conservation and wise use, as well as the basis for planning and implementing their sustainable management.

40. Of the 1179 Ramsar sites designated worldwide (as of July 2002) covering 102.1 million hectares, 541 (46%) sites covering 36 million hectares (35% of the total area) are wholly, or include, coastal and marine wetland types, and numerous others are in the terrestrial parts of coastal zones. Many coastal zone Ramsar sites are large, and in some places they cover the whole coastal zone over substantial areas, for example in large coastal plain estuaries and areas of intertidal flats and coral reef systems. Furthermore, many other areas of the coastal zone not yet designated might qualify for designation according to the Ramsar *Criteria for Identifying Wetlands of International Importance* (Resolution VII.11).

Guideline No. 10 – Ensuring the recognition of the role of Ramsar sites and their management in the ICZM process

10.1 In line with Vision and Objectives of the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Resolution VII.11), identify and establish a coherent national network of Ramsar sites which fully represent the diversity of coastal and marine wetlands and their key ecological and hydrological functions.

10.2 Ensure that national ICZM policy guidance recognizes the role and importance of Ramsar sites, including their ecological and hydrological functions for sustaining human life, in the sustainable management of the coastal zone.

10.3 Raise awareness with those levels of government responsible for developing and implementing ICZM initiatives of the purpose and management approach embodied in Ramsar site designation, and ensure that such sites are not regarded solely as sectoral nature conservation sites.

10.4 Seek opportunities for developing the management of Ramsar sites as demonstration sites for the ecosystem approach to their sustainable use.

10.5 Ensure that the Convention's *New Guidelines for management planning for Ramsar sites and other wetlands* (Resolution VIII.14) is available to those responsible for developing and implementing ICZM, and that the management planning processes for Ramsar sites are fully integrated with the ICZM process where it exists for areas including Ramsar sites.

10.6 Ensure that those responsible for ICZM recognize and utilise as appropriate the Convention's guidance on wetland management planning for wetlands in the coastal zone that are not designated as Ramsar sites.

Principle 7. Coastal wetlands are highly vulnerable to degradation and loss, but although easily degraded their restoration is costly and sometimes impossible.

41. Too often, decision-making in the coastal zone has treated many types of coastal wetlands as unproductive wastelands. It has been thought that the most appropriate management policy would be to control them or to permit encroachment upon them from a wide variety of uses inconsistent with the maintenance of natural coastal processes.

42. Many coastal wetland habitats continue to be destroyed at an alarming rate, as a consequence of a wide variety of development activities. Much coastal wetland loss is effectively irreversible, particularly where major urban and industrial development is in place. Nevertheless, restoration and rehabilitation of coastal wetlands should form a component of ICZM implementation as a mechanism for redressing, where appropriate, at least some of the past of habitat loss and for reinstating the important natural coastal protection functions of wetlands. However, such restoration can be much more expensive than exercising the option to maintain naturally functioning coastal wetlands, and the success of coastal wetland restoration is generally unpredictable.

Guideline No. 11 – Ensuring that Contracting Parties consider issues related to the degradation, loss and restoration of coastal wetlands

11.1 Choose, and adapt to the local conditions, the most appropriate methodology for assessing the damage to coastal wetlands that are caused by natural events and human actions.

11.2 Assess the status of coastal wetlands with regard to their degradation and loss, and undertake the cost/benefit analysis of the environmental, social and economic effects of the implementation of mitigation measures, including restoration, as part of an inventory of coastal wetlands suitable for restoration, applying guidance on this matter contained in Resolution VIII.16.

11.3 Raise public awareness about the benefits of maintaining and restoring the existing coastal wetlands as opposed to their destruction.

11.4 If a coastal wetland is to be restored, seek the best possible advice and experience of other similar restorations so as to minimise risks of failure.

11.5 Integrate the cost and benefits of the wetland restoration projects in ICZM programmes and projects.

11.6 Ensure that full cost/benefit assessment, including the costs of restoring or recreating coastal wetland habitat that would be lost, form an essential part of environmental impact assessments for coastal wetland development projects.

11.7 Ensure that the difficulties, costs, and uncertainties of coastal wetland restoration are fully understood by ICZM decision-makers.

11.8 Where a coastal zone development proposal could cause loss of part or all of a designated Ramsar site, ensure that all those involved in impact assessment and decision-making are fully aware of the obligations and procedures as established in Articles 2.5 and 4.2 of the Ramsar Convention and the guidance on these matters contained in Resolution VIII.20.

D. Addressing the integration of the conservation and sustainable use of wetlands in broad-scale integrated ecosystem management

Principle 8. ICZM should be linked with river basin/catchment management and oceans and fisheries management so as to secure the conservation and sustainable use of coastal wetlands.

43. Influences and linkages of the coastal zone extend far beyond its boundaries: hinterland linkages are extended over the area of entire river basins/catchments, while the seaward influences extend beyond the outer limits of the coastal zone, affecting a number of ocean-related economic activities. A particular challenge for ICZM is to incorporate offshore activities into the process.

44. Conversely, activities and water resource management decisions upstream in river basins can have a profound influence on coastal wetlands, for example through changes in sediment and water flow regimes (e.g. increases in discharges due to deforestation and rapid run-off; decreases through trapping of water and sediments in dams), water quantity and quality.

