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RECONCILING ENERGY DEVELOPMENT WITH THE CONSERVATION OF MIGRATORY SPECIES: AN ANALYSIS OF NATIONAL REPORTS TO CMS COP13

(Prepared by the CMS Secretariat)

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Summary:

This information document provides an overview of the efforts and progress made by reporting Parties to reconcile the deployment of renewable energy and power lines with the conservation of migratory species. It is conducted in accordance with Resolutions 7.4, 7.5 (Rev. COP12), 10.11 and 11.27 (Rev. COP12). The document is based on an analysis of the National Reports submitted by Parties in 2019, in advance of the 13th Meeting of the Conference of the Parties.

CHAMPION PLUS

The Government of the Federal Republic of Germany, through the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) were recognized as Champion Plus for their generous support and commitment towards Reconciling Energy Sector Developments with Migratory Species Conservation for the period 2018-2020. The Energy Task Force has been funded with the contribution granted by Germany under the Migratory Species Champion Programme.

Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit

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1 Background

In a projected scenario, rising incomes and a growing population of an additional 1.7 billion people will drive global energy demand up by more than 25 per cent by 2040 (IEA, 2018)[1]. On the other hand, the central aim of the Paris Agreement seeks to limit global temperature rise from exceeding 1.5°C above pre-industrial levels. Transformative change in the energy sector is therefore essential to meet the global demand, while simultaneously curbing climate change. The convergence of renewable energy technologies (RET) and transformations in the electricity sector are all crucial vectors for such change, allowing for more sustainable shifts within the energy world. Yet, while RET can benefit migratory species by mitigating climate change, the deployment of energy infrastructures and power lines can also have negative consequences on species and their habitats when poorly planned[2].

Accordingly, Parties to the Convention on the Conservation of Migratory Species of Wild Animals (CMS) have adopted several Resolutions in recognition of the risks to migratory species from the development of renewable energy and associated infrastructure, including: CMS Resolution 7.4 *Electrocution of Migratory Birds,* Resolution 7.5 (Rev.COP12) *Wind Turbines and Migratory Species,* Resolution 10.11 *Power Lines and Migratory Birds,* and Resolution 11.27 (Rev.COP12) *Renewable Energy and Migratory Species*[3]. This information document reviews the latest efforts taken by Parties to CMS to implement these Resolutions, as communicated by the Parties themselves through their National Reports to the 13th Session of the Meeting of the CMS Conference of the Parties (COP13). It was developed by the CMS Secretariat on behalf of the CMS multi-stakeholder Task Force on Reconciling Selected Energy Sector Developments with Migratory Species Conservation (Energy Task Force; ETF).

2 Scope and outline

This document is based on an analysis of the National Reports[4] submitted in 2019, in preparation for CMS COP13,17-22 February 2020[5]. It comprises an examination of 90 National Reports that were submitted to the Secretariat as of the time of writing (December 2019), representing 69 per cent of all Parties to CMS at that time. It corresponds in its structure to an analysis and the document UNEP/CMS/COP12/Inf.32, prepared by BirdLife International on behalf of the ETF, and submitted to COP12, held in Manila in October 2017.

Notably, the National Reports analysed herein were presented in response to an updated reporting template that had been significantly revised, following CMS Decision 12.4. Major revisions to the reporting format focused on aligning the National Reports with the Strategic Plan for Migratory Species (SPMS) 2015–2023[6]. Hence, amendments involved restructuring the questions to inform progress towards the 16 targets included in the SPMS, alongside reducing some complexities of the questionnaire. Related to this change in the format of the National Reports, the present analysis and sections of the document differ in some aspects from the previous one that was submitted as UNEP/CMS/COP12/Inf.32 to COP12. In addition, the latter one included the information from National Reports submitted to COP11, held in

[1] IEA (2018), World Energy Outlook 2018, IEA, Paris, https://doi.org/10.1787/weo-2018-en.
[2] UNEP/CMS/COP11/Inf.26: <https://www.cms.int/en/document/renewable-energy-technologies-deployment-and-migratory-species-0>.
[3] All Resolutions can be found online: <https://www.cms.int/en/documents/cop-resolutions>.
[4] Submitted National Reports are available online: <https://www.cms.int/en/documents/national-reports>.
[5] CMS COP13 website: <https://www.cms.int/en/meeting/thirteenth-meeting-conference-parties-cms>.
[6] UNEP/CMS/Resolution 11.02: <https://www.cms.int/en/document/strategic-plan-migratory-species-2015-2023-2>.

Quito in November 2014, and therefore covered two inter-sessional periods of implementation of the relevant provisions existing under CMS at that time.

The present analysis focuses on the impacts posed by RET and power line deployments on migratory species, as well as the efforts made by Parties to address them. Implementation was carried out with regard to CMS Resolutions 7.4 *Electrocution of Migratory Birds*, 7.5 (Rev.COP12) *Wind Turbines and Migratory Species,* Resolution 10.11 *Power Lines and Migratory Birds,* and Resolution 11.27 (Rev.COP12) *Renewable Energy and Migratory Species*. While other pressures such as habitat destruction and illegal killing and taking are also of great importance – and exceed the threat posed by renewable energy and electrical infrastructure – they are beyond the scope of this analysis. Additionally, this information document takes all taxa and RET into consideration; however, some taxa and RET may receive more substantial coverage in the National Reports due to the specific focus of the relevant CMS Resolutions currently in place.

A brief outline of this document begins with an examination of the extent to which power lines, RET and associated infrastructure have been identified as a pressure to migratory species included in the CMS Appendices. Following on, the next section then proceeds with an in-depth analysis of the various types of measures carried out to address these threats. The document then subsequently discusses the main gaps and difficulties identified by relevant Parties. Other barriers to implementation were also considered by drawing on inputs from the members of the ETF during the second, third and fourth ETF meetings held in September 2017 (Bonn, Germany), November 2018 (Sharm El Sheik, Egypt) and September 2019 (Paris), respectively.

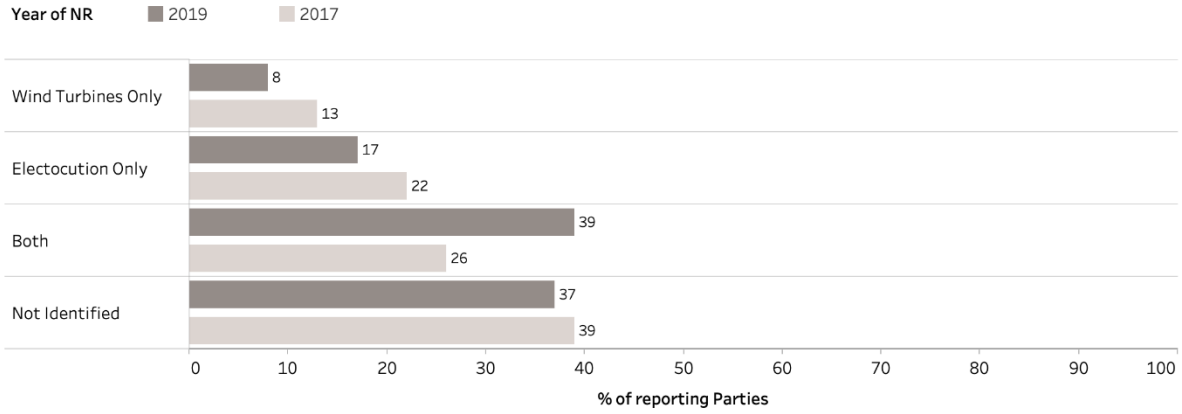
Qualitative findings from both the previous analysis presented in UNEP/CMS/COP12/Inf.32 and the present document were compared. In this connection, it is important to note that despite following a new reporting template, evaluations with the previous inter-sessional periods were still achievable as the method of analysis focused on the content of the report as a whole, rather than the answers to individual questions. The method of analysis – including a survey of the key differences between each reporting period – can be found in Annex 1 of this document. Through an extensive review of both past and present reporting templates, it can be inferred that the updated 2019 National Report format appears to offer a more comprehensive platform for the inclusion of answers related to power lines and RET.

