

6th SESSION OF THE MEETING OF THE PARTIES

9-14 November 2015, Bonn, Germany

“Making flyway conservation happen”

RESOLUTION 6.6

UPDATED ADVICE ON CLIMATE CHANGE ADAPTATION MEASURES FOR WATERBIRDS

Recalling the need, expressed in Article III of the Agreement, for Contracting Parties to identify networks of sites and habitats for migratory waterbirds, and to protect, manage, rehabilitate and restore these as essential actions to maintain the favourable conservation status of species,

Recalling again Resolution 3.17 on *Climate Change and Migratory Waterbirds*, Resolution 4.14 on *The Effects of Climate Change on Migratory Waterbirds* and Resolution 5.13 on *Climate Change Adaptation Measures of Waterbirds*, the latter of which requested the Technical Committee to review and summarise relevant studies and policies related to climate change and migratory waterbird conservation and management, especially with respect to the creation and management of networks of protected and managed sites and other adequately managed sites, and in the light of this work, to propose to MOP6 which additional complementary approaches - if necessary - should be taken,

Further recalling the adoption in Resolution 5.13 of the AEWA guidance framework for climate change adaptation relevant to migratory waterbirds as guidance for the Contracting Parties, which encourages Parties to:

- Maintain and increase ecological resilience to climate change to support the widest range of biodiversity to survive and adapt,
- Conserve the range and ecological variability of habitats and species, to increase the chances that species whose current habitat becomes inhospitable will be able to spread locally into newly favourable habitat,
- Maintain existing ecological networks *and* establish ecological networks through habitat restoration and creation, to promote the success of species dispersal,
- Integrate adaptation and mitigation measures into conservation management to complement existing policies, and
- Undertake vulnerability assessments of biodiversity and associated ecosystem goods and services without delay to prioritise and develop appropriate actions,

Noting the publication in 2014 of the *Fifth Assessment Report* by the Intergovernmental Panel on Climate Change (IPCC)¹ which concluded that climate change associated with medium- to high-emission scenarios poses an “*increased risk of abrupt and irreversible [...] change in the composition, structure, and functions of [...] freshwater ecosystems, including wetlands,*”

Aware of Resolution 11.26 of the Convention on Migratory Species (CMS) which sets out a *Programme of work on climate change and migratory species* in response to Resolution 10.19 on *Migratory species conservation in the light of climate change*, which *inter alia*, called on CMS Parties and others to:

¹ <http://www.ipcc.ch>

- Improve the resilience of migratory species and their habitats to climate change, and ensure habitat availability for the full life-cycle of the species, now and in the future,
- Identify and promote a standardised methodology for evaluating species' vulnerability to climate change and evaluate species' vulnerability on this basis,
- Develop and implement monitoring regimes that are adequate to distinguish declines in populations from transboundary range shifts; diagnose the causes of decline, and to help analyse the impact of climate change on migratory species, and
- Identify, evaluate, prioritise and reduce the additional impacts on migratory species resulting from changes in human behaviour due to climate change,

Aware also of the Ramsar Convention's Resolution XI.14 (2012) on Climate change and wetlands which inter alia, urged or encouraged Ramsar Parties to:

- Maintain or improve the ecological character of wetlands, including their ecosystem services, to enhance the resilience of wetlands as far as possible in the face of climate-driven ecological changes including, where necessary, to promote the restoration of degraded wetlands, and further to promote the ability of wetlands to contribute to nature-based climate change adaptation, and
- 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, eradicating poverty, and meeting biodiversity goals, including the Aichi Biodiversity Targets,

Aware of the increasing number of assessments of the modelled changes in future distributions of migratory waterbirds consequent on changed climate, and the implications such changes have for national, and hence international networks of protected areas, and a growing body of research findings that have relevance to this topic,

Conscious that adaptation measures that help maintain and improve the quality of wetland ecosystems for migratory waterbirds also directly benefit human communities dependent on those wetlands through ensuring continued provision of ecosystem services, such as water, food and fibre, disaster risk reduction and thus aware that climate change adaptation measures are a critical element in strategies that build resilience of human communities to the consequences of changing climate – especially, although not restricted to, those that are most impoverished,

Noting that, as reflected by national reports submitted to MOP6, only a small number of Parties have yet taken actions to adapt to climate change impacts on waterbirds, either through systematic assessment of vulnerability of key habitats (11 Parties) or species (10 Parties), and consequent review of relevant national conservation policies (7 Parties) and/or national climate change action plan (4 Parties), but welcoming those actions that have been undertaken as an important source of experience for other countries,

*Noting with appreciation the generous support to the project *Climate Resilient Site Network in the African-Eurasian Flyway* through the International Climate Initiative provided by the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) on the basis of a decision adopted by the German Parliament.*

The Meeting of the Parties:

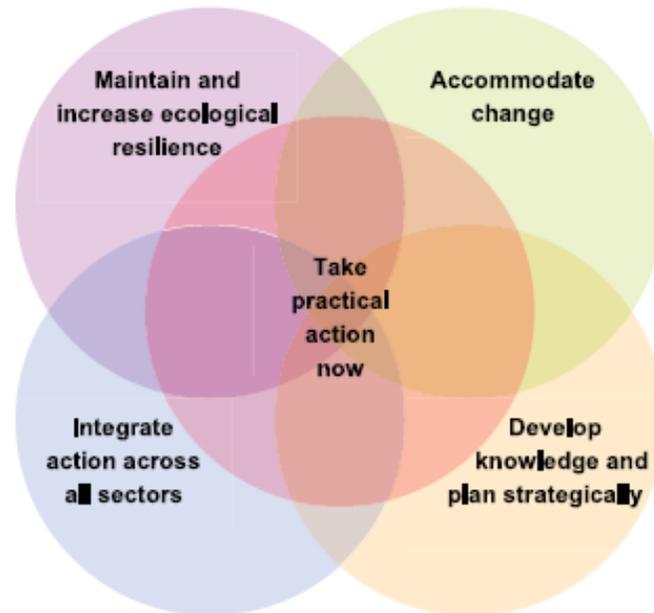
1. *Adopts* the revised framework for adaptation measures for migratory waterbirds – 2015, as presented in Appendix I to this Resolution as further guidance for actions related to national adaptation measures related to the conservation of waterbirds and their wetland, and other habitats; and *urges* Contracting Parties to implement these principles in their implementation of the Agreement as a matter of priority;

2. *Encourages again* Contracting Parties to complete the identification of relevant areas and build national networks of protected areas and other adequately managed areas; to undertake national assessments of the resilience of these sites both individually and collectively; and to report such assessments to future Meetings of the Parties thus sharing this experience;
3. *Urges* Contracting Parties and others to make full use of existing guidance from the Ramsar Convention on the wise use of wetlands (available in Ramsar's *Handbooks for the Wise Use of Wetlands*), much of which is directly applicable to many of the threats and impacts to wetlands important to waterbirds arising from climate change, in developing their policies and adaptations to climate change impacts on wetlands;
4. *Recalling* CBD Decision XII/19 on Ecosystem conservation and restoration and Ramsar Resolution 12.13 on Wetlands and Disaster Risk Reduction, which emphasise the critical importance of coastal wetlands for ecosystem services including of climate change resilience and biodiversity conservation, and conscious of the challenge to Parties to re-plan their coasts in response to sea level rise and other climate change effects, *welcomes* initiatives that support the conservation and restoration of coastal wetlands, including options to build a "[*Caring for Coasts*](#)" initiative as part of a global movement to restore coastal wetlands and *encourages* Contracting Parties to consider engaging in the development and implementation of the proposed initiative;
5. *Requests* the Technical Committee to continue to periodically update AEWA's Guidance framework for climate change adaptation to ensure that it summarises contemporary knowledge of this rapidly developing area, and especially to seek both relevant guidance in French, and that which is relevant to non-European situations.

APPENDIX I

An AEWA guidance framework for climate change adaptation – 2015 update²

Five main adaptation principles are fundamental to conserving biodiversity in a time of rapid climate change:



The precautionary principle should underpin all of these.

Many elements of these principles are neither new nor specific to climate change adaptation; they underpin existing policy and practice in nature conservation. However, climate change creates a new imperative to understand and work with the dynamics of natural systems. The complex interactions between people and their natural environment must be managed to maintain the services and benefits that society derives from biodiversity and ecosystems. These will be increasingly important and threatened as the climate changes.

²This framework is developed, with acknowledgement, from Smithers, R.J., Cowan, C., Harley, M., Hopkins, J.J., Pontier, H. & Watts, O. 2008. *England Biodiversity Strategy: Climate Change Adaptation Principles. Conserving biodiversity in a changing climate.* DEFRA, UK. <http://archive.defra.gov.uk/environment/biodiversity/documents/ebs-ccap.pdf>

Principle	Existing relevant AEWA and other guidance	Brief Overview
Principle 1: Take practical action now		
<p>The speed and scale of climate change require action <u>now</u>. We cannot know exactly how the climate will change or how it will impact directly or indirectly on species, habitats and ecosystems, particularly at a local scale. We cannot wait until the evidence demonstrates greater certainty, as delay will result in more severe impacts, fewer available options for action and increased costs of damage and intervention (if restoration is possible at all). This is because of the length of time it will take to implement adaptation action and for biodiversity to respond. Moreover often there are low-regret, flexible adaptation measures, including ecosystem-based adaptation, for which there is no reason to wait with implementation. Existing conservation efforts are insufficient and there is a need to act now with greater vigour to:</p>		
<p>Conserve existing biodiversity</p> <p>The richness of future biodiversity, even in a changing world, will depend largely upon the biodiversity we conserve today.</p>	<p>Resolution XI.14 Climate change and wetlands: implications for the Ramsar Convention on Wetlands¹</p>	<p>This Resolution sets out Ramsar’s approach to accounting for, mitigating and adapting to climate change in wetlands.</p>
<p>Conserve protected areas and all other high quality habitats</p> <p>These areas will remain important because they have characteristics that will continue to favour high levels of biodiversity. They are key ecological components of wider terrestrial, freshwater and marine ecosystems.</p>	<p>Paragraph 3.2 of AEWA’s Action Plan in relation to conservation of areas</p>	
	<p>Ramsar Handbook for the wise-use of wetlands no. 17: <i>Designating Ramsar Sites</i>²</p>	<p>Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance</p>
	<p>Ramsar Handbook for the wise-use of wetlands no. 18: <i>Managing wetlands</i>³</p>	<p>Frameworks for managing Ramsar Sites and other wetlands</p>
	<p>Ramsar Handbook for the wise-use of wetlands no. 19: <i>Addressing change in wetland ecological character</i>⁴</p>	<p>Addressing change in the ecological character of Ramsar Sites and other wetlands</p>