Guideline No. 12 – Ensuring the recognition by Contracting Parties of the linkages between wetlands, ICZM, river basin/catchment management, and oceans and fisheries management

12.1 Identify and describe key linkages between wetlands in coastal and river basin/catchment areas and ocean-related activities, and ensure that the roles of inland and coastal wetlands are fully recognized.

12.2 Identify the key barriers to the integration of issues related to coastal areas and those related to river basin/catchment areas, and work with those responsible for river basin management and ICZM to overcome them.

12.3 Promote the Integrated Coastal Area and River Basin Management (ICARM) approach and identify key stakeholders in the management process.

12.4 Stimulate the preparation of integrated coastal area and river basin/catchment management plans, and help to secure adequate resources for their preparation and implementation. Where management plans already exist for river basins/catchments and coastal zones, these should be reviewed and may form the basis for their integration.

12.5 Work towards raising the public awareness, including through the Convention's Communication, Education, and Public Awareness Programme, of the necessity to identify and integrate issues common to wetlands, coastal areas, and river basins, and of the need to improve the stakeholders' participation in ICARM.

12.6 Review the role and importance of coastal wetlands in supporting fish populations and fisheries, and promote the implementation of FAO's Code of Conduct for Responsible Fisheries, particularly where it relates to coastal wetland issues.

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Appendix 1

ICZM definitions, terms, and current approaches

1. This Appendix provides background information on commonly-used definitions and terms in ICZM, what Integrated Coastal Zone Management is, and general principles and good practice embodied in ICZM implementation.

What is Integrated Coastal Zone Management?

2. ICZM is essentially a mechanism for bringing together the multiplicity of users, stakeholders, and decision-makers in the coastal zone in order to secure more effective ecosystem management whilst achieving economic development and intra- and inter-generational equity through the application of sustainability principles. The ICZM approach is generally facilitated through existing terrestrial and marine territorial planning legislation and mechanisms, where these exist.

3. Although there are many different definitions of ICZM, differences amongst them are minor. Most definitions recognize that ICZM is a continuous, pro-active and adaptive process of resource management for sustainable development of coastal zones, and that its goals have to be achieved within the constraints of physical, social, economic and environmental conditions, as well as within the constraints of legal, financial, and administrative systems and institutions.

4. ICZM does not substitute for sectoral planning and management. Rather it focuses on the linkages between sectoral activities, strengthening and harmonizing sectoral management to achieve more comprehensive sustainability goals.

5. ICZM is a cyclical process, generally composed of three basic stages: 1) initiation; 2) planning; and 3) implementation, monitoring, and evaluation. However, it should operate as an iterative process in which regular adjustments to the planning and implementation phases are made on the basis of review and evaluation.

Definitions and terms in the coastal zone

6. Integrated approaches to coastal management are known under a variety of different names and abbreviations, including Integrated Coastal Zone Management (ICZM), Integrated Coastal Area Management (ICAM), Integrated Coastal Management (ICM), and Integrated Marine and Coastal Area Management (IMCAM).

7. The precise region of coverage and terminology used in ICZM varies between countries and between ICZM initiatives. In some cases, definitions are embedded in legislation, but in others they have developed through general use and application. In not all countries are clear and agreed definitions and delimitations of the of the coastal zone itself, or other related terms, recognized.

8. Most published ICZM guidelines agree that the *coastal zone* is a relatively narrow interface zone between land and sea, where complex and intensive functional and ecological processes that depend on the interaction between land and sea take place. Ecologically,

coastal zones contain a number of critical terrestrial and aquatic habitats that are closely linked with the socio-economic systems, forming complex functional units.

9. However, in different countries, the definition of "coastal zone" that is applied can vary from: the intertidal shore between low and high water marks; this intertidal zone plus adjacent parts of the land, either as a defined distance landward from the shore (sometimes including also wider buffer zonation) or a more flexible inclusion of adjacent terrestrial ecosystems; to terrestrial, intertidal and nearshore marine parts of a coastal system, up to Economic Exclusion Zones of territorial waters.

10. Other terms in use in relation to ICZM include:

    i) *Coastal area*: geographically broader than the coastal zone, with its boundaries extending further inland. The coastal zone forms part of the coastal area. This is important from the functional point of view, because many processes, be they environmental, demographic, economic or social, actually originate within the wider boundaries of the coastal area, but their main manifestations are visible only within the boundaries of the coastal zone;

    ii) *Coastal waters*: a narrow near-shore belt of marine and estuarine waters;

    iii) *Intertidal area (or zone)*: the area between the lowest tide and the shoreline (the landward extent of the tidal influence);

    iv) *Coastline*: the contact line dividing the land from the coastal water bodies; and

    v) *Shore lands*: the terrestrial area down to the highest line of tidal influence.

11. Coastal waters, intertidal area, coastline and shore lands all generally form parts of the coastal zone.

12. There are several common problems with effective implementation of ICZM as a consequence of the variation in definitions of the coastal zone concept. First, the national legislation dealing with the issue, if it exists, is usually vague in specifying the exact definitions and boundary criteria for the coastal zone. Second, very often the administrative boundaries do not coincide with the ecosystem boundaries. Third, transboundary coastal zones are often managed with difficulty by the countries concerned, not least since legislation and delimitation of coastal zones can differ greatly between adjacent countries.

13. A further inconsistency in coastal zone definitions arises in that, in some jurisdictions, land-use planning legislative frameworks cover only the terrestrial and intertidal parts of the zone (often extending to the low water line), whereas in others the legislation covers the terrestrial, intertidal, and near-shore marine components of the zone.

