Prepared by:

Guidance on avian post construction monitoring techniques for wind and solar energy facilities with specific reference to Migrating Soaring Birds (MSB) in the Rift Valley/Red Sea Flyway

Appendix III – Inquiry to stakeholders

March 2014

Prepared for:

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APPENDIX III

In order to support the literature review and obtain site specific information related to post construction monitoring methods and techniques already employed at wind and solar facilities along MSB flyways, a questionnaire (Section A) was developed and emailed to key subject matter exerts including:

- Birdlife International Partners in the hosting countries;
- Experts in the ecology and study of birds of the hosting countries and MSBs;
- Experts in the interaction between birds and renewable energies in the hosting countries;
- Environmental Authorities from the Rift Valley/ Red Sea Flyway countries;
- Developers and Financers with renewable energy implemented or to implement in the hosting countries.

The results of this survey are summarized in Section B. In Section C contains the list of contacts established with an indication of their participation. These survey results were considered in the recommendations produced throughout this guidance document.

A. INQUIRY PRESENTED TO STAKEHOLDERS

Guidance on avian post construction monitoring techniques for renewable energy developments with specific reference to Migrating Soaring Birds (MSB's) in the Rift Valley- Red Sea Flyway

BirdLife International has assigned Bio3 a project with the main objective of defining a set of standard methodologies to predict and evaluate the impacts of solar and wind energy on birds, particularly Migratory and Soaring Birds, and assess the efficiency of the implemented mitigation measures during the post-construction phase in the Rift Valley/ Red Sea Flyway hosting countries.

As you may know the interactions between wildlife and renewable energies is not free of negative impacts. Birds worldwide are known to suffer severe impacts from the implementation of wind and solar energy facilities.
The Rift Valley/ Red Sea Flyway is very important for birds' populations, since this is regarded as the second most important bird flyway worldwide. Considering the political strategy of the countries in this area to expand and develop their renewable energy production, is considered extremely important prevent and mitigate potential impacts. Hence the need to provide a standard methodology designed to assess the impact caused by this infrastructures, as well as to implement and assess the efficiency of the adopted mitigation measures. Therefore the main focus of the work to be undertaken in this guidance will refer to post-construction monitoring programmes.

This questionnaire will provide further insight into the requirements of the methodologies to implement and into the concerns of the stakeholders involved in this geographical area. The information obtained through these questionnaires will be for the direct use of the project's team, and will be presented in the final guidance report without identifying individual opinions.

We appreciate the reception of responses until February 7th. We would like to thank you for your time and support on this project, which will provide us precious help on the development of robust solutions.

*Obrigatório

Section 1 | Identification

Name of the organization *

Person of contact

Type of organization *

- Non-Governmental organization
- Developer
- Government
- Financer
- Other

Section 2 | Policy and Legislation

2.1. What is the current national policy and regulations regarding wildlife, specifically birds, and the development of wind and/or solar energies in your country? *

2.2. Is data generated through the Environmental Impact Assessment or Strategic Environmental Assessment process regarding interactions between birds and renewable energies shared and publicly available? *

- Yes
- No
- No not know

2.2.1. If you have answered Yes above, how is the information available?

2.3. Are there incentives for a more 'bird-friendly' energy developments in your country? *

- Yes
- No
- Do not know

2.3.1. If you have answered Yes above, please state what are the incentives present in your country.

2.4. Are there any technical standards for bird safety in terms of the types of wind turbines/ solar technologies used and/or the layout of the wind/solar farm? *

i.e. avoiding bird sensitive habitat

- Yes
- No
- No not know

2.4.1. If you have answered Yes above, please state what are the technical standards existent in your country.

2.5 As a financier, are you bound by any risk management frameworks? *
i.e. the Equator Principles

- ○ Yes
- ○ No

2.5.1. If you have answered Yes above, please list and provide details of these frameworks.

Section 3 | Awareness and Information

3.1. Are you aware if biodiversity (e.g. birds) protection is a major concern in your country? *

- ○ Yes
- ○ No
- ○ Do not know

3.1.1. If you have answered Yes above, what are the policies and regulations implemented?

3.2. What is your knowledge on the impacts of wind and solar energies on birds? Please state the impacts you consider to be the most serious for bird and migratory soaring birds' populations. *

3.3. Are there any other impacts on MSB's in your country besides impacts caused by renewable energies? *

e.g. poisoning, collision with power lines, habitat loss, amont others

- ○ Yes
- ○ No
- ○ Do not know

3.3.1. If you have answered Yes above, please state what impacts are you aware of and what is the current state of the MSB affected populations in your country.