3 Wind turbines and power lines as obstacles to migratory species included in the CMS Appendices

The revised 2019 National Report framework asked Parties to indicate adverse pressures affecting migratory species or their habitats (Question X.1). Amongst a total of 32 listed pressures, the impact of collisions and electrocutions from power lines and wind turbines were also included.

Of the 90 National Reports submitted in 2019, 57 Parties (63 per cent) explicitly indicated either wind turbines or electrocution, or both, as a pressure to migratory species listed in the CMS Appendices. While eight per cent of reporting Parties explicitly indicated collisions with wind turbines as a threat to migratory species in their country, 17 per cent reported solely on the harmful impact of electrocution (Fig. 1). Thirty-nine per cent of reporting Parties recognized both wind turbines and electrocution as obstacles to migratory species; thirty-seven per cent did not identify with either.

Figure 1. Percentage of Parties identifying wind turbines and/or electrocution as a pressure to migratory species in the National Reports.



A previous analysis of the 2017 National Reports was also conducted on a total of 90 submissions – and in response to a similar question. Figure 1 displays a comparison of the trends observed in each reporting period. The percentage of reporting Parties that identified either wind turbines or electrocution as a pressure to migratory species decreased from 2017 to 2019. The same was observed for those that did not identify with any. On the contrary, the percentage of reporting Parties that associated with both threats saw an increase in 2019.

For each threat, Parties were also asked to assess the severity of the impact – ranked from severe to moderate and low. The regions most affected by collisions with wind turbines and electrocution can be seen in Figures 2 and 3, respectively. Reporting Parties that identified wind turbines as a pressure to migratory species were predominantly located in Europe (Fig. 2). Electrocution, however, presents a more global threat to migratory species (Fig. 3). Moderate-to-high levels of severity were identified by Parties across Africa, Asia, Europe, as well as South and Central America. Of all the reporting Parties, two assigned a high level of severity to the impact of wind turbines on migratory species; the adverse impact of electrocution was given a severe rank by six Parties.

Figure 2. Reporting Parties that identified **collisions from wind turbines** as a pressure to migratory species (1 = severe; 2 = moderate; and 3 = low) in the 2019 National Reports.

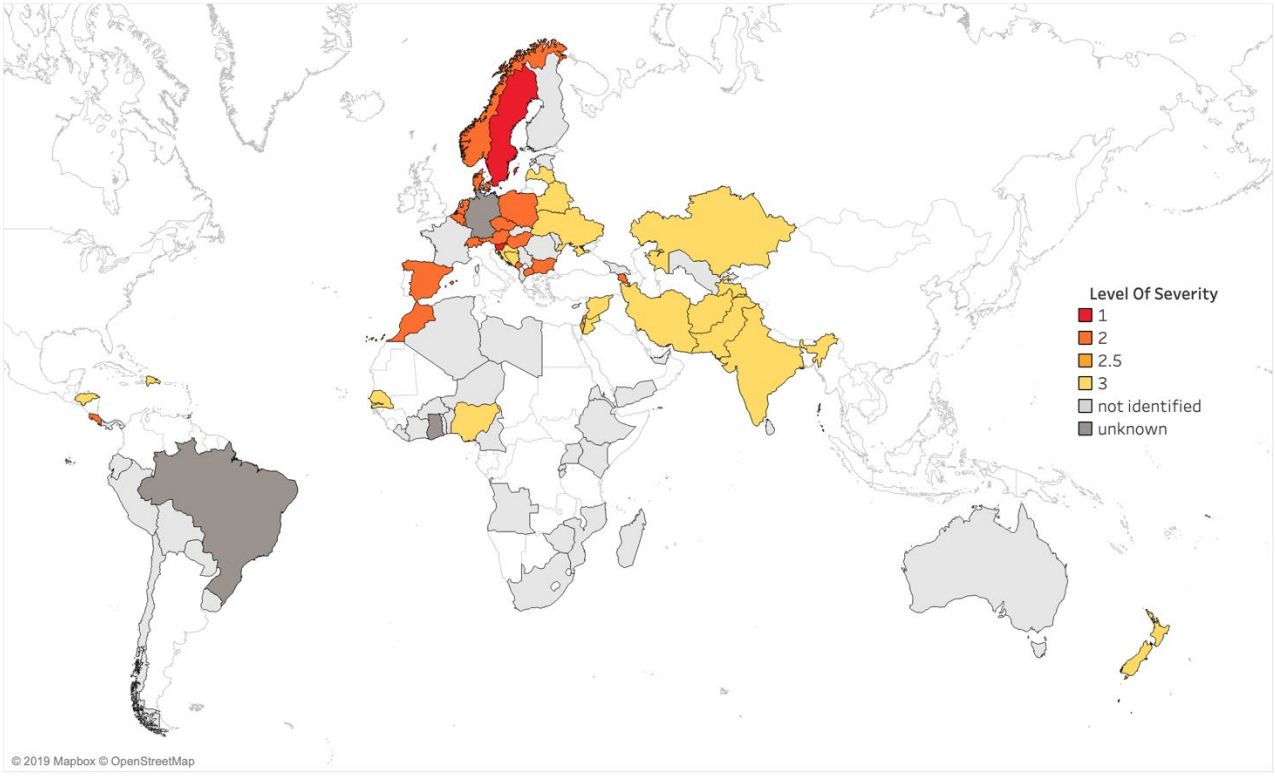
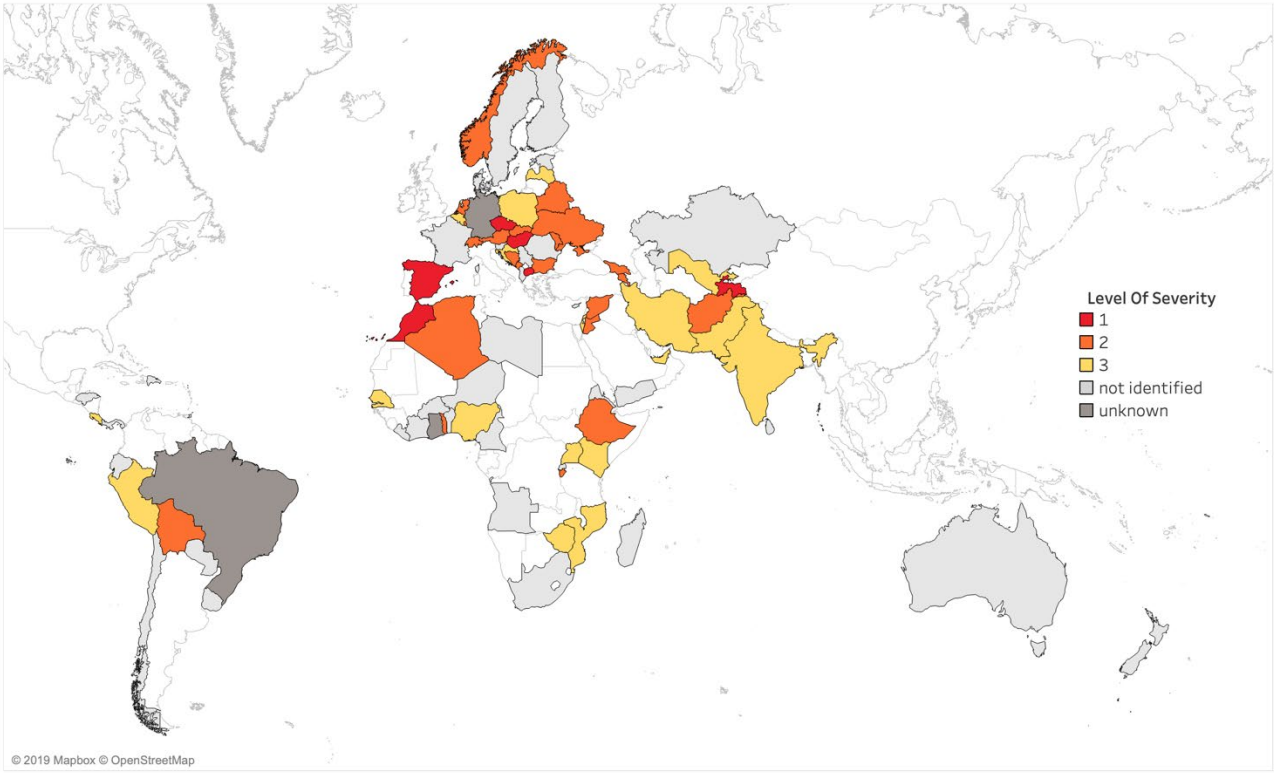