General principles and practice of ICZM

14. The purposes of ICZM are generally recognized to be to:

i) guide the level of coastal uses or interventions so as not to exceed the carrying capacity of the resource base, by identifying which resources need to be harnessed without causing their degradation or depletion, and which resources need to be renewed or rehabilitated for traditional and new uses;
ii) respect natural dynamic processes, encouraging beneficial processes and preventing adverse interventions;
iii) reduce risks to vulnerable resources;
iv) ensure the coastal ecosystems' biodiversity;
v) encourage complementary rather than competitive activities;
vi) ensure that environmental, social, and economic objectives are achieved at an acceptable cost to society;
vi) protect traditional uses and rights and equitable access to resources; and
vii) resolve sectoral issues and conflicts.

15. A vital feature of a successful ICZM process is ensuring the full engagement and participation from its earliest stages of local communities, and this is particularly important in circumstances in which much or all of the coastal zone is under local ownership, such as customary tenure and rights to the exploitation of natural resources.

16. ICZM should incorporate a dual "bottom-up" and "top-down" approach. This seeks to ensure that the interests of all stakeholders are taken into consideration through a local consultation and participation process, whilst at the same time creating a legal and regulatory environment for an effective implementation of the ICZM process.

17. There are a number of dimensions of integration that need to be taken into consideration within the ICZM process. These include:

vertical - integration among institutions and administrative levels within the same sector;
horizontal - integration among various sectors at the same administrative level;
systemic - the need to ensure that all important interactions and issues are taken into consideration;
functional - interventions by management bodies which must be harmonised with the coastal area management objectives and strategies;
spatial - integration between the land and marine components of the coastal zone;
policy - coastal area management policies, strategies and plans which need to be incorporated into broader-scale (including national) development policies, strategies and plans;
science-management - integration among different scientific disciplines and the transfer of science for use by end-users and decision-makers;
planning - plans at various spatial scales should not have conflicting objectives, strategies or planning proposals; and
temporal - coordination among short-, medium- and long-term plans and programmes.

18. There is no single general model for a successful ICZM process, since successful implementation depends upon, among other things, local conditions, experience, ecosystem features, and patterns of development pressure, as well as the nature and extent of national and regional legislative and policy frameworks.

19. However, experience with implementing ICZM to date has identified some key components that need to be incorporated in any ICZM initiative if it is to succeed. These include:

    i) achieving integration and coordination among government departments at various levels;
    ii) linking sectors by "internalizing" problem solutions within them;
    iii) achieving long-term sustainability of the intervention by securing its financial security;
    iv) ensuring political support and institutional arrangements for project implementation;
    v) securing local community and stakeholders' full participation and consultation;
    vi) achieving consensus on the sustainable use and management of coastal resources;
    vii) shaping the management process to allow flexibility and adaptation to the changing conditions; and
    viii) fitting the ICZM process to the institutional, organizational, and social environments of the countries or regions involved.

20. ICZM outputs range from global declarations to more detailed local ICZM plans.

21. At a global scale, in 1992 the Rio United Nations Conference on Environment and Development (UNCED) adopted Agenda 21. Chapter 17 of Agenda 21 addresses oceans and sea, living marine resources, and coastal zone management. It offers a variety of global integrated coastal management strategies, as well as an assessment of costs needed for their implementation. The ecosystem-based approach of the Ramsar Convention, embodied in its wise use concept, is consistent with the sustainable development approach for the coastal zone outlined in Agenda 21. An analysis of Ramsar's contribution to the implementation of Agenda 21, in preparation for the 2002 World Summit on Sustainable Development (WSSD), has concluded that the Convention has contributed significantly to Chapter 17 of Agenda 21, particularly in terms of three of its seven programme areas – integrated management and sustainable development of coastal areas, marine environmental protection, and sustainable use and conservation of marine living resources under national jurisdiction.

22. At the regional scale, examples of ICZM include the Mediterranean Agenda 21 (adopted in 1994), which provides a unique example of a regional strategy in the format of UNCED's Agenda 21. Also at the regional scale, in response to an extensive project-based demonstration programme which included development of ICZM involving a number of coastal wetlands sites, the European Commission has passed a communication to the European Parliament and Council which incorporates a recommendation detailing a *European Strategy for ICZM*, which was due to be finalised in mid-2002.

23. National coastal policies and legislation are now setting the strategic direction for coastal management in an increasing number of countries, as well as defining the regulatory framework for coastal interventions. These are increasingly complemented by the establishment of appropriate institutional arrangements involving ministries, inter-ministerial coordination committees, coastal agencies, and others, although the extent of such coordination varies greatly between countries.

24. Coastal spatial plans are generally considered as amongst the powerful instruments for guiding coastal development through an ICZM process, and are often developed at a

regional (subnational) scale. Regulation and enforcement tools, often as part of development planning legislation with local government responsible for its application, can also prove valuable instruments in supporting the implementation of such coastal plans. Environmental impact assessment (EIA), strategic environmental assessment (SEA), and economic instruments for environmental management are also increasingly being used to facilitate the implementation of ICZM at national and local levels.

25. At local scale, Local Agendas 21 are being developed in many parts of the world and are proving particularly effective in stimulating stakeholder participation and reaching local consensus on coastal management actions.

26. However, there are a number of frequently encountered barriers that stand in the way of a more effective implementation of ICZM. Bureaucratic inertia, opposition to changes, opposition from multiple private economic interests, lack of adequate political will to start the process, lack of minimal financial resources, complexity of the legislative issues in defining the coastal zone, and lack of understanding between marine scientists and land use planners are generally some of the most important barriers.

