

Environmental and Social Data Sheet

Overview

Project Name: Tafila wind farm Jordan
 Project Number: 20110433
 Country: Jordan
 Project Description: The project concerns the development, implementation and operation of a 117 MW wind farm in the Tafila Governorate in Jordan. Once operational the wind farm will be connected to the existing 132 kV line that goes through the project site and supply electricity to the national grid.

EIA: Required

Project included in Carbon Footprint Exercise¹: yes

(details for projects included are provided in section: "EIB Carbon Footprint Exercise")

Summary of Environmental and Social Assessment, including key issues and overall conclusion and recommendation

The environmental assessment work carried out to date has resulted in an overall understanding of the environmental and social risks and mitigation measures needed for a project of this nature. A revised Environmental and Social Impact Assessment (ESIA), including Non-Technical Summary (NTS) has been prepared and has been carried out addressing IFC's and EIB's environment and social requirements and standards as well as the legal framework at national and local levels. The ESIA documentation has been submitted to the Ministry of Environment, the national competent authority, in December 2012 and already received final approval.

The ESIA presents a baseline assessment, the expected environmental and social impacts of the project, and a description of the mitigation measures. Given that the Dana Nature Reserve, a designated Biosphere Reserve and Important Bird Area (IBA), falls within the direct area of influence of the project, special attention was given to all biodiversity aspects. The environmental and social (E&S) issues associated with the project include: (i) biodiversity (flora, fauna, avifauna), (ii) increased noise pollution, (iii) negative visual impact including shadow flickers, (iv) increase of dust emissions, (v) cultural heritage, (vi) hydrology and hydrogeology and (viii) general workplace and community safety. Some of the areas planned for the placement of the turbines will require special attention as these are located in the vicinity of migratory flight pathways or close to local communities. Based on the socio-environmental assessment, the environmental and social impacts will be by and large limited to the construction stage, and will be localised, temporary and reversible.

The ESIA contains a framework Environmental and Social Management Plan (ESMP) that sets out how the E&S impacts and risks identified by the assessment will be managed and monitored throughout the project life cycle. The ESMP includes an implementation timeline for all the actions. The ESMP contains commitments to develop a comprehensive monitoring programme for avifauna, the development of a series of E&S policies to safeguard employees, the local communities and the environment.

¹ Only projects that meet the scope of the Pilot Exercise, as defined in the EIB draft Carbon Footprint Methodologies, are included, provided estimated emissions exceed the methodology thresholds: above 100,000 tons CO₂e/year absolute (gross) or 20,000 tons CO₂e/year relative (net) – both increases and savings.

The stakeholder engagement and public consultation carried out to date has been documented in a Stakeholder Engagement Plan. This document lists all known stakeholder groupings and outlines a set of future stakeholder engagement, a key component of the wide-ranging stakeholder engagement planned for the project. The adequacy of the public consultation process and stakeholder engagement will be reviewed by the Bank in stage 2 of the appraisal.

Capacity and management structures of the promoter to address environmental and social impacts, in particular for EHS and biodiversity monitoring programme, in order to ensure the sustainability of the operation will be further assessed in stage 2 of the appraisal.

Note, however that gaps remain in the current analysis on the impact of the project on migratory birds and therefore the analysis will be completed during stage 2 of the process including setting up a framework for the monitoring programme.

Overall and in the long-term the project is expected to have a positive impact on the environment. The project will increase the production of electricity from renewable sources, partly alleviating Jordan's heavy (>96%) energy import dependency in a troubled geopolitical region. The project supports the country's objective of increasing the share of indigenous, renewable energy sources in electricity production. In addition, the project will be the first large-scale wind farm developed in Jordan and therefore will contribute to the creation of local employment.

With the appropriate mitigation measures in place and the Environmental and Social contractual conditions placed on the project, the project is acceptable for Bank financing

Environmental and Social Assessment

Environmental Impact and Mitigation

Environmental and social assessment: The EIA process in Jordan, according to the Jordan Regulation of Environmental Impact Assessment, No. 37 of 2005, foresees scoping study and full EIA, including public consultations. Tafila wind farm project, including its connection to the national grid system, has successfully gone through the scoping procedure and the relevant public consultation in the end of 2010, beginning of 2011. Full ESIA (EIA including social aspects) was submitted to the Ministry of Environment in December 2012 for its review and approval. Additional assessments, notably on biodiversity, noise and social aspects were carried out to meet lenders' environmental and social requirements and standards, notably IFC and EIB. The Bank is still in the process of reviewing the adequacy of the biodiversity analysis carried out by the promoter so far and might request additional studies to be carried out on top of those strictly required under national law.