Figure 3. Reporting Parties that identified **electrocution** as a pressure to migratory species (1 = severe; 2 = moderate; and 3 = low) in the 2019 National Reports.

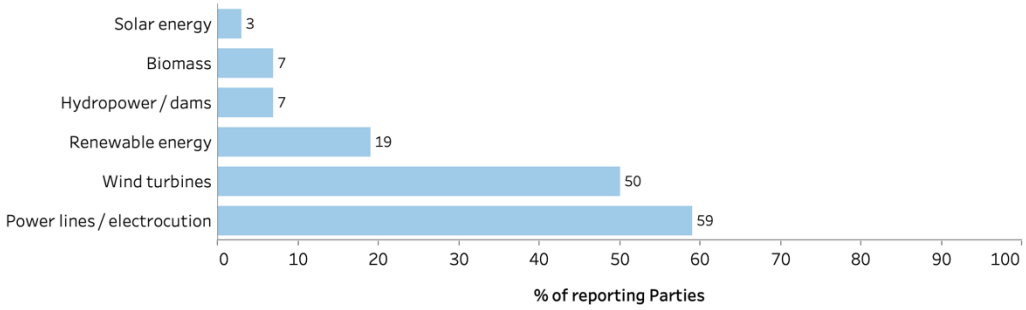


It should be observed that while several countries did not indicate wind turbines and/or electrocution as a pressure to migratory species under Question X.1 of the National Reports, information on these issues was provided in other sections of the report. Conversely, several countries had flagged these specific pressures but did not report any action to address them. Thus, these inconsistencies are addressed in the relevant sections of this document, in relation to each specific RET.

4 Implementation of CMS Resolutions related to renewable energy and power lines

Of the 90 National Reports submitted in 2019, 65 Parties (72 per cent) mentioned power lines and/or renewable energy. This validates the ongoing global relevance of energy sector developments in the context of migratory species conservation, as there were no specific questions within the updated National Report template which directly addressed these issues. In Figure 4, power lines or electrocution represented the most frequently mentioned issues (59 per cent), followed closely by wind turbines (50 per cent). Nineteen per cent of all reporting Parties made statements on renewable energy, while fewer brought up specific RET such as hydropower (7 per cent), biomass (7 per cent), and solar energy (3 per cent).

Figure 4. Percentage of Parties that specifically mentioned power lines/electrocution and/or renewable energy in the 2019 National Reports.



All Parties that reported on renewable energy and its associated infrastructure included information on avian species in this context. These species included, for example: CMS-listed birds of prey, *Otis tarda* (Great Bustard) in Eastern Europe, as well as storks and cranes across Asia and parts of Africa. Bat species were also commonly mentioned by Parties – especially those within the European continent. Only a few Parties reported on the impact of RET on fish and marine mammals, such as *Phocoena phocoena* (Harbour Porpoise); see details below.

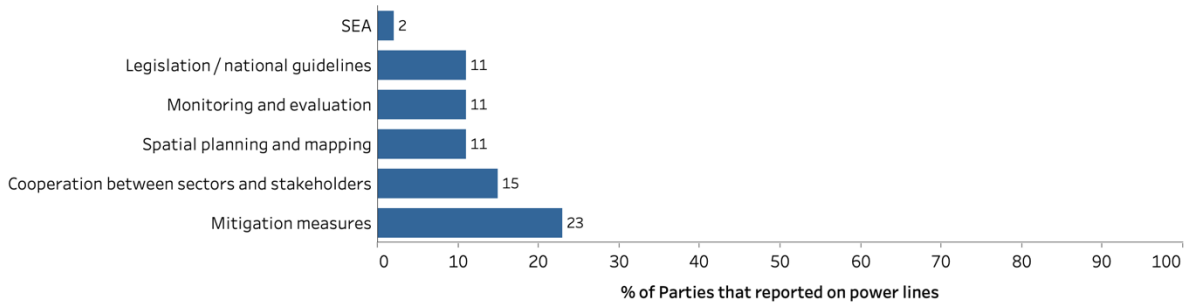
Furthermore, the updated National Report framework requested Parties to state the most significant advances that have been made to counter any of the identified pressures to migratory species. All responses in relation to the implementation of the relevant Resolutions are individually discussed in the sections below.

4.1 Resolutions 7.4 and 10.11: Electrocution and power lines

Resolutions 7.4 and 10.11 are related to the recognition of increasing electrocution risks from power lines and power grids to migratory birds. Parties and non-Parties are both encouraged to implement the Resolutions and carry out appropriate measures in legislation, in order to minimize electrocution impacts on bird populations. Whereas a total of 53 Parties mentioned power lines and/or electrocution in relation to migratory species, only 18 Parties (34 per cent) reported carrying out action to implement Resolutions 7.4 and 10.11.

