

## Environmental and Social Data Sheet

### Overview

Project Name:	<i>OUARZAZATE II (PARABOLIC)</i>
Project Number:	2013-0342
Country:	MOROCCO
Project Description:	<i>Construction and operation of a 200 MW CSP Parabolic trough plant under the second phase of the Ouarzazate solar power complex.</i>
EIA required:	yes
Project included in Carbon Footprint Exercise:	yes

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

The project (also known as *Ouarzazate II*) concerns the construction and operation of a second concentrated solar power plant (using parabolic trough technology) with 200MW gross capacity, as part of the 500 MW Ouarzazate solar complex. It follows the first phase of the Ouarzazate complex which was approved for financing by the Bank in late 2011. The implementation of the project aims at increasing renewable power generation in Morocco, thereby mitigating greenhouse gas emissions and dependence on foreign energy imports in the country. The project will be implemented on a 3,000 ha greenfield area located 10km E-NE of Ouarzazate, already used for the development of the first phase project. It is planned to start construction in early 2015 and enter into operation by mid-2017. The site was chosen because of its good solar resources, the availability of water, easy access and the proximity of a robust power grid to evacuate the electricity from the site and onto the Moroccan power grid.

Within the EU, the project would fall under Annex II to the EIA Directive, leaving it to the Competent Authority to decide whether or not an EIA should be requested. Given the scale of the expected solar complex and the fact this is the first of its kind in Morocco (and in the region) the Moroccan Competent Authority (the *Secrétariat d'État chargé de l'Eau et de l'Environnement* – SEEE) requested an EIA procedure to be followed, which is considered appropriate by the Bank.

Since the specific technical design of each phase in the complex is determined only at the stage where a winning bidder is selected, the promoter decided to first prepare a Framework Environmental and Social Impact Assessment (FESIA), which was approved by the Bank in mid-2011. The FESIA scope covers the different technologies (parabolic trough, power tower etc.) envisaged by the promoter for the Ouarzazate solar complex. The FESIA includes a Framework Environmental and Social Management Plan (FESMP), which covers institutional settings, general mitigation measures and monitoring plan for the potential impacts expected from project activities during construction and operation stages.

According to the FESIA the main impacts of the planned Ouarzazate complex which would be relevant for the Ouarzazate II project relate to: (i) increased water use in a desert environment; (ii) potential pollution from leakage of thermal fluid, anti-freeze or rust inhibitor; (iii) thermal and / or chemical pollution of local waterways from cooling water and other waste water; and (iv) fire risk from solar converters at high temperatures. No physical or economic displacement of local population is foreseen.

- There is no remarkable natural habitat in the close vicinity of the site. The closest protected natural zone (habitats) is the Mansour Ed Dahbi dam lake, 6km south of the site. The FESIA concluded it is unlikely that the proposed Ouarzazate complex would significantly degrade any of these habitats.

- There are several potential impacts of climate change on the complex, in particular as it relies on water availability for part of its cooling needs. The Ouarzazate II project will rely on dry cooling technology thus reducing significantly its water consumption, which is considered appropriate by the Bank. In addition, and in line with the Bank's earlier recommendations (during the appraisal of the Ouarzazate I project), the promoter has launched a specific study to further assess the impact of climate change on the complex, for which findings should be available by end-2013.

Like for the Ouarzazate I project, the SPV for Ouarzazate II (once established) will carry a project-specific Environmental and Social Impact Study (ESIS) with appropriate mitigating and monitoring measures. This study and its corresponding Environmental and Social Management Plan (ESMP) will need to obtain clearance from the CNEI. This clearance, together with the submission to the Bank of the final version of the EIS and the ESMP as approved by the CNEI (and acceptable to the Bank) will be required.

In addition environmental and social assessments for the infrastructures to be shared by the various phases of the Ouarzazate complex (transmission lines, water supply) are being carried out by the relevant Moroccan national agency (*Office National de l'Electricité et de l'Eau Potable* – ONEE). Clearance on these studies from CNEI, and submission to the Bank of their final version (acceptable to the Bank) will be required.

In summary, the project environmental and social impacts are considered acceptable for Bank financing, if it complies with the above mentioned requirements.

## **Environmental and Social Assessment**

### **Environmental Assessment**

#### Environmental legislation and studies

The Moroccan EIA Law (Law no 12-03) was promulgated in May 2003 and is generally in line with the principle of EU directives. Implementing decrees on public inquiries and environmental consent procedures were signed in November 2008. According to the procedure, the EIA should be submitted to the *Comité National des Études d'Impact* (CNEI) together with the results of the public inquiry. The CNEI then formulates its recommendation to the Ministry of Environment which issues the environmental consent.

A Framework Environmental and Social Impact Assessment (FESIA) for the Ouarzazate complex has been finalised by the promoter in 2011. This FESIA provides a baseline environmental and social assessment of the project site. It has aimed to inform the process of integration of environmental and social concerns in the design and preparation of the project, and has also been closely followed by the different IFIs following project preparation. The FESIA scope covers the different solar technologies (parabolic trough, power tower, photovoltaic etc.) envisaged. The FESIA includes a Framework Environmental and Social Management Plan (FESMP), which covers institutional settings, general mitigation measures and monitoring plan for the potential impacts expected from project activities during construction and operation stages. The FESIA (finalised to the Bank's satisfaction) obtained its final clearance from the *Comité National des Études d'Impact* (CNEI – part of the SEEE) in November 2011.

