

PROJECT INFORMATION DOCUMENT (PID) CONCEPT STAGE

Report No.: PIDC521

Project Name	MA- Noor Concentrated Solar Power Project (P131256)
Region	MIDDLE EAST AND NORTH AFRICA
Country	Morocco
Sector(s)	Other Renewable Energy (95%), Public administration- Energy and mining (5%)
Theme(s)	Other environment and natural resources management (100%)
Lending Instrument	Specific Investment Loan
Project ID	P131256
Borrower(s)	MASEN
Implementing Agency	MASEN
Environmental Category	A-Full Assessment
Date PID Prepared/ Updated	03-Jun-2014
Date PID Approved/ Disclosed	17-Jun-2014
Estimated Date of Appraisal Completion	20-Jun-2014
Estimated Date of Board Approval	30-Sep-2014
Concept Review Decision	Track I - The review did authorize the preparation to continue

I. Introduction and Context

Country Context

In early 2014, countries in northern Africa are actively seeking a viable energy future for their people. Following the Arab Spring, construction of power plants to meet demand has been lagging throughout the region. Demand for power from the residential sector has increased, especially during peak hours: the winter evening peaks continue to be from lighting, while the summer daytime peaks due to the increased use of air conditioning is beginning to overshadow the winter peaks. This has contributed to power outages in Algeria, Libya, Egypt, and Tunisia.

Against this background, countries are looking for generation options for the future. A number of countries, including Tunisia, are closely considering coal. Morocco is already using significant amounts of coal-fired generation supplied through Independent Power Producers (IPPs). Others, such as Lebanon, are exploring the possibility of importing Liquefied Natural Gas (LNG).

In large part driven by the fiscal burden of high energy subsidies, Morocco has opted for a low carbon development strategy centered on green infrastructure investments. As part of its strategy, Morocco aims to: (i) reduce Morocco's dependence on fossil fuels, which are highly subsidized (ii) diversify and optimize the energy mix around reliable and competitive energy technologies, in order to reduce the share of oil to 40 percent by 2030; (iii) develop the national renewable energy potential; (iv) make energy efficiency improvements a national priority (induce energy savings of 15 percent by 2020 and 25 percent by 2030); (v) develop national energy resources by intensifying hydrocarbon exploration activities and developing conventional and unconventional oil sources; and (vi) integrate into the regional energy market, through enhanced cooperation and trade with both other Maghreb countries and the EU. The strategy is particularly ambitious as regards renewable energy (RE), calling for a RE share of 42 percent of power generation capacity by 2020, and over US\$2 billion have been allocated so far to meet those objectives.

Aside from Morocco, a wide range of international stakeholders and governments are supporting the development of CSP as part of a range of limited carbon-free technology options for electricity generation (e.g., geothermal, hydropower, nuclear, wind power) with the aim of combating climate change. CSP has demonstrated its capacity to supply power on a reliable basis. Among renewable energy technologies, CSP is a technology of particular interest as (a) generation is more predictable than for most renewable energy options (lower intermittency) when combined with thermal storage; and (b) associated storage is closer to economic viability than for other renewable energy options. As of early 2014, approximately 2,136 MW of CSP plants were operational world-wide and 2,527 MW were under construction. An additional 10,134 MW of capacity had been announced.

Sectoral and Institutional Context

Morocco's power sector experienced significant changes during the last 25 years and is currently characterized by strong involvement of the private sector in power generation and electricity distribution:

- ONEE, the public power and water utility, remains the main operator in the system. The company is entrusted by the GoM with the development of power generation, transmission and distribution of electricity mostly outside the distribution concessions and rural areas.
- Private producers account for more than 40 percent of the power generating capacity in the country, which is sold to ONEE under power purchase agreements (PPAs).
- Seven regional distributors (Régies) and four private concessions in Casablanca, Rabat, Tétouan and Tanger supply 50 percent of the electricity demand.

At the end of 2011, the total installed energy capacity in Morocco was about 6,377 MW. The main characteristics of the power generation capacity are as follows: (i) a strong dependence on coal for baseload generation (40 percent of electricity production in 2010); (ii) a strong dependence on imports from Spain (17 percent); (iii) a significant share of hydropower (13 percent), which is high for a region characterized by water scarcity; and (iv) the lowest share of natural gas generation in the region (10 percent of electricity production). The introduction of natural gas in the Moroccan electricity system is recent (2005 with the Tahaddart combined cycle) as gas supply has been constrained until the recent breakthrough supply agreement with Algeria. Morocco's share of wind power in the energy supply mix is at about 2 percent annually.