Environmental and Social Management Systems: The ESMP outlines the management programme to be further developed for the project (construction, commissioning, operation and decommissioning) through the project E&S Management System and is supported by early E&S planning in relation to the management of specific issues such as avifauna monitoring, community relations, community safety, traffic management, waste management and E&S performance monitoring. For the proper implementation of the ESMP the promoter will designate one professional staff to supervise the overall implementation of the ESMP. In addition, key staffs engaged in environmental management in the contractor's company will receive training. During the construction period and first 3 years of operation, collision impacts with birds monitoring will be carried out at selected sites.

Biodiversity: The wind farm site is located in a hilly remote area, without much vegetation, in proximity of the Dana Nature Reserve which is the most diverse nature reserve in the country in terms of habitats and species. Dana reserve supports a wide variety of wildlife, including several globally threatened species of birds. It has been therefore designated both as Biosphere Reserve and Important Bird Area (IBA). Dana IBA provides essential habitat to

breeding, wintering and migrating birds that breed in Europe and pass through the region twice a year. Generally speaking the impacts of the wind farm on the protected species and habitats have been assessed in the course of ESIA procedures. Biodiversity baseline field studies were carried out and a number of mitigation measures, such as the selection of the site outside of the main birds' migratory routes, repositioning of some of the turbines, avoiding key habitats (both flora and fauna). The field surveys indicate that the project is not on the main bird's migratory routes, as the wind farm site is away from the edges of the rift valley and it is not heavily covered with vegetation. According to ESIA some routes adjacent to the site seem to be passage or feeding and nesting areas of raptors. At the request of the Bank, the analysis was strengthened taking into account recommendations of two key Jordanian nature protection: NGOs BirdLife International and Royal Society for Conservation of Nature. The Bank will review the final ESIA in order to ensure full compliance with the Bank's biodiversity requirements and standards notably having an adequate baseline, a comprehensive methodology and analysis and to ensure that the appropriate mitigations are put into place. In order to address gaps that remain in the current analysis on the impact of the project on migratory birds further surveys and analysis related to spring migration are required, to be carried in the second stage of the project assessment.

Noise Assessment: based on ISO 9613-2 propagation model and UK ETSU-R-97 guideline has been performed as a part of ESIA. The turbines closest to residential areas are about 1.5 km from the east of Gharandil Town and about 1.1 km from a small settlement belonging to the existing LaFarge Rashidiya cement plant. Due to sufficient distance of the wind turbines to the nearest dwellings and based on the detailed noise prediction modelling results, the ESIA concludes that the Project's operational noise impacts are low and remain below Jordanian limits and IFC/WBG ambient noise guideline limits. There is very little exceedance of 0.3 dB(A) of the local limit of 35 dB(A) at the mosque in LaFarge which is considered to be negligible under consideration of the uncertainty of the model. The propagation calculation model assumes that the receptor is downwind of the source of the noise. As all noise sensitive areas are during main periods upwind of all turbines, this assumption provides a comfortable safety margin. The promoter stated that background noise measurements may be repeated if required by the competent authorities. Further noise emissions and imissions measurements will be performed after the construction of the wind farm. If it would be necessary, in the unlikely scenario, to reduce the noise output of the wind farm, the selected wind turbine offers the possibility to run in a noise-optimized mode albeit at the expense of the power output. The independent noise measurement before the start of the commercial operation is proposed as an undertaking.

Shadow Flicker: The ESIA assessed the project's impacts of shadow flicker for the closest receptors to the project site using the shadow flicker guideline limits of Germany accumulated exposure on residential properties should not exceed 30 hours per year or 30 minutes per day. The ESIA concludes that the limits will not be exceeded. With regard to the semi-nomadic people who temporarily stay in the Project area during agricultural activities of the year, the Company will post shadow flicker boards to inform them of the most affected areas so that they can consider setting up temporary tents at less impacted areas.

Visual Impact: The ESIA evaluated the landscape and visual amenity changes that will occur as a result of the project. The layout of the wind farm was designed to have a minimum visual and landscape impacts. The impacts on surrounding villages are judged as not significant as the turbines will only partly be seen. Turbines will not be visible from the Dana Biosphere Reserve.

Cultural Heritage: The project area is rich in historical artefacts. The archaeological impact assessment, including baseline survey, was conducted by representatives from the Jordan Department of Antiquities supported by specialists from REEC. Through the ESIA process, a number of archaeological sites were avoided, and roads or turbines were relocated. Alternative locations were proposed for 14 turbines and their locations were shifted. Out of which, two turbines were completely relocated to different parts of the farm area. The key mitigation measures of include identification of sensitive areas to contractors; keeping vehicles on the construction site and on the access roads; avoidance of known sensitive areas (already incorporated during the design optimization process); oversight during

excavation by archaeological experts; and preparation and implementation of chance-find procedures in line with lenders' requirements. The promoter will conduct regular audits of mitigation measures, including monitoring of any chance-find archaeological remains during the construction phase, in order to mitigate impacts on archaeological artefacts. However, there is still a limited risk that unexpected archaeological findings may delay construction works.

