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### **BIOLOGICAL DIVERSITY OF INLAND WATER ECOSYSTEMS: REPORT ON ASSESSMENT OF WAYS AND MEANS TO ADDRESS RELEVANT INLAND WATER BIODIVERSITY NEEDS IN COASTAL AREAS**

*Note by the Executive Secretary*

#### **EXECUTIVE SUMMARY**

This note discusses how the programmes of work on the biological diversity of inland water ecosystems and marine and coastal biodiversity address needs in coastal areas together with a consideration of the scope of the Ramsar Convention on Wetlands in the same area. The terms “inland” and “coastal” do not have universal definitions based on either ecological or geographic criteria and neither is it feasible or necessary to reach on consensus on their meaning. The area in question is a transitional zone and there are usually no clearly identifiable boundaries. “Wetlands” as a term defined by the Ramsar Convention means that the scope of the convention includes all inland and coastal areas including many shallow areas offshore, excepting deep water marine areas. Explicit attention to the relevance of, and guidance provided by, the Ramsar Convention has been much more comprehensive with the inland waters programme of work. The main ecological linkages between inland coastal and marine areas are hydrology based, including sediment transfer, and migrations. There is, as intended, overlap between the programmes of work on inland waters and marine and coastal biodiversity. For inland waters the area considered, and the activities described, include the coastal zone and impacts upon it. The marine and coastal programme of work covers a similar topic largely through its programme element on Integrated Marine and Coastal Area Management. Inconsistencies in attention to coastal areas, and relevant ecosystem based considerations, can be identified providing evidence that the “programme of work” approach can lead to compartmentalizing subjects. Coherence between the programmes of work themselves is however less important than how the programmes of work are implemented. In this regard, the chief way and means to address relevant needs is to adopt the ecosystem approach and consider requirements in the context of the Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets. Other ways and means to address needs include better recognition that the Ramsar Convention is

\* UNEP/CBD/SBSTTA/15/1.

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relevant across the broad interests of the Convention on Biological Diversity and that terminology and scope are flexible.

## **SUGGESTED RECOMMENDATIONS**

The document is provided for the information of the Subsidiary Body on Scientific, Technical and Technological Advice. A recommendation to welcome this document is included in the draft recommendations of the note by the Executive Secretary on biological diversity of inland water ecosystems: implications of changes in the water cycle, and freshwater resources, in the implementation of the thematic and cross-cutting programmes of work (UNEP/CBD/SBSTTA/15/8).

### **I. INTRODUCTION**

1. In paragraph 16 of decision X/28, the Conference of the Parties (COP) noted that there is a need to clarify the scope of, and inter-linkages between, the programmes of work of the Convention on Biological Diversity (CBD) on the biological diversity of inland water ecosystems and the biological diversity of marine and coastal ecosystems in coastal areas, including regarding coverage of coastal wetlands under the Ramsar Convention on Wetlands, and requested the Executive Secretary and invited the Secretariat of the Ramsar Convention on Wetlands, subject to available resources, to undertake through the joint work plan between the two conventions an assessment of ways and means to address relevant inland water biodiversity needs in coastal areas and to report on this matter to the fifteenth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice.

2. Accordingly, the Executive Secretary, in collaboration with the Secretariat of the Ramsar Convention, has prepared this note. Section II draws conclusions on relevant terminology in use (based on expanded explanation in the annex) and the scope of the Ramsar Convention. Section III describes some of the important ecological linkages between inland and coastal/marine areas. Section IV explores the scope of, and inter-linkages between, elements of the two programmes of work. Section V examines how well the scope and relevance of the Ramsar Convention is reflected in the programmes of work. Section VI draws conclusions and identifies the key ways and means to address the needs focussing on the ecosystem approach and the Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets.

3. This note incorporates comments received from the SBSTTA Bureau at a face-to-face meeting held on 5 and 6 June 2011 in Montreal. An earlier draft of this note was posted for review from 17 June to 14 July 2011 in accordance with notification 2011-123 and the comments received have been incorporated as appropriate.

### **II. USE OF TERMS AND DEFINED SCOPE**

#### **A. *Use of terms and defined scope in the Convention on Biological Diversity***

4. The terms “inland waters”, “coastal wetlands” or “coastal zone” (etc.) are not defined in any decisions of the Convention on Biological Diversity including the programmes of work on inland waters and marine and coastal biodiversity. Neither are there consistent definitions of these terms at national, international or global levels. With regards to ecological criteria, biomes throughout this region can be either saline or freshwater (or anything in between) including those located a long way inland from the coastline (e.g., saline lakes, the upstream brackish water zones of rivers) and often a long way seawards from the coast (e.g. freshwater plumes extending into oceans offshore of river mouths). Criteria for defining geographic limits are also arbitrary. Further discussion of terminology is provided in the annex to this note. This concludes that consensus on terms, and therefore scope, is unlikely to be reached but also unnecessary in a region in effect characterized by the absence of clear boundaries. This region is one of the clearest examples of the need to adopt ecosystem based perspectives.

## **B. Wetlands and the scope of the Ramsar Convention**

5. By decision III/21, the Conference of the Parties established the Ramsar Convention as the lead implementation partner on wetlands for the Convention on Biological Diversity. This decision determines that the scope of the Ramsar Convention, with regards to the Convention on Biological Diversity, includes all matters and activities where wetlands are relevant. This includes not only activities in wetlands themselves but also broader landscape scale impacts on wetlands and wetland ecosystem services, which can influence other areas well beyond wetland margins (especially regarding hydrological influences).