MASEN, which oversees the preparation, construction and operation of the Noor Solar Complex, has been set up in 2010 as a dedicated agency entrusted with the development of a local solar

industry through the Moroccan Solar Plan. MASEN is a company (“société anonyme”) with all shares, directly or indirectly, held by the Government of Morocco.

Relationship to CAS

The proposed Project is fully in line with the 2014-2017 Country Partnership Strategy (CPS) for the Kingdom of Morocco. It will contribute to the development of the CPS results area 2.2 “increase renewable energy generation and enhance energy efficiency,” which is part of Morocco’s effort to reduce its dependence on fossil fuels, protection against excessive fluctuations of prices from fossil fuels, and the development of Morocco’s vast renewable energy resources. Morocco’s new strategy targets a renewable energy capacity of 41 percent by 2020. Morocco estimates that the Morocco Solar Plan, which is to deliver 2000 MW towards Morocco’s renewable energy target, will cost US \$9 billion. The country is making resources available accordingly and has created a dedicated agency – MASEN – to implement the Moroccan Solar Plan.

II. Proposed Development Objective(s)

Proposed Development Objective(s) (From PCN)

The project development objectives (PDO) of the Noor II and III projects are (i) to scale-up generation of solar-based electricity in Morocco through an increase of the Noor "Solar Complex" capacity; (ii) pilot solar tower technology in Morocco; and (ii) to mitigate greenhouse gas emissions and local environmental pollutants.

The project will also contribute to Morocco’s long term objective of reducing its dependency on fossil fuels, to the global public good of mitigating climate change through acceleration of global deployment of Concentrated Solar Power (CSP), and to accelerating the momentum towards European Union- Middle East and North Africa renewable energy integration.

Key Results (From PCN)

The key result indicators are: (i) increase of installed CSP power generation capacity in Morocco (in MW); (ii) electricity production by Noor II and III (in kWh); (iii) electricity production from a solar tower project (Noor III, in kWh); (iv) avoided CO₂ emissions through displacement of fossil fuels (in tons of CO₂ annually); and (v) avoided local air pollution (tons of NO_x, SO_x annually).

Indicators relating to the global PDO are (i) avoided CO₂ emissions through displacement of fossil fuels (in tons of CO₂ annually); and (ii) solar electricity production expanded in Morocco (in GWh) as a means of acceleration of global deployment of CSP.

III. Preliminary Description

Concept Description

The proposed Project is designed to support the development of Phase II of the Noor Complex. This phase will consist of two distinct plants: (a) a 150-200 MW parabolic trough CSP plant (Noor II) and (b) a 100-150 MW tower CSP plant (Noor III). Both plants would be constructed on lots adjacent to Noor I (160 MW gross) that have already been acquired by MASEN. No new land acquisition will be required for Noor II and III. The project will entail limited additional land acquisition in the context of those associated facilities that remain to be built, primarily the Quarzazate - Tazarte transmission line

To support development of Phase II, the Project will consist of two components: Component 1: This component will support the formation of a PPP between MASEN and each of the bidders

competitively selected to develop the two plants. Component 2: This component is expected to help reduce the fiscal impact of this subsidy by lowering the Government of Morocco's cost of capital through a financing mechanism to improve the long-term sustainability of the fiscal investment.

IV. Safeguard Policies that might apply

Safeguard Policies Triggered by the Project	Yes	No	TBD
Environmental Assessment OP/BP 4.01	x		
Natural Habitats OP/BP 4.04		x	
Forests OP/BP 4.36		x	
Pest Management OP 4.09		x	
Physical Cultural Resources OP/BP 4.11		x	
Indigenous Peoples OP/BP 4.10		x	
Involuntary Resettlement OP/BP 4.12	x		
Safety of Dams OP/BP 4.37	x		
Projects on International Waterways OP/BP 7.50		x	
Projects in Disputed Areas OP/BP 7.60		x	

V. Financing (in USD Million)

Total Project Cost:	2673.00	Total Bank Financing:	400.00
Financing Gap:	0.00		
Financing Source			Amount
Borrower			352.00
International Bank for Reconstruction and Development			400.00
African Development Bank			123.00
Clean Technology Fund			238.00
EC European Commission			123.00
EC European Investment Bank			477.00
FRANCE French Agency for Development			68.00
GERMANY KREDITANSTALT FUR WIEDERAUFBAU (KF			892.00
Total			2673.00

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