Principle	Existing relevant AEWA and other guidance	Brief Overview
	Statement 6. (CMS COP 11 Doc 23.4.2 Annex Draft Resolution ⁵)	Statement Six provides a definition of “favourable conservation status” in the light of climate change
	Measures to facilitate species adaptation in response to climate change. (Para.2. Bullet. 2. CMS COP 11 Doc 23.4.2 Annex to the Draft Resolution ⁵)	This bullet point stresses the need to ensure that individual sites hold a variety of habitats and topography.
	Observed and predicted effects of climate change on species abundance in protected areas (Johnston <i>et al</i> 2013) ⁶	This paper investigates the capacity of the UK’s current protected area network to provide protection for migratory species under future climate change.
<p>Reduce sources of harm not linked to climate</p> <p>Climate change is one of many threats to biodiversity. By reducing other sources of harm we will help natural systems maintain their biodiversity in the face of climate change.</p>	Measures to facilitate species adaptation in response to climate change. (Para.2. Bullet .5. CMS COP 11 Doc 23.4.2 Annex to the Draft Resolution ⁵)	This bullet point sets out the following action to undertake specific management to eliminate, counteract or compensate for impacts of climate change and other threats.
	Climate change mitigation, human adaptation, and land use. (Para. 1. CMS COP 11 Doc 23.4.2 Annex to the Draft Resolution ⁵)	This paragraph calls for the identification, evaluation, prioritising and reduction of additional impacts on migratory species resulting from human behavioural change to climate change

Principle	Existing relevant AEWA and other guidance	Brief Overview
	Sec III. A.17. Vulnerability [...] Report on the technical workshop on ecosystem-based approaches for adaptation to climate change ⁷	Recognises that climate change exacerbates pressures on ecosystems which are already negatively affected by other stressors including deforestation.
<p>Use existing biodiversity legislation and international agreements</p> <p>Existing legal and policy frameworks should be used to enable effective action now while working with policy-makers to remedy any potential shortcomings.</p>	Ramsar Handbook for the wise-use of wetlands no. 20: <i>International cooperation</i> ⁸	Guidelines and other support for international cooperation under the Ramsar Convention on Wetlands
Principle 2: Maintain and increase ecological resilience		
<p>Increasing the resilience of ecosystems to the impacts of climate change, will help the widest range of biodiversity to survive and adapt. Ecological resilience ‘depends on a dynamic relationship within species, among species and between species and their abiotic environment, as well as the physical and chemical interactions within the environment’ (Convention on Biological Diversity, 2000). It is vital to continue and extend current efforts to:</p>		
<p>Conserve range and ecological variability of habitats and species</p> <p>It is impossible to predict which localities will continue to have climatic conditions suitable for a given species or habitat. Diversity of terrestrial, freshwater and marine ecosystems, in terms of physical features and habitats, should be maintained. This will increase the chances that species whose current habitat becomes inhospitable</p>	Observed and predicted effects of climate change on species abundance in protected areas (Johnston <i>et al</i> 2013) ⁶	This paper investigates the capacity of the UK’s current protected area network to provide protection for migratory species under future climate change.
	Sec III. A.18. Vulnerability [...] Report on the technical workshop on ecosystem-based approaches for adaptation to climate change ⁷	Recognises the role of healthy ecosystems in increasing resilience.