6. For the purposes of the Ramsar Convention, wetlands are “areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, 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<sup>1</sup>” (Article 1 of the Convention). This is also the accepted definition of wetland used by the Convention on Biological Diversity. The Ramsar Convention uses a broad interpretation of the categories of wetlands covered in its mission, including lakes and rivers, “swamps”, wet grasslands, peatlands, oases, estuaries, deltas, tidal flats, salt pans, near-shore marine areas, mangroves and coral reefs, and human-made sites such as fish ponds, rice paddies, and reservoirs. The Ramsar Convention offers no definitions of “inland” and “coastal” etc.

7. “Wetlands” include all aquatic components of inland water ecosystems including those located in the coastal zone. There is effectively full overlap of scope between the work of the Ramsar Convention and the programme of work on inland waters of the Convention on Biological Diversity. For the marine and coastal programme of work, the scope of the Ramsar Convention includes all relevant components of aquatic systems including landward and seaward of the coastline within a coastal zone and relevant offshore marine areas (e.g., shallow coral reefs). Coverage of Ramsar seawards of the coastline in terms of physical extent varies depending upon local topography. For example, a large number of Ramsar Sites are shallow coastal areas extending a considerable distance offshore, particularly tidal mudflats and estuaries. The six metre limit also applies to local topography of an area and is irrespective of distance from land or the depth of intervening water. For this reason, the majority of the world's shallow coral reefs, including many located far offshore and surrounded by ocean, are regarded as wetlands. The scope of the Ramsar Convention effectively encompasses all the marine and coastal programme of work of the Convention on Biological Diversity, and all habitats irrespective of salinity, excepting for deepwater marine areas.

8. Substantial relevant guidance has been produced by the Ramsar Convention in particular through the Third Edition (2007) of the Ramsar Toolkit<sup>2</sup> including: water related guidance (Handbook 6); river basin management (Handbook 7); water allocation and management (Handbook 8); and in particular, coastal management – wetlands issues in integrated coastal zone management (Handbook 10).

## **III. ECOLOGICAL INTER-LINKAGES BETWEEN INLAND, COASTAL AND MARINE AREAS**

### **A. Hydrology**

9. Inland, coastal and marine wetlands can overlap and/or be physically connected depending on definitions and local conditions. The primary ecological connectivity between these various areas and ecosystem components occurs through hydrological influences. Likewise, the interface continent-sea,

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<sup>1</sup> The six metre limit originates from an earlier estimate, since disproved, that this was the depth to which coastal waterbirds could dive to and forage, reflecting the waterbird influence on the origins of the Ramsar Convention.

<sup>2</sup> [http://www.ramsar.org/cda/en/ramsar-pubs-handbooks/main/ramsar/1-30-33\\_4000\\_0\\_\\_](http://www.ramsar.org/cda/en/ramsar-pubs-handbooks/main/ramsar/1-30-33_4000_0__)

where coastal wetlands are located, is characterized by complex processes related to hydrodynamic flows (and reflux) of freshwater and marine (tidal), movement of masses of water. The water cycle involves terrestrial areas (e.g., evapo-transpiration, soil moisture and groundwater recharge), inland and coastal wetlands and oceans as a source of evaporation returning some water to land areas. Water flow through surface and groundwater is a major driver of the ecology of coastal areas (Figure 1). For example, estuaries are obviously driven by hydrological influence and mangroves, in common with most coastal vegetation types and are also highly sensitive to hydrological change. Changes to natural flows caused by human activity (anthropogenic hydrological changes) through land and water use, including water-related physical infrastructure such as dams, river impoundments and coastal “protection”, drive major changes to coastal ecosystems. This subject is considered further in the document by the Executive Secretary on implications of changes in the water cycle, and freshwater resources to the implementation of the programmes of work and cross-cutting issues (UNEP/CBD/SBSTTA/15/8) and an information note on possible indicators for water and water related ecosystem services for the Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets (UNEP/CBD/AHTEG-SP-Ind/1/INF/3).<sup>3</sup>

10. Hydrological factors are important beyond their influence directly on water availability. They also affect water quality by transporting pollutants, and also refuse, primarily from land based activities, into and/or from coastal areas and beyond them to open oceans. They also influence water quality and refuse transfer through dilution and concentration effects and rapid transportation during floods.

11. Most of the major pollutants (and refuse) affecting marine systems, including offshore and in oceans, arise from land based activities and are delivered there via rivers. The only major exception is for greenhouse gases, in particular carbon dioxide driving ocean acidification, which are transported mainly by atmospheric cycling. Efforts to reduce marine pollution therefore centre largely on managing land based activities and the transfer of these impacts through inland wetlands (including their coastal component). Whilst increases in marine and ocean pollution are indeed cause for concern, the loads there, due to dilution effects, are usually orders of magnitude lower than they are in contributing inland and coastal systems. The Global Programme of Action for the Protection of the Marine Environment from Land-based Activities of the United Nations Environment Programme (UNEP) was adopted by the international community in 1995 and “aims at preventing the degradation of the marine environment from land-based activities by facilitating the realization of the duty of States to preserve and protect the marine environment”. Although the initiative is often cited as a “marine programme” it targets inland water and land issues. It is also unique in being the only global initiative directly addressing the surface connectivity between terrestrial, freshwater, coastal, marine and open ocean ecosystems, although a large number of similar initiatives operate at river basin or regional level. Managing coastal hydrologic functions and the related pollution loads carried from inland areas is a key factor in successful integrated marine and coastal area management (IMCAM).

