



10th Meeting of the Conference of the Parties to the
Convention on Wetlands (Ramsar, Iran, 1971)

“Healthy wetlands, healthy people”

Changwon, Republic of Korea,
28 October-4 November 2008

Resolution X.24

Climate change and wetlands

1. RECOGNIZING that wetlands deliver a wide range of ecosystem services that contribute to human well-being, and that in some wetland types this may include services relating to climate change mitigation and/or adaptation;
2. RECALLING that the text of the Convention acknowledges that the global hydrological cycle is fundamental to the maintenance of the ecological character of wetlands and stresses the “fundamental ecological functions of wetlands as regulators of water regimes”, and ALSO RECALLING that Resolution VI.23 emphasizes the “inextricable link between water resources and wetlands” and Resolution VIII.1 highlights the importance of water allocations for wetlands in maintaining wetland ecological character;
3. RECOGNIZING that almost all of the world’s consumption of freshwater is drawn either directly or indirectly from wetlands, and ALSO RECOGNIZING the importance of wetland ecosystems in protecting freshwater supplies, as expressed in Resolution IX.1 Annex C, *An Integrated Framework for Ramsar’s water-related guidance* (2005);
4. RECALLING Resolution VIII.3 on *Climate change and wetlands: impacts, adaptation and mitigation* (2002), which *inter alia* recognized the potentially serious implications of climate change for ensuring the continued conservation and wise use of wetlands and called upon Contracting Parties to manage their wetlands in such a way as to increase their resilience to climate change and extreme climatic events and to ensure that in their climate change responses such as revegetation, forest management, afforestation and reforestation, such implementation does not lead to serious damage to the ecological character of wetlands;
5. ALSO RECALLING that in its Third Assessment Report (TAR), the IPCC concluded that some wetlands, including reefs, atolls, mangroves, and those in prairies, tropical and boreal forests, and arctic (including permafrost) and alpine ecosystems, are considered to be amongst those natural systems especially vulnerable to climate change because of their limited adaptive capacity and that they may therefore undergo significant and irreversible damage;
6. NOTING WITH CONCERN that the Intergovernmental Panel on Climate Change (IPCC) in its Fourth Assessment Report indicates that warming of the earth’s climate system is unequivocal, that most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas (GHG) concentrations, and that observational evidence from all

continents shows that many natural systems, including wetlands, are being affected by regional climate changes;

7. AWARE from the findings of the IPCC Fourth Assessment Report that:

- “With regard to changes in snow, ice and frozen ground (including permafrost), there is high confidence that natural systems are affected. Examples are:
 - enlargement and increased numbers of glacial lakes;
 - increasing ground instability in permafrost regions, and rock avalanches in mountain regions;
 - changes in some Arctic and Antarctic ecosystems, including those in sea-ice biomes, and also predators high in the food chain.”

- “Based on growing evidence, there is high confidence that the following effects on hydrological systems are occurring:
 - increased runoff and earlier spring peak discharge in many glacier- and snow-fed rivers;
 - warming of lakes and rivers in many regions, with effects on thermal structure and water quality.”

- “There is very high confidence, based on more evidence from a wider range of species, that recent warming is strongly affecting terrestrial biological systems, including such changes as:
 - earlier timing of spring events, such as leaf-unfolding, bird migration and egg-laying;
 - poleward and upward shifts in ranges in plant and animal species.”

- “Based on satellite observations since the early 1980s, there is high confidence that there has been a trend in many regions towards earlier ‘greening’ of vegetation in the spring linked to longer thermal growing seasons due to recent warming.”

- “There is high confidence, based on substantial new evidence, that observed changes in marine and freshwater biological systems are associated with rising water temperatures, as well as related changes in ice cover, salinity, oxygen levels and circulation. These include:
 - shifts in ranges and changes in algal, plankton and fish abundance in high-latitude oceans;
 - increases in algal and zooplankton abundance in high-latitude and high-altitude lakes;
 - range changes and earlier migrations of fish in rivers.”

- “Sea-level rise and human development are together contributing to losses of coastal wetlands and mangroves and increasing damage from coastal flooding in many areas.”