Principle	Existing relevant AEWA and other guidance	Brief Overview
will be able to spread locally into newly favourable habitat.		
<p>Maintain existing ecological networks</p> <p>Further habitat fragmentation and isolation should be avoided by maintaining management of terrestrial, freshwater and marine ecosystems maintaining the ecological character of these habitats and implementing appropriate spatial planning.</p>	<p>Ramsar Handbook for the wise-use of wetlands no. 17: <i>Designating Ramsar Sites</i>²</p>	<p>Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance</p>
	<p>AEWA Strategic Plan 2009 – 2017 (Objective 1 Target 1.2)⁹</p>	<p>The Strategic Plan provides context for implementation of the Agreement by setting the overall goal, the objectives and targets for a period of nine years. Target 1.2 concerns the establishment of an ecological network of sites for migratory waterbirds.</p>
	<p>Observed and predicted effects of climate change on species abundance in protected areas (Johnston <i>et al</i> 2013)⁶</p>	<p>This paper investigates the capacity of the UK's current protected area network to provide protection for migratory species under future climate change.</p>
<p>Create buffer zones around high quality habitats</p> <p>High quality habitats can be buffered from potential negative edge effects by reducing the occurrence of damaging activities in their immediate vicinity. For example, this may be achieved on land by creating the same or complementary habitats adjacent to them.</p>	<p>Paragraph 3.3 of AEWA's Action Plan in relation to rehabilitation and restoration</p>	
	<p>Measures to facilitate species adaptation in response to climate change. (Para.2. Bullet .7. CMS COP 11 Doc 23.4.2 Annex to the Draft Resolution⁵)</p>	<p>Calls for action to integrate protected areas into wider landscapes/ seascapes</p>

Principle	Existing relevant AEWA and other guidance	Brief Overview
<p>Take prompt action to control spread of invasive species</p> <p>The establishment of invasive species known to cause significant habitat degradation or loss of other species should be prevented where action can be sustained.</p>	<p>AEWA Guidelines on Avoidance of Introductions of non-native Waterbird Species¹⁰</p>	<p>This technical report provides guidelines for parties relating to the avoidance of introducing non-native waterbirds.</p>
	<p>Invasive Alien Species: Review of work and considerations for future work. (CBD COP 12 Decision XII/17¹¹)</p>	<p>This CBD Decision reviews progress made and future work needed relating to the introduction of invasive alien species.</p>
	<p>Invasive alien species: management of risks associated with introduction of alien species as pets, aquarium and terrarium species, and as live bait and live-food, and related issues. (CBD COP 12 Decision X11/16¹²)</p>	<p>This CBD Decision gives guidance on devising and implementing measures to address risk relating to introduction of alien species as well as setting out progress made and future work relating to this subject.</p>
<p>Principle 3: Accommodate change</p>		
<p>Climate change brings into sharp focus the need to manage for the future and adopt an increasingly dynamic approach to conservation. Both gradual change and extreme weather events will shape the places where species occur. Species populations will change and move, affecting other species and habitats. The past will provide no, or limited, guidance to the future due to the rate and magnitude of change expected. There is a need to:</p>		
<p>Understand that change is inevitable</p> <p>The structure and composition of habitats has never been static. Species will respond individually to climate change and we should seek to work with the grain of change and natural processes.</p>	<p>This was thought to be widely accepted and therefore assisting documentation is not provided.</p>	

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<p>Make space for the natural development of rivers and coasts</p> <p>Changing rainfall patterns and rising sea levels will affect our rivers and coasts. By recognising the role of erosion and deposition in shaping the environment, we can increase the potential for species and habitats to adapt naturally to these changes.</p>		
<p>Establish ecological networks through habitat restoration and creation</p> <p>Some species will need to move some distance from their current locality if they are to survive climate change. The success of species dispersal can be promoted by enhancing protected areas and creating new habitat, restoring degraded habitat, and sympathetically managing areas between existing habitats in the wider environment.</p>	<p>Paragraph 3.3 of AEWA's Action Plan in relation to rehabilitation and restoration</p>	
	<p>AEWA Strategic Plan 2009 – 2017 (Objective 1, Target 1.2)⁹</p>	<p>The Strategic Plan provides context for implementation of the Agreement by setting the overall goal, the objectives and targets for a period of nine years. Target 1.2 concerns the establishment of an ecological network of sites for migratory waterbirds.</p>
	<p>Measures to facilitate species adaptation in response to climate change. (Para.2. Bullet. 3. CMS COP 11 Doc 23.4.2 Annex to the Draft Resolution⁵)</p>	<p>This bullet point outlines the following action to ensure connectivity between sites to aid species dispersal and colonization with distribution shifts.</p>
	<p>Measures to facilitate species adaptation in response to climate change. (Para.2. Bullet .10. CMS COP 11 Doc 23.4.2 Annex to the Draft Resolution⁵)</p>	<p>This bullet point calls for action to identify species which have special connectivity needs i.e. dispersal limited</p>

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	Observed and predicted effects of climate change on species abundance in protected areas (Johnston <i>et al</i> 2013) ⁶	This paper investigates the capacity of the UK's current protected area network to provide protection for migratory species under future climate change.
<p>Aid gene flow</p> <p>The ability of a species to adapt to change is correlated with genetic diversity and population size, so conservation should seek to maintain or create large populations. Gene flow between populations is desirable but care may be required where small populations have been isolated for a long period and local genetic variation may be swamped.</p>		
<p>Consider the role of species translocation and ex-situ conservation</p> <p>Translocation (introduction, reintroduction and restocking) and captive-breeding programmes may be used to conserve some species, as appropriate. Large-scale translocations may be impractical.</p>	<p>AEWA Recommended best practice for the conservation of threatened waterbirds through action planning and re-establishment (Resolution 4.4)¹³ which was based on Review of waterbird re-establishment projects^{12a}</p>	
	<p>AEWA Guidelines for the Translocation of Waterbirds for Conservation Purposes: Complementing the IUCN Guidelines¹⁴</p>	<p>This technical report provides guidelines on translocation of waterbirds providing details on planning translocations as well as best practice case studies.</p>