12. A holistic approach is to consider the “coastal zone” as being effectively the lower region of a river basin and its management, including of influences in the marine realm, is in effect a sub-set of integrated catchment management. Again, it is important to capture the reality that wetlands are part of the landscape and relevant seascape and that management of water use on land is an important part of managing coastal systems. For example, land-use change, such as shifts in agricultural practice and in particular irrigation, including land cover (vegetation) change, is an important driver of change in local and regional hydrological conditions.

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<sup>3</sup> "Possible Indicators for Water and Water Related Ecosystem Services for the Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets" (<https://www.cbd.int/doc/?meeting=AHTEG-SP-IND-01>).

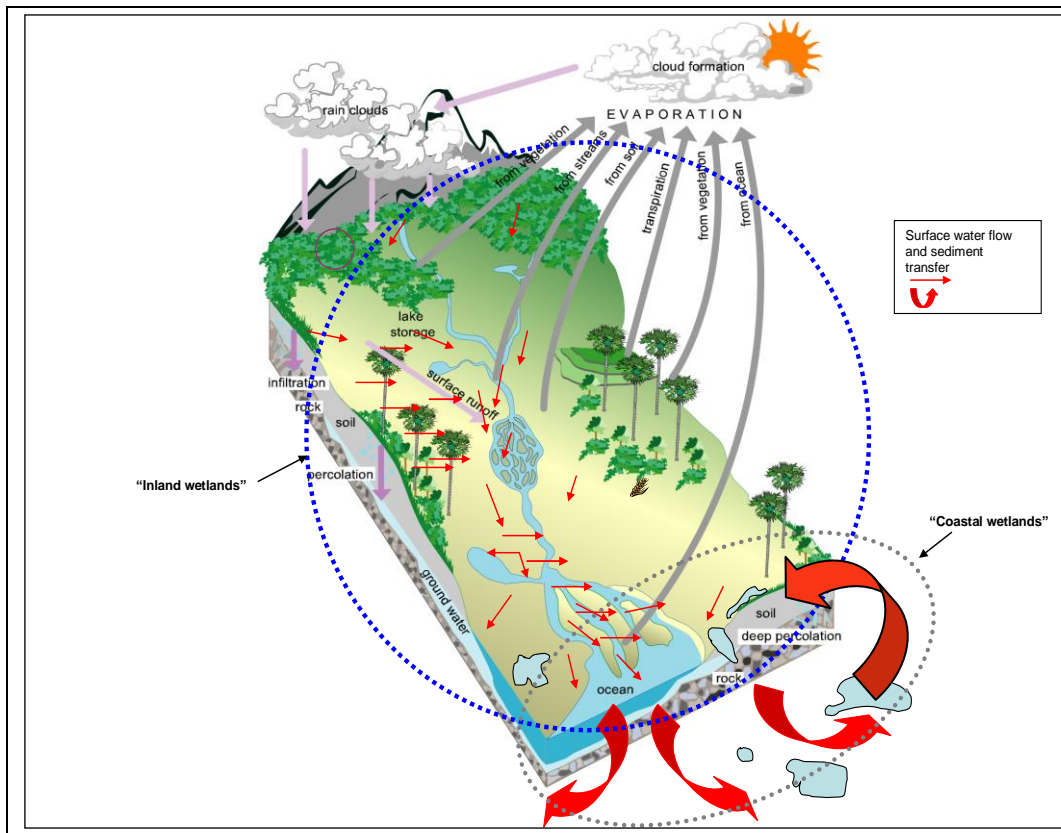


Figure 1: A simplified schematic of an ecosystem, including the landscape and hydrological setting of wetlands.

### ***B. Sediment and nutrient transfer***

13. A key aspect of functionality and interconnectedness between inland and coastal ecosystems is sediment formation and transfer. The process is very dynamic and involves both land and aquatic components of ecosystems. Indeed it is responsible for land formation itself but the sediments are transported and deposited by water (usually via rivers). This is very much a hydrologically driven process. Biodiversity is directly involved in contributing to producing and regulating the sediments (for example soil formation and functions and land cover regulates erosion), whereas sediments are moved and transported by more “physical” processes along rivers, but in fashions determined by ecosystem integrity, and when eventually deposited (not always at the coast) determine the functioning and extent of ecosystems and habitat. Whilst sediment transfer greatly in excess of natural levels is usually undesirable, the maintenance of natural levels of sediment transfer is a critical ecosystem service. The reduction in sediment transfer, below natural levels, has very significant social, economic and biodiversity impacts on coastal ecosystems. Further details of this very important topic are provided in document UNEP/CBD/AHTEG-SP-Ind/1/INF/3.

14. Similarly, nutrient transfer from land, via rivers, is an important determinant of the functioning and productivity of coastal ecosystems. Land based pollution is a well recognised problem in coastal areas and addressing it a core component of IMCAM.

### ***C. Migrations***

15. The migration of species between inland, coastal and marine areas is another important mechanism of ecological interconnectedness. This aspect is relatively well recognized. For fishes and invertebrates, many species undertaking short or long distance migrations within water are usually present

throughout inland and coastal areas: for example, salmon and eel migrations between headwaters of rivers and the open ocean demonstrate the absence of ecosystem boundaries. Likewise, many migratory waterbirds connect ecosystems over long distances; Arctic Terns being an emblematic example by migrating between the poles.