- “Increases in sea surface temperature of about 1-3°C are projected to result in more frequent coral bleaching events and widespread mortality, unless there is thermal adaptation or acclimatisation by corals.”
 - “Coastal wetlands including salt marshes and mangroves are projected to be negatively affected by sea-level rise especially where they are constrained on their landward side, or starved of sediment”.
 - “By mid-century, annual average river runoff and water availability are projected to increase by 10-40% at high latitudes and in some wet tropical areas, and decrease by 10-30% over some dry regions at mid-latitudes and in the dry tropics, some of which are presently water-stressed areas. In some places and in particular seasons, changes differ from these annual figures.”
 - “Drought-affected areas will likely increase in extent. Heavy precipitation events, which are very likely to increase in frequency, will augment flood risk.”
 - “In the course of the century, water supplies stored in glaciers and snow cover are projected to decline, reducing water availability in regions supplied by meltwater from major mountain ranges, where more than one-sixth of the world population currently lives.”
8. ALSO AWARE of the increasing evidence that some types of wetlands play important roles as carbon stores, but CONCERNED that this is not yet fully recognized by international and national climate change response strategies, processes, and mechanisms;
 9. RECOGNIZING the significant progress made since Ramsar COP8 (2002) with respect to peatland inventory and awareness of the carbon storage function of wetlands such as peatlands;
 10. NOTING that the global *Assessment on Peatlands, Biodiversity and Climate Change* (prepared under the coordination of Wetlands International and the Global Environment Centre with support from UNEP-GEF, Canada, Netherlands and others) analysed much information on the importance of peatlands for biodiversity and mitigation of, and adaptation to, climate change and confirmed that peatlands are the most important carbon store in the terrestrial biosphere, storing twice as much carbon as the forest biomass of the world, and that degradation of peatlands has been contributing annual emissions equivalent to 10% of global fossil fuel emissions; and that CBD COP 9 encouraged Parties and other governments to strengthen collaboration with the Ramsar Convention on Wetlands and promote the participation of interested organizations in the implementation of the *Guidelines for Global Action on Peatlands* and other actions, such as the ones listed in the global *Assessment of Peatlands, Biodiversity and Climate Change*, that could contribute to the conservation and sustainable use of peatlands and encouraged the implementation of the actions included in the Assessment;
 11. NOTING WITH CONCERN the Key Messages of the Millennium Ecosystem Assessment (MA) *Wetlands and Water Synthesis Report* that the degradation and loss of wetlands is more rapid than that of other ecosystems, that global climate change is likely to exacerbate the loss and degradation of many wetlands, that the adverse effects of global

- climate change will lead to a reduction in the services provided by wetlands, and that the projected continued loss and degradation of wetlands will reduce the capacity of wetlands to mitigate impacts;
12. RECOGNIZING that the conservation and wise use of wetlands enable organisms to adapt to climate change by providing connectivity, corridors and flyways along which they can move;
 13. AWARE from the findings of the Millennium Ecosystem Assessment (MA), the 4th Global Environment Outlook (GEO-4), the World Water Development Report (WWDR 2006), and *A Comprehensive Assessment of Water Management in Agriculture* (CA) that a major driver of the continuing degradation and loss of wetland ecosystems and their services is the increasing abstraction of water especially for agriculture, that many surface and groundwater-dependent wetland systems and their catchments are already water-stressed, and that demand for water, particularly for irrigated agriculture as well as other uses, is projected to continue to increase;
 14. NOTING that many climate change mitigation and adaptation policies include measures such as increasing energy supplies from hydropower and biofuels and more water storages and inter-basin water transfers, and STRESSING the benefits of implementing Ramsar's water-related guidance (Resolution IX.1 Annex C and Resolution X.19) so as to ensure where possible that such climate policies promote positive and minimise negative impacts on the ecological character of wetlands;
 15. AWARE that the United Nations Food and Agriculture Organization (FAO):
 - i) has established climate change as a Priority Area for Interdisciplinary Action, in order to assist countries in developing cross-sectoral policies to address the negative impacts of climate variability and change on agriculture;
 - ii) has organized the "High-Level Conference on World Food Security: The Challenges of Climate Change and Bioenergy" at FAO Headquarters in June 2008;
 - iii) as Chair of UN-Water and in close collaboration with the Libyan Arab Jamahiriya, the African Union, the African Ministers' Council on Water (AMCOW), the African Development Bank, and the Economic Commission for Africa, is organizing a High-level Conference on "Water for Agriculture and Energy in Africa: The Challenges of Climate Change" to be held in Sirte, Libyan Arab Jamahiriya, from the 15th to 17th December 2008; and
 - iv) within the framework of these and other ongoing initiatives of the FAO, including those with the United Nations Development Programme and the United Nations Environment Programme, reiterates the importance of addressing the topic "climate change and wetlands" and its willingness to strengthen cooperation with the Ramsar Convention on this matter;
 16. NOTING that wetlands can also reduce adverse effects of climate change, such as food shortages, by providing vital biodiversity resources, but CONCERNED that the continued degradation and loss of both coastal and inland wetlands is reducing the capacity of wetlands to deliver such resources;
 17. THANKING the government of Canada for supporting the CBD / Ramsar STRP workshop on "Wetlands, Water, Biodiversity and Climate Change" (Gland, March 2007),

and NOTING the preliminary findings and recommendations in the Executive Summary of the report of that workshop.