Following the award of the EPC contract to the winning bidder, Ouarzazate II project's SPV will carry a project-specific Environmental and Social Impact Study (ESIS) with the setting of appropriate mitigating and monitoring measures. This project specific ESIS, and its corresponding Environmental and Social Management Plan (ESMP) will need to obtain clearance from the CNEI. This clearance, together with the submission to the Bank of the final

version of the ESIS and the ESMP as approved by the CNEI (and acceptable to the Bank) will be required.<sup>1</sup>

In addition environmental and social assessments for the infrastructures to be shared by the various phases of the Ouarzazate complex (transmission lines, water supply) are being carried out by the respective Moroccan national agencies (*Office National de l'Electricité et de l'Eau Potable* – ONEE). Clearance on these studies from CNEI, and submission to the Bank of their final version (acceptable to the Bank) will be required.

#### Environmental impacts and mitigation measures

During construction, the main expected impacts associated with the project are similar to other construction works impacts (waste, noise and disturbance on wildlife) and should be managed in the same way as similar impacts for large construction projects (waste disposal, minimisation of wildlife disturbance etc.).

During operation, the key potential adverse impacts of the proposed project are summarised hereafter. The FESIA also specified several appropriate mitigation measures, environmental monitoring plans, institutional arrangements and training requirements, together with cost estimates for the implementation of the mitigation measures. A final assessment of these will be possible once the project-specific ESIS is available, and the acceptability of the residual impacts is evaluated in the light of the project's technical configuration.

- Water consumption for turbine cooling; but also for the humidification of roads, sanitary uses, and mirrors cleaning, will be minimised thanks to the choice of a dry cooling configuration for the solar plant. The water will be provided from a nearby reservoir. For the project a maximum of 230,000 m<sup>3</sup> of water would be needed annually, which is approximately 8 times less than the needs for the Ouarzazate I project.
- Risk of pollution due to soil infiltration (and local contamination of rainwater) from synthetic oil, molten salts and/or fossil fuels, all used on site. Proposed mitigation measures include the choice of key components with leak-proof designs, to be regularly maintained, cleaned and periodically replaced by appropriately trained staff.
- Risk of degradation of nearby habitats/feeding areas (oueds or dam lake) from localised thermal fluid pollution. Proposed mitigation measures are the implementation of appropriate waste water management practices, of monitoring of discharge water, regular analysis of wastewater composition and compliance with related pollutant emission levels of liquid effluents.
- Fire risk from solar converters at high temperatures including risk of out-gassing from panel components, due to the on-site presence of synthetic oil and/or fossil fuel. Proposed mitigation measures include the implementation of measures against overheating (e.g. coolants) and of relevant warning & monitoring systems.

#### Biodiversity aspects

There are no remarkable habitats in the close vicinity of the site. The project site is recognised as being of low patrimonial value. None of the flora species found at the site is considered threatened or rare. Several protected natural zones (habitats) have been identified in the region, the closest being the Mansour Ed Dahbi dam lake, located some 6km south of the site. The FESIA concluded it is unlikely that the proposed Ouarzazate complex would significantly degrade any of these habitats.

#### Climate change mitigation and adaptation

It is foreseen that the project will avoid greenhouse gas emissions by producing renewable electricity, and displace the construction of new capacity using fossil fuels.

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<sup>1</sup> This is the same approach than the one followed for the first Ouarzazate project approved by the Bank in late 2011. The corresponding specific EIS was finalised to the Bank's satisfaction in early 2013, and obtained final clearance from the CNEI in April 2013.

There are several potential impacts of climate change on the complex, in particular as it relies on water availability for part of its cooling needs. The Ouarzazate II project will rely on dry cooling technology thus reducing significantly its water consumption, which is considered appropriate by the Bank. In addition, and in line with the Bank's earlier recommendations (during the appraisal of the Ouarzazate I project), the promoter has launched a specific study to further assess the impact of climate change on the complex, for which findings should be available by end-2013.

### **EIB Carbon Footprint Exercise**

Overall the project is expected to generate CO<sub>2</sub> emissions savings, given it is based on the use of a renewable energy source, with very limited use of fossil fuel (only for the heating of the Heat-Transfer-Fluid and emergency start-up). The estimated emissions savings for the project are 276,000 tonnes of CO<sub>2</sub> equivalent per year.

This was calculated using the Carbon Footprint Methodology for firm capacity in a country with high demand growth. Corresponding assumptions are that the baseline for alternative generation is 25/75 in terms of operating margin (the existing technology mix on the Moroccan power grid) versus built margin (the expected power plants coming on line in the next 5 years in the country).

