

JORDAN: UPDATE - BRINGING RENEWABLE ENERGY TO MARKET



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With a size of 89,200 km² sharing borders with Iraq, Syria, Israel and Saudi Arabia, and a population of 6 million, Jordan's economy is growing at an average annual rate of over 7%.¹ At present, Jordan imports 97% of its energy resources and the country's only potential domestic resources are limited natural gas and undeveloped oil shale.^{2,3} Electricity is imported (and some exported) via the Inter-Arab Electricity Network, which includes Jordan, Syria and Egypt. Jordan imports natural gas from Egypt through the Arab gas grid. The country has some oil shale though development is nascent and Jordan remains almost fully dependent on oil imports from its regional neighbors such as Iraq. With political change and the sharp escalation in oil prices in international markets, Jordan has found itself in a difficult position, particularly with electricity demand growing steeply and predicted to continue in the future.⁴ In 2012, for example, peak demand was well over 2,770 MW.⁵

Jordan is a signatory to the European Energy Charter and currently is in the process of accession to the Energy Charter Treaty.⁶ Efforts to ensure universal service commenced with the creation of the Jordan Electricity Authority (JEA) in 1967, and by the early 1990s nearly 100% of Jordan's population has access to electricity.⁷ In September 1996, the JEA was converted to the National Electric Power Company (NEPCO), a public shareholding company wholly-owned by the government, that currently owns and operates the transmission grid. The electricity sector is a single buyer model, with NEPCO buying electricity via long-term power purchase agreements, then selling to distributors and large consumers at regulated prices; retail prices from the distributors are also set by tariff.⁸ Supply comes largely from steam and combined cycle plants,⁹ with privatization efforts ongoing. The 380 MW combined cycle Amman East power plant was Jordan's first independent power producer. The plant was owned and operated by AES Jordan PSC, a company owned by a consortium of AES Oasis Limited and Mitsui and Company Limited, subject to a 25-year power purchase agreement with NEPCO and supplied with natural gas by a pipeline from Egypt.¹⁰ The Central Electricity Generating Company, which produces 70% of the electric power generated in Jordan, was privatized in 2007, with 51% ownership sold to the Enara Company.

Though it has strong solar and wind potential, Jordan currently generates just 1%-2% of its electricity from renewable energy sources.¹¹ Over the last few years, Jordan has made significant efforts to develop renewable energy resources and build a framework to support investment. Its regulator, the Electricity Regulatory Commission (ERC),¹² established in 2001, has supported these efforts by providing ongoing input to policy initiatives and investment project evaluations. Under Jordanian law, the Ministry of Energy and Mineral Resources (MEMR) sets policy, with the ERC implementing the regulatory framework, including setting tariffs, licenses, issuing codes and protecting consumer interests. This case study looks at the steps taken to incentivize renewable energy production in Jordan, while profiling the supporting

role that the regulator has played and continues to play in these initiatives before project implementation takes hold.

RE Achievements in Jordan

Jordan's National Energy Strategy calls for 7% of the country's energy mix to come from renewable energy sources by 2015 and 10% by 2020. In order to decrease the dependency of the Kingdom on international fuel prices, to enhance security of supply and to shift patterns of energy supply and demand into a more sustainable direction, the Government of Jordan, in its 2007 Energy Strategy, has set ambitious goals for the development of renewable energies. By the year 2020, the share of renewable energy in primary energy supply is to increase from the current 1% to 10%. Targets have been set for specific technologies including wind power (installation of about 1200 MW), solar power (600 MW) and solar water heaters (share of 30% by 2020), in addition to waste/energy (30-50MW).

Unfortunately, attracting investments for renewable energy projects has not been easy. There are a variety of reasons for this, including the unfavorable market conditions with price increase for wind turbines, challenges in project financing due to the financial crisis and the relatively small size of Jordan as a market for renewable energy.

However, the government reinforced its commitment to reach the ambitious targets set in the Energy Strategy by launching the Renewable Energy and Energy Efficiency Law (REEEL) as a Royal Decree in February 2010¹³. With this law for the first time in Jordan unsolicited or direct proposals are allowed. This means that investors can identify renewable grid-connected electricity production projects such as wind parks, solar systems or others and propose these to the Ministry of Energy and Mineral Resources.