18. RECOGNIZING that the wise use and restoration of wetlands contributes to building the resilience of human populations to climate change impacts and can attenuate natural disasters expected with climate change, such as the use of restored floodplain wetlands to reduce risks from flooding;
19. REAFFIRMING that integrative policies and planning measures need to be encouraged in order to address the influence of global climate change on the interdependencies between wetlands, water management, agriculture, energy production, poverty reduction and human health;
20. RECOGNIZING that the use of renewable energies is essential to face the challenges posed by climate change, and ACKNOWLEDGING the need to develop these energies in a way that promotes positive and minimises negative impacts on wetlands and their capacity to store carbon;
21. RECALLING the invitation of the Joint Liaison Group (JLG) between the United Nations Framework Convention on Climate Change (UNFCCC), the UN Convention to Combat Desertification (UNCCD), and the Convention on Biological Diversity (CBD), to the Secretariat of the Ramsar Convention to share information and to participate in the meetings of the JLG as appropriate; and RECOGNIZING that this forum, together with the Biodiversity Liaison Group (BLG) of the secretariats of the biodiversity-related Conventions and the Treaty on Plant Genetic Resources for Food and Agriculture and other fora, provides important opportunities to progress matters of common interest, including those concerning climate change;
22. WELCOMING the fact that the 9th Conference of the Contracting Parties to the Convention on Biological Diversity (CBD) in Decision IX/16 invited the Conference of the Parties to the Ramsar Convention, at its 10th meeting, to consider appropriate action in relation to wetlands, water, biodiversity and climate change in view of the importance of this subject for the conservation and sustainable use of biodiversity and human welfare, in line with the lead implementation role of the Ramsar Convention for CBD for wetlands and the terms of the fourth CBD/Ramsar Joint Work Plan; invited the Ramsar STRP to further assess the contribution of biodiversity to climate change mitigation and adaptation in peatlands and other wetlands; recognized the importance of the conservation and sustainable use of the biodiversity of wetlands and in particular peatlands in addressing climate change; and invited the Intergovernmental Panel on Climate Change to participate in the Convention on Biological Diversity and Ramsar processes of preparing future technical studies on climate change and biodiversity, particularly on wetlands;
23. NOTING that the Convention on Biological Diversity (CBD) at its 9th meeting established an Ad-Hoc Technical Expert Group on Climate Change and Biodiversity to provide scientific and technical advice and assessment on the integration of the conservation and sustainable use of biodiversity into climate change mitigation and adaptation activities;
24. RECALLING that Objective 4.1 of the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* is “to use Ramsar sites as baseline

and reference areas for national, supranational/regional, and international environmental monitoring to detect trends in the loss of biological diversity, climate change, and the processes of desertification”, but CONCERNED that mechanisms may not be in place for reporting such trend assessments, and ALSO CONCERNED that adequate national wetland inventory and assessment information at regional and global scales is not available to support and interpret such trend assessments;

25. NOTING the Scientific and Technical Review Panel’s (STRP) renewed attention to wetlands and climate change issues during the 2006-2008 triennium, including: on developing simple methods for assessing the vulnerability of different wetland types to climate-driven changes in water regimes; on the role of and opportunities for wetland restoration as a tool for climate responses; on the role and importance of different wetland types in the global carbon cycle; on assessing vulnerability of wetlands to hydro-ecological impacts, wetland restoration and climate change; and on recent key messages and recommendations concerning wetlands, water and climate change from relevant intergovernmental and international processes and initiatives, and THANKING the STRP for making this work available to Contracting Parties and others through Ramsar Technical Reports and other documents; and
26. RECOGNIZING that the low levels of understanding and appreciation of wetlands in climate change discussions represent a serious and real threat to wetland ecosystems and a missed opportunity for wetlands to contribute to addressing the impacts of climate change;

