

MAREÑA RENOVABLES WIND POWER PROJECT

ENVIRONMENTAL AND SOCIAL STRATEGY¹

I. PROJECT DESCRIPTION

- 1.1** The proposed Mareña Renovables Wind Power Project (the Project) involves the financing of a wind park constructed over two adjacent land areas (San Dionisio del Mar (306 MW) and Santa Maria del Mar (90 MW) located in the Isthmus of Tehuantepec in the state of Oaxaca, Mexico. The Project is being developed by Fomento Económico Mexicano, S.A.B. de C.V. (FEMSA), Macquarie Asset Finance Limited (a subsidiary of Macquarie Capital Group Limited) and Macquarie Mexican Infrastructure Fund. Total project cost is approximately 14 Billion Mexican Pesos (including related VAT) and the IDB has been approached to finance up to 750 million Mexican pesos.
- 1.2** The part of the wind park to be constructed on the San Dionisio del Mar land area will be constructed on the *Cabo de Santa Teresa* between the *Laguna Superior* and the *Laguna inferior* in the municipality of San Dionisio del Mar and entails the construction and operation of 102 wind towers with a total installed capacity of 306 MW. A substation will be constructed in Santa Teresa, a transmission line of 52 km will be built and be connected with La Ventosa substation. According to the project's *Manifestación del Impacto Ambiental* (MIA), this wind park is expected to occupy a total area of 37.86 ha (excluding the transmission line) (see Map 1). Major road improvements are required for this part of the wind park.
- 1.3** The balance of the wind park will be constructed on the Santa Maria del Mar land area located between the *Laguna Inferior* and the Gulf of Tehuantepec where 30 wind towers will be erected with a total installed capacity of 90 MW. A substation will be constructed near the northern coast of Santa Maria land area. This balance of the wind farm will occupy a total area of 57.38 ha. Minor to moderate road improvements will be required for this part of the wind park.
- 1.4** The wind park will use 132 Vestas V90-3.0 MW turbines with 80-m a hub heights and will require the construction of a transmission line. However this component was not part of the initial environmental and social documentation review. According to the information presented, the environmental impact statement and application have been filed with SEMARNAT under a separate permitting process from the wind farm.

¹ This Environmental and Social Strategy (ESS) is being made available to the public in accordance with the Bank's Policy on Disclosure of Information. The ESS has been prepared based primarily upon information provided by the project sponsors and does not represent either the Bank's approval of the project or verification of the ESS's completeness or accuracy.

Construction for the Mareña Renovables wind park is expected to start in November 2011.

II. INSTITUTIONAL AND REGULATORY CONTEXT

- 2.1** The General Law for Ecological Equilibrium and Protection of the Environment (“Ecology Law” hereafter) was passed in 1988 and established the overall framework for industrial requirements and associated fines and penalties for noncompliance. The Ecology Law was amended several times since, and the currently applicable Ecology Law is the consolidated version of July 2007. The Ecology Law requires that for certain projects an Environmental Impact Assessment (EIA) (“*Manifestación del impacto ambiental*”) be prepared and reviewed by the Ministry of Environment and Natural Resources (“*Secretaría de Medio Ambiente y Recursos Naturales*”) (SEMARNAT) before an environmental license can be issued. Per the Article 28 of the Ecology Law, power generation facilities do require an EIA and prior review by SEMARNAT. In order to comply with the Ecology Law, an EIA for the San Dionisio del Mar part of the wind park was submitted to SEMARNAT in June 2009. SEMARNAT has granted the environmental license in January 2010. The EIA for the Santa Maria del Mar part of the wind park was submitted in May 2009 and SEMARNAT gave the environmental license in February 2010. It is understood that the detailed layout of the wind park has changed since the environmental licenses were issued, and the current permitting status of the Project will be further reviewed during due diligence.
- 2.3** The Project triggers several directives of IDB’s OP-703 Environmental and Safeguards Policy: B.1 Bank Policies; B.2 Country Laws and Regulations; B.3 Screening and Classification; B.5, Environmental Assessment; B.6 Consultation; B.7 Supervision and Compliance; B.9 Natural habitat; B.11 Pollution prevention and Abatement. Given the presence of *ejidos* in the area of the wind park, the Project also triggers OP-765 on Indigenous Peoples. It is expected that IDB’s OP-710 on Involuntary Resettlement Policy will not apply to this Project. However, once additional information on the transmission lines for the wind park will be available, it will be possible to determine if resettlement is required (physical and/or economic) for the rights of way. Given that the Project is located in areas with high levels of tectonic activity and vulnerable to flooding and hurricanes, the Disaster Risk Management Policy (OP-704) is triggered. The Project is classified as a Category A operation primarily due to scale of the wind park, the importance of bird migratory movement across the sites and the potential cumulative impacts on the avian fauna given the presence of numerous other wind parks in the La Ventosa region.