Principle	Existing relevant AEWA and other guidance	Brief Overview
	Measures to facilitate species adaptation in response to climate change. (Para.3. CMS COP 11 Doc 23.4.2 Annex to the Draft Resolution ⁵)	This paragraph asks that ex-situ and assisted colonization are recognised as appropriate for species severely threatened by climate change.
<p>Develop the capacity of institutions and administrative arrangements to cope with change and learn from experience</p> <p>We must learn to be effective in a changing and uncertain world. This will require a cultural shift to work positively towards a future of potentially different circumstances, learning from experience, and sharing information more widely within and between organisations, whilst retaining consistent objectives.</p>	AEWA Conservation Guideline series ¹⁵	A series of 14 guideline documents which provide advice on a range of waterbird conservation topics.
	African Initiative for the conservation of migratory waterbirds and their habitats in Africa (Resolution 4. 9) ¹⁶	Set up a mechanism by which the AEWA secretariat was instructed to support the African range states to enhance cooperation and communication.
	Statement 9. CMS COP 11 Doc 23.4.2 Annex Draft Resolution ⁵	This statement requests liaison between the Secretariat and other MEAs.
<p>Respond to changing conservation priorities</p> <p>Conservation targets need to be regularly reviewed to ensure resources are directed towards conservation priorities as some species increase, others decline and habitats change in character.</p>	Ramsar Handbook for the wise-use of wetlands no. 3: <i>Laws and institutions</i> ¹⁷	Reviewing laws and institutions to promote the conservation and wise use of wetlands

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Principle 4: Integrate action across partners and sectors		
<p>Adaptation policy across all sectors needs to be built on a foundation of healthy and resilient ecosystems. Different sectors of society view biodiversity and ecosystems in terms of their own economic, cultural and societal needs. Biodiversity is critical both for its intrinsic value and because of the key role it plays in providing the ecosystem and other services upon which we all ultimately depend. Yet competing economic uses of land, water resources and the marine environment usually undervalue biodiversity and natural systems, sometimes with widespread incentives and subsidies that lead to damage to the environment. The scale of adaptation required demands that biodiversity conservation is integrated with economic activities on land and at sea. There is a need to:</p>		
<p>Integrate adaptation and mitigation measures</p> <p>Biodiversity conservation can contribute to carbon management; for example, as a result of peatland restoration or native woodland creation. Mitigation should not harm biodiversity and should recognise opportunities for biodiversity, thereby contributing to adaptation.</p>	<p>Monitoring and research. (Para.7. CMS COP 11 Doc 23.4.2 Annex to the Draft Resolution⁵)</p> <p>Climate change mitigation, human adaptation, and land use. (CMS COP 11 Doc 23.4.2 Annex to the Draft Resolution⁵)</p> <p>Biodiversity and climate change and disaster risk reduction. (CBD COP 12 Decision XII/20¹⁸)</p>	<p>This paragraph calls for continued research to make explicit the associated synergies and trade-off between biodiversity conservation, mitigation and adaptation efforts.</p> <p>This section draws on the relationship between climate change mitigation and adaptation and land-use and further its potential impacts on biodiversity.</p> <p>This CBD Decision seeks to make explicit the link between conservation of biodiversity and ecosystem restoration and mitigation of climate change and the reduction of disaster risk.</p>

Principle	Existing relevant AEWA and other guidance	Brief Overview
	Sec III. A.18. Vulnerability [...] Report on the technical workshop on ecosystem-based approaches for adaptation to climate change ⁷	Recognises the role of healthy ecosystems in increasing resilience.
<p>Integrate policy and practice across relevant economic sectors</p> <p>Adaptation measures for biodiversity should be explicitly linked with the wider benefits that they bring. Governments should ensure that planning for national adaptation is integrated across different sectors and that adequate environmental safeguards are built into adaptation responses across all policy sectors. Projected needs of migratory species should be integrated within all relevant policies especially National Biodiversity and Species Action Plans, Protected Area policy and management plans, and National Adaptation Policies and plans. Conservation organisations can assist in demonstrating and catalysing action for biodiversity across all relevant economic sectors. In this way, conservation can be interwoven with other activities for effective delivery of ecosystem goods and services.</p>	Ramsar Handbook for the wise-use of wetlands no. 5: <i>Partnerships</i> ¹⁹	Key partnerships for implementation of the Ramsar Convention
	Biodiversity and climate change and disaster risk reduction. (CBD COP 12 Decision XII/20 ¹⁸)	This CBD Decision seeks to make explicit the link between conservation of biodiversity and ecosystem restoration and mitigation of climate change and the reduction of disaster risk.
	Ten steps to Biodiversity Mainstreaming ²⁰	This guide presents ten key steps to biodiversity mainstreaming derived from the experience and good practice of participants of the first NBSAPs 2.0 Mainstreaming Biodiversity and Development project workshop.
	Sec III C. Integration of ecosystem-based approaches into adaptation policies and programmes. Report on the technical workshop on ecosystem-based approaches for adaptation to climate change ⁷	This section provides examples of the integration of ecosystem-based approaches into policy.
<p>Build and strengthen partnerships</p>	Ramsar Handbook for the wise-use of wetlands no. 5: <i>Partnerships</i> ¹⁹	Key partnerships for implementation of the Ramsar Convention