Section 4 | Study of Migratory Soaring Birds

4.1. Is there regular spring or fall count of Migratory Soaring Birds in your country? *

e.g. raptors, storks, pelicans

- ○ Yes
- ○ No
- ○ Do not know

4.1.1. If yes, please specify:

- ○ Fall count
- ○ Spring count
- ○ Both

4.2. Are there counting spots or counting routes set up for count of Migratory Soaring Birds in your country? *

- ○ Yes
- ○ No
- ○ Do not know

4.2.1. If yes, please specify the name(s) and locations:

4.3. Is there any database of counts of Migratory Soaring Birds in your country? *

- Yes
- No
- Do not know

4.3.1. If exist please specify the type of organization responsible by its management.

- National Database
- NGO
- Private Company
- Other
- Do not know

4.3.2. Please specify the name of the organization referred in the previous question (4.3.1.)

4.4. Are there annual reports about Migratory Soaring Birds produced in your country? *

- Yes
- No
- Do not know

4.4.1. If produced please specify the type of organization responsible by its production.

- Private company
- BirdLife Partner
- Non-Governmental Organization
- National Institute
- Other

4.4.2. Please indicate the name(s) of the company(es) referred above (4.4.1.)

Section 5 | Monitoring and Mitigation

5.1. Is there any scientific research in your country regarding bird ecology and their interaction with wind and solar energies? *

Scientific puplications, Research Institutes, Grey literature (among others)

5.2. From the following methodologies select the ones you find to be most appropriate to monitor migratory and soaring birds: *

- [ ] Vantage Points
- [ ] Checklists
- [ ] Radar surveys
- [ ] Vehicle Transects

5.2.1. Do you find other methodology more appropriate? Which one?

5.2.2. From the techniques referred above, which do you find to have the best cost benefit relation? *

5.3. In your country are impacts mitigated prior to construction of the renewable energy development? *

i.e. pre-construction assessment and avoidance of sensitive areas

- ( ) Yes
- ( ) No
- ( ) No not know

Section 6 | Limitations

6.1. Do you have any concerns regarding the implementation of mitigation measures? *

- ( ) Yes
- ( ) No

6.1.1. If you have answered Yes above, please state what are your concerns.
e.g. its cost-benefit ratio

6.2. Do you have any concerns regarding the implementation of post-construction monitoring assessment? *

- Yes
- No

6.2.1. If so, please state what are your concerns.

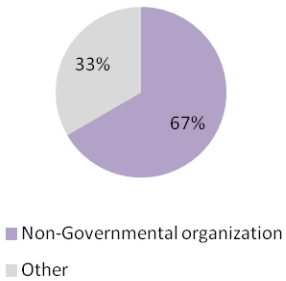
Section 7 | Suggestions

Please state any other remarks and suggestions regarding the subject of this questionnaire.

B. Main Results of the Contacts Established

Section 1 | Respondents

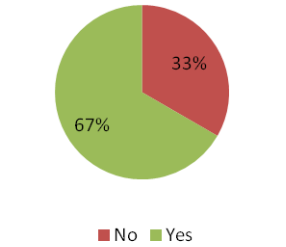
Type of organization



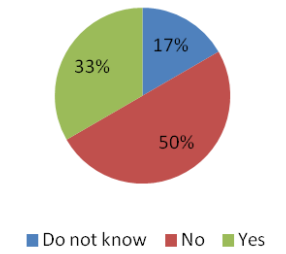
Most of the respondents were non-governmental organizations, including environmental experts and consultants, as well as NGO's and BirdLife associates.
Direct answers from Jordan, Lebanon, Syria and Yemen were obtained.
Within the range area of this study as also obtained information concerning Egypt and Kenya.
Outside of the study area important feedback was given from environmental experts on South Africa.
No answers from financers were obtained.

Section 2 | Policy and Legislation

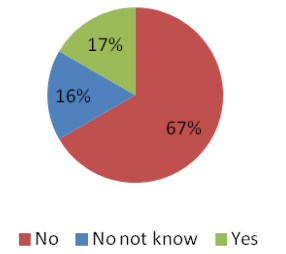
Information of EIA and SEA available and shared?