III. ENVIRONMENTAL AND SOCIAL SETTING

- 3.1 Wind resources in Oaxaca are among the best in the world due to a mountainous topography that levels off at a point where the land mass tapers down to a narrow isthmus. This creates a natural wind tunnel for air currents flowing between the Gulf of Mexico and the Pacific Ocean. As a result of these excellent wind conditions, development of wind energy projects in the region is attractive, and several large-scale projects are either in planning, under construction or already in operation.
- 3.2 The Isthmus of Tehuantepec has been classified as an Endemic Bird Area (EBA) by Birdlife International. Some bird species are endemic to the Isthmus of Tehuantepec, in particular the Cinnamon-tailed Sparrow (*Aimophila Sumichrasti*) listed in the Near Threatened (NT) category in the 2010 IUCN Red List. The Due Diligence will confirm what could be the potential impacts to this species. The wind park is found within the migratory routes taken by birds between North American and Mexico and/or further south. Potential impacts of the Project on endemic and migratory birds will be further assessed during due diligence.

San Dionisio del Mar land area

- 3.3 Three main economic activities are observed in this part of the Project area. First, on the western tip of the wind concession, small-scale salt extraction is taking place. Second, on the shore of the Laguna superior, fishing activities by the locals (San Mateo del Mar, Pueblo Viejo and Alvaro Obregón) have been recorded. Cattle grazing activities, while present in the Project's area of influence are not very productive due to the soil conditions (high level of salinity) and the absence of favorable vegetation. Land tenancy or ownership is distributed among *ejidatarios* (common owners of agricultural land). The overall area is flat, with almost no vegetation, mostly few trees and shrubs. During the rainy season, this part of the Project area is vulnerable to flooding as it is surrounded on both sides by lagoons. The *Laguna Superior* and the *Laguna inferior* are viewed by Mexican authorities (specifically the *Comisión Nacional para el uso y conocimiento de la biodiversidad (CONABIO)* as priority marine conservation areas, and it is unclear at this stage if the Project will have any detrimental impact on current conditions. Due Diligence will investigate this. The CONABIO recently determined that there are several environmental problems already in this region of Mexico (the south coast of Oaxaca to the north coast of Chiapas) including mangrove deforestation, illegal turtle trading, channel dredging, river obstruction, and pollution due to garbage, residual waters and agrochemicals that could cause perturbations to the marine conservation areas. The Due Diligence will determine if the Project works will have any increased impact on marine life; with special attention to be put on potential impacts of increased maritime traffic.

