

JORDAN: RECENT STEPS TO BRING RENEWABLE ENERGY TO MARKET



2010

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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 (its only potential domestic resources are some natural gas and undeveloped oil shale²).³ Electricity is imported (and some exported) via the Inter-Arab Electricity Network, which includes Jordan, Syria and Egypt. Gas is imported 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 2007, for example, peak demand was well over 2,000 MW, a double-digit increase over the previous year.⁵ In 2009, the peak demand was 2,330 MW.

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 was supplied.⁷ In September 1996, the JEA was converted to the National Electric Power Company (NEPCO), a public shareholding company wholly-owned by the government, which currently owns and operates the transmission grid. The current sector model is single buyer, with NEPCO the buyer 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 Initiatives

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. The Jordanian government created the National Energy Research Center for renewable energy in 1996, which focuses also on energy savings. **The government intends to build 600 MW of wind by 2015 and a further 600-1,000 MW by 2020.** The 2007 Energy Strategy listed obstacles to renewable energy development as including: (1) the high capital costs of such projects compared to non-renewables; (2) the need for large amounts of land which can be hard to secure; and (3) lack of legislation, including treatment of customs and tax issues.¹³ The recommended actions to take included enactment of a renewable energy law and energy fund for renewables,¹⁴ **the law was issued in early 2010 and the Renewable Energy and Energy Efficiency Fund is in the process of being established according to the law.**

A renewable energy law was enacted at the beginning of 2010 through Royal Decree as temporary legislation, setting Jordan ahead of many of its neighbors in creating a legislative framework specifically for renewable energy. It provides investors in the renewable energy sector with a number of incentives, guaranteed network access, and some tax and customs exemptions. The law also provides favorable treatment to land devoted to renewable energy project development. In particular, it allows private companies with renewable energy projects to bypass the competitive government bidding process and negotiate directly with the Energy Ministry. The law also sets guidelines for net metering.¹⁵ **The regulator took part in discussions (through numerous meetings) related to the preparation of the law in the different stages.**

The law anticipates execution of power purchase agreements with renewable energy developers on a case-by-case negotiated basis, allowing developers to make offers (as opposed to open tenders) to the MEMR to develop renewable energy projects, with the tariff offered within a reasonable range compared to a standard reference, without further elaboration. NEPCO must purchase all electricity produced by renewable energy power plants and pay the cost of connecting the project to the network.

In early 2010, Jordan established a Renewable Energy and Energy Efficiency Fund (now in the process of being established), with resources available to private sector companies or investors in and outside of Jordan, to support energy-saving and renewable energy initiatives. The Fund is financed by the state budget and international donor agencies, including the World Bank and the Global Environment Fund.

The Government is currently reviewing the regulatory issues related to RE such as the Reference Price mentioned in the law (Article 6), incorporating RE needed regulations in the regulatory documents and also reviewing the technical details for connection to the grid.

These steps have placed Jordan in a strong position to bring renewable energy to market, with negotiations on several renewable energy projects now underway.

Bringing RE Projects to Life

In 2009 negotiations for Jordan's first wind farm (in Al Kamshah) began, with Terna Energy, one of Greece's major owner-operators of wind farms, selected as the preferred bidder for a 30-40 MW facility at Al Kamshah, north of Amman, with output to be purchased by National Electric Power Company. Al Kamshah was only to be the first in a series of wind projects, with still existing plans for an 80-90 MW project in Fujij, near Wadi Musa, and wind turbines at Al Harir, Maan and Wadi Araba, to produce a total of 300-400 MW of power.¹⁶

Negotiations for Al Kamshah stalled in 2009, with the director of the renewables department of the Ministry of Energy and Mineral Resources indicating publicly that the government is reconsidering the project,¹⁷ though renegotiations have recently resumed. Initial delay was due to concern over noise levels and land regulations, but the project also faced obstacles when negotiations between the government and the Greek-Jordanian consortium over the amount of the tariff.¹⁸ Only one other bidder, Russia's Rossijskaja Avtonomnaja Energo Sistema (RAO UES), had responded to the tender. Via the 2010 law described above, the Government of Jordan is reassessing use of the tendering process versus use of other support schemes; though some tendering schemes may continue for large projects.

Jordan's experience with this project and its attempts to encourage the growth of domestic renewable energy and wind in particular provide important valuable lessons in the framework needed for development and potential obstacles along the way. The regulator has played a supporting role, as a member of the project evaluation committee, and also participated in the various meetings directed at reform in the topics pertinent to its role. **With respect to Al Kamshah in particular, a Commissioner from the ERC has served as part of the project evaluation committee and another is currently serving on the project evaluation committee for another large wind farm project. As a member of this Committee, the Commissioner is able to contribute information that is regulatory in nature and therefore not necessarily available to other Committee members. Some examples are:**

- **Offering details as to the permitting and licensing process, so as to help estimate time**
- **Making compatible the different project documents and agreements, including avoidance of duplication or conflict between the license and the other documents**

Committee participation by the ERC has a collateral benefit for the sector, namely it prepares the regulator for imminent responsibilities, such as the need to license in a timely manner, once the project is approved. This has the potential to improve the overall process and ensure maximum efficiency and minimize delay.

To further efforts to stimulate renewable energy growth in Jordan, the ERC was actively involved in committee evaluation of two projects in 2010. One is the mentioned El Kamshah project; the other is Al Fujij, an 80-90 MW project. A total of 29 interested letters were received, with 16 found qualified and invited in September 2010 to send their proposal by

March 2011. The ERC is now working with other committee members to prepare needed documents and analysis for the anticipated submissions of proposals. The ERC is also involved in actively planning for future projects. In particular, it is engaged as part of a committee established to implement a 1 MW PV pilot project in Jordan, intended to pave the way for a larger PV effort in the future.

In parallel, the ERC is currently working with relevant institutions to develop specific regulations in the renewable energy field to ensure streamlined implementation of existing and future projects. At present the ERC is focusing on regulations for:

- Integration of wind farms in the national electric system of Jordan
- Estimating indicative price for various renewable energy products
- Consulting service for strengthening the legal, regulatory and institutional framework for the development of renewable energy resources

This preparatory work is part of the ERC's larger commitment to ensuring investment and successful operation of renewable energy projects to secure a sustainable energy supply for Jordan.

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 See <http://www.erc.gov.jo/English/Pages/default.aspx>;
http://www.nepco.com.jo/english_statisticalDetails.aspx?album_id=5. 2008 peak demand was 2260 MW. [http://www.nepco.com.jo/PDF%20Documents/Annual ReportEnglish2008.pdf](http://www.nepco.com.jo/PDF%20Documents/Annual%20ReportEnglish2008.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 <http://www.nerc.gov.jo/Download/english%20-energy%20strategy.pdf>

¹⁴ *Id.*

¹⁵ See <http://www.jordantimes.com/?news=23153>

¹⁶ http://www.menafn.com/qn_news_story_s.asp?storyid=1093278395

¹⁷ See <http://www.windpowermonthly.com/go/middleEastAfrica/news/993625/Jordans-first-commercial-wind-farm-endangered-noise-issues-regulations/>

¹⁸ See http://www.menafn.com/qn_news_story_s.asp?storyid=1093278395