Presence of incentives for bird-friendly energy?



Technical standards for bird safety and energy technologies?



National policy and regulations regarding wildlife, specifically birds, and the development of wind and/or solar energies?
Jordan: There has been lack of awareness during the planning phase of wind facilities among governmental decision makers, regarding the possible impacts on wildlife particularly birds. Currently the Ministries of Energy and Environment still appear to neglect the importance of re-locating wind facilities from areas with high bird activity, especially those located on the top of the escarpment/upper rift margins. A Strategic Environmental Assessment is not necessary/in the legislation in Jordan although it would have been very helpful in the planning process. As for EIAs including the methods of assessing impact of wind facilities and power lines on birds, there are still no clear standards or criteria to be used locally and the lenders are usually the parties asking for standards closer to international standards.
Several: In Jordan, Egypt and Kenya international conventions (AEWA, Bern-convention) have been signed and included in national legislation. In Egypt various *memoradum* of understanding have been signed by environmental and energy authorities and NGO's. National Environmental Agencies have much less "muscle power" than Energy Authorities and will often loose in the political process if donors do not insist on following IFC and World Bank standards.
Syria: All national and local development projects regarding energy will be liable to EIA process overseen by the Ministry of Environment. These have to coincide with the national standards.
Lebanon: An EIA directive exists for large projects to which any wind facility developer must comply. The Ministry of Environment approves the monitoring results and gives permission to implement the project.
Yemen: Protection of wildlife is disregarded due to the country political instability.

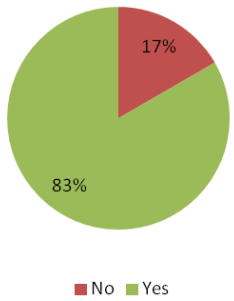
How is the information of EIA and SEA available and shared?
Usually the information is shared as reports of the EIA/SEA process when these are published, usually not in a general database. Efforts have been made to centralize the information in the Ministry of Environment (of each country).

What are the incentives to a more bird-friendly energy?
Better location of wind facilities, away from areas with migration routes and high activity of breeding soaring birds; minimization of the use of power lines.

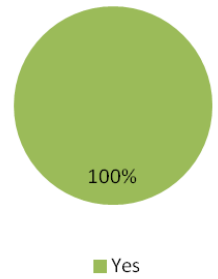
Which technical standards are applied?
Limitations regarding protected areas; the EIA should set the parameters to safeguard birds, which include wind facility layout, wind turbine technology and mitigation measures.

Section 3 | Awareness and Information

Awareness of biodiversity protection



Impacts on MSB besides renewable energies



What are the policies and regulations implemented for biodiversity protection?
In some countries there are no clear policies and regulations being implemented, despite the concern among different competent authorities and NGO's.
However in other locations there are already implemented several policies and regulations implemented by different governmental levels to protect biodiversity and prevent the exploitation of resources.

Impacts of wind and solar energies on birds, especially MSB
Impacts caused by wind facilities on MSB include:
- Displacement of local populations;
- Collision with migrating populations;
- Habitat destruction and fragmentation due to turbines, roads, and transmission lines;
- Collision with the power lines and with anticipated wind turbines as hot points set in a specialized assessment study to assess this interaction.
- Wrong location assessment as wind facilities may be located on the top of escarpments and too close to the rift margins. Moreover, the higher margins hold the only breeding sites for many raptor species which are rare and endangered in Jordan - according to recent studies these breeding raptors would be severely threatened by wind facility developments, and in one location on the top of escarpment, models showed that hundreds of migratory birds and some of resident species could be affected each year
- Fatality due to collisions from both turbines and associated grid-structures. Bird numbers counting hundreds of thousands in even small areas with very high wind speeds, periods of sandstorms and low visibility does (until otherwise proven) consist a major risk."
- Wind facilities impact migratory birds if the wrong technology, layout, and a lack of mitigation measures (e.g. shut down conditions) are present. However, if proper mitigation measures and original designs and specifications are met, then wind facilities and migratory birds need not be in conflict. It would be extremely unfair to penalize well implemented wind facilities for migratory birds' issue, as experience shows that with proper technology, e.g. radar, fatalities are very limited.
None of the respondents had knowledge regarding impacts of solar energy.