Mitigation measures were the most widely-reported action taken by Parties to counter power line-related pressures – making up 23 per cent of those Parties that mentioned power lines (Fig. 5). These measures generally entailed the execution of corrective actions or enhanced safety procedures on hazardous power lines. Bulgaria, Hungary and Jordan carried out the retrofitting of dangerous overhead power lines; Spain highlighted a decrease in the number of electrocutions from power lines due to corrective actions. Croatia also reported successful implementation of guidelines against electrocution, such as bird-safe insulation of electricity pylons, usage of bird exclusion devices and artificial bird-safe perches, and the placement of medium voltage lines underground. Similarly, in Serbia, artificial nests were installed on electricity pylons for *Ciconia ciconia* (White Stork; listed on CMS Appendix 2) and *Falco cherrug* (Saker Falcon; listed on Appendices 1 and 2).

Figure 5. Reported measures taken by Parties to counter **power line-related pressures** to migratory species in the 2019 National Reports.



Fifteen per cent of reporting Parties referred to cooperation and consultations between relevant sectors and stakeholders as a measure taken to avoid the electrocution of migratory birds (Fig. 5). Hungary and Latvia amongst others, reported cooperation between national protection authorities, non-governmental organizations (NGOs) and energy companies. In Spain, the State distributed aid to NGOs for the conservation of endangered species – including the prevention of power line-related pressures. France reported the organization of a steering body dedicated solely to this issue – Comité national avifaune (CNA) – to discuss and implement actions aimed at reducing the impacts of power lines on birds. This committee brings together two major nature protection associations: LPO (BirdLife France) and France Nature Environment (FNE), as well as the country's main electricity network managers, RTE and Enedis. Austria cited DANUBEPARKS[7], the Danube River Network of Protected Areas, as a leading example of steady transnational cooperation. Under the DANUBE FREE SKY initiative, technical solutions regarding bird collisions with electricity wires along the Danube flyway will be formulated and implemented. Additionally, it offers a platform for cooperation between nature conservation and the energy sector by raising awareness and implementing pilot actions. Slovakia also noted progress towards increased awareness and the active involvement of power supply companies to prevent the electrocution of birds. Educational programmes were also conducted with the general public and groups of interest.

The creation of, or ongoing compliance to, national legislation or guidelines were mentioned by 11 per cent of reporting Parties (Fig. 5). Monitoring and evaluation were also reported on by 11 per cent of Parties; spatial planning and mapping were also reported on by the same amount. Only one Party cited Strategic Environmental Assessments (SEA). Several Parties alluded to the application of various monitoring methods such as tagging, the systematic role of distribution system operators (DSO), and conducting risk analyses of the associated infrastructure: Switzerland reported the careful spatial planning of power lines, whereas

[7] Danube Parks: <http://www.danubeparks.org>.

Hungary mentioned the creation of a conflict map of power lines *vs.* birds in order to inform policy reforms.

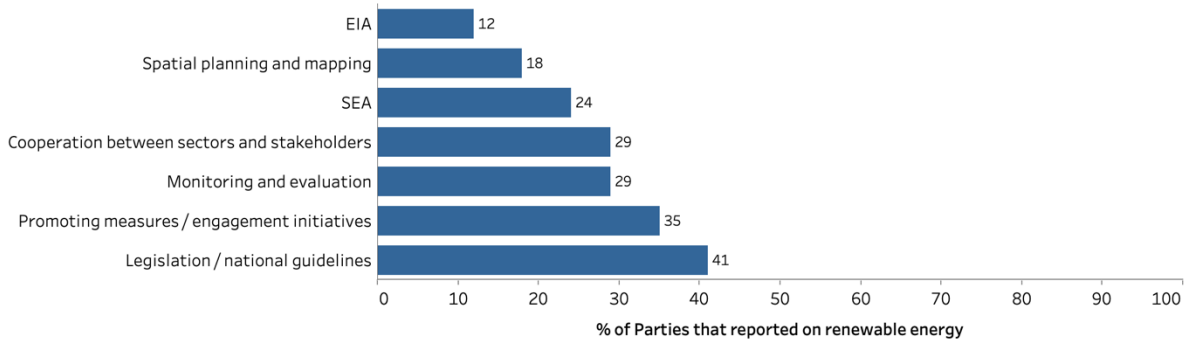
4.2 Resolution 11.27 (Rev.COP12) *Renewable Energy and Migratory Species*

Resolution 11.27 (Rev.COP12) on *Renewable Energy and Migratory Species* recognizes that increased use of technologies to exploit renewable energy may potentially affect many migratory species listed by CMS. This includes renewable energy generated from wind, solar power, hydro-power and biomass. However, this section of the document will begin with a collective analysis of all RET – its components are discussed subsequently in further detail. Only two of the 17 Parties that reported on RET did not report on actions taken to implement Resolution 11.27 (Rev.COP12).

Of all the Parties that reported on renewable energy-related pressures to migratory species in the 2019 National Reports, 41 per cent mentioned adopting or acting in accordance with national legislation (Fig. 6). Croatia reported that renewable energy procedures were being harmonized in consideration of the obligations stemming from CMS, among other international agreements and the EU legislation. Malta affirmed that consideration of the impacts on wildlife for any potential development of renewable energy facilities were also included in the National Biodiversity Strategy and Action Plan. Romania saw the mainstreaming of the ecosystem approach into policies as a fundamental means to reduce the impact of human activities and achieve policy objectives in a sustainable and equitable way. Antigua and Barbuda, Romania, and Seychelles all identified with the development of national policies and guidelines on renewable energy, but did not specify elements featuring the conservation of migratory species.

Similarly, while a range of Parties reported on the implementation of promoting measures or engagement initiatives associated with the use of renewable energy (35 per cent), many omitted details regarding the potential benefits towards migratory species. Twenty-nine per cent of the Parties that reported on renewable energy mentioned monitoring and evaluation measures (Fig. 6). Sweden noted that changes in the sustainable use of green energy are slow and it will take many years before concrete results are reflected in the status of species and the quality of their habitats. Multi-sector and stakeholder cooperation were also accounted for at 29 per cent (Fig. 6). In Eritrea, the Department of Energy works with line ministries and communities on the introduction of alternative energies, so as to minimize environmental pressures and restore biodiversity. Germany also mentioned the government's special interest and funding in several CMS projects, including the ETF.

Figure 6. Reported measures taken by Parties to counter **renewable energy-related pressures** to migratory species in the 2019 National Reports.



Of all the Parties that reported on renewable energy, 24 per cent mentioned conducting SEA for plans or programmes within the energy sector (Fig. 6). Spatial planning and mapping were

cited by 18 per cent of Parties reporting. Romania stated the adoption of a coherent policy on spatial planning, urban planning and landscape in relation to renewable energy developments. A few Parties, such as Jordan, reported on the application of Environmental Impact Assessments (EIA) for energy development (12 per cent).