MEMR, in cooperation with ERC, is committed to promoting the development of RE so that energy from the sun, wind and other renewable sources can contribute to the energy supply system of the Kingdom. This will only be successful if public and private sectors pool efforts and work together in a transparent manner.

After the REEEL Decree in 2010, the Ministry of Energy and Mineral Resources received an overwhelming amount of interest from investors and had numerous interactions with developers, financiers, and advisors on developing proposals in accordance with the provisions of direct proposal option allowed in this Law.

Because the total number of projects that can be approved using direct proposals is capped based on the overall targeted capacity of renewable energy, it is vital that the government selects the best possible projects using the direct proposal mechanism through an effective and transparent mechanism (see Direct Proposals Approach section for more details).

Jordan has taken the following steps towards creating an enabling environment for renewable energy development:

- *Promoting a Stable Regulatory Framework*
- *Setting Adequate and Transparent Public Policies and Targets*
- *Establishing Clear Financial Support Schemes*
- *Defining Infrastructure Provisions (Lands, Grid connections, etc...)*

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Legal Framework

In April 2012, Jordan passed the REEEL as a permanent law. This law, the first in the region, allows investors to identify and develop grid-connected generation projects through unsolicited or direct proposal submissions. The Law has also created the Jordan Renewable Energy and Energy Efficiency Fund (JREEEF), which aims to channel financial resources to that end, and, through a by-law, established a tax exemptions for RE and EE systems and equipment.

Regulatory Framework

The ERC has made significant progress in advancing the regulatory framework for clean energy, including the adoption of a public consultation process for new rules and regulations whereby draft regulations are published in the official gazette and local newspapers for public comment before finalization. The ERC utilized this new strategy and received a significant number of comments to incorporate into the following rules to promote RE:

- Reference Pricelist Record (Feed in Tariff), including preferential prices for local contents (local manufacturing)¹⁴ (2012)
- Directive for the Costs of Connecting Renewable Energy Facility to the Distribution System and the Directive of Electric Power Wheeling¹⁵ (2012)
- Directive Governing the Sale of Electrical Energy Generated from Renewable Energy Systems (net metering for small, rooftop RE systems)¹⁶ (2012)

These rules have led to the installation of approximately 2,500 kWac in net-metering projects (most of those installations used Photovoltaic (PV) Systems) with more than 7 MWac in application under the pre-qualification stage.

The ERC has also issues several standard regulatory tools that enable infrastructure investment:

- *Generation License Procedures for Transmission/Distribution Connection Renewable Generators*
- *Standard Generation Licenses for Transmission/Distribution Connection Renewable Generators*
- *Standard Connection Agreements for Transmission/Distribution Connection Renewable Generators*

Direct Proposals Approach

The MEMR in coordination with ERC and other relevant institutions established a Policy Statement set to guide the development of the targeted 1800MW of RE under the Energy Strategy through unsolicited direct proposals or competitive tenders. This statement provides

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details of the direct proposals process and pricing mechanisms, taking into account the following criteria for projects:

- **Planned phasing of capacity increases** through tenders versus direct proposals in accordance with technical grid capacity (current and future expansion), financial constraints (assessed impact on energy bill, availability of concessional financing), and other constraints such as land ownership and transaction readiness of data.
- **Targeted project size / technology mix** to leverage comparative advantages of different projects.
- **Conditions and parameters of tenders versus direct proposals**, including project size ranges, access to public land, access to concessional finance, and pricing mechanisms (feed-in-tariff, best-offer, or negotiated tariffs).
- **Mechanisms for prioritizing projects** in case applications exceed targeted capacity increase.

Jordan has adopted an Expression of Interest (EOI) approach through which applicants can respond within a certain timeframe (approximately one year later or as required by investors). Selected parties can then submit direct proposals can be submitted for evaluation.

The EOI focused on applicant credentials, general project plans and parameters in the proposed location, and their compatibility with the technical integration plans and the grid capacity as detailed below.

Successful applicants for the EOI will receive a Memorandum of Understanding (MOU) from the government which enables them to proceed with feasibility studies and other preparatory and due diligence work, such as negotiating access to land and financing options of the proposed projects. Once MOU steps are completed, the applicant needs to submit a full and committed direct proposal in compliance with the provisions of the laws and regulations in place within the time window specified in the MOU.