#### IV. SCOPE OF AND INTER-LINKAGES BETWEEN THE ELEMENTS AND ACTIVITIES OF THE CBD PROGRAMMES OF WORK ON INLAND WATER AND MARINE AND COASTAL BIODIVERSITY

##### A. *The biological diversity of inland water ecosystems*

###### 1. *Programme elements and activities*

16. The revised programme of work on the biological diversity of inland water ecosystems was adopted as the annex to decision VII/4 of the Conference of the Parties. As noted above, there is no definition of terms, nor explanation of scope. Paragraph 11 of decision VII/4 recognises the presence of inland water ecosystems within other biomes and the ecological connectedness between inland waters, estuaries and inshore coastal areas and calls for cross-referencing to, and coherence with, the other thematic programmes of work while implementing this programme of work. An overarching guiding principle for the programme of work is “to apply the ecosystem approach to the management of inland water ecosystems” (para. 9 (b) of the annex to decision VII/4). Subsequent referencing to marine and coastal areas is limited. “Coastal” is not explicitly mentioned at all in the programme of work and “marine” areas are mentioned explicitly only in activity 3.2.3 referring to the need for integrated approaches including associated terrestrial and “in-shore” marine ecosystems. Relevant coastal and marine considerations are, of course, not excluded. Many of the actions for the programme of work would also contribute to improved conditions in marine and coastal areas. For example, there is attention to the hydrological factors and pollution.

###### 2. *Relevant considerations during the in-depth review of implementation of the programme of work at the fourteenth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice and the tenth meeting of the Conference of the Parties*

17. The in-depth review of implementation of the programme of work paid attention to “coastal” subjects. In terms of geographic scope, the review considered the landwards areas in coastal zones to be “inland” areas. For example, trends in mangroves and shorebirds were included in assessing status and trends in biodiversity as part of the review. Much attention was also given to trends in habitats and conditions in estuarine and near-shore areas, in particular regarding pollution loads and changes in sediment transfer and impacts on coastal erosion.

18. The most important relevant aspect of the in-depth review was however its attention to hydrological linkages, or the “water-cycle”, highlighting this as the major ecological linkage between “inland” and “coastal” ecosystems. These linkages were explicitly reflected in decision X/28 in, *inter alia*, paragraphs 10(b), 10(l), 21, 25(a) and 46(b). Better recognition of water as a “cross-cutting” subject is a significant step forward in breaking down artificial barriers between programmes of work and promoting more ecosystem level perspectives.

##### B. *Marine and coastal biodiversity*

###### 1. *Programme elements and activities*

19. The elaborated programme of work on marine and coastal biodiversity is contained in annex I to decision VII/5. This does not explicitly define or explain its scope in coastal *versus* inland areas but

Parties agreed that the programme of work should be applied and interpreted consistent with national law, and where applicable, international law, including the United Nations Convention on the Law of the Sea. The scope of the programme of work (regarding inland *versus* coastal) is therefore expected to be determined through national level implementation. A footnote (number 11) to this decision provides additional description of the geographic and ecological coverage of marine and coastal protected areas and the marine environment based on the definitions adopted by an Ad-Hoc Technical Expert Group (further discussion on this is provided in the annex to this document).

20. Paragraph 4 of annex I (referring to basic principles) of the programme of work states that, *inter alia*, the ecosystem approach has a central role in guiding all activities undertaken as part of the programme of work, and thus provides the foundation for its implementation. The importance of understanding of the functioning of the broader ecosystem in terms of its component parts and their connectivity is also highlighted, implicitly including the linkages with inland water ecosystems. Likewise, subsequent texts, programme elements and activities capture the ecosystem approach to varying degrees. In particular, the inland waters – marine and coastal nexus is addressed in the context of “integrated management” under the programme element 1: Implementation of IMCAM. Relevant suggested activities include: to promote the application of ecosystem-based management, including through integration of coastal management activities and watershed management (operational objective 1.1 activity (b)); and, to achieve substantial progress in protecting the marine environment from land-based activities through effective application of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities and other appropriate instruments, including proper coastal land use, watershed planning, and integration of IMCAM into key sectors (operational objective 1.2 activity (c)). Links also exist in programme element 2 (marine and coastal living resources) for example with regards to the degradation of coral reefs due to land based influences (in appendices 1 and 2 to the same annex).

21. Appendix 3 (of the programme of work) refers to elements of a marine and coastal biodiversity management framework which contains reference to sustainable management of the wider environment (section E) including land-based activities, water quality and sedimentation. Paragraph 4 of this appendix emphasized the significance of the connectivity between inland water and marine and coastal habitats using the example that dispersing larvae can link distant marine, coastal and inland water habitats.

22. Notably, however, the programme of work does not have the equivalent context provided by paragraph 11 of decision VII/4 (for inland waters) drawing attention to the fact that all other biomes (and therefore programmes of work) can also occur in coastal areas and also recognising the connectivity between inland, coastal and marine ecosystems.