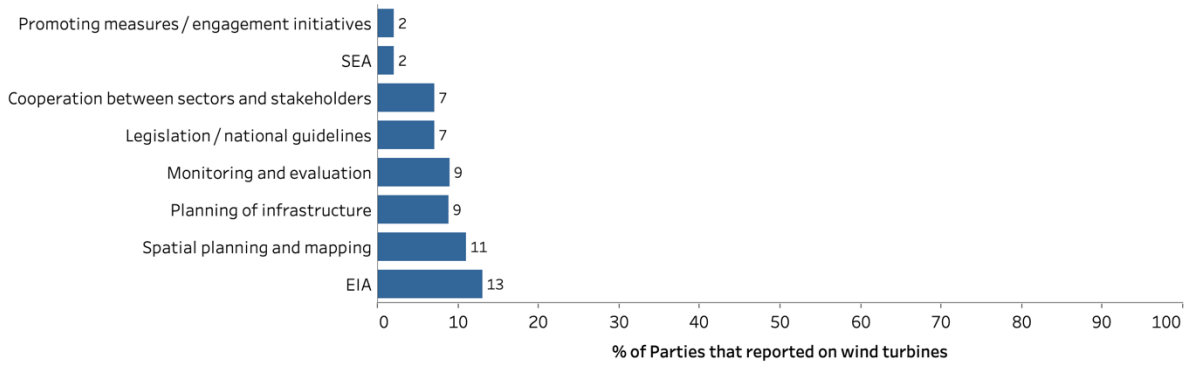
4.2.1 Resolution 7.5 (Rev.COP12) Wind Turbines and Migratory Species

Resolution 7.5 (Rev.COP12) *Wind Turbines and Migratory Species* calls upon Parties to identify areas where migratory species are vulnerable to wind turbines. Parties were requested to take account of the precautionary principle, environmental impact data and monitoring information, as well as spatial planning processes in the development of wind farms. Forty-five Parties (50 per cent of those reporting; Fig. 4) mentioned wind turbines as a pressure to migratory species; however, only 14 Parties (31 per cent) described the actions taken.

Most Parties referred to the carrying out of EIA as a measure to counter the impact of wind turbines on migratory species (13 per cent; Fig. 7). Belgium and Slovenia both stated that the potential negative impacts of turbines on relevant species were being assessed in EIA procedures during the planning processes. In Ghana, the Environmental Assessment Regulations, LI 1652, were enforced in 1999 to give comprehensive legal cover to EIA procedures within the country. During the reporting period, three prospective wind energy generation companies established along the country's coast were subject to EIA, to minimize their impact on migratory birds. On the other hand, Armenia highlighted concerns regarding weak EIA and insufficient monitoring of new wind turbine projects.

Of the Parties that reported on wind turbines, 11 per cent mentioned conducting spatial planning and mapping as a measure to implement the Resolution (Fig. 7). Nine percent of Parties reported on the planning of infrastructure; nine percent of Parties reported on monitoring and evaluation as an action that was taken. Both Germany and Israel referred to the consideration of ecological/bird flight corridors in the planning of wind farms. In order to counter unfavourable impacts arising from the installation of wind turbines, a "Noise Protection Concept" for Harbour Porpoises has been established by the German Ministry for the Environment, Nature Conservation and Nuclear Safety since 2013. The Netherlands referenced the ongoing Wind Energy at Sea Ecological Programme (WOZEP) aimed at conducting research and investigations to minimize the effects of wind turbines (i.e. collision risks and underwater noise) on migratory species. An early warning system was also implemented in wind parks in the Netherlands and Bulgaria. This integrated protection system allows management and reduction of bird collisions with rotating wind turbines, as single or clustered turbines can be halted. Moreover, species of high conservation concern may also be monitored during periods of high risk.

Figure 7. Reported measures taken by Parties to counter **wind turbine-related pressures** to migratory species in the 2019 National Reports.



Seven per cent of Parties that reported on wind turbine-related pressures reported taking action by adopting national legislation and/or guidelines (Fig. 7). Equally, seven per cent of Parties accounted for cooperative measures between relevant sectors and stakeholders. SEA and the use of engagement initiatives were each mentioned on by two per cent of reporting Parties. In Jordan, the conservation of migratory species was mainstreamed into national development plans. This included the development of new national guidelines and legislation for wind farm projects, alongside cooperation with relevant consultancy firms and contractors to mitigate the threat of wind farms to migratory birds. While Malta has no wind turbine installations at the moment, applications would be assessed according to the national legislation where potential impacts on species and their habitats would be considered. New Zealand specified that under the country's Wildlife Act 1953, it was an offence to kill protected wildlife. Thus, the Department of Conservation will generally seek an evaluation of any impact of wind farm development on threatened indigenous species. The Resource Management Act 1991 also requires wind farm developers to avoid, remedy or mitigate effects on wildlife. This includes, for example, ensuring that wind farms do not cause harmful effects resulting from migratory bird species passing through the operating area. Bulgaria reported cooperation with experienced ornithologists, where high-tech radar observations and meteorological data integrated with field-based observations are used to mitigate potential threats.

4.2.2 Biomass

Six Parties (7 per cent of all reporting Parties) reported on biomass in their 2019 National Reports (Fig. 4). Previously, two Parties had mentioned energy from biomass in their 2017 National Reports; the same number as in 2014. Thus, compared to the former two rounds of reporting, there was an increase in the number of Parties commenting on biomass in 2019.

Relevant responses mainly focused on biomass in relation to peatlands or wetlands. Peat is widely drained and extracted for energy purposes; however, the unregulated or unfettered use of biomass can make it a threat to biodiversity and lead to serious environmental problems. Belarus reported cooperation with BirdLife Belarus on the conservation of wetlands. Measures were implemented to re-take fossil peat deposits in order to restore habitats for waterbirds and waterfowl. Belarus also cited efforts aimed at restoring the hydrologic regime of the Yelnya bog, with support through the initiative "Every Drop Matters". Belgium referenced the Natura 2000 scheme, noting that the creation of its network was mainly based on hydrological sites. Consequently, wetlands were therefore well-represented – working in favour of many migratory waterbirds. Nonetheless, it was stated that mainstreaming biodiversity concerns and addressing conservation measures outside Natura 2000 sites still remained a challenge. Australia mentioned that a key management objective of the New South Wales (NSW) Coastal Management Act 2016 was to improve the resilience of coastal wetlands and littoral rainforests to the impacts of climate change, and secure opportunities for migration. Furthermore, the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) provided a legal framework to protect and manage ecological communities of national and international significance, including the 'Ramsar' wetlands.

Two other Parties also referred to the Ramsar Convention in relation to biomass. The Netherlands reported on the establishment of the National Ramsar Committee which meets at least twice annually to discuss issues regarding the Ramsar Convention. These meetings mainly concern the conservation of migratory waterbirds, and are attended by representatives of the national government, NGOs and relevant experts. Sweden also reported on initiatives to designate additional Swedish wetlands as Ramsar sites, alongside the restoration of peatlands through EU LIFE Projects. References were also made to the Nordic-Baltic

Wetlands (NorBalWet)[8] initiative – a regional initiative to provide effective support for improved implementation of the Ramsar Convention aims.

4.2.3 Hydropower and Dams

In 2019, 6 Parties (7 per cent of all reporting Parties) mentioned hydropower and dams in their National Reports (Fig. 4). This is a reduction in numbers compared to the 12 Parties that were identified in the 2017 National Reports.