EIB Carbon Footprint Exercise

Estimated emissions savings are 175 kt/year of CO₂ equivalent emissions, based on the estimated electricity production of 353.6 GWh/year. Given the intermittent power generation in wind farms in a market with high growth, it is assumed that 50% of generated electricity is replacing power generation in existing fossil fuel-based power plants (operating margin) and 50% of generated electricity is replacing power generation in new combined cycle gas power plants. Default emission factors were used: 633 g CO₂/kWh for operating margin and 354 g CO₂/kWh for build margin (new CCGT power plant). For the annual accounting purposes of the EIB Carbon Footprint, the project emissions will be prorated according to the EIB lending amount signed in that year, as a proportion of project cost'.

Social Assessment

A number of Bedouin camps were observed on, or in proximity to, the project site. The Bank was informed by the promoter that those communities were based in nearby towns and were only present in these camps during the summer months. It is likely that such communities would be affected by the construction and operation of the wind farm. There are no permanent dwellings or other structures in the project area that would be affected by the construction or operation of the project.

Community Health and Safety: During the construction phase of the Project, the contractor will establish an unarmed security team on site to ensure that possibilities for access to site facilities by third parties are limited to the extent possible. A Health, Safety and Environment Plan will be implemented to minimize health and safety risks to the surrounding communities. To minimize health and safety risks of the community members, the promoter plans to implement the following measures: fencing and guarding of the substation area, assigning unarmed security personnel in the wind farm area, establishing clear signals in hazardous construction areas, placing of warning tapes around dangerous areas (such as excavation areas), and securing of areas where dangerous activities are performed (such as turbine erection activities). Security personnel will be trained to minimize potential conflicts with Project affected communities.

Occupational Health and Safety: the contractor has a detailed safety manual for operation of the V112 turbine. The manual includes organization of safety-related work (safety meetings, planning of work); safety training requirements (general, employees working at height; employees working with electricity at high voltage); training on-site (including for visitors and all types of employees, subcontractors and other relevant co-operation partners); safety inspection on construction site; safety alerts; risk assessment; communication; personal safety (two person teams, restriction on working alone in the turbine); considerations in respect of weather conditions (wind speed, working in cold and freezing conditions, working at high temperature conditions, working in sunny conditions, thunder storms and lighting). The promoter will monitor and audit the health and safety performance of the contractor regularly. Although Jordan has not ratified some of the ILO Conventions on freedom of association and collective bargaining 87 the project shall ensure the adherence to the principles and the application of the ILO Core Labour Standards

Public Consultation and Stakeholder Engagement

The project scoping session was held in Amman on December 5th 2011 with the participation of ministerial representatives, NGOs, academia and other stakeholders. On January 8th 2012 the project scoping report received an approval from the Ministry of Environment. Responses and issues raised by during the scoping session have been considered addressed in ESIA report. Full ESIA (EIA including social aspects) was submitted to the Ministry of Environment on December 23rd 2012 for its review and approval. During the approval procedure ESIA study is available for comments at the promoter's web site and as a hardcopy at the office of Dana reserve.

Additional public meetings were held during which the views of the residents were sought on several occasions from October 2011 to December 2012 including an ESIA public consultation meeting held at the Dana Biosphere Reserve Visitor Centre on November 12, 2012 and the technical meetings with RSCN and BirdLife International on mitigation and avoidance measures set out in the biodiversity chapter of the ESIA. Participants included not only residents from the town of Gharandil, but also some of the semi-nomadic people who choose to live reside seasonally in the tents in the project area. No objections were made. Key issues identified during the above listed consultation activities include: project land lease arrangement and access to the land after the project development; environmental mitigation measures (dust, noise, traffic accident); the effect of underground cables, and shadow flicker; supplies that the promoter will be bringing in; phases of the ESIA process and public consultation; local economic benefit and employment opportunities; and biodiversity impacts. The promoter prepared an environmental and social management plan including all mitigation measures being proposed to mitigate potential negative impacts, and to address concerns raised and to enhance benefits of the project to local communities. The promoter will continue to engage with stakeholders during the project construction and operation and implement partnership programmes with the Royal Society for the Conservation of RSCN, the operator of the Dana Biosphere Reserve.

The link to the ESIA has been published on the EIB website as well as on the promoter's website. Hard copies are available at the Dana Reserve.