2. *Relevant considerations during the in-depth review of the programme of work at fourteenth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice and the tenth meeting of the Conference of the Parties*

23. The outcomes of the in-depth review of the programme of work were reflected, in part, through decision X/29 of the Conference of the Parties. Pertaining to the linkages with inland waters biodiversity, the need to implement actions at the national level and collaborate with activities related to the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities is noted in paragraph 6 of this decision. Similarly, paragraph 13(j) requests further efforts in sea areas that are affected by multiple direct and indirect anthropogenic influences originating from the watershed area, and where the biodiversity issues require an integrated holistic approach aiming to improve the water quality and restore the health and functioning of the whole ecosystem.

24. The pre-session document for consideration of the in-depth review at the fourteenth meeting of the Subsidiary Body on Scientific, Technical and Technological Advice (UNEP/CBD/SBSTTA/14/4; based partly on further background information in document UNEP/CBD/SBSTTA/14/INF/2), notes that at the level of implementation of IMCAM there is good attention to inland-coastal linkages. For example,

based on fourth national reports, 78 per cent of all Parties to the Convention on Biological Diversity have instituted improved IMCAM (including catchment management) in order to reduce sediment and nutrient loads into the marine environment. Good progress is also reported for several regional initiatives where activities include: pollution control, including sewage, nutrients, persistent organic pollutants and heavy metals; waste water treatment; addressing eutrophication; environmental assessment and monitoring; as well as environmental restoration. The importance of creating a linkage between watershed management and management actions taken in marine and coastal areas to the success of IMCAM activities is noted in UNEP/CBD/SBSTTA/14/INF/2 together with case-studies.

### *C. Linkages with the programme of work on protected areas*

25. The overall objective of the programme of work on protected areas is “the establishment and maintenance by 2010 for terrestrial and by 2012 for marine areas of comprehensive, effectively managed, and ecologically representative national and regional systems of protected areas that collectively, *inter alia* through a global network contribute to achieving the three objectives of the Convention and the 2010 target to significantly reduce the current rate of biodiversity loss” (decision VII/28, para. 18). There is no mention of inland waters in this objective, but similar language was adopted as a target under Goal 1.1 of the programme of work on protected areas (decision VII/28, annex) whereby a footnote refers to the fact that “terrestrial” includes inland waters.<sup>4</sup> It is unclear why inland waters, despite suffering the fastest rate of biodiversity loss of all biomes when this decision was considered, were dealt with through a footnote. Notably, coastal areas (including coastal wetlands) were entirely absent from the wording of this 2010 target for protected areas. It is unlikely that there was an assumption that they were included under “inland” or “marine areas”, and even if so, this was not explained or footnoted.

26. There are four references to “coastal” in the programme of work on protected areas (as specified in the annex to decision VII/28) and in all cases with regards to the programme of work on marine and coastal biodiversity and in particular in the context of its programme element 3 on protected areas. Since there are uncertainties regarding how the latter addresses scope regarding coastal areas, this historical reliance of the programme of work on protected areas on the programme of work on marine and coastal biodiversity raises the possibility of significant gaps in attention for coastal areas. This is particularly the case regarding coastal areas in close association with, or within, land and/or nearshore and offshore fresh- and brackish-water areas. However, these potential gaps have now been largely addressed in the Strategic Plan for Biodiversity 2011-2020. Target 11 of the Aichi Biodiversity Targets (annex to decision X/2), referring to protected areas, now clearly specifies terrestrial, inland, coastal and marine areas.<sup>5</sup> The emphasis of the programme of work on protected areas on ecologically representative and well connected systems of protected areas also encapsulates the needs in inland and coastal areas by reducing constraints due to biome or ecosystem definitions. Implementation of the programme of work encourages Parties, based on an ecological gap analysis, to focus on the more relevant issue of representativity taking into account irreplaceability and vulnerability criteria. This is a more practical framework for addressing relevant protected area needs in coastal areas than that reflected in programme element 3 (protected areas) of the marine and coastal programme of work.

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<sup>4</sup> By 2010, terrestrially\* and 2012 in the marine area, a global network of comprehensive, representative and effectively managed national and regional protected area system is established as a contribution to (i) the goal of the Strategic Plan of the Convention and the World Summit on Sustainable Development of achieving a significant reduction in the rate of biodiversity loss by 2010; (ii) the Millennium Development Goals - particularly goal 7 on ensuring environmental sustainability; and (iii) the Global Strategy for Plant Conservation. [\*Terrestrial includes inland water ecosystems].

<sup>5</sup> By 2020, at least 17 per cent of terrestrial and inland water areas, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.



**D. *Scope and inter-linkages regarding other programmes of work of the Convention on Biological Diversity***

27. There are many inter-linkages between the other thematic programmes of work of the Convention on Biological Diversity, even if considerations are limited to coastal areas. For example, coastal areas can include dry and sub-humid lands, mountains and forests and agriculture is usually practiced there and various combinations of these and other topics constitute the thematic programme of work on island biodiversity. The extent to which these linkages are captured in the other thematic programmes of work is variable.