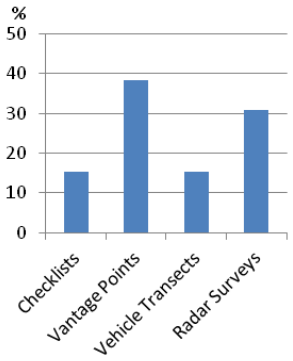
Impacts on MSB besides renewable energies
All respondents answered positively concerning the existence of impacts on MSB caused by other factors than renewable energy. Among the identified threats where poisoning, power lines, illegal hunting, disturbance in night roosts, agricultural practices on the migrating routes and at bottleneck sites, habitat loss, increasing dams.

Section 4 | Study of Migratory Soaring Birds

Respondents of the Rift Valley/Red Sea Flyway countries were not aware if regular spring and/or fall counts of MSB were implemented, therefore no information was collected regarding this subject.

Section 5 | Monitoring and Mitigation

Appropriate method to survey MSB

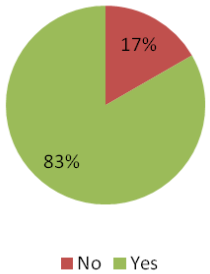


Several respondents indicated that scientific research is underway to understand the interactions between MSB and renewable energies in the Rift Valley/Red Sea flyway countries. This investigation is in many cases implemented by universities, NGO's and governmental entities. Besides scientific literature there is also "grey literature" resulting from a few published reports.

Methodology to survey MSB

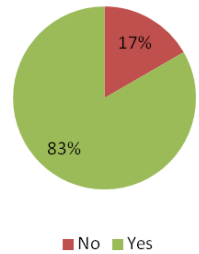
Most of the inquirites regarded vantage points as an appropriate method to survey MSB in their country. A smaller percentage agreed on Radar surveys, and Checklists or Vehicle surveys were the less selected as adequate. However was noted that the selection of such methods is site specific as not all methods can be used in all countries for security reasons, being a choice dependent on the circumstances.

Mitigation pre-construction



Section 6 | Limitations

Concerns in implementing post-construction monitoring



Concerns regarding implementation of mitigation measures

All respondents presented concerns regarding the implementation of mitigation measures:

- Often not sufficient due to cost factor; and avoidance of sensitive sites not being implemented at all:
- Mitigation measures are only proposed in birds are seen in numbers. The amount of birds observed is by ten- or even hundred-fold dependant on methodology and experience of observers. VERY high proportions of birds are flying at height not detectable by visual observations and number passing is HIGHLY dependent on use of technical detection systems like radars.
- Projects are often based on one year baseline studies only, even if substantial between year variations is found in the migration system.
- From a conservation point of view pre-construction mitigation is usually not only concerning area avoidance. Existing knowledge on many of the potentially affected species are poor or even non-existing. Implementing more generic preconstruction mitigation measures may therefore be non-effective in these areas.
- Relevant knowledge on interactions between Wind, Topography and birds use of these in these landscapes are basically unknown to support a qualified process of micro-sitting which is proven highly important from studies in other regions of the world with soaring birds.
- Technical "quick-fixes" like blade-painting, light markings, noise dissuasion systems and so on are very poorly documented and in the best case only partially efficient.
- Using fewer and bigger turbines which from repowering around the world may be a quick way to reduce collisions/MW/year is often not possible for