The key measures implemented by reporting Parties to counter pressures to migratory species arising from the use of hydropower and dams include: 1) spatial planning, and 2) monitoring and evaluation, and 3) the adoption of national legislation and/or guidelines. With regard to the conservation of aquatic mammals in the CMS Appendices, Brazil reported that it was in the process of elaborating the 'Amazon Hydroelectric Impact Reduction Plan for Biodiversity', where a forecast version was to be produced in the second half of 2019. Moreover, it was noted that analyses on the movement of affected migratory species and participation in environmental policy dialogues were required as part of the licensing requirements of major infrastructure works such as the construction of dams and hydroelectric plants in the Amazon. Croatia also stated that several white papers covering small hydropower plants and river management projects have been elaborated. These authoritative reports provided an overview of specific types of adverse influences and possible mitigation solutions to support the conservation of migratory species. In the Netherlands, the Haringvlietdam was cited as a migration barrier between the North Sea and the River Rhine. A positive outcome was reported by the Party as the migration route has officially been restored again in November 2018. Switzerland reported that migratory species were featured in the development and planning of dams. Since the last reporting period, the Federal Council has also adopted the Swiss Biodiversity Strategy. The ensuing Action Plan contains measures contributing to achieve SPMS Target 5 such as hydropeaking remediation measures and an implementation guide on the revitalization of water courses.

Two Parties implied possible directions for improvements in their implementation. Bosnia and Herzegovina reported that economic strategies related to energy were amongst the primary goals of the country. However, threats to migratory species were also largely witnessed within this field. These pressures mainly arose from hydropower-related infrastructure as concessions for building hydropower plants had been given with little regard to biodiversity. Romania also noted hydro-morphological pressures to migratory species emanating from damming and the construction of hydropower facilities. Similarly, the Party commented that mainstreaming of the ecosystem approach into policies was necessary to achieve conservation objectives.

4.2.4 Solar Energy

Three Parties (3 per cent of reporting Parties) reported on solar energy in relation to migratory species in the 2019 National Reports (Fig. 4). This compares to references to solar energy by two Parties in the 2017 reporting cycle.

Romania reported that the construction of photovoltaic facilities was a threat to migratory species, but did not specify what measures were being implemented to alleviate this. Eritrea reported that the Department of Environment worked with the responsible ministries and communities in the introduction of alternative energies, including solar energy, to minimize environmental pressures and conserve the habitats of migratory species. For Antigua and

[8] NorBalWet website: <https://www.norbalwet.org>.

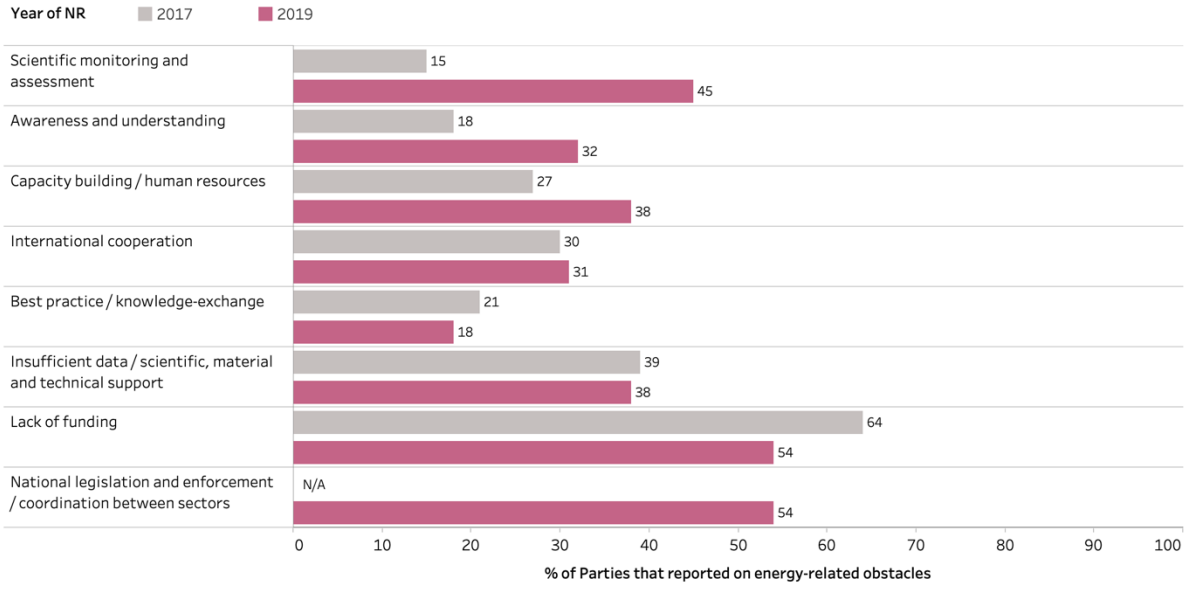
Barbuda, solar energy was not identified as a direct pressure to migratory species – but rather a means to reduce climate change and other environmental concerns.

5 Main gaps and difficulties

Of the 65 Parties which indicated energy-related obstacles, 59 Parties (91 per cent) identified the main gaps and difficulties with implementation. Nonetheless, these gaps do not explicitly refer to only RET and associated infrastructure – they are the main challenges faced by Parties, that indicated energy-related obstacles, in implementing the Convention on the whole. In most cases, Parties identified more than one priority requiring future support in their country. A ranking was also not requested by the reporting template.

Figure 8 displays the main gaps faced by Parties in implementing the Resolutions, expressed as a percentage of Parties that reported on renewable energy-related obstacles in the 2017 and 2019 National Reports. Challenges faced by Parties were largely unchanged between the two reporting cycles; although, one new gap – namely, national legislation and enforcement – was identified in the latest reporting period. Scientific monitoring, awareness and understanding, capacity building, and international cooperation all showed an increase between the 2017 and 2019 National Reports. Best practice/knowledge-exchange, material and technical support, and insufficient funding decreased from 2017 to 2019.

Figure 8. Main gaps and difficulties identified by Parties that indicated energy-related obstacles in the National Reports.



Note: Data from the 2017 National Reports focuses on the types of assistance requested by Parties who identified wind turbines and electrocution as obstacles to migratory species in Appendix 1, taken as a % of the total number of Parties requesting assistance with implementation.

In the 2019 National Reports, lack of funding, and inadequate national legislation and enforcement, featured most frequently (each at 54 per cent of Parties that reported on energy-related obstacles; Fig. 8). Thirty-five Parties reported on the lack of financial resources available to effectively implement the Convention and meet conservation needs. Thirty-five Parties also identified the lack of adequate national regulations and enforcement, alongside limited coordination between sectors, as a main gap. Some Parties mentioned having no specific legislation related to migratory species within their country, or faced difficulties in the development of relevant action plans. Coordination with other ministries and departments to deliver certain conservation objectives were also reported as a difficulty by several Parties.

6 Meetings of the ETF: Identification of barriers to implementation

Barriers to the implementation of relevant Resolutions were identified during the meetings of the ETF members. Participants of the first meeting of the ETF (December 2016) had previously identified barriers under four key groupings: i) inadequate legislation and monitoring, ii) technical barriers, iii) information and communication issues, and iv) lack of resources and capacity.[9] These groupings remained largely unchanged during the second (September 2017)[10] and third (November 2018)[11] meetings. A preliminary analysis of the fourth ETF meeting report (September 2019; meeting report to be published) oversaw progress in eliminating these key barriers and promoting more effective implementation.