27. These barriers may be broken down through actions that include:

    i) placing the proposed ICZM programme in its full social context at the earliest possible moment;
    ii) indicating clearly to the largest possible number of stakeholders what ICZM is and what it can, and cannot, achieve;
    iii) increasing the transparency of the decision-making process through ICZM mechanisms;
    iv) improving the stakeholders' participation; and
    v) bringing into the process, as early as possible, the representatives of all affected agencies with regulatory or implementation responsibilities in the coastal zone.

Appendix 2

Rationale for the principles for incorporating wetland issues into ICZM

Principle 1. The Ramsar Convention is the global intergovernmental treaty that specifically addresses the conservation and wise use of coastal zone ecosystems.

1. The Convention's "Classification system for wetland type" lists the following types of wetlands under its section **Marine/Coastal wetlands**:

   A. *permanent shallow marine waters* in most cases less than six metres deep at low tide, including sea bays and straits;
   B. *marine subtidal aquatic beds* including kelp beds, sea-grass beds and tropical marine meadows;
   C. *coral reefs*;
   D. *rocky marine shores* including rocky offshore islands and sea cliffs;
   E. *sand, shingle or pebble shores* including sand bars, spits, sandy islets, dune systems and humid dune slacks;
   F. *estuarine waters*: the permanent water of estuaries and estuarine systems of deltas;
   G. *intertidal mud, sand and salt flats*;
   H. *intertidal marshes* including salt marshes, salt meadows, saltings, raised salt marshes, and tidal brackish and freshwater marshes;
   I. *intertidal forested wetlands* including mangrove swamps, nipah swamps and tidal freshwater swamp forests;
   J. *coastal brackish/saline lagoons* including brackish to saline lagoons with at least one relatively narrow connection to the sea;
   K. *coastal freshwater lagoons* including freshwater delta lagoons; and
   Zk(a) *marine/coastal karst and other subterranean hydrological systems.*

2. In addition, many of the inland wetland types in the Ramsar classification system can occur within the coastal zone as defined for the purposes of ICZM.

3. It is also important to recognize that the Ramsar classification covers human-made as well as natural wetlands, and that artificially-created wetlands in the coastal zone may also be covered under Ramsar site designations (see also Principle 6). In the coastal zone, particularly significant human-made wetland types included in the Ramsar classification system are:

   1. *Aquaculture* (e.g. fish/shrimp) *ponds*; and
   5. *Salt exploitation sites*, such as salt pans and salines.

4. The Convention's ecosystem-based approach for the wise use[2] of all wetlands, and the extensive guidance adopted by Contracting Parties for its delivery and incorporated in the Ramsar Wise Use Handbooks, is fully consistent with the multisectoral approach embodied in ICZM.

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[2] "Wise use" was defined in 1987 by Ramsar COP3 as "sustainable utilization for the benefit of humankind in a way compatible with the maintenance of the natural properties of the ecosystem".

5. In addition, through its Joint Work Plan 2002-2006 with the Convention on Biological Diversity (CBD) and the decisions of the CBD COP, the Ramsar Convention acts as a lead implementing partner of the CBD for its programme of work on wetlands, including marine and coastal, and inland water ecosystems. The Convention works jointly with the CBD in the delivery of its Jakarta Mandate programme of work on marine and coastal ecosystems, notably concerning ICZM (including through these Principles and Guidelines); marine and coastal living resources, especially coral reefs; rapid assessment methods for marine and coastal biodiversity; and marine and coastal protected areas (see also Principle 6).

6. One of the commitments of countries which are Contracting Parties to the Ramsar Convention is to ensure, as far as possible, the sustainable utilisation of all wetlands in their territories and, for the coastal zone, ICZM processes provide a strong mechanism for securing the intent of that commitment.

7. However, government commitments to sustainable utilization under Ramsar appear to be poorly recognized and seldom utilised in the context of ICZM. Neither is this clearly recognized in most guidelines for ICZM. It is essential, therefore, that all sectors and levels of government (from national to local) and agencies with responsibilities in the coastal zone are made fully aware of, and contribute to the delivery of, their government's commitment to Ramsar's wise use principle, including through the development and implementation of ICZM.

8. Parties to the Ramsar Convention also make commitments to international cooperation under the Convention (see in particular Ramsar Wise Use Handbook 9), which includes the sharing of information and expertise and joint actions for transboundary wetlands, river basins, and migratory species. These established mechanisms provide useful tools and guidance for those implementing ICZM in a transboundary context.

Principle 2. The full incorporation of wetland conservation and wise use issues into ICZM is essential for a successful sustainable coastal management process.

9. Past and present management practices have not always helped towards more effective integrated management of coastal areas, and coastal wetlands have far too often been treated as separate sectoral management issues. This has resulted in the lack of integration, as well as to many conflicting decisions.

10. Coastal areas have predominately been treated within the purview of land use planning and management, which is focused on securing coastal development. Its major outcome has been regulation of the use of coastal space, but this approach has largely failed to secure wider consideration of other important coastal issues.

11. Within land use planning and management, coastal wetlands have generally been perceived as solely within the domain of protected areas management, whose main objective is to secure their protection and conservation. Such planning has often failed to integrate coastal wetlands in wider development objectives, leaving them to be treated as special spatial units that have little to contribute to other coastal sectors. The result has been that, in many parts of the world, the conflicts in coastal use have resulted in continued degradation and loss of coastal wetlands and their functions.

