

Renewable Energy in Morocco: a promising market

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Among the Northern African countries, Morocco is the country which is extremely dependent on energy imports and fossil fuels. More than 95% of Moroccan energy needs are met by the import. At the meanwhile, the country has abundant renewable energy resources such as wind and solar. Developing renewable energy is a main priority for the public authorities, which is projecting to achieve energy security, sustainable development and job creation by investing in renewable energy. Morocco is planning to become with Algeria and Tunisia an energy platform between Africa and Europe. Morocco has already transmission interconnection with Europe. This makes exporting green electricity possible without further intensive investment.

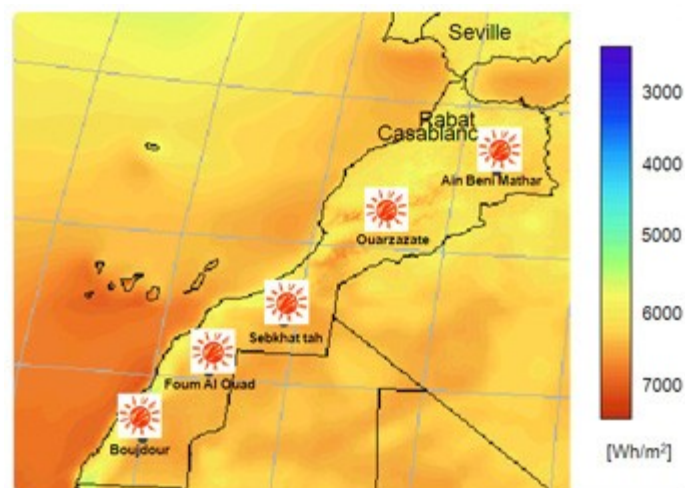
In terms of wind energy resources, Morocco has an excellent wind potential, mainly in the North and in the South with an annual average wind speed between 7 m/s and 8.5 m/s in the South, and between 8 m/s and 11 m/s in the North, especially in the Atlantic coastal regions and the Taza corridor to the interior [1]. Morocco is aiming at attaining 1000 MW capacity installed wind farms by 2012. Few wind farms are already operating in the regions of Tangier, Tetouan and Essaouira. Other projects are being developed in the south and north of the country.

Morocco is actively promoting *build-operate-transfer (BOT)* and *independent power project (IPP)* contracts, which seek to award long-term agreements to private sector actors. The country has opted for a competitive bidding process to get a competitive tariff rate [2].

Morocco has also an excellent Solar potential: 4,7 - 5,7 kWh/day (2800 hours/year in the North, and more than 3000 hours/year in the South [3]. This huge potential could be exploited to supply abundant and cost effective green energy. Moroccan government

has established a national fund for developing renewable power and energy efficiency (1 billion \$US), and has launched a US\$ 9 billion solar projects, that involves building five solar power generation sites across the country to meet its goal of producing 2,000 megawatts of electricity by 2020 [3]. Five sites have been identified for the launch of this project; Ouarzazate, Ain Bni Mathar, Fom Al Oued, Boujdour and Sebkhatah. This plan will integrate all the value chain of solar energy, starting from local manufacturing, services and related training and research activities in order to boost economic growth and job generation.

The Moroccan Solar Plan has synergy with other initiatives that promotes the development of renewable energy in the North Africa such as the Mediterranean Solar Plan, Desertec Industry Initiative and Medgrid.



The first solar project will be developed in Ouarzazate; it has a total capacity of 500 MW, and the first part concerns 160 MW. The dimension of the first project is very large, many actors are involved both in financing the project and in the technical assistance. This may delay the start of the project; however, this public private partnership may be developed and become a business model for other renewable energy projects in Morocco and in all the Northern African Countries. The project site is located 10 Km in the North of the city of Ouarzazate, and has a total area of 33 km². The selected technology for this project will be CSP; it will be one of the largest solar CSP plants worldwide. This project has a big size and does involve high risks in the initial stages

since the technology cost is still relatively high.

To finance this project, grants non refundable were granted by the EU, in addition to loans from the Africa Development Bank (AFDB), World Bank (WB), Agence Française de développement, and Kreditanstalt für Wiederaufbau. These international financial institutions are working together to promote renewable energy in the North Africa, and will assist Morocco in this framework. The world bank states that this initiative of promoting renewable energy in this region will include a wide ranges of donors and promote a mix of private and public investments.

The CSP technology is still expensive and Morocco can afford the high cost only by exporting electricity. Nevertheless, for the first phase of 160 MW, Morocco is aiming at adopting concessional financing to start the project. The Clean Technology Fund has already approved a loan of \$197 million to finance this project [4]. AFDB is also committed to participate in financing this project. The WB as well will finance this project by providing \$200 million loan.

References :

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