6.1 Inadequate Legislation and Monitoring

In the second meeting of the ETF, participants stressed that it was important to harmonise national and international guidelines and standards on renewable energy and migratory species. Uniform standards should be adopted to avoid inconsistencies and confusion. Participants also recommended the need to consider ecosystem service impacts of renewable energy developments in addition to species impacts, and to address potential conflicts as early as possible in the planning process. At the fourth ETF meeting, participants reported that while environmental protection measures were often implemented to attract investors, the quality of the execution still remained a challenge. Draft decisions submitted for adoption at CMS COP13 renew the encouragement to Parties to provide support to the Task Force, and further encourage them to integrate biodiversity and migratory species considerations into their national energy and climate action plans.[12] .

6.2 Technical Barriers

Technical barriers that restrict the effective implementation of Resolutions were reported by ETF members and observers. Participants of the second ETF meeting expressed the need for technological mitigation measures, where further data were required to ensure a scientific approach. The need for a more robust dataset was reiterated as data limitations still remained. Key research gaps were identified in both the second and third meetings of the ETF. These included, for example, further research into collision risk models, the accumulative impacts of power lines and RET on birds, and spatial mapping tools. Participants at the second ETF meeting commented on the lack of reliable baseline information on the sensitivity of offshore energy development; participants of the third meeting noted incomplete analysis of many existing datasets and relevant literature.

On the other hand, the fourth meeting of the ETF saw notable progress towards resolving previously identified technical barriers. A brief update was given on research undertaken by the British Trust for Ornithology (BTO) of relevance to the ETF Workplan. This included: an overall assessment of the different forms of renewable energy and the impact on birds and mammal species, a report on power lines and collisions using data collected from transmission operators, and ongoing work in the offshore wind industry to improve understanding of the vulnerability of different species.

[9] See Section 6 of UNEP/CMS/COP12/Inf.32 for a complete analysis.
[10] CMS/ETF2/Report: <https://www.cms.int/en/document/report-meeting-etf2>.
[11] CMS/ETF3/Report: <https://www.cms.int/en/document/meeting-report-4>.
[12] CMS Decisions 12.81 and 12.82 – Support to the ETF: <https://www.cms.int/en/page/decisions-1281-1282-support-energy-task-force>.

6.3 Information and Communication Issues

Another key issue raised in the second and third ETF meetings was the lack of communication at national levels. The meeting identified the necessity for effective communication and strong cooperation between representatives from both the environmental and energy sectors to enable conservation objectives. In the fourth meeting of the ETF, it was noted that with the rapid growth of RET and associated infrastructure, the ETF had to act very quickly to be on top of all the changes. Thus, effective communication was vital to relay information and suggest solutions that integrated consideration of migratory species.

Participants also highlighted the role of the ETF in bringing material together for dissemination across different ministries within governments. Information materials could be shared among members and should also be available online for others to access. Participants of the third meeting noted that the ETF webpage should be used more effectively to showcase information, case studies and success stories. By the fourth meeting, it was reported that the ETF website had been updated with the addition of an extensive review of the scientific literature. Further material would also be incorporated over 2020.

Issues arising from data confidentiality were also brought up on several occasions. Some members expressed the need for a proper mechanism for collecting, integrating and sharing data; although more had to be done to dispel fears about the reputational risk of data sharing, whilst respecting (or altering as appropriate) agreements on non-disclosure. In the fourth meeting of the ETF, the difficulty in obtaining data from private companies was mentioned. There is ongoing work on finding legal ways to obtain access to these datasets for the purpose of assessing and improving mitigation measures.

6.4 Lack of Resources and Capacity

Inadequate financial support for mitigation measures and projects was a predominant recurring theme. The past four meetings of the ETF all reported on the need for more funding to also counter the increasing costs of mitigation measures. Considering short timelines and funding deficiencies, it was suggested that the membership had to prioritize its actions. The duplication of processes and models that had already been developed should be avoided; developing partnerships and cooperation with organisations that already had information or systems in place was seen as an efficient step. Most recently, it was mentioned in the fourth ETF meeting that other funding solutions also need to be sought for the ETF to continue post-2020.

Some participants noted the lack of both awareness and skilled personnel as another barrier to implementation. Participants of the second ETF meeting suggested that more efforts should be made to build capacity in the national level, to learn how to better monitor projects undertaken in the country. However, at the third ETF meeting, a participant commented that some countries did not have the capacity to develop plans, strategies or models. It was therefore proposed that these elements should be elaborated by organizations and shared with less developed countries. A participant of the fourth meeting of the ETF raised that guidance on operational phase monitoring should not just include data collection, but also how to analyze it. There were times when a great deal of data was collected, but the robust statistical analysis was not always conducted.

7 Summary and discussion

Over 70 per cent of reporting Parties identified RET and/or associated infrastructure as a pressure to migratory species in the 2019 National Reports. This is an increase compared to around 60 per cent of reporting Parties in 2017. An analysis of the submitted 2019 National Reports revealed that many Parties also outlined some form of action to address this threat. Accordingly, successful outcomes were also positively highlighted by certain Parties.

Reconciling the development of RET and related infrastructure will require interventions across the entire succession. Effective results are more likely to be achieved when all relevant measures, from spatial planning through to monitoring and evaluation, are implemented. From the conducted analysis, Parties generally reported on one or two measures; only a handful were involved in four or more. Thus, a well-rounded implementation strategy is recommended to ensure that negative impacts on migratory species are avoided.

There were notable inconsistencies and gaps within the Parties' reporting, such as the impact to migratory species, and the action being taken. However, this may be attributed to the reporting template as it asks for comments on the implementation of the relevant Resolutions, but without further refinement of specific issues and measures of reconciling the impacts of RET and power line deployments with migratory species conservation. More comprehensive and consistent reporting, including under targeting processes such as showcasing achievements under the ETF could potentially allow a more accurate assessment provide additional valuable information on the progress made by Parties individually and at the global level.

Moreover, several barriers to implementing the Resolutions are yet to be addressed. There was a degree of consistency between the main gaps identified in both the 2017 and 2019 National Reports, although to differing extents. The meetings of the ETF recognized the same four major barriers across the four years: inadequate legislation and monitoring, technical barriers, information and communication issues, and lack of resources and capacity. Nevertheless, the forecast is certainly more optimistic as positive advancements were highlighted in the fourth meeting of the ETF that took place recently.

Overall, important progress has been made to implement the Resolutions on power lines, RET and associated infrastructure. Though the energy transition is clearly gaining much momentum, it also has a long way to go. Draft decisions based on inputs from the ETF members, submitted to COP13 proposed for adoption can provide further guidance and encouragement to Parties to amplify their efforts in a comprehensive and ambitious manner[13]. The ETF will also continue to work to support the implementation of the relevant Resolutions and Decisions, and strive to ensure that migratory species are thoughtfully considered in the undertaking of all energy sector developments.

[13] https://www.cms.int/en/document/renewable-energy-and-migratory-species-4

8 Annex 1: Methodology

Annex 1 presents an overview of the methodology used in conducting this analysis report. As there were no questions in the National Report template that specifically addressed the pressures posed by power lines and RET on migratory species, a 'keyword search' technique was employed. Table 1 contains the list of keywords that were used to find and compile information on each renewable energy-related pressure from the submitted 2019 National Reports. Furthermore, any answer that contained the searched word was carefully checked for its relevance to the purposes of this analysis before it was further processed.

Table 1. Keywords used to identify each renewable energy-related pressure to migratory species in the 2019 National Reports.