12. Sustainable coastal management is an objective that has yet to be fully delivered. It should encourage the management of all aspects of the human use of the coastal area (within its widest geographical definition) to yield the greatest benefits for the present population, but maintaining the potential of coastal systems to meet the aspirations of future generations. This task involves integrating successfully a range of coastal sectors and activities. Coastal wetlands count among the most crucial parts of coastal systems.

13. The values and functions of coastal wetlands are already well established (see section B of these Principles for further guidance): many of the products and services that they provide are of crucial importance for the functioning of coastal areas, and without them life in coastal areas would be impossible or much poorer. In addition, the ecological value of coastal wetlands and their biodiversity in their own right justifies that coastal wetlands be effectively integrated and managed in ICZM.

14. The distinctive feature of ICZM is that it is both multi-sectoral and operates at different spatial scales of decision-making, and that it strives to integrate and coordinate the activities of all coastal users. It has this multi-objective character because it has both to manage coastal development and to conserve and manage natural resources. While doing so, it must integrate the concerns and objectives of all relevant economic sectors, institutions and social groups. Among the most important linkages that ICZM should achieve, which at the same time constitutes one of its fundamental challenges since in most countries planning does not cross the land-sea interface, is the integration of the terrestrial and maritime domains.

15. The multiple benefits of wetlands as fundamental to maintaining the health of the coastal zone have been poorly understood. Often individual administrations have perceived the potential and value of wetlands only within the context of their own sectoral interests. Since coastal wetlands were therefore undervalued, the real costs of destructive practices affecting them have not been taken fully, if at all, into account. This has often resulted in policy inconsistencies and/or wetland destruction or degradation.

Principle 3. Coastal wetlands have important values and functions and provide multiple goods and services of high economic value.

The overall role of coastal wetlands in providing goods and services, values and functions

16. In many parts of the world, coastal wetlands are of particularly great significance for their provision of fish and shellfish. Not only do coastal wetlands act as habitat for adult fish that provide vital food sources for many local communities, but many, such as estuaries, seagrass beds, coral reefs and mangroves, also act as critical spawning and nursery areas for many species of both inshore and oceanic fish.

17. Naturally-functioning coastal wetlands also contribute vital roles in reducing coastal erosion, buffering storm impacts, and mitigating effects of sea-level rise.

18. Coastal wetlands provide a number of other services for the people, both locally and further afield.

19. There have been many attempts to calculate the total value of products and services that wetlands provide through valuation techniques (see also Ramsar's *Economic Valuation of Wetlands: A Guide for Policy Makers and Planners,* Barbier, Acreman & Knowler, 1997). Although exact figures have proven to be difficult to calculate, there is a general agreement that, if the values also include those of all the environmental services provided by coastal wetlands (e.g., flood and hazard storm protection, climate change mitigation, water purification, water recharge, sediment/pollutant retention, nutrient retention, evaporation, habitats, etc.), this figure would be extremely high.

20. However, many coastal wetland systems and resources have been grossly undervalued in development decisions. Although they produce a number of marketable products that may be valued, the greater part of their value lies in non-marketable goods and services, which therefore remains largely unrecognized. Some of the ecological services provided by coastal wetlands are also considered as public goods, i.e. the services that should be available to everyone at no cost, but these are seldom fully costed in valuation practices . Under-valuation has been a major reason why wetland resources have been misallocated and why conversion of wetlands to other uses has continued to be a common practice, with often serious consequential costs and impacts on local communities.

The role of coastal wetlands in coastal processes

21. Processes operating in coastal waters largely determine the production of renewable resources and regulate vital processes, such as water quality and coastline dynamics. Processes operating in the coastal (terrestrial) strip determine whether or not people can settle safely in this zone. Beach erosion and devastating floods are, however, constant threats to coastal communities. Hydrological and biological processes in estuaries, where rivers discharge into the sea, are particularly complex because of the mixing of fresh and saline waters and the interaction of tidal flows and river discharge determining sediment movement and deposition. Such processes can be readily disrupted by human interventions that unwittingly alter salinity, water flows, and sedimentation, and which can limit the adaptive capacity of coastal systems to respond to change.

The role of coastal wetlands in mitigating impacts of natural hazards, pollution, and flooding

22. Coastal erosion can be increased as a result of, for example, removal of protective barriers, removal of wetland vegetation, direct removal of wetland sediment, reduction of sediment inputs, and land-claim or reclamation of coastal wetlands and the construction of hard artificial shorelines and barriers to coastal sediment transport, such as groynes and breakwaters. The benefits and risks of construction of such hard shoreline stabilization and storm protection measures need to be carefully evaluated against the opportunities for maintaining or restoring the buffering provided by naturally-functioning coastal wetlands.

23. Other human actions can also indirectly cause coastal erosion, for example, as a consequence of construction works in coastal wetlands or in upstream parts of rivers, mariculture in mangrove swamps, other forms of aquaculture, coastal agriculture, damming of rivers, reduction of soil erosion in drainage basins, and salt marsh land reclamation.

24. It is, however, important to keep in mind that many coastlines are naturally dynamic, and cycles of erosion are often an important feature of their ecological character. Attempts at

artificial control of erosion where, for example, conflicts arise between the natural ecosystem functioning and protection of life and property, can have consequential effects on erosion and sedimentation patterns elsewhere in the coastal zone.