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Partnerships between the public and private sectors should form a fundamental part of the process of developing climate change adaptation strategies from the outset. Engagement with stakeholders and local communities is crucial to developing adaptation actions that will work best on the ground.	Ramsar Handbook for the wise-use of wetlands no. 7: <i>Participatory skills</i> ²¹	Establishing and strengthening local communities' and indigenous people's participation in the management of wetlands
	Knowledge exchange and capacity-building. (Para. 5. CMS COP 11 Doc 23.4.2 Annex to the Draft Resolution ⁵)	This paragraph calls for establishment of regional/ sub-regional workshops between actors for knowledge exchange.
	Sec III. E. Knowledge management and stakeholder engagement. Report on the technical workshop on ecosystem-based approaches for adaptation to climate change ⁷	Provides cases studies of knowledge management, capacity building and stakeholder engagement to promoting ecosystem-based approaches.
<p>Raise awareness of benefits of the natural environment to society and adopt an ecosystem approach to conservation</p> <p>Wider appreciation that adaptation for biodiversity is in the interests of individuals, communities and businesses will lead to demand and support for implementation. This should build on recognition of environmental services provided by biodiversity and ecosystems and an appreciation that safeguarding ecosystems supporting migratory birds can reduce vulnerability and enhance adaptive capacity of people to climate change.</p>	AEWA Communications Strategy ²²	This document sets out a communication strategy for AEWA.
	Ramsar Handbook for the wise-use of wetlands no. 6: <i>Wetland CEPA</i> ²³	The Convention's Programme on communication, education, participation, and public awareness (CEPA) 2009-2015
	Biodiversity and climate change and disaster risk reduction. (CBD COP 12 Decision XII/20 ¹⁸)	This CBD Decision seeks to make explicit the link between conservation of biodiversity and ecosystem restoration and mitigation of climate change and the reduction of disaster risk.

Principle	Existing relevant AEWA and other guidance	Brief Overview
	Developing a ‘business case’ for biodiversity	This paper sets out the rationale for placing biodiversity at the heart of policy, legislation, plans and projects and further, how to develop a business case to encourage business to adopt this message.
	The Economics of Ecosystems and Biodiversity (TEEB) for Water and Wetland Summary ²⁴	This report seeks to generate a better understanding of the ecosystem service values of water and wetlands and encourage improved decision making and business commitment for their conservation, investment and wise use.
	Sec III. A.18. Vulnerability [...] Report on the technical workshop on ecosystem-based approaches for adaptation to climate change ⁷	Recognises the role of healthy ecosystems in increasing resilience of communities.
Principle 5: Develop knowledge and plan strategically		
<p>We cannot know exactly how the climate will change or its precise impacts on biodiversity but we do know the general trends and some specific species responses. We have to plan for the future with available information, developing techniques that will enable us to move forward with actions that we will not regret whatever the future may bring. Simultaneously, we must strive to learn more about the impacts of climate change on biodiversity and ecosystems and to monitor the effectiveness of adaptation.</p>		
Undertake vulnerability assessments of biodiversity and associated ecosystem goods and services without delay	Measures to facilitate species adaptation in response to climate change. (Para.1. CMS COP 11 Doc 23.4.2 Annex to the Draft Resolution ⁵)	This paragraph calls for the preparation of species actions plans for those species considered most vulnerable.

