



Morocco: Renewable Energy Market

Summary

Morocco is heavily dependent on fuel imports because it lacks its own source of hydrocarbons. As a result, the government recently developed a new energy vision that leverages its proximity to Europe – and an already existing undersea power connection to Spain – and its membership in the Mediterranean Union, a multilateral partnership that includes most European Union and Mediterranean countries. The Union's Solar Plan will turn the Southern Mediterranean countries into producers of solar energy and then circulate the electricity through the Euro-Mediterranean region. The long term strategy will allow Morocco to become an exporter of green energy and become a green technology development platform in the MENA (Middle East North Africa) region.

Market at a Glance

Morocco is the only North African country with no known substantial fossil fuel deposits. As Morocco's energy supply depends heavily on imports (97%), in 2009 the Moroccan government adopted a strategy based on an accelerated development of renewable resources. The energy plan expects to increase the renewable share of installed capacity in electricity generation to 42% by 2020, up from 26% in 2008.

Morocco's geography and topography provide abundant renewable energy resources:

- Wind resources at a speed reaching 10m/s capable of generating as much as 25GW (*Morocco Wind Atlas*, CDER, 2007)
- Solar captivity up to 5.7KWh/m²/day and 3000 hours of sunshine yearly
- Biomass resources can produce more than 950MW

Morocco's electric power production is insufficient to meet a demand that has been increasing at an average annual rate of 8% for the past five years. In 2012, Morocco had an installed capacity from renewable energy of 2.853 GW, of which 90% was large-scale hydroelectric plants. Of the remainder, 82% was wind parks, 12% thermo-solar plants, 5% photovoltaic solar installations and the rest micro-hydroelectric plants and biomass treatment plants.

Morocco has a well defined energy strategy for 2009-2020 that aims to: 1) improve security of supply through a more diverse energy mix, 2) increase access to electricity with more competitive pricing, and 3) promote regional integration through increased openness to Euro-Mediterranean power markets. These objectives are supported by two new institutions, the Agency for Development of Renewable Energy and Energy Efficiency (ADEREE) and the Moroccan Agency for Solar Energy (MASEN), and by a \$1 billion Fund for Energy Development (SIE).

Office National de l'Eau et d'Electricite (ONEE), a state owned company, is the principal entity in Morocco's electricity sector, with a monopoly on transmission and the largest in-country distribution grid. Unlike transmission activity, power generation in Morocco has been extended to private companies since 1990. Today, independent power producers (IPPs) are responsible for approximately half of power production in Morocco. Therefore, IPP developers are the key buyers of equipment. However, ONEE remains the sole buyer of electricity as well as the entity to which IPP assets are transferred after the end of the concession period.

Market Opportunities

Electricity demand in Morocco is expected to grow by 8.5% to 9% annually through 2020. This is mainly driven by an ambitious rural electrification plan for 100% coverage. In order to increase the renewable share in its power production, Morocco will be undertaking the following plans:

The Solar Energy Initiative: Launched in 2009, this \$9 billion initiative includes the installation of 2000 MW in five sites of 10,000 hectares by 2020. The Moroccan Agency for Solar Energy (MASEN), was created in 2010, to manage this Initiative. Its mandate is to implement the overall project (design, choice of operators, implementation, and management) and to coordinate and supervise all other activities related to the Solar Energy Initiative. MASEN stakeholders include the Hassan II Fund For Economic & Social Development, the Energy Investment Company (SIE), the Agency for Development of Renewable Energy and Energy Efficiency (ADEREE) and ONEE – all government entities. Once completed, the solar initiative will meet 14% of local power demand.

The tender process for the first phase of the 500MW Ouarzazate site (150MW of Concentrated Solar Power with parabolic troughs) included a prequalification tender, issued in September 2010. A short list of consortiums was invited to bid on a final international tender in December 2010. The first project was awarded to ACWA holding in October 2012 and the plant delivery is slated for 2015. A 300 MW, CSP-with-storage Phase II, project was tendered during 2013 and a short list of consortiums including three US companies was published. It is expected to follow the same steps of the first phase tender process.

The U.S. Trade & Development Agency (USTDA) is supporting phase II through a grant to MASEN to fund a [technical assistance for a Concentrated Solar Power with Tower technology](#). MASEN selected **U.S. consultant NEXANT** to conduct the technical assistance.

Besides their grants for utility scale solar projects, USTDA also awarded two grants to support solar photovoltaic technology. The first grant is for the development of a **5MW solar photovoltaic (PV) pilot project in Essaouira**, Morocco. The funding will provide technical assistance to identify the specific needs of a solar PV power plant and will serve to establish a baseline for evaluating and replicating solar PV plants of similar scope throughout Morocco. ADEREE selected **U.S. consultants Power Engineers/Delphos** to conduct the technical assistance. The second grant is a feasibility study to the Moroccan National Company for Transportation and Logistics (SNTL), for the development of a **1.5 MW solar photovoltaic (PV) rooftop pilot project** in Mohammedia, Morocco.

More information on the Solar Energy Initiative can be found at <http://www.mem.gov.ma/Ministre/sommaire1.htm>.

The EnergiPro program: is a set of incentives to encourage private operators to contribute to a total installation of 2000MW of wind energy by 2020. The Moroccan government encourages private producers of wind power to engage in tri-party agreements with a Moroccan buyer and ONEE, which secures the transportation of electric power as well as the purchase of any excess production. This program also involves heavy manufacturers who may choose to produce their own electricity needs. Several private companies who are major energy consumers have initiated their own wind parks. For example, Nareva, a subsidiary of Omnium Nord Africain (ONA), the largest private holding in Morocco, is the developer/operator of small scale wind farms. Nareva signed two agreements recently to develop two wind parks with the Moroccan rail authority (ONCF) and the Moroccan Airports Authority (ONDA).

ONEE will also develop 1000MW of wind energy by 2020 at five additional sites. The first tender for the Taza 150MW site was launched in May 2011. The second prequalification tender for 850MW was launched in February 2012.

Biomass has the potential of 950MW based on abundant agricultural resources, including wide areas for livestock breeding (2.6 million cattle, 16.3 million sheep and 5.3 million goats). The Green Morocco Plan to boost agricultural production and new regulations for waste management represents an additional potential of 400MW by the year 2030. In 2002, the U.S. consortium (GESI-Edgeboro-SADAT) won a government tender for the management of the first controlled landfill in Fez. It plans to convert methane gas from the landfill into electricity to power all Fez public lighting.

Best Prospects

All power production projects in Morocco are conducted through government tenders for development on a concession basis. U.S. manufacturers of solar, wind and biomass equipment are encouraged to partner with U.S. developers, in order to participate in tenders as joint consortiums.

Specialized engineering services are also sourced internationally. U.S. companies are encouraged to respond to requests for proposals regarding consultants for the design of technical specifications of large project tenders. *Companies should be aware that if they are involved in design tenders they will be prohibited from bidding for subsequent building and management tenders for that particular project.*

More than 24,700 jobs are to be created in the renewable energy sector by 2030. As such, technical training services for facilities repair and maintenance is part of the government's action plan. Technopolis campus, an industrial park in Rabat, has announced a program dedicated to attracting renewable energy research and development into its facilities.

Disclaimer: The information provided in this report is intended to be of assistance to U.S. exporters. While we make every effort to ensure its accuracy, neither the United States government nor any of its employees make any representation as to the accuracy or completeness of information in this or any other United States government document. Readers are advised to independently verify any information prior to reliance thereon. The information provided in this report does not constitute legal advice.

International copyright, U.S. Department of Commerce, 2007. All rights reserved outside of the United States.