	security reasons which is additionally challenging in the regimes along the flyway where the military power is very strong and very conservative. - The issue of wind facility power reduction or shut down in times of high activity for MSB is not well thought off, i.e., most of the wind facility developers internalize the expected cost of shutting down when they bid in their power purchase price, or will the government finance the shed supply in times of high MSB activity, just like they should do should the government's national utility have a transmission breakdown. - Less concern of wildlife in general and the urgent need to energy which is for public and economist have priority. **Concerns regarding the implementation of post-construction monitoring** Monitoring may not be sufficient for the following reasons: - lack of follow up by the ministry of environment - even if an EIA states so, monitoring during operation of projects is not being implemented sufficiently in Jordan; - lack of qualified personnel to carry out monitoring of birds; - cost factor Adaptive management during the operations is increasingly being used to "solve" conflicts. These do however require a continued effort in monitoring during the entire life-span of the project. There is very large economic pressure for keeping turbines spinning even when large numbers of birds are passing which may challenge the shut-down-on-demand system. Also, frequent and massive shut-down of large or multiple small WF may in some cases be a critical problem for the transmission owner in order to stabilize the grid. Reliability of data on which mitigation measures are based, soundness of monitoring methodologies, qualifications of monitoring personnel, validity of data analysis. The private sector has shown excellent willingness to ensure the highest sustainability criteria are met, and have shown willingness to go the extra mile to safeguard the issue on MSB. The government needs, however, to show more coordination on the issue between the Ministry of Environment, Ministry of Energy and Water, and EDL, especially on the point of how the shed supply, if any, will be accounted for and how it will be monitored.
Suggestions and Remarks	
Strategic environmental assessments should be carried out during the planning phase and before final selection of sites, particularly for wind facilities. This should become part of the legislations before wind facilities and major power lines are to be established. More research on MSBs should be carried out to identify sensitive areas. Determine the standards and methodologies for assessments of impacts on birds, with higher standards for areas within 5 km from the upper rift margins (e.g. minimum 40 hours per week during migration seasons and for 2-3 years). There is very general conflict between methodologies ideally to be applied to provide the knowledge actually needed and the methodologies permitted due to security reasons. Radar systems which to our experience is one of the important tools has e.g. proven periodically very difficult to use due to military security issues.	

C. LIST OF CONTACTS ESTABLISHED

Organization	Person of contact	Response
BirdLife Partners and Associates		
Association Djibouti Nature (BirdLife Affiliate)	-	No
Nature Conservation Egypt (BirdLife Affiliate)	-	No
Nature Conservation Egypt (BirdLife Affiliate)	-	No
Egyptian Environmental Affairs Agency (BirdLife partner to the Migratory Soaring Birds Project)	-	No
Ethiopian Wildlife and Natural History Society	-	No
Royal Society for the Conservation of Nature (BirdLife Partner)	-	No
Republic of Lebanon Ministry of Environment (BirdLife partner to the Migratory Soaring Birds -Project)	-	No
Society for the Protection of Nature in Lebanon (BirdLife Partner)	-	No
Palestine Wildlife Society (BirdLife Partner)	-	No
Saudi Wildlife Authority (BirdLife Affiliate in Saudi Arabia)	-	No
Sudanese Wildlife Society (BirdLife Affiliate in Sudan)	-	No
Syrian Society for Conservation of Wildlife (SSCW) (BirdLife Affiliate in Syria)		Yes
Foundation for Endangered Wildlife (Yemen) (BirdLife Affiliate)		Yes
BirdLife Middle East Division Amman	-	No
BirdLife Africa Office	-	No
BirdLife South Africa	-	Yes
CEPF Med RIT	-	No
Environment Non-Governmental Organizations		
The Ornithological Society of the Middle East, the Caucasus and Central Asia (OSME)	-	No
National Wildlife Research Center – Saudi Arabia	-	No
Arab Federation for Wildlife Protection (AFWP) - Djibouti	-	No
Arab Federation for Wildlife Protection (AFWP) - Egypt	-	No
Arab Federation for Wildlife Protection (AFWP) - Yemen.	-	No
IUCN – Regional Office of West Asia	-	No
Egypt National Committee of IUCN Members	-	No
Jordanian National Committee for IUCN	-	No
Lebanon National Committee for IUCN	-	No
Syria National Committee of IUCN Members	-	No
OSME Country Contact (Jordan)	Dr Fares Khoury	Yes
Birding in Egypt Project	-	No
Regional Academic Institutions		
Islamic World Academy of Sciences (IAS)	-	No
Local experts and Environmental Consultants		
-	Elhassan Elfaki Esmet	No
-	Zeb Labinger	No
Environmental Solutions LLC	Jack Mozingo	Yes

Organization	Person of contact	Response
Enbicon Aps	Bjarke Laubek	Yes
University Cape Town	Rob Simmons	Yes
Environmental Authorities		
Council for Development and Reconstruction (Lebanon)	-	No
New & Renewable Energy Authority (Egypt)	-	No
Ministry of Environment (Jordan)	-	No
UNDP	Hassan Harajli	Yes
Renewable Energy Developers and Authorities		
Central Electricity Generating Co. (CEGCO)	-	No
Egyptian Wind Energy Association	-	No
Financers		
World Bank Africa	-	No
Climate Investment Funds	-	No
European Investment Bank	-	No
European Bank for Reconstruction and Development	-	No
International Finance Corporation	-	No
African Development Bank	-	No
KfW	-	No