**V. **RECOGNITION OF THE LEAD ROLE OF RAMSAR CONVENTION IN THE PROGRAMMES OF WORK OF THE CONVENTION ON BIOLOGICAL DIVERSITY****

28. There are prominent and extensive references to the Ramsar Convention throughout decision VII/4. Paragraph 2 of this decision recognizes the usefulness of the national reports submitted to the Ramsar Convention for a global status of the implementation of the programme of work on the biological diversity of inland water ecosystems. Paragraphs 3, 21, 29 and 30 variously request joint work between the Secretariats of the Convention on Biological Diversity and the Ramsar Convention on Wetlands or invite inputs from the Ramsar Convention and/or its Scientific and Technical Review Panel (STRP). Paragraph 4 welcomes with appreciation the synergy being developed between the Convention on Biological Diversity and the Ramsar Convention in implementing the programme of work, notes the progress made in the implementation of the joint work plans between the two conventions and encourages further activities aiming at avoiding overlaps in the work of both conventions. Paragraph 13 recognises the linkages with the strategic plan of the Ramsar Convention. Paragraph 16 refers to the Ramsar Convention with regards to baseline data/information gathering and assessing status and trends. Paragraph 27 requests those Parties to which this is appropriate, to adopt the Ramsar classification of wetlands as an interim classification system and use it as a framework for the initial inventorying of inland water ecosystems for the purpose of preparing indicative lists of inland water ecosystems important in the framework of the Convention on Biological Diversity (but there is no similar request elsewhere regarding coastal/marine wetlands to which Ramsar's classification guidance equally applies).

29. Paragraph 2 of the preamble to the inland waters programme of work (annex to decision VII/4) notes that the programme and activities of the Ramsar Convention on Wetlands and its STRP have been studied very carefully and actions were identified to optimize harmonization of activities of the Convention on Biological Diversity and its lead partner in the implementation of the programme of work on biological diversity of inland water ecosystems; and that this has been done in accordance with the third joint work plan between the two conventions. Other references to the Ramsar Convention (and/or its STRP) in the programme of work are too numerous to list here.

30. The in-depth review (as above), however, noted that joint implementation of the Convention on Biological Diversity and the Ramsar Convention at national level was a weak area based on third national reports to the Convention on Biological Diversity: only nine Parties had taken comprehensive measures for joint implementation at that time, although quantifying progress based on CBD fourth national reports is constrained by differing reporting formats (UNEP/CBD/SBSTTA/14/INF/3).

31. Since the third meeting of the Conference of the Parties to the Convention on Biological Diversity, the Ramsar Convention has been the lead implementation partner for the Convention on Biological Diversity regarding wetlands and most coastal habitats under the marine and coastal programme of work, including many coral-reefs, are officially recognized as wetlands by the Convention on Biological Diversity. However, cross-referencing to the Ramsar Convention in the programme of work on marine and coastal biodiversity is limited by comparison to inland waters. The programme of work on marine and coastal biodiversity (annex I to decision VII/5) makes only one mention of the Ramsar

Convention, in relation to cooperative initiatives on invasive alien species. Decision VII/5 (including all annexes and appendices) includes one other reference to the Ramsar Convention with regards to capacity-building support for coral reefs and coral bleaching (Appendix 1, Specific work plan on coral bleaching, including its footnote number 26). Cross-referencing to the Ramsar Convention in the in-depth review of the programme of work on marine and coastal biodiversity (including in the relevant background documents UNEP/CBD/SBSTTA/14/4 and UNEP/CBD/SBSTTA/14/INF/2) is similarly limited. The only explicit reference in decision X/29 (in the section referring to the in-depth review) is its paragraph 19 which requests the Executive Secretary, in collaboration with the Secretariat and the STRP, to review opportunities for strengthening implementation of the coastal components of the programme of work on marine and coastal biodiversity, but only in relation to the actions requested in paragraph 17 of decision X/28 (on inland waters) which is limited to water allocation policies.

32. Further inconsistencies in the way in which the Ramsar Convention is referenced both between and within the programmes of work on inland waters and marine and coastal biodiversity could be identified: in brief, many of the linkages, needs and opportunities as identified for inland waters would equally apply to coastal areas but are not referenced there. But this does not necessarily mean that the Ramsar Convention is considered to be less relevant to the programme of work on marine and coastal biodiversity.

33. The Ramsar Convention obviously has a high degree of relevance to protected areas. Paragraph 34 of decision VII/28 (on protected areas) requests the Executive Secretary to strengthen collaboration with, *inter alia*, the Ramsar Convention regarding implementation of the programme of work on protected areas. The Ramsar Convention is listed as a partner in the programme of work itself (annex and appendix to decision VII/28). The programme of work also recognizes the links between it and other programmes of work, including those on inland water and marine and coastal biodiversity. The Ramsar Convention was referenced to varying degrees, and sometimes relatively extensively, in the background documentation supporting the in-depth review of the programme of work on protected areas by SBSTTA-14, leading to decision X/31. Wetlands are also relevant to all other programmes of work of the Convention on Biological Diversity but cross-referencing to the Ramsar Convention and its guidance is minimal or absent in these.

## VI. CONCLUSIONS AND WAYS AND MEANS TO ADDRESS NEEDS

34. Assessing the scope and inter-linkages between programmes of work of the Convention on Biological Diversity is fraught with difficulties and outcomes are somewhat dependent on whether coherence or disconnect is sought. This assessment has identified examples, and more could be cited, supporting a conclusion that the “CBD programme of work” approach can lead to compartmentalizing subjects. The decision requesting this note be prepared (decision X/28, para. 20) is itself an illustration of this danger by referring to “ways and means to address relevant inland water biodiversity needs in coastal areas”: that is, it could be argued to be equally relevant to consider marine and coastal biodiversity needs in inland areas, although the ecosystem approach would warrant no reference to programmes of work and simply focus on “biodiversity needs in coastal areas”. Although the ecosystem approach was adopted as the primary framework for action under the Convention on Biological Diversity as early as the second meeting of the Conference of the Parties (decision II/8, paragraph 1), and prior to the current form of the programmes of work being adopted, this has yet to be fully operationalized at Convention level. The Ramsar Convention has certainly been cross-referenced by the Convention on Biological Diversity more frequently and explicitly in the programme of work on inland waters than in the one on marine and coastal biodiversity, or any of the other programme area.

