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RENEWABLE ENERGY AND MIGRATORY WATERBIRDS

Explanatory note

Renewable energies are becoming increasingly important on a global scale as efforts to halt climate change by reducing greenhouse gas emissions continue to increase. The International Energy Agency (IEA) currently estimates that renewables based power generation will triple globally by 2035 and that the use of biofuels will experience a similar increase. The development and utilization of renewable energy sources is further being pushed by favorable government policies and subsidies such as the European Union target to increase the share of energy derived from renewables within the EU to 20% by 2020.

All forms of power generation have an impact on the environment, and renewable energies are no exception. Each renewable energy source poses new challenges with respect to possible adverse effects on ecosystems and biodiversity. Renewable energy resources differ significantly within the AEWA region. Wind resources and the availability of biomass, for example, differ significantly from country to country. Hence different sources of renewable energy will form a part of the energy mix in different AEWA range states, making an overview of all renewable energy sources in relation to migratory waterbirds essential in order to minimize potential direct and indirect negative effects, particularly on those populations listed in Table 1 of the Agreement.

Wind energy is expected to continue growing rapidly within the AEWA region, especially within the European Union. Studies have shown that whilst wind energy in general does not pose a serious threat to wildlife, poorly sited or designed wind farms can pose a threat to vulnerable species and habitats, and can in particular increase bird mortality or lead to the displacement of birds from areas of occurrence. Research conducted on the effects of wind farms on birds have resulted in several studies with recommendations and guidelines on how to best avoid possible negative impacts of new installations (careful site selection) as well as on possibilities to minimize adverse effects (changing lighting, temporary shut downs during peak migration etc.). Such guidelines have been developed by the European Commission, the Bern Convention and the World Bank. However, more research is still needed, particularly concerning the effects of offshore wind farms on birds.

Less information is available on the possible adverse effects specifically on birds of other sources of renewable energy such as solar energy, hydropower and biofuels.

However, although generally not thought to directly cause higher bird mortality, other sources of renewable energy do have the potential to lead to a decline in waterbird populations by impacting on waterbird habitats and food sources, for example through disturbance, displacement and loss or deterioration of habitats, especially if sites in key areas.

Although technical and financial constraints remain for the large scale utilization of wave and tidal energy, these technologies are certain to become more important in the future. Preliminary studies on tidal power barrages conducted in the UK indicate, for example, that such barrages can have a number of consequences for waterbirds - particularly waders - as the barrages potentially reduce the tidal range and thereby the tidal area itself.

This change in tidal range can lead to dramatic changes in the nature of estuary and inlet habitats used for feeding and nesting. Offshore wave energy farms with above water buoy structures may in turn result in collisions and alter food sources particularly affecting shore- and seabirds.

Hydropower is estimated by the IEA to be the renewable energy resource of choice in many non-OECD countries, as it is a relatively cheap and low-technology option in comparison with other renewable energy sources. Legal constraints such as environmental regulations for the building of new hydropower plants are also much lower in comparison with regulations in OECD countries. The largest growth in energy derived from hydropower is estimated to take place in Africa. Hydropower installations can, however, have a destructive effect on communities as well as biodiversity such as the destruction of critical habitats for migratory waterbirds, for example through the flooding of wetlands.

The impacts of biofuel and bioenergy production on biodiversity can vary enormously according to the biomass feedstock used, but it potentially poses a great threat to migratory waterbirds as natural habitats are being turned into agricultural land for biomass production.

Traditional bioenergy use, which constitutes using wood and other renewable energy sources for heating and cooking, is in general expected to diminish in developing countries except in Africa, where it is still expected to grow. With populations growing, such traditional use of wood for example, can have quite negative effects on habitats locally. Off-the-grid small scale solar farms are being deployed through development cooperation projects in some African countries in order to diminish dependency on traditional bioenergy and consequently stop the depletion of natural habitats.

Little or no studies have been undertaken to estimate whether solar energy installations potentially pose a threat to birds. Although it seems unlikely that solar energy installations would cause bird mortality, the water usage required to maintain some of these installations could, particularly in arid areas, lead to habitat changes depending on the water sources used.

The information available stresses that site selection is the crucial factor in mitigating the impact of renewable energy installations on ecosystems and birds in particular. Chosen sites for new installations should preferably have a sparse biological community and locations that have been identified as key sites for migratory waterbirds should be avoided. Depending on the technology used, scale of the project and sensitivity of the community to different impacts, sites with a rich biological community can also be considered, as long as the technology deployed is not expected to have any adverse impacts on the community in question. In addition the main migration corridors also have to be taken into consideration when surveying sites for new installations such as wind farms. By using strategic environmental impact assessments as well as sensitivity and zoning maps, the spatial and temporal abundance of birds including bird activity at night can be determined so that hot spots and particularly migration bottleneck sites can be avoided. By introducing slight modifications to the modus operandi of existing installations adverse effects on migratory waterbirds can be further mitigated.

Although some information, including international guidelines, does exist for the use of certain renewable energy sources, more specific guidelines are needed with regard to avoiding negative effects on birds. In addition the existing guidance is constantly being updated as new scientific information becomes available. Guidance is most often only accessible in English and is scattered amongst different international organizations, making an overview difficult. In order to better understand possible effects and undertake mitigating measures more research and collaboration between range states, relevant international organizations and the private sector is needed.