- 3.4** A total of 124 bird species pertaining to 34 families had been observed during the monitoring period. Out of this 124 species, 21 bird species are under some type of protection under the Mexican legislation, including the Cinnamon-tailed Sparrow (*Aimophila Sumichrasti*). A total of 6 species of reptiles had been identified in this part of the Project's area of influence, although none of them is under a conservation status. The terrestrial fauna is not abundant (mostly rodents) and none of them are under a conservation status except the Tehuantepec Jackrabbitt (*Lepus Flavigularis*) which is endemic to the Salina Cruz area, and listed as endangered per the IUCN Red list.
- 3.5** No cultural artifacts have been encountered so far during preliminary surveys. The final layout of this part of the Project stays away from five earlier identified sites (these were identified by INAH, the National Institute of Anthropology and History) in the general area. Therefore, given information currently available, no additional rescue or rehabilitation efforts will be necessary with respect to archaeological sites. The Due Diligence will determine if a chance-find procedure will need to be implemented.

Santa Maria del Mar land area

- 3.6** The wind park's area of influence in the Santa Maria del Mar land area has already been heavily impacted by human activities such as agricultural activities and cattle grazing. Based on information reviewed, the land tenure is based on communal ownership in both sites. The level of poverty is quite high and according to the EIA, local population would be engaged in illegal egg poaching of marine turtles and the hunting of iguanas.
- 3.7** A total of 119 bird species pertaining to 40 families had been observed during the monitoring period. Out of these 119 species, 64 are considered as residents while 42 species are migratory and 13 are transitory. Out of these 119 birds species, 15 species are under a special protection status under Mexican legislation, including the Northern Bobwhite (*Colinus virginianus*) which is in the Near Threatened category in the 2010 IUCN Red List and endemic to the Tehuantepec's Isthmus. A total of 5 species of reptiles had been identified in this part of the Project area, none of them are under a conservation status. Similar to the San Dionosio del Mar land area, the terrestrial fauna is not abundant and none of the species found are under a conservation status except the Tehuantepec Jackrabbitt (*Lepus Flavigularis*) which is endemic to the Salina Cruz area and listed as endangered per the IUCN Red list.
- 3.8** No cultural artifacts have been encountered so far during preliminary surveys. The final layout of this part of the Project stays away from five earlier identified sites (these were identified by INAH, the National Institute of Anthropology and History) in the general area. Therefore, given information currently available, no additional rescue or rehabilitation efforts will be necessary with respect to archaeological sites. The Due Diligence will determine if a chance find procedure will need to be implemented.

IV. KEY POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS AND RISKS

- 4.1** During the construction phase there will be some habitat disturbance, although these effects are expected to be temporary and short term. Given the nature (highly human impacted area with shrub vegetation, pasture lands) and size of the habitat to be directly impacted by construction activities, impacts on the avifauna due to habitat loss are not expected to be significant. Besides, according to information reviewed, the area of the wind park does not constitute a suitable breeding and foraging habitat for birds. Significance of potential impacts on the endangered Tehuantepec Jackrabbitt will be further assessed during due diligence. A plan to protect and increase the Jackrabbitt population has been proposed and is awaiting approval. Overall, the environmental impacts related to construction activities (e.g. soil erosion, noise, dust generation, traffic disruption) are likely to be of limited significance, and can be mitigated through routine standard procedures. Areas temporarily used or disturbed during construction will be reinstated and re-vegetated at the end of construction, and the permanent footprint of each tower is relatively small. Occupational health and safety hazards specific to wind energy facilities and activities primarily include working at heights. Hazards associated with working at heights can generally be prevented with an adequate health and safety management system. Other hazards such as aircraft and marine navigation safety; electromagnetic interference and radiation are not considered significant in the context of the Project.
- 4.2** Once in operation, there is a potential for impacts due to mortality caused by collisions for migrating birds and large flocking wintering. On both land areas, bird monitoring had been conducted for a period of one year including the spring and the fall migration. For both wind park land areas, the wind towers will have a height of 80 m, taking into account that the blades will have a diameter of 90 m, the risk of collision will be present for any birds which flies between 35 m and 125 m of altitude. A Collision Risk Assessment has been completed for the Project. The report identifies specific recommendations that the Project should undertake going forward, including a bird monitoring plan that establishes specific measures for the operations of the Project. The assessment requires preventative measures to protect the impact on birds during the migratory season. The Due Diligence report will provide more information on impacts management and mitigation measures.
- 4.3** There is little tree cover on both land areas, and due to the height of the wind turbines, there is little mitigation measures possible to reduce the visual impacts of the wind park. However, according to the information presented in the EIAs, this aspect does not represent an issue for population living in the vicinity of the proposed wind park. There are no known cultural heritage features within the land areas. The land areas have been previously used for agricultural and pasture purposes. No significant environmental impacts on ground conditions and water resources are expected as a result of the Project.