35. Over the recent years, the work both at Convention and Secretariat levels under the inland waters programme of work has tended to emphasize freshwater areas (which are the dominant ecosystem type in this region) whilst recent work under the marine and coastal area (at Convention level) has been oriented

(at the request of Parties) more towards coral-reefs and offshore areas. However, it is difficult to determine whether this has resulted in gaps in attention.

36. Whatever the history of the current scope of, and inter-linkages between, the programmes of work of the Convention on Biological Diversity, the practical issue is how to move forward. The key “ways and means to address relevant inland water biodiversity needs in coastal areas”, as requested in paragraph 16 of decision X/28, are identified to be:

*Move out of silos to implementation of the ecosystem approach across the Convention*

37. The fundamental need is to use the framework of the ecosystem approach. Similarly, the “wise use” of wetlands, at the centre of the approach of the Ramsar Convention, is defined as “the maintenance of their ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development” and therefore is largely synonymous with the ecosystem approach. These approaches recognize that aquatic components of ecosystems (wetlands) are viewed and managed in a broader landscape perspective which captures the need to manage land and water together as water flows through the landscape, via wetlands, into coastal areas and beyond them into the open sea and oceans. The need is for better recognition of this interconnectivity and, more so, acting accordingly upon it. The needs are in terms of approach/philosophy rather than specifics.

*Focus on the Strategic Plan for Biodiversity 2011-2020*

38. The Strategic Plan for Biodiversity 2011-2020 and its Aichi Biodiversity Targets (annex to decision X/2) is intended to be the focus for future action. It recognizes that the programmes of work and cross-cutting issues provide detailed guidance and key tools for implementation, but they are not the basis of its framework. The Aichi Biodiversity Targets are in general not programme of work based and implementation to achieve most of them involves subjects relevant to most, if not all, of the programmes of work and cross-cutting issues. How “coastal” or “inland” areas or biodiversity are addressed is not an issue in this context, unless practitioners revert to programmes of work as the entry point.

*Recognize the scope and relevance of the Ramsar Convention to the Convention on Biological Diversity, but also vice-versa*

39. The need is to better operationalize the existing recognition of Conference of the Parties to the Convention on Biological Diversity that the Ramsar Convention is the lead implementation partner for wetlands. Wetlands being part of the landscape, and influencing and being influenced by land-based activities, and transcending the inland-coastal-marine interface, means that the Ramsar Convention, in terms of technical scope, has relevance across most, if not all, the areas of interest of the Convention on Biological Diversity.

40. The Conference of the Parties to the Convention on Biological Diversity has consistently recognized the good cooperation with the Ramsar Convention: for example, recognizing that this sets a good example in building synergies between conventions to effectively deliver the objectives of both conventions (preamble to decision VIII/20). This outcome has originated largely, but not exclusively, through considerations for inland waters. There are opportunities to build on this strength across other areas of work and interest. But the fact that the Ramsar Convention is the lead partner for the Convention on Biological Diversity on wetlands begs the question of what then is the Convention on Biological Diversity to the Ramsar Convention? “Lead partner” status is recognition that Ramsar's business is CBD's business but it also implies a reciprocal role. One such role would be for the Convention on Biological Diversity to incorporate Ramsar's interests much more comprehensively and systematically across its own areas of work (as noted above). Others might include that the Convention on Biological Diversity promotes wetlands topics in relevant fora, particularly where the Ramsar Convention has limited access, and encourages referencing to multi-lateral environment agreements, and cooperation between them, based on mutual interest and not their historical or geographic origin.

*Understand that terminology and scope are flexible*

41. The terms “inland” and “coastal”, as used by the Convention on Biological Diversity, and the “scope” of its programmes of work, although ambiguous, need not, and probably could not, be further refined. Where an ecosystem approach is truly operational, definitions and scope are somewhat redundant. In practice there are no boundaries so they need not be sought. Inland and coastal areas overlap and are irrespective of any geographic limits that might need to be set and both areas may contain either freshwater or marine biomes and anything in-between the two. Land and water are intimately connected and aquatic systems (possibly excepting offshore) are part of the landscape and *vice versa*. The term “wetland”, as broadly described by the Ramsar Convention and as used in the context of the Convention on Biological Diversity, includes all relevant biomes/habitats from the top of mountains, through lowland and coastal areas and into the marine environment (but excludes deeper marine areas). In practice, national interpretations are what matters. National, including the various institutional, interpretations of terms and scope need not necessarily be modified. It is more important to understand, and capture, their fluid and flexible nature than to dwell on specifics.