THE CONFERENCE OF THE CONTRACTING PARTIES

27. AFFIRMS that this Resolution wholly updates and supersedes Resolution VIII.3 on *Climate change and wetlands: impacts, adaptation and mitigation*;
28. URGES Contracting Parties to manage wetlands wisely to reduce the multiple pressures they face and thereby increase their resilience to climate change and to take advantage of the significant opportunities to use wetlands wisely as a response option to reduce the impacts of climate change;
29. ALSO URGES Contracting Parties to ensure that the necessary safeguards and mechanisms are in place to maintain the ecological character of wetlands, particularly with respect to water allocations for wetland ecosystems, in the face of climate driven changes and predicted changes in water distribution and availability due to the direct impacts of, and societal responses to, climate change;
30. ENCOURAGES Contracting Parties to promote the restoration of river, lake and aquifer basins and their wetlands as an important aspect of policy related to climate change;
31. URGES Contracting Parties and other governments, where appropriate, to include in national climate change strategies the protection of mountain wetlands, to reduce the impacts of extremes in precipitation, attenuate the impacts of melting and disappearing glaciers and the reduction of water storage in mountain areas, and the restoration and management of degraded lowland and coastal wetlands, resulting in the attenuation of large storms and sea-level rise;

32. ALSO URGES relevant Contracting Parties to take urgent action, as far as possible and within national capacity, to reduce the degradation, promote restoration, improve management practices of peatlands and other wetland types that are significant GHG sinks, and to encourage expansion of demonstration sites on peatland restoration and wise use management in relation to climate change mitigation and adaptation activities;
33. INSTRUCTS the Ramsar Secretariat, the STRP, and the Coordinating Committee for Global Action on Peatlands (CCGAP) to strengthen synergies between the Ramsar Convention, CBD, UNFCCC and UNCCD with respect to peatland and other wetland conservation and wise use, including for reducing vulnerability and increasing resilience to climate change, whilst recognizing the distinct mandates and independent legal status of each convention and the need to avoid duplication and promote cost savings;
34. INVITES the Global Environment Centre, Wetlands International, and other interested partners to translate into other languages, further disseminate, and undertake follow-up activities to the global *Assessment on Peatlands, Biodiversity and Climate Change*;
35. CALLS ON Ramsar Administrative Authorities to provide expert guidance and support where appropriate to their respective UNFCCC focal point, within the context of UNFCCC Decision 1/CP.13, on the joint policies and measures that are aimed to reduce anthropogenic greenhouse gas emissions from wetlands such as peatlands, where practical;
36. ENCOURAGES Contracting Parties to promote integrated coordination in developing and implementing national policies related to water management, agriculture, energy production, poverty reduction, and human health, in order to ensure that sectoral objectives are mutually supportive in addressing the likely negative impacts of climate change and that such objectives are consistent with the need to protect the ecological character of wetlands and maintain wetland services, as is described in the reports of the IPCC and the MA;
37. REAFFIRMS the need for Contracting Parties to make every effort, when implementing the UNFCCC and, as appropriate, its Kyoto Protocol, to consider the maintenance of the ecological character of wetlands in national climate change mitigation and adaptation policies;
38. ENCOURAGES Contracting Parties to utilize peatlands to showcase the Communication, Education, Participation and Awareness activities for implementation of the Convention in the context of efforts to reduce greenhouse gas emissions and mitigate and adapt to the impacts of climate change;
39. ALSO ENCOURAGES Contracting Parties, the private sector and other stakeholders, respecting national legislation, to pay attention to the potential of incentive measures and funding mechanisms under climate change adaptation and mitigation activities to support the sustainable use and restoration of wetlands as well as to support local livelihoods and contribute to poverty eradication, including exploration of the concept of payments for ecosystem services (PES), consistent and in harmony with the Convention, the internationally agreed development goals and other relevant obligations, in the context of the services provided by wetlands;