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<p>Vulnerability to climate change is ‘the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes’ (Intergovernmental Panel on Climate Change, 2007). Assessing vulnerability will help to identify priorities and develop appropriate actions.</p>	<p>Vulnerability Assessment. (CMS COP 11 Annex to the Draft Resolution⁵)</p>	<p>This sections calls for vulnerability assessments of migratory species to be carried out in a consistent way.</p>
	<p>A Framework for assessing the vulnerability of wetlands to climate change²⁵</p>	<p>This technical report identifies knowledge gaps and sets out a framework for vulnerability assessment</p>
	<p>Section III. A. Vulnerability [...] diagram & Section. D. Methodological, technical and scientific aspects of ecosystem-based approaches for adaptation. Report on the technical workshop on ecosystem-based approaches for adaptation to climate change⁷</p>	<p>A. This section provides the diagram ‘Effect and feedback loops in coupled human-environment systems.’</p> <p>D. Discussing lessons learned and good practices on relevant tools and approaches.</p>
<p>Undertake scenario planning and implement no regrets actions</p> <p>There is a need to make strategic decisions by embracing uncertainty and addressing the full range of likely variation in projected changes and their impacts. It is important to avoid selection of one preferred future in the hope that it will become true.</p>	<p>Observed and predicted effects of climate change on species abundance in protected areas (Johnston <i>et al</i> 2013)⁶</p>	<p>This paper investigates the capacity of the UK’s current protected area network to provide protection for migratory species under future climate change.</p>
<p>Pilot new approaches and monitor</p> <p>New approaches to conservation management need to be piloted and monitored at a large scale and</p>	<p>Measures to facilitate species adaptation in response to climate change Para.4. (CMS COP 11 Annex to the Draft Resolution⁵)</p>	<p>This paragraph calls for the monitoring of conservation action to guide ongoing efforts and apply suitable adaptive responses.</p>

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within a time period commensurate with the challenge.		
<p>Monitor actual impacts and research likely future impacts</p> <p>Gaining knowledge of actual and projected impacts of climate change on biodiversity is essential to help shape and adapt conservation action.</p>	Monitoring and research Para.5.Bullet.6. (CMS COP 11 Doc 23.4.2 Annex to the Draft Resolution ⁵)	This paragraph calls for the development and implementation of monitoring regimes to diagnose changes in species populations etc.
	Observed and predicted effects of climate change on species abundance in protected areas (Johnston <i>et al</i> 2013) ⁶	This paper investigates the capacity of the UK's current protected area network to provide protection for migratory species under future climate change.
<p>Improve understanding of the role of biodiversity in ecosystem services</p> <p>Implementing an ecosystems approach requires a better understanding of the benefits provided by biodiversity and ways in which ecosystem services will be affected by climate change.</p>	Monitoring and research Para.5.Bullet.1. & Para. 6. (CMS COP 11 Doc 23.4.2 Annex to the Draft Resolution ⁵)	Paragraph 5 calls for the development and implementation of monitoring regimes to diagnose changes in species populations etc. Paragraph 6 calls for research relating to testing the effectiveness of species adaptation methods and associated risks.
	Knowledge exchange and capacity-building. (Para. 7. Bullet CMS COP 11 Doc 23.4.2 Annex to the Draft Resolution ⁵)	This paragraph calls for the increased support for natural resources managers and other decision makers.
<p>Research knowledge gaps with stakeholder participation</p> <p>Climate change adaptation has cross-sectoral implications. Ensuring stakeholders have a</p>	The BioDiversa Stakeholder Engagement Handbook ²⁶	The handbook provides best practice guidelines for stakeholder engagement in research projects

Principle	Existing relevant AEWA and other guidance	Brief Overview
common understanding of and commitment to new evidence is essential to develop policy and practice.		

Sources

1. Ramsar Convention Secretariat 2012. *Climate Change and wetlands: implications for the Ramsar Convention on Wetlands*. Resolution 11.14. At <<http://www.ramsar.org/sites/default/files/documents/pdf/cop11/dr/cop11-dr14-e-climate.pdf>>
2. Ramsar Convention Secretariat 2010. Designating Ramsar Sites. *Ramsar handbooks for the wise use of wetlands*. No. 17. At <http://archive.ramsar.org/cda/en/ramsar-pubs-handbooks/main/ramsar/1-30-33_4000_0>
3. Ramsar Convention Secretariat 2010. Managing Wetlands. *Ramsar handbooks for the wise use of wetlands*. No. 18. At <http://archive.ramsar.org/cda/en/ramsar-pubs-handbooks/main/ramsar/1-30-33_4000_0>
4. Ramsar Convention Secretariat 2010. Addressing change in wetland ecological character. *Ramsar handbooks for the wise use of wetlands*. No. 19. At <http://archive.ramsar.org/cda/en/ramsar-pubs-handbooks/main/ramsar/1-30-33_4000_0>
5. Convention on Migratory Species 2014. Programme on work on climate change and migratory species. In *COP11/Doc.23.4.2*.
6. Johnston, A. *et al.* 2013. Observed and predicted effects of climate change on species abundance in protected areas. *Nature Climate Change* **3**: 1055–1061.
7. UN Framework Convention on Climate Change 2013. *Report on the technical workshop on ecosystem-based approaches for adaptation to climate change*. At <<http://unfccc.int/resource/docs/2013/sbsta/eng/02.pdf>>
8. Ramsar Convention Secretariat 2010. International cooperation. *Ramsar handbooks for the wise use of wetlands*. No. 20. At <http://archive.ramsar.org/cda/en/ramsar-pubs-handbooks/main/ramsar/1-30-33_4000_0>
9. UNEP/AEWA Secretariat 2008. *AEWA Strategic Plan 2009-2017*. At <<http://www.unep-aewa.org/en/documents/strategic-plan>>
10. Owen, M., Callaghan, D. & Kirby, J. 2006. Guidelines on Avoidance of Introductions of Non-native Waterbird Species. *AEWA Conservation Guidelines*. At <http://www.unep-aewa.org/sites/default/files/publication/ts12_guidelines_non-native-species_complete_0.pdf>
11. Convention on Biological Diversity 2014. Invasive alien species: review of work and considerations for future work. In Decision X11/17. At <<http://www.cbd.int/doc/decisions/cop-12/cop-12-dec-17-en.pdf>>
12. Convention on Biological Diversity 2014. Invasive alien species: management of risks associated with introduction of alien species as pets, aquarium and terrarium species, and as live bait and live food, and related issues. In Decision XII/16. At <<http://www.cbd.int/doc/decisions/cop-12/cop-12-dec-16-en.pdf>>
13. UNEP/AEWA Secretariat. 2008. Developing International Best Practice for the Conservation of Threatened Waterbirds through Action Planning and Re-establishment. in *AEWA MOP 4/4.4* (2008). At <www.unep-aewa.org/sites/default/files/document/res4_4_ssap_re-establishments_final_0.pdf>

