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Energy diversification programme to leverage scarce resources, cut oil bill

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AMMAN - Despite lower oil prices, Jordan is continuing to push its energy diversification programme in a bid to reduce its reliance on foreign suppliers and decrease the Kingdom's burdensome energy bill.

With over 96 per cent of Jordan's total energy supply coming from imported products in 2007 - including 7 per cent of electricity - the country has announced plans to decrease its foreign dependency to 61 per cent by 2020, by encouraging a mixture of new nuclear and renewable sources.

Even with the tumbling cost of crude, the fiscal rationale behind such a move is clear. Earlier this month, at the Euro-Jordanian Renewable Energy Conference (EJREC), Minister of Energy and Minerals Resources Khaldoun Qteishat stated that energy imports accounted for 23 per cent of the Kingdom's gross domestic product in 2008.

Nor does it look as though the demand pressures will lessen in coming years. Demand for electricity within Jordan is 2100MW, according to 2007 figures, which is expected to rise to 5770MW by 2020. Primary energy demand is currently 7.6 million tonnes of oil equivalent, expected to rise to 15 million by 2020.

Growth in electricity was 13 per cent in 2007 - more than double primary energy demand growth, which was 5.1 per cent. Averaged over the next 12 years to 2020, electricity demand growth should level out at 7.4 per cent, still some two percentage points higher than primary energy demand growth of 5.5 per cent in 2007.

As a result, for both strategic and budgetary reasons, the development of new sources of homegrown generation is crucial.

Like an increasing number of countries in the region, nuclear power is one of the more promising tracks the Kingdom is exploring. Through the Jordan Atomic Energy Commission (JAEC), Jordan is looking to develop two key civilian nuclear-related projects in cooperation with international partners.

One is a nuclear plant to generate power and desalinate water, while the other will explore natural nuclear resources, such as uranium deposits, in the country.

According to Khaled Toukan, the chairman of JAEC, the total value of the proposed projects will range between \$2 billion and \$3 billion, creating approximately 5,000 jobs.

Memoranda of understanding and nuclear cooperation agreements have already been signed with the US, UK, South Korea, China, France, Russia and Canada.

A site near Aqaba has been selected for the country's first nuclear plant. The site, nine kilometres inland from the Gulf of Aqaba, outside the Aqaba Special Economic Zone, was chosen due to the proximity to water. Desalinated water will be used to cool the plant to minimise the environmental impact.

Jordan's large domestic reserves of crude uranium will be used to power the reactor. According to the World Nuclear Association, Jordan has 112,000 tonnes of known recoverable uranium resources, representing approximately 2 per cent of the global total.

Four international firms have submitted proposals for the nuclear plant project: France's Areva, South Korea-based KEPCO, the Atomic Energy of Canada and Russia's Atomstroyexport.

"We are in the final stages of examining the proposals," Toukan recently told local media. The first nuclear plant is expected to start generating electricity in 2016. The plant is expected to generate between 1000 and 1400MW of power.

While the international hype surrounding oil shale has been toned down with the fall of oil prices from the historical highs seen in 2008, Jordan is moving forward with agreements and plans to develop its oil shale reserves and reduce dependence on foreign imports.

Earlier this year, the Natural Resources Authority concluded negotiations with Royal Dutch Shell on a commercial deal to produce oil from oil shale. In the initial phases, the deal will see Shell spend around \$430 million to assess the project and its expected revenues, according to Qteishat.

Overall, the project is expected to attract direct investment of \$20 billion-\$25 billion and take 12-20 years from the date the agreement is signed to produce the first commercial quantities of oil.

The agreement is still being studied by the Cabinet, and if approved, will be presented to parliament for ratification. The deal would complement other agreements for oil shale exploration and production signed by the government with companies such as Estonia's Eesti Energia and Brasil's Petrobras.

Eesti Energia's feasibility study, released in May 2008, estimates that one of Jordan's oil shale deposits could yield 36,000 barrels of oil per day. This would account for about a third of the current domestic demand of 100,000 barrels per day.

According to the World Energy Council, Jordan has approximately 50 billion tonnes of oil shale reserves.

Producing power from nuclear sources is a medium to long-term initiative, but according to Qteishat, "the optimum solution in the short term is the enhancement of renewable energy projects".

As a result, national energy strategy calls for the country to generate 600MW of renewable energy in 2015 and 1200MW of solar and wind energy by 2020. This would represent 10 per cent of the total energy mix by 2020. While this is a dramatic increase from the current 1 per cent, the country is wasting no time in putting its words into action.

A Greek firm is currently in negotiations with the government to set up Jordan's first operational wind-powered plant. While Jordan has had a pair of pilot wind farms producing 300kW and 1.2 MW in the north of the country for the past two decades, this will mark the Kingdom's first foray into commercial production.

The proposed deal would see the construction of a 30 to 40MW plant near Jerash come online in 2010. The second wind plant, to be located in Fujeij near Petra, is expected to produce between 80 and 90MW. The tender will be floated later this month, with the expectation that the plant will be generating wind power by 2011.

Additionally, the Ministry of Energy is looking to float an additional tender for three more wind energy plants in the southern part of the country by year's end. The tender would package together three wind turbine stations, at Al Harir, Maan and Wadi Araba, for the winning bidder to develop and construct concurrently.

Combined, the three plants would produce 300-400MW of wind energy.

The extent of the government's commitment to promoting renewable and non-hydrocarbon energy production is impressive. In spite of the lowered price of crude and the subsequent reduced pressure on the national budget, the Kingdom is continuing to diversify its energy sources in a bid to protect the country against future exogenous commodity shocks.

Through a combination of nuclear, oil shale and renewable energy, Jordan should be able to leverage its scarce energy resources to gain a greater degree of energy independence and reduce its import expenditures.

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