40. INVITES the Executive Secretary of the CBD to include relevant considerations and activities in relation to wetlands, water, biodiversity and climate change as a high priority in the Joint Work Plan (2002-2010) between the CBD and the Ramsar Convention, including drawing upon the expertise available through the STRP in the Ad Hoc Technical Expert Group on Biodiversity and Climate Change established in CBD Decision IX/16, para. 12 (b), and INSTRUCTS the STRP to contribute to these processes subject to available resources;
41. URGES Contracting Parties to develop and implement policies that promote opportunities to take advantage of the regulatory services already provided by wetlands to the global climate system, while at the same time contributing to improving human livelihoods and meeting biodiversity goals, and to communicate progress, successes and best practices to the Convention;
42. ENCOURAGES Contracting Parties and other organizations to undertake, where possible, studies of the role of wetlands in carbon storage and sequestration, in adaptation to climate change, including for flood mitigation and water supply, and in mitigating the impacts of sea level rise, and to make their findings available to the Convention, the UNFCCC and other relevant processes;
43. INSTRUCTS the STRP, in its more comprehensive examination of climate change and wetland issues, to review emerging information on the ways in which, *inter alia*, changes in wetland thermal and chemical regimes, hydro-patterns, and increases in water storage and conveyance infrastructure, including impoundments, potentially alter the pathways by which non-native species invade wetlands, and influence their spread, persistence and ecological impacts on native species, and to liaise with the Arctic Council on an assessment of the vulnerability of Arctic wetlands to climate change and the development of guidelines for wise use while taking account of the ongoing Arctic Biodiversity Assessment; and ENCOURAGES Contracting Parties, other governments, and relevant organizations to undertake, where possible, studies of the complex and interactive effects of climate change and invasive species in wetlands, and to undertake an investigation of potential adaptive strategies for Arctic wetlands, seeking cooperation with the Arctic Council;
44. URGES Contracting Parties and others to make full use of the existing Ramsar guidance on the wise use of wetlands (the Wise Use Handbooks), much of which is applicable to many of the threats and impacts on wetlands arising from climate change, in developing their policy and management responses relating to climate change;
45. REQUESTS the Ramsar Secretariat, the STRP, and CCGAP to work together with relevant international conventions and agencies, including the CBD, UNCCD, UNEP, UNDP, FAO and the World Bank, and especially UNFCCC and IPCC, while RECOGNIZING the distinct mandates and independent legal status of each convention and the need to avoid duplication and promote cost savings, to investigate the potential contribution of wetland ecosystems to climate change mitigation and adaptation, in particular for reducing vulnerability and increasing resilience to climate change;
46. ALSO REQUESTS the Ramsar Secretariat and the STRP to use appropriate mechanisms to work with the UNFCCC and other relevant bodies, recognizing the distinct mandates and independent legal status of each convention and the need to avoid duplication and

promote cost savings, to develop guidance for the development of climate change mitigation and adaptation programmes that recognize the critical role of wetlands in relation to water and food security as well as human health; and URGES Contracting Parties and other governments, and INVITES the secretariats and scientific and technical subsidiary bodies of environment conventions, to improve integration on biodiversity and climate change at the international level through capacity building, resource mobilisation and implementation of collaborative work programmes, including under the aegis of established mechanisms including the Joint Liaison Group of the Rio conventions and the Biodiversity Liaison Group;

47. INSTRUCTS the STRP to bring climate change issues with relevance to wetlands to the attention of the Chairs of the Scientific Advisory Bodies of the Biodiversity-related Conventions (CSAB) at the next available opportunity, and where appropriate to utilize this forum to encourage enhanced scientific collaboration on such issues; and, recognizing the distinct mandates and independent legal status of each convention and the need to avoid duplication and promote cost savings, to review the roles of different wetland types in the carbon cycle;
48. INSTRUCTS the STRP to continue its work on climate change as a high priority and, in conjunction with the Ramsar Secretariat, to collaborate with relevant international conventions and agencies, including UNFCCC, CBD, UNCCD, IPCC, UNEP, UNDP, FAO and World Bank, in the development of a multi-institutional coordinated programme of work to investigate the potential contribution of wetland ecosystems to climate change mitigation and adaptation, in particular for reducing vulnerability and increasing resilience to climate change, and in addition to:
 - i) establish ways and means of collaborating with the UNFCCC and other relevant bodies to develop guidance for the development of mutually supportive adaptation and mitigation programmes that recognize the critical role of wetlands in relation to water and food security as well as human health;
 - ii) bring scientific issues and information on wetlands and climate change to the attention of the Chairs of the Scientific Advisory Bodies of the Biodiversity-related Conventions (CSAB) at the next available opportunity, and use this forum to encourage enhanced scientific collaboration on issues related to wetlands and climate change;
 - iii) establish ways of collaborating with the IPCC on scientific issues specifically related to wetlands and climate change, and contribute to its future work in order to raise the awareness of the climate change community of the importance of wetlands, including through the preparation and publication of relevant scientific reports on wetlands and climate change;
49. URGES STRP National Focal Points to engage in and contribute to this work in order to bring in national and regional issues and expertise from their in-country networks of wetland scientists and other experts; and
50. INVITES the Ramsar Administrative Authorities to bring this Resolution to the attention of national focal points of other multilateral environment agreements (MEAs), and

ENCOURAGES Contracting Parties to promote collaborative work between the national focal points of MEAs in support of its implementation.