*Annex***TERMINOLOGY**

1. Attempts to define the “scope” of the programmes of work on inland waters or marine and coastal biodiversity based on consensus building for definitions is problematic and probably unfruitful. There are no agreed “definitions” of either of the terms “inland” or “coastal” in adopted text, nor in supporting guidance, under either the Convention on Biological Diversity (CBD) or the Ramsar Convention. Neither do the two terms have universal understanding beyond the two conventions. A greatly simplistic view would be that the geographic boundary between inland areas and the sea would broadly be the “coastline”: that is, where land meets the sea (the beach or sea-shore). “Inland” could therefore be generally assumed to be areas located landwards of this boundary, but this approach is not universally adopted. Even this interpretation is problematic where the coastline is non-linear, probably the norm, and is particularly difficult for larger estuaries. “Coastal” is a term that generally includes both the area of land in proximity to the coastline and an area extending from it into the sea. The extents of both are defined with a great deal of flexibility by different levels of government depending on key management objectives, critical issues, geographical and ecological features and government challenges. The terrestrial portion is variously defined and for larger landmasses can include between 40 to 60 km landwards from the coastline. As for seaward extent, much depends on local topography including the location of the continental shelf, if any, and topography and depth profile of the sea bottom, and location of islands. These interpretations are complicated further by, for example, the existence of what are effectively “coastlines” (or shores) along larger inland water bodies in particular the larger lakes and inland seas. Some Parties do indeed consider such areas as “coastal”. Maritime jurisdictions of different levels of government, e.g., 3 or 12 mile zones, are often employed as the limit of seaward boundary of coastal zones (the historical origins of which are based on neither geographic nor ecological criteria but often on the distance a cannon ball could be propelled).

2. The “inter-tidal zone”, often characterizing coastal areas, refers to the area of land inundated or exposed due to tidal ranges, including wave action. It is often regarded as the ecological boundary between land and sea. This is also an unhelpful concept because the shoreline of inland water bodies can be influenced by tides and certainly waves. Lake Victoria, for example, has a tide, albeit a small one. Inter-tidal zones invariably extend well up the lower sections of rivers, sometimes up to hundreds of kilometres in larger systems with big tidal ranges.

3. Notably the scope of the two programmes of work in coastal areas cannot be defined on ecological criteria. Whilst the largest proportion of inland water bodies is indeed freshwater, a significant proportion is not. Many lakes both well inland and in coastal margins are saline or hyper-saline. Likewise, in cases, freshwater wetlands can extend to the shoreline, sometimes traversing it. Brackish-water areas are practically ubiquitous and can occur well inland in some rivers. For many of the world's larger rivers a fully freshwater zone can extend well offshore, even beyond 100 km from land. Likewise, a deeper saltwater zone can extend well inland in rivers underneath fully freshwater flow above it. In addition, the ecological character of most of these zones changes both spatially and temporally, including seasonally, according to tides, currents, weather conditions, river discharges and in many cases through human influences (such as changed water flows and engineering works). It is also worth mentioning that there appears to be no universal understanding of what the term “marine” means. Whilst ecologists might be in close, but not full, agreement, geographers, for example, have different criteria.

4. Use of the terms “sea” *versus* “lake” is also confused. The Dead Sea, for example, is clearly inland having no connection to the “sea” and is hyper-saline. An example of the fluid nature of terminology is paragraph 11 of decision X/29 of the Conference of the Parties to the Convention on Biological Diversity, referring to processes for identifying ecologically or biologically significant marine areas, which makes reference to the Caspian, Black and Baltic Seas. All of these have varying salinity and

neither the Black nor Baltic Seas are predominantly marine, whereas the Caspian Sea is the world's largest lake and typically marine biota are absent from it<sup>6</sup>.

5. Definitions and scope are problematic also with regards to zoning for geographic and population considerations, and therefore implied socio-economic importance. There are widespread references to, for example, population densities and development pressures in “coastal zones”. For example, the Ad-Hoc Technical Expert Group on Enhancing the Implementation of Integrated Marine and Coastal Area Management (UNEP/CBD/COP/8/26/Add.1) made the claim that “Population densities on the coasts are nearly three times that of inland areas”. Such statistics are presumably generalities, for example noting this to be untrue for all landlocked countries with no coast. The actual relative figures derived of course depend on the extent of coastal area included, something which appears to be rather arbitrary but often designed to capture the largest population in the smallest space. Nevertheless, and whatever the criteria, coastal zones (where they exist and whatever the definition) are indeed often areas of population concentration. One problem lies in what “inland” areas are considered to be: presumably anywhere not coastal (?). In reality, if the coastal zone is taken to be, for example, 60 km from the coastline, most of the people living in it usually still have effectively limited contact with the sea (most people living in London, for example, would be surprised to hear they are living coastal). A different picture of human geography emerges using different criteria. For example, all cities, including the coastal mega cities are by choice located on rivers and the bulk of humanity is therefore not so much “coastal” but “riverine”. Throughout history rivers have shaped the evolution of civilizations, and coastlines, probably more than the direct access by people to the sea. Such issues are more than semantic. Terms influence perceptions which can fuel bias and constrain more holistic management.

6. Footnote number 11 of decision VII/5, as previously referenced in the text of this note, attempts to further clarify some of the scope of the marine and coastal programme of work by utilizing the definitions adopted by an Ad Hoc Technical Expert Group which includes “Marine and coastal protected area’ means any defined area within or adjacent to the marine environment...”. Furthermore, it agreed that “Areas within the marine environment include [*inter alia*] ... sea bays; straits; lagoons; estuaries; intertidal muds; marshes.....” all of which can technically be freshwater and some are very commonly brackishwater. This approach, therefore, captures the variable nature of geography and ecology in the coastal region.

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<sup>6</sup> Dumont, H. J. 1998. The Caspian Lake: History, biota, structure and function. *Limnol. Oceanogr.* 43(1), 44-52.