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, where applicable**

#### Resettlement and land acquisition

Like for the previous phase of the Ouarzazate complex, the project does not involve any physical or economic displacement of local populations. For the development of the Ouarzazate complex, however, the acquisition of approx. 2,500 hectares of collective land owned by the *Ait Oukroun Toundout* community (out of a total area of 64,000 hectares) was required. This land is uncultivated and of little economic value. The transaction was carried out following Moroccan standard procedure for similar types of voluntary land transactions between a local community and a public agency (article 11 of Dahir dated 27/04/1919).

A Land Acquisition Plan (LAP) describes the detailed procedure through which the promoter proceeded with land acquisitions. The LAP document includes, in particular, copies of: (i) the land price committee determination of the price of the land; (ii) the written agreement by the community of Ait Oukroun Toundout on the sale and conditions for the transfer of the land; (iii) the authorisation of the Supervisory Board about the transaction; and (iv) the ONE/promoter/community tripartite agreement on land acquisition. The LAP is summarised in the FESIA, is in line with EIB's social standards, and is publicly available on the promoter's website since July 2011.

In addition, a Social Development Plan (SDP) is being developed through a participatory approach involving the promoter, the Ministry of Interior and the local community, and will include measures in the area of education, sanitation and rural roads rehabilitation. A preliminary version of the SDP has been reviewed to the Bank's satisfaction, and its acceptability to the Bank in its final form will be confirmed at second-stage appraisal.

#### Other social issues

Morocco has ratified seven of the eight ILO core labour standards, except for Convention 87 on Freedom of Association. In order to ensure that the core principles and standards are adhered to in the context of the project, the promoter has requested in the bidding documents that the SPV's approach to social issues (articulated inter alia in the project-specific environmental and social management plan) is in accordance with EIB's environmental and social practice handbook guidelines.

The SPV will have direct responsibility for the implementation of the Environment, Health and Safety measures for the site during construction and operation, which should be prepared in accordance to EIB's environmental and social practice handbook guidelines, as requested in the bidding documents. The SPV will, inter alia, need to prepare a project-specific environmental and social management plan (ESMP), which should ensure that the negative impact on occupational and community Health & Safety are avoided or minimised.

The social impact of the project is generally considered positive as it is creating temporary employment, stimulating local investments and supporting economic growth. Negative potential impacts on Vulnerable Groups are not foreseen.

### **Public Consultation and Stakeholder Engagement, where required**

As part of the ESIA process, public enquiry should be held according to the related implementing decree signed in November 2008. The public consultation process covered by this implementation decree, however, has been more of an indirect kind, involving representatives from elected councils and from all relevant public institutions. This process thus follows national culture and legislation, but does not fully comply with the Bank's requirements, because it excludes stakeholders other than official representatives. A new government decree – which opens up direct public consultation to all stakeholders - was enacted in February 2011.

Despite the absence of legal requirement for full direct public consultation on the Ouarzazate solar complex (the latest implementation decree on public consultation does not apply retroactively), a formal public consultation meeting on the draft FESIA took place on 3 November 2010 in Ouarzazate, which confirmed the support from local officials and community representatives to the project. The main comments made during the meeting are related to natural risks (wind, seisms), water use, access road, economic and social impacts. The proceedings of this meeting are included in the final FESIA report. In addition the local population (the Ait Oukroun Toundout community and more specifically the village of Tasselmant) took part in consultations organised by MASEN as part of the LAP process and the preparation of the SDP (see section on "Social Assessment"). A public enquiry process was also undertaken on the final version of the FESIA and was concluded in the end of 2011.

The project-specific ESIS should be subject to direct public consultation in the course of its preparation by the SPV. It is expected that more relevant and project-detailed information will be available (notably conclusions of the specific ESIS, discussion of recommended mitigating activities and plans) and should ensure more meaningful consultations.

### **Other Environmental and Social Aspects**

#### Summary of E&S management arrangements

Like for the previous phase of the Ouarzazate complex, the project will be implemented by a Special Purpose Vehicle (SPV) to be created as a partnership between the promoter and a competitively selected private investor/developer with strong financial, technical and project management and implementation capabilities. As soon as it is established, the SPV will carry out a project-specific ESIS with appropriate mitigation and monitoring measures. The environmental and social capabilities of the counterpart entity/ies that will enter into the SPV will be fully assessed during the selection which will be carried out by the promoter with the assistance of reputable technical and transaction advisors.

The implementation and monitoring of the framework environmental and social management plan will be the responsibility of the promoter. The promoter has appointed an Environmental and Social Coordinator and, and will hire environmental and social specialists as relevant, depending on the in-house environmental and social capacity. The promoter will work closely with the appointed SPV to ensure that all environmental and social mitigation measures including occupational health & safety guidelines are mainstreamed into the project design, that they are monitored and supervised.

The SPV will also include an Environmental & Social Coordinator that will have direct responsibility for the implementation of the environmental, social and health & safety measures for the site during construction and operation. The SPV Environmental & Social Coordinator will, inter alia, prepare a monthly environment and health & safety report during the construction phase.

Disclosure of key E&S documents (EIB transparency)

The final version of the FESIA and LAP were reviewed by the Bank and are disclosed on its website. Project-specific ESIS which will be conducted by the winning bidder and national agencies in charge of water and electricity will also be subject to disclosure (on the promoter's website or on the Bank's website).