Renewable energy-related pressures	Keyword
Power lines and electrocution	Power line (or powerline); elec- (e.g. electrical, electrocution, etc.)
Renewable energy	Renewable; alternative energy; green energy
Wind turbines	Wind; turbine
Biomass	Biomass; peat; wetland; bog; fen; mire
Hydropower	Hydro- (e.g. hydropower, hydroelectricity, etc.); dam
Solar	Solar; sun

The main gaps and difficulties with implementation identified by Parties (Section 5) were an accumulation of responses to three relevant questions in the 2019 reporting template (Table 2). However, it should be reiterated that there were no specific questions on the main challenges faced by Parties with regard to the implementation of measures on renewable energy and migratory species.

Table 2. Relevant questions on main gaps and difficulties in implementation in the 2019 National Report template.

Section	Question
High-level Summary of Key Messages	In your country, in the reporting period, what does this report reveal about the greatest difficulties in implementing the Convention?
XIII. Area-based Conservation Measures	What are the main gaps and priorities to address, if any, in order to achieve full identification of relevant critical habitats and sites as required to achieve SPMS target 10?
XIX. Resource Mobilization	Which are the most important CMS implementation priorities requiring future support in your country?

8.1 Relevant Questions in the Reporting Template: 2019 *vs.* 2017 National Reports

Relevant questions concerning renewable energy were extracted from the reporting templates for a brief comparison of the previous *vs.* updated formats (i.e. the 2017 and 2019 National Reports, respectively). This is shown below in Table 3. As the analysis was conducted via a 'keyword search' method, the greater number of relevant questions in the updated 2019 National Report format appears to offer a more comprehensive basis for the inclusion of answers related to power lines and/or RET.

Table 3. Questions applicable to renewable energy in the reporting templates for 2017 and 2019 National Reports.

Year	Section	Question	Relevant options/answers
2017	IV. National and Regional Priorities	Does the conservation of migratory species currently feature in any other national or regional policies/plans (apart from CMS Agreements)?	Land-use planning, planning of power lines, planning of dams
	X. Implementation of COP Resolutions and Recommendations	Please provide information about measures undertaken by your country relating to recent Resolutions and Recommendations since the last report.	Resolutions 7.4 and 10.11 on electrocution and power lines; Resolutions 7.5 (Rev.COP12) and 11.27 (Rev.COP12) on renewable energy
2019	VI. Mainstreaming migratory species in other sectors and processes	Does the conservation of migratory species currently feature in any national or local strategies and/or planning processes in your country relating to development, poverty reduction and/or livelihoods?	
	VIII. Incentives	Has there been any elimination, phasing out or reforming of harmful incentives in your country resulting in benefits for migratory species?	Indication of what measures were implemented
	IX. Sustainable production and consumption	During the reporting period, has your country implemented plans or taken other steps concerning sustainable production and consumption which are contributing to the achievement of the results defined in SPMS Target 5?	Description of the measures that have been planned, developed or implemented
	X. Threats and pressures affecting migratory species; including obstacles to migration	Which of the following pressures on migratory species or their habitats are having an adverse impact in your country?	Collisions and electrocution (power lines and wind turbines)
		What are the most significant advances that have been made since the previous report in countering any of the pressures identified above?	Can add further comments on the implementation of specific provisions in relation to Resolutions 7.4, 7.5 (Rev.COP12), 10.11 and 11.27 (Rev.COP12)

9 Annex 2: Additional information

Table 4. List of reporting Parties that identified collisions from wind turbines as a pressure to migratory species in the 2019 National Reports (1 = severe; 2 = moderate; and 3 = low).

Party (collisions from wind turbines)	Level of severity
Afghanistan	3
Armenia	2
Austria	2
Belarus	3
Belgium	2
Bosnia and Herzegovina	3
Brazil	unknown
Bulgaria	2
Costa Rica	2
Croatia	3
Czech Republic	2
Denmark	2
Dominican Republic	3
Germany	unknown
Ghana	unknown
Honduras	3
Hungary	2
India	3
Iran	3
Israel	2.5
Jordan	3
Kazakhstan	3
Latvia	3
Liechtenstein	3
Luxembourg	2
Montenegro	2
Morocco	2
Netherlands	2
New Zealand	3
Nigeria	3
North Macedonia	2
Norway	2
Pakistan	3
Poland	2
Senegal	3
Slovenia	1
Spain	2
Sweden	1

Party (collisions from wind turbines)	Level of severity
Switzerland	2
Syrian Arab Republic	3
Tajikistan	3
Ukraine	3

Table 5. List of reporting Parties that identified electrocution as a pressure to migratory species in the 2019 National Reports (1 = severe; 2 = moderate; and 3 = low).

Party (electrocution)	Level of severity
Afghanistan	2
Algeria	2
Armenia	2
Austria	2
Belarus	2
Belgium	3
Bolivia	2
Bosnia and Herzegovina	2
Brazil	unknown
Bulgaria	2
Burundi	2
Costa Rica	3
Croatia	3
Czech Republic	1
Ethiopia	2
Georgia	2
Germany	unknown
Ghana	unknown
Hungary	1
India	3
Iran	3
Israel	3
Jordan	2
Kenya	3
Latvia	3
Liechtenstein	3
Luxembourg	2
Montenegro	2
Morocco	1
Mozambique	3
Netherlands	2
Nigeria	3

Party (electrocution)	Level of severity
North Macedonia	1
Norway	2
Pakistan	3
Peru	3
Poland	3
Republic of Moldova	2
Senegal	3
Slovakia	2
Spain	1
Switzerland	2
Syrian Arab Republic	2
Tajikistan	1
Togo	2
Uganda	3
Ukraine	2
United Arab Emirates	3
Uzbekistan	3
Zimbabwe	3

Table 6. A complete list of reporting Parties that specifically mentioned power lines and/or renewable energy in the 2019 National Reports (mentioned: light blue shaded fields).

Party	Power lines / electro-cution	Renewable energy	Wind turbines	Biomass	Hydro-power / dams	Solar energy
Afghanistan						
Algeria						
Antigua and Barbuda						
Armenia						
Australia						
Austria						
Belarus						
Belgium						
Bolivia						
Bosnia and Herzegovina						
Brazil						
Bulgaria						
Burundi						
Costa Rica						
Croatia						
Czech Republic						

Party	Power lines / electro-cution	Renewable energy	Wind turbines	Biomass	Hydro-power / dams	Solar energy
Denmark						
Dominican Republic						
Eritrea						
Ethiopia						
France						
Georgia						
Germany						
Ghana						
Honduras						
Hungary						
India						
Iran						
Israel						
Jordan						
Kazakhstan						
Kenya						
Latvia						
Liechtenstein						
Luxembourg						
Malta						
Montenegro						
Morocco						
Mozambique						
Netherlands						
New Zealand						
Nigeria						
North Macedonia						
Norway						
Pakistan						
Peru						
Poland						
Republic of Moldova						
Romania						
Senegal						
Serbia						
Seychelles						
Slovakia						
Slovenia						
Spain						

Party	Power lines / electro-cution	Renewable energy	Wind turbines	Biomass	Hydro-power / dams	Solar energy
Sweden						
Switzerland						
Syrian Arab Republic						
Tajikistan						
Togo						
Uganda						
Ukraine						
United Arab Emirates						
Uzbekistan						
Zimbabwe						