25. Sediment and nutrient retention and export (a bio-geochemical function of wetlands) is beneficial because coastal wetlands, by slowing down the force of water, encourage the deposition of sediments (which would otherwise be lost through coastal erosion) and nutrients carried in water. Nutrient retention in wetlands makes them produce great volumes of organic matter, which forms the base of the aquatic food chain. Sediment brought down by rivers builds up rich and fertile deltas and is important in balancing coastal land loss. Coastal deltas are dependent on riverine sediments and nutrients for their survival. In other coastal wetland systems most sediment is brought in by currents from the reworking of offshore marine sediments.

26. Wetlands in the terrestrial part of the coastal zone and upstream often play a crucial role in flood and storm control. Flood management requires implementation of coastal flood and erosion control measures, but wetlands can reduce the need for expensive engineering structures for water management. Wetland vegetation also plays a role in slowing down the rate of flow of floodwaters.

27. Coastal terrestrial wetlands and those further up-river help to purify polluted water, particularly urban waters and agricultural runoff, through natural filtration, by processing chemical and organic wastes before they enter the coastal waters. This reduces the eutrophication of coastal waters and limits the high concentration of nutrients reaching groundwater supplies or other water sources that may be used for drinking water.

28. However, water quality in many coastal wetlands is still affected by pollution carried by rivers. Pollution can be generated by discharges from industrial waste-waters, domestic sewage (particularly from overcrowded cities), forestry and agriculture operations, temperature increases caused by the operations of thermoelectric plants, construction of large reservoirs or dams that slow the water flow, recreational activities, airborne dust, and oil from offshore installations. Coastal wetlands help cleanse the polluted water before it is discharged into the sea, but the chemical pollution introduced into coastal wetlands can greatly affect their natural ecological character.

The role of coastal wetlands in mitigation of, and adaptation to, impacts of climate change and sea-level rise

29. Direct impacts of rising sea levels may include increased levels of inundation and storm flooding; accelerated coastal erosion; seawater intrusion into fresh groundwater; encroachment of tidal waters into estuaries and river systems; elevated sea surface temperatures and ground temperatures contributing to the increase of wave activity and storm waves and surges.

30. Rising sea-surface temperatures associated with climate change are considered to be already affecting coral reefs through increased bleaching and reduced calcification rates – in turn, increasing impacts on mangrove and coastal lagoons are expected soon, often as a consequence of the loss of the storm buffering role of coral reefs.

31. There are also a number of predicted indirect impacts of climate change on coastal wetlands due to changes in storm surges and increased saltwater intrusion into the freshwater systems as a consequence of rising sea levels.

32. Coastal wetlands play a very important role in mitigating the effects of climate change. They play a major role in carbon, nitrogen, and sulphur cycles, and degradation of coastal wetlands could disrupt these cycles. The maintenance of forested coastal wetlands, notably mangroves, may become increasingly important in their role as carbon sinks.

33. Sometimes the human response to climate changes may also impact indirectly on coastal wetlands. Thus, for example, increasing aridity inland can lead to a greater proportion of river flow being intercepted before the river discharges to the coastal zone, thus reducing sediment inputs and increasing salinity in coastal wetland systems.

34. Sea-level rise associated with climate change may lead to large negative effects on coastal areas, causing the loss of property and human lives, changes in coastal ecosystems causing a decrease in their productivity, and changes in coastal resource systems (freshwater, land, soil, vegetation, etc.).

The role of coastal wetlands as important reservoirs of high species biological diversity, including migratory and non-migratory species and threatened species

35. Some coastal wetlands, for example coral reefs, are known to support as large a species diversity as any ecosystem in the world, and are a particularly rich source of genetic material. Coastal wetlands, notably mangroves, coral reefs and seagrass beds, also support a very high diversity of fish and shellfish species, both for adults and as spawning and nursery areas for juvenile stages, many of which are commercially important as food. Many globally and nationally threatened species of plants and animals also depend upon coastal wetlands for their survival.

36. Some species live permanently in coastal wetlands, whereas others spend only part of their time there but are nevertheless dependent on these coastal wetlands during different stages of their life-cycles. Coastal wetlands also provide critical habitat networks and migratory pathways for migratory species, notably waterbirds, fish and turtles, and some cetaceans.

37. Maintaining coastal wetland habitats is crucial for the overall ecology of coastal areas and their support of the many coastal wetland-dependent species. Hence the continuing loss and degradation of coastal wetland habitats (see also Principle 7 below) threatens the survival of many coastal wetland species important for the maintenance of biodiversity and of socio-economic importance.

38. The requirements of migratory waterbirds dependent on coastal wetlands are of particular significance to the integrated management of coastal systems. Such species require the maintenance of habitat networks, both local, national and international at different spatial scales for their survival through their annual migrations.

39. At the international scale, many migratory waterbirds depend upon the continued presence of a network of migratory staging areas and non-breeding grounds that are often widely separated geographically along migratory flyways. For many species, critical parts of these networks are in the coastal zone. A number of initiatives have been established in different

parts of the world that seek to identify and safeguard site networks, including many coastal wetlands. These include the African-Eurasian Migratory Waterbird Agreement (AEWA), the Asia-Pacific Migratory Waterbird Conservation Strategy (APMWCS), and the Western Hemisphere Shorebird Reserves Network (WHSRN), as well as others that are under development.