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RENEWABLE ENERGY AND MIGRATORY WATERBIRDS

Recognizing the beneficial role of renewable energies in both mitigating and adapting to climate change and the significance of addressing issues arising from climate change for the long-term survival of migratory waterbirds as highlighted in Resolution 4.14 on the Effects of Climate Change on Migratory Waterbirds,

Further recognizing that, as renewable power generation is estimated by the International Energy Agency to triple globally by 2035 with a similar increase expected in the use of biofuels, there is a need to assess and consequently address possible adverse effects from renewable energy sources on migratory waterbirds,

Acknowledging that wind energy installations in particular can have both direct and indirect impacts on birds under some circumstances for example as concluded in the Bern Convention Report "Effects of Wind Farms on Birds",

Further acknowledging that the production and use of biofuels can potentially have negative effects on biodiversity including the degradation of crucial waterbird habitats such as wetlands, depending on factors such as the feedstocks used, the mode and place of production and the agricultural practices used as highlighted in the draft Ramsar Technical Report "Wetlands and Energy Issues: A Review on the Possible Implications of Policies, Plans and Activities in the Energy Sector for the Wise Use of Wetlands",

Recalling that, for those waterbird populations listed in Table 1, Paragraph 4.3 of AEWA's Action Plan, Contracting Parties are required, *inter alia* to assess the impact of proposed projects which are likely to lead to conflicts between these populations and human interests, to promote high environmental standards in the planning and construction of structures in order to minimize their impact and to consider steps to minimize the impact of existing structures should they have negative impacts,

Further recalling Resolutions 7.5 and 10.9 of the Convention on the Conservation of Migratory Species on wind turbines and migratory species and on the conservation of migratory species in the light of climate change, which *inter alia* call for the application of strategic environmental impact assessments, the development of environmental sensitivity and zoning maps and post-construction monitoring of climate change mitigation and adaptation projects, such as bio-energy production, as well as guidelines for the construction of offshore wind farms aimed at minimizing the negative impacts on migratory species,

Recognizing Resolution X.25 of the Ramsar Convention on Wetlands on wetlands and biofuels, which *inter alia* calls for the assessment of the potential impacts, benefits and risks of biofuel production, affecting wetlands,

Further acknowledging that negative impacts of some renewable energy installations on waterbirds can be substantially minimized through careful site selection, by learning from post-construction monitoring and by undertaking activities to mitigate adverse effects as highlighted *inter alia* in the World Bank working paper "Good and Bad Dams: Environmental Criteria for Site Selection of Hydroelectric Projects",

The Meeting of the Parties:

1. *Calls upon* Contracting Parties to develop and strengthen national renewable energy planning and development to include monitoring in order to avoid and minimize adverse effects of renewable energy installations (including for biofuels) on waterbirds, and in particular to:

   - carefully evaluate potential sites for the development of new renewable energy installations, *inter alia* by undertaking strategic environmental impact assessments, developing sensitivity and zoning maps, thereby avoiding existing protected areas, such as Ramsar Sites and Special Protection Areas, or other sites of importance (including Important Bird Areas);

   - in addition avoid sites located within the main migration corridors of migratory waterbirds which have been shown to experience high bird densities, such as wetlands, coastlines, ridges and other topographic features, also taking into consideration possible indirect effects such as disturbance, displacement, loss or deterioration of habitats;

   - ensure that water usage in renewable energy processes does not affect critical waterbird habitats and is economized where this might be the case, and that possible negative impacts of construction of infrastructure related to renewable energy installations, such as the building of roads and power lines, are kept at a minimum;

   - follow existing international environmental guidelines, recommendations and criteria for the development and utilization of renewable energy sources, such as those listed in Annex I.;

   - use AEWA Guideline No. 11 on how to avoid, minimize or mitigate the impacts of infrastructural developments and related disturbance affecting waterbirds;

   - encourage post-development monitoring of renewable energy installations and associated infrastructure in order to identify possible effects on biodiversity;

   - encourage the mitigation of adverse effects of existing renewable energy installations and associated infrastructure where such effects have been identified;

   - share information from post-construction monitoring and mitigation measures in renewable energy installations on observed effects (negative as well as positive) on migratory waterbirds, so Parties can benefit from lessons learned;

   - consider, where appropriate, the possibility of compensation for damages on biodiversity resulting from the development of renewable energy installations in accordance with national legislation as well as Ramsar Resolution VII.24 *Compensation for lost wetland habitats and other functions* (1999) and Ramsar Resolution VIII.20 *General guidance for interpreting "urgent national interest" under Article 2.5 of the Convention and considering compensation under Article 4* (2002);

2. *Further calls upon* Contracting Parties to undertake specific measures to reduce the potential negative impact of wind farms on waterbirds, *inter alia* by:

   - encouraging wind farm operators to operate wind farms in ways that minimize bird mortality as necessary and appropriate, for example by introducing short-term shutdowns during peak migration and minimizing lighting in wind farms;

   - further encouraging the dismantling of wind turbines in existing installations, should waterbird mortality have an effect on the population status of a species and other mitigation measures have proved insufficient;

- focusing research efforts on alleviating the negative effects on waterbirds from wind farms, such as the mapping of the main migration corridors and migration crossings for waterbirds also allowing the optimizing of wind farm layouts;

3. *Further calls upon* Contracting Parties to pay particular attention and undertake specific measures to assess, identify and reduce potential negative impacts of biofuel production on waterbirds;

4. *Requests* the Technical Committee, in liaison with relevant industry bodies and other interested parties, to identify key knowledge gaps and/or deficiencies in guidance related to the impact of renewable energy production and migratory waterbirds, and make proposals as to how these might most effectively be filled.

Annex I: International environmental guidelines, recommendations and criteria for the development and utilization of renewable energy sources (non-exhaustive):

European Commission (2010): Guidance Document: Wind Energy Developments and Natura 2000. EU Guidance on wind energy development in accordance with EU nature legislation, 97 pp.

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- Wind Energy Systems
- Biogas Systems
- Small-scale Hydroelectric Energy Systems.

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