As required under the REEEL, within six months following the close of the time window specified in the MOU, the MEMR in coordination with ERC and other relevant institutions select the best projects, subject to any financial affordability or technical constraints which may exist. This selection is based on evaluation criteria developed through the direct proposal evaluation Committee and an international consulting firm hired by MEMR to guide this selection process. The MOU also guarantees that a Power Purchasing Agreement will be provided upon successful completion of the project in the specified timeframe.

Under these arrangements to date the following progress has been made:

- 64 Expressions of Interest were received in 2012
- 30 MOUs were signed with a total Capacity of 850 MW (split between solar and wind)
- 12 PV solar proposals were received in March 2013 with total capacity of 200 MW, currently under executive stage (PPA negotiation)

- The first direct proposal for a wind project of 115 MW in the South of Jordan is in the final negotiation phase
- The next round of announcement for new submissions was launched in August 2013 and the dead line for EOs submissions was set on November 14, 2013.

Conclusion

Jordan has established clear policy frameworks as well as legal and commercial tools to promote RE to achieve policy targets in the national energy mix. The ERC has played an important role in this process, working with various public and private institutions, drawing on best practices from around the globe including public hearing models and roundtable discussions with stakeholders, to set a necessary regulatory framework. In doing so, they have implemented new procedures and practices to ensure clarity, transparency and stability to encourage investment to help create an enabling environment for investment.

¹ <http://www.heritage.org/Index/Country/Jordan>

² http://tonto.eia.doe.gov/country/country_energy_data.cfm?fips=JO; http://www.iea.org/stats/gasdata.asp?COUNTRY_CODE=JO; http://pubs.usgs.gov/sir/2005/5294/pdf/sir5294_508.pdf at 18.

³ http://www.nepco.com.jo/engDetails.aspx?news_id=139

⁴ See http://www.usea.org/programs/EUPP/Jordan_Distribution/Article_Jordan_Dist_EEV_May_2009.pdf; <http://www.powergenworldwide.com/index/display/articledisplay/259077/articles/middle-east-energy/volume-3/issue-2/features/country-focus-jordan-sector-for-sale.html>; <http://www.jordantimes.com/?news=21078>

⁵ The Hashemite Kingdom of Jordan Central Electricity Generating Company, Annual Report 2012

http://www.cegco.com.jo/files/E_2012.pdf

⁶ <http://www.encharter.org/index.php?id=474>

⁷ See http://www.nepco.com.jo/english_history.html

⁸ The distribution sector is made up of three companies all of which are privately owned:

- Jordan Electric Power Company, formed in 1947 as a private power company and 23% owned by the government, which serves Amman and central Jordan, and supplies about 64% of electricity consumers in Jordan;
- Electricity Distribution Company, established in 1997 when JEA was disaggregated and privatized in 2007 (purchased by Kingdom Electricity Company (KEC)), which covers the south and east of Jordan and serves approximately 140,000 customers; and
- Irbid District Electric Company (IDECO), established in 1961 and serving the northern part of the country with 250,000 customers. KEC also purchased 55.4% of IDECO in 2007.

http://www.nepco.com.jo/english_reorganize.html; http://www.usea.org/programs/EUPP/Jordan_Distribution/Article_Jordan_Dist_EEV_May_2009.pdf

⁹ http://www.nepco.com.jo/english_statisticalDetails.aspx?album_id=8

¹⁰ See <http://www.petra.gov.jo/Artical.aspx?Lng=1&Section=1&Artical=145129>; <http://www.nepco.com.jo/PDF%20Documents/AnnualReportEnglish2008.pdf>

¹¹ See http://www.usea.org/programs/EUPP/Jordan_Transmission/April_2009_Presentations/Article-for_NEPKO_first_EEV_May_2009.pdf

¹² <http://www.erc.gov.jo/English/Pages/default.aspx>

¹³ Note the Renewable Energy and Energy Efficiency Law (REEEL) was passed temporarily as Royal Decree in February 2010 before becoming a permanent law in April 2012.

¹⁴ <http://www.erc.gov.jo/English/Pages/RenewableEnergy.aspx>

¹⁵ <http://www.erc.gov.jo/English/Pages/RenewableEnergy.aspx>

¹⁶ <http://www.erc.gov.jo/English/Pages/RenewableEnergy.aspx>