40. ICZM initiatives in one coastal area need to take into account these requirements of migratory species and the international commitments to their conservation, since removing or damaging one link (e.g., land-claim or reclamation of an estuary) in a migratory chain may threaten the viability of migratory populations throughout their flyways.

41. In addition, at smaller spatial scales, for example within a tidal estuary, waterbirds also generally require a mosaic of coastal habitats for feeding and roosting at different stages of a tidal cycle, and ICZM planning needs to be well informed of such requirements, as well as of the implications of selective removal or degradation of some elements of the coastal habitat mosaic.

Principle 4. Mechanisms to resolve jurisdictional overlap in the coastal zone must fully include the legal and institutional frameworks for wetlands.

42. Establishment of an appropriate legal and institutional framework is crucial for the long-term sustainability of ICZM processes. It is also necessary to achieve a certain level of flexibility in defining boundaries of coastal wetlands and coastal zones in order to avoid unnecessary conflicts among resource management domains.

43. Legislative and institutional frameworks for ICZM differ greatly between countries, as do the legislative and institutional responsibilities of different levels of government from national to local level. In some countries there are strong national legislative frameworks, but in others ICZM is at best policy-driven and/or voluntary. In some countries, ICZM implementation is directed from national government, but in many others the implementation responsibility lies with regional or local government, often chiefly delivered through general development planning powers which do not necessarily recognize the complexity of coastal zone jurisdictions.

44. It is likewise important to ensure that institutional capacity is sufficient to secure full integration of wetlands into ICZM, through training and awareness raising of those institutions responsible for ICZM and by securing adequate resources for implementation through the involvement of all relevant sectors, including those in local government.

Principle 5. Many stakeholders use coastal wetlands and must participate fully in their management.

45. Stakeholders should be stimulated to take an active part in all stages of the ICZM process: initiation, planning (data collection, analysis, conflict identification, objectives definition, strategy formulation, and integration of sectoral plans), and monitoring and evaluation. Extensive public consultation should be held in advance of important decisions being taken. Conflicts among coastal users should be identified as early as possible, and their resolution should be built into the ICZM process.

46. Until recently, stakeholder involvement and community participation in environmental management was relatively limited. However, the 1992 Rio Conference (UNCED) has led to a major shift in this attitude. Elements of civil society (local communities, NGOs, professional associations, local authorities, the private sector) have became more prominently recognized, and consensus has evolved that the long-term sustainable use of major natural resources depends upon the understanding and support of those who are closely connected with them.

47. Coastal areas, including their wetlands, are often managerially very complex because of the large number of users and stakeholders involved. There is a large degree of shared, and often overlapping, jurisdiction, and a great amount of common property resources involved. Resource management initiatives have both to involve all levels of government (sometimes called "vertical concertation") and reach a high degree of coordination among sectoral actors ("horizontal concertation"). This can only be possible if wide stakeholder participation is achieved.

48. Education and public awareness is very important in this endeavour, but it should not be confused with participation. Education and awareness helps the stakeholders better to understand sustainable use and value of coastal resources, but it is only the participation, as a part of the political and decision-making process, that leads to a consensus to support certain decisions. Participation is not about changing stakeholders' views, but rather about shifting their perspective from taking an exclusively sectoral view to a more integrated agenda that will make all the parties better prepared to address major environmental management issues in coastal areas.

Principle 6. The designation and management of Wetlands of International Importance in the coastal zone provides a global mechanism for the identification and recognition of critically important parts of coastal zone ecosystems, as the basis for their sustainable management.

49. Ramsar site designation is guided by the Convention's *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance*, adopted in 1999 under Resolution VII.11, whose vision is "to develop and maintain an international network of wetlands which are important for the conservation of global biodiversity and for sustaining human life through the ecological and hydrological functions they perform". On the *Strategic Framework*, the Convention's Contracting Parties established that the international network has to be built from coherent and comprehensive national networks of designated Ramsar sites.

50. Under the Convention, governments are expected to develop sustainable management plans for their Ramsar sites that are compatible with the maintenance of their ecological character and key biodiversity features.

51. It is important that Ramsar sites are recognized, in general, as multiple use areas that provide vital goods and services to people and their livelihoods, and normally not solely as "protected areas". Relatively few Ramsar sites are nature reserves where the primary land use is for nature conservation, yet there is a common misconception that Ramsar sites are only relevant under ICZM as a sectoral nature conservation and protected areas interest.

52. There are major opportunities to use Ramsar sites, in the coastal zone and elsewhere, as demonstration sites for the ecosystem approach to sustainable utilisation and management (including full stakeholder and local community participation) and the delivery of ICZM.

53. In the *New Guidelines for management planning for Ramsar sites and other wetlands* (Resolution VIII.14), the Parties stress that it is essential to ensure the participation of all stakeholders, particularly local communities and indigenous peoples, in the management planning process, and to develop management planning in its wider context of river basin and coastal zone planning and management. This is wholly consistent with the principles and practice of ICZM.

Principle 7. Coastal wetlands are highly vulnerable to degradation and loss, but although easily degraded their restoration is costly and sometimes impossible.

54. Many coastal wetlands have been degraded or destroyed through a variety of development activities, including: agriculture and forestry (drainage, embankment construction, fertiliser and pesticide use, water abstraction for irrigation, dune stabilisation, and conversion of natural forests to intensive plantation); transport (navigation channels, road and railway construction, drainage and embankments, and landscape fragmentation); energy (hydro-electric power dams, electricity lines, power station construction); tourism and recreation (floodplain and coastline infrastructure development, leisure navigation, damage to habitats due to pressure of tourists, pollution); urban and industrial development (including direct habitat loss, and increased run-off and other inflows); construction of dams and embankments to protect infrastructure; drainage of land for new development; waste disposal and pollution; ground and surface water abstraction; extractive industries (gravel extraction and toxic mining waste); and the indirect effects of climate change (erosion due to sea-level rise, changing rainfall patterns).