Waste materials generated during construction, including hazardous waste, will be transported by a certified waste carrier and disposed of to an appropriately licensed waste facility located off-site. For both Project areas, it will be necessary to improve some roads in the area in order to transport the heavy equipment.

- 4.4** As per IDB's Operational Policy on Indigenous Peoples, the direct, indirect and cumulative impacts of the Project on local communities will be further assessed during due diligence through a socio-cultural evaluation. It will be also verified that the Project has entered into good faith negotiations with the affected *ejidatarios* in order to achieve fair compensation and a satisfactory level of support for the Project and related mitigation measures.
- 4.5** As a generally recognized rule of thumb, the additional noise level from a wind turbine over background noise is considered insignificant at a distance of 3 times the blade tip height, i.e. about 270 m for the category of wind turbines used for the Project. Potential noise impacts caused by the wind turbines during operation on adjacent communities are therefore not expected to be significant. The turbine supplier has committed to meet Mexican noise regulations. Appropriate monitoring and follow-up should ensure that noise levels are respected.

V. ENVIRONMENTAL AND SOCIAL DUE DILIGENCE STRATEGY

- 5.1** The Bank will perform an Environmental and Social Due Diligence ("ESDD") in order to confirm that all Project relevant impacts and risks have been, or will be properly and adequately evaluated, and mitigated. The ESSD will specifically address the following aspects:
- a.** Confirmation that the Project has been designed and carried out in compliance with environmental law and regulations of Mexico, any applicable IDB Environmental and Social Safeguards, as well as IFC's Environmental, Health and Safety and Guidelines for Wind Power;
 - b.** A follow-up on the conditions attached to the environmental licenses for both wind park land areas will be done to ensure that the studies and management plans requested by SEMARNAT had been provided;
 - c.** An assessment of the Project's Environmental, Health and Safety Management System, including plans and procedures, to assess their adequacy in terms of responsibilities, training, auditing, reporting, and resources to be made available to ensure adequate implementation;
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- e.** Evaluation of project-related information disclosure and public consultation activities that have been performed, and proposed future actions to provide adequate ongoing information disclosure and public consultation with affected parties;
- f.** Development of an Action Plan for the timely resolution of non-compliances, as required, e.g. regarding any environmental liability or outstanding non compliance with the Environmental and Social Management Plan at the end of construction;
- g.** Assessment of impacts on endemic and migratory birds, and development of an appropriate mitigation mechanism comprising real time monitoring of birds during migratory seasons and a wind turbine generators shut down procedure, as appropriate, depending on the results of the Collision Risk Assessment;
- h.** Assessment of potential adverse socio-economic impacts of land acquisition, construction activities, permanent and temporary loss of access to agricultural land required for the installation of the wind towers; evaluation of mitigation and compensation framework and measures for the current land users along the proposed transmission lines;
- i.** Assessment of the Project's impact on affected Indigenous Peoples, including adequacy of the consultation and negotiations process, compensation arrangements and proposed community investment program;

5.2 As part of the ESSD process, the Project Team will analyze the environmental and social aspects of the Project and prepare an Environmental and Social Management Report (ESMR).

APPENDIX

Map 1. Project location of San Dionisio del Mar



Map 2. Project location of the Santa Maria del Mar