14. Lee, R., Cranswick, P.A., Cromie, R.L., Hilton, G.M., Jarrett, N.S., Hughes, B. 2012. AEWG Guidelines for the Translocation of Waterbirds for Conservation Purposes: Complementing the IUCN Guidelines. *AEWA Conservation Guidelines*. At <http://www.unep-aewa.org/sites/default/files/publication/ts49_translocation_guidelines.pdf>
15. UNEP/AEWA Secretariat. *AEWA Conservation Guidelines Series*. At <<http://www.unep-aewa.org/en/publications/technical-publications>>
16. UNEP/AEWA Secretariat. African Initiative for the Conservation of Migratory Waterbirds and Their Habitats in Africa. In Resolution 5.9. At http://www.unep-aewa.org/sites/default/files/document/res_5_9_african_initiative_0.pdf
17. Ramsar Convention Secretariat 2010. Laws and institutions: Reviewing laws and institutions to promote the conservation and wise use of wetlands. *Ramsar handbooks for the wise use of wetlands*. No. 3. At <<http://ramsar.rgis.ch/pdf/lib/hbk4-03.pdf>>
18. Convention on Biological Diversity 2014. Biodiversity and climate change and disaster risk reduction. In Decision XII/20. At <<http://www.cbd.int/doc/decisions/cop-12/cop-12-dec-20-en.pdf>>
19. Ramsar Convention Secretariat 2010. Partnerships. *Ramsar handbooks for the wise use of wetlands*. No. 5. At <<http://ramsar.rgis.ch/pdf/lib/hbk4-05.pdf>>
20. IIED & World Conservation Monitoring Centre 2013. Ten steps to Biodiversity Mainstreaming. At <<http://pubs.iied.org/pdfs/14625IIED.pdf?>>
21. Ramsar Convention Secretariat 2010. Participatory skills. *Ramsar handbooks for the wise use of wetlands*. No. 7. At <http://archive.ramsar.org/cda/en/ramsar-pubs-handbooks/main/ramsar/1-30-33_4000_0>
22. UNEP/AEWA Secretariat 2015. *AEWA Communications Strategy*. At http://www.unep-aewa.org/sites/default/files/document/mop6_21_draft_communication_strategy_0.pdf
23. Ramsar Convention Secretariat 2010. Wetland CEPA. *Ramsar handbooks for the wise use of wetlands*. At <http://archive.ramsar.org/cda/en/ramsar-pubs-handbooks/main/ramsar/1-30-33_4000_0>
24. Russi, D., ten Brink, P., Farmer, A., Badura, T., Coates, D., Förster, J., Kumar, R., Davidson, N. 2013. *The Economics of Ecosystems and Biodiversity (TEEB) for Water and Wetlands*. At <<http://www.teebweb.org/publication/the-economics-of-ecosystems-and-biodiversity-teeb-for-water-and-wetlands/>>
25. Gitay, H., Finlayson, C.M. & Davidson, N.C. 2011. *A Framework for assessing the vulnerability of wetlands to climate change*. Ramsar Technical Report No. 5/CBD Technical Series No. 57. Ramsar Convention Secretariat, Gland, Switzerland & Secretariat of the Convention on Biological Diversity, Montreal, Canada. ISBN 92-9225-361-1 (print); 92-9225-362-X (web). At <<http://strp.ramsar.org/strp-publications/ramsar-technical-reports/rtr-no.5-a-framework-for-assessing-the-vulnerability-of-wetlands-to-climate-change-2011>>
26. Durham, E., Baker, H., Smith, M., Moore, E., & Morgan, V. 2014. *The BiodivERsA Stakeholder Engagement Handbook*. 108 pp. At <<http://www.biodiversa.org/577>>