55. Many important coastal wetland habitats continue to be destroyed at an alarming rate. For example, in tropical regions up to 80% of mangroves are believed to have been lost from a range of countries, with rates of destruction being most rapid during the past 50 years. Coral reefs are also highly vulnerable to habitat destruction because of their physical structure, and damage often occurs as a result of unregulated and/or uncontrolled tourism activity, increased sediment discharge from rivers into the coastal zone, and from destructive fishing techniques. Such loss and damage to coral reefs is in addition to the problems they are facing from coral bleaching as a consequence of rising sea surface temperatures. In some developed temperate countries, over one-quarter of highly productive estuarine habitat has been lost, largely for agriculture, industrial development, and related infrastructure.

56. Much coastal wetland loss is effectively irreversible, particularly where major urban and industrial development is in place. Nevertheless, restoration and rehabilitation of coastal wetlands should form a component of ICZM implementation as a mechanism for redressing, where appropriate, at least some of the past of habitat loss and for reinstating the important natural coastal protection functions of wetlands. However, as for other wetlands, the Ramsar Convention guidance on wetland restoration (Resolution VIII.16) is that this should be a secondary option, less preferable than the strategy of continuous conservation and sustainable use of existing coastal wetlands and their values and functions.

57. There have been some successes in coastal habitat restoration, mostly at a small scale, for example in mangrove restoration and in re-establishing tidal marshes on claimed agricultural land. However, experience so far is that currently available restoration techniques for coastal wetlands are generally imprecise and the outcomes unpredictable in relation to restoration objectives. Very seldom can restoration or rehabilitation re-create conditions and values that attain those of pristine natural coastal wetland ecosystems.

58. Furthermore, restoration is a long-term and costly process that includes technical, as well as institutional, economic and regulatory measures, as well as monitoring and management as a restoration project proceeds. A full cost/benefit assessment, including the costs of restoring or recreating coastal wetland habitat that would be lost, should be an essential part of ICZM decision-making.

59. The Ramsar Convention stipulates that destruction of part or all of a designated Ramsar site should only be permitted in the "urgent national interest" (Article 2.5 of the Convention) and that under such circumstances compensatory habitat provision should be made (Article 4.2). Guidance adopted by the Convention in 2002 (Resolution VIII.20) on such compensation indicates that wherever possible it should provide for the habitats and species characteristic of the destroyed area, although it is recognized that this is often hard to achieve.

Principle 8. ICZM should be linked with river basin/catchment management and oceans and fisheries management so as to secure the conservation and sustainable use of coastal wetlands.

60. River basins are increasingly becoming the primary unit for water resource management and for many river basins management authorities have been or are being established. The Ramsar Convention has also adopted *Guidelines for integrating wetland conservation and wise use into river basin management* (Resolution VII.18) in recognition of the important role that inland wetlands play in water resource management. However, it is also essential that river basin (or catchment) management processes should be closely linked with ICZM processes in related areas.

61. The approach of Integrated Coastal Area and River Basin Management (ICARM) requires the adoption of goals, objectives and policies, as well as the establishment of governance mechanisms which recognize the interrelationships between the two systems with a view to their sustainable development. The basic principles of ICARM are the same as those for ICZM (see Appendix 1) but applied simultaneously to the two, linked, systems. The importance of both inland and coastal wetlands as a pre-requisite for successful ICARM needs to be fully recognized.

62. Likewise, activities further off-shore outside the coastal zone, for example unsustainable fisheries, can lead to degradation in biological diversity and change in the ecological character of coastal wetlands which species may utilise at different stages of their life-cycles; offshore sediment extraction can lead to increased coastal erosion; oil and other toxic chemical spillage from off-shore oil exploitation and shipping can cause severe on-shore pollution events impacting coastal wetlands.

63. Fishing and aquaculture are amongst the most important ocean-related economic activities. However, existing fisheries policy and management in many countries have failed to create

a positive environment for sustainable use of this resource. This has brought increasing resource degradation, further overexploitation of the resource base, and inequity. Three main threats to coastal fisheries are considered to be: open access to fisheries, the loss of fish habitat, and water pollution.

64. Fisheries should be fully integrated into ICZM, since many fish populations are highly dependent on coastal wetlands, yet fisheries jurisdiction and management often continue to be maintained as a separate sectoral process. Integrating fisheries into ICZM requires deciding how coastal resources should be used, and taking into account the needs of local communities (including fishers) and considering their opinions as crucial input in the planning process. Where the coastal zone (including coastal wetlands) has multiple uses, fisheries practices should be carried out to avoid conflict among fishers and other users. Important coastal wetland fish habitats such as mangroves, coral reefs and lagoons should be protected from destruction and pollution.

65. The adoption of the FAO Code of Conduct for Responsible Fisheries is considered to be a positive step towards sustainable fishery resources management. All people involved in fisheries should strive to achieve maximum sustainable yield, i.e. to achieve long-term sustainable use of fish resources, as a means of assuring resource conservation, continued food supplies, and alleviation of poverty in fishing communities.