

**PROJECT INFORMATION DOCUMENT (PID)
APPRAISAL STAGE**

Report No.: AB4535

Project Name	JO-AL QATRANA POWER PROJECT
Region	MIDDLE EAST AND NORTH AFRICA
Sector	Power (100%)
Project ID	P108850
Borrower(s)	GOVERNMENT OF JORDAN Qatrana Electric Power Company
Guarantor:	Government of Jordan
Project Sponsor:	Korea Electric Power Corporation (South Korea) and Xenel Industries Ltd (Saudi Arabia)
Environment Category	<input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> FI <input type="checkbox"/> TBD (to be determined)
Date PID Prepared	July 8, 2009
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Date of Board Approval	August 6, 2009

1. Country and Sector Background

Jordan is a middle-income country with a population of about 5.9 million and GDP of USD 16.6 billion (2007 estimates). The Jordanian economy performed strongly over the 2004-07 period, when real Gross Domestic Product (**GDP**) growth averaged over 7.0 percent. Growth in 2008 was lower, at around 5.5 percent, and in 2009 it may fall further to 3.0-4.0 percent due to the impact of the global economic slowdown on the MENA region through a decline in exports, foreign inflows, and remittances. Unemployment, although still high, declined in 2008 to 12.7 percent from 13.9 percent in 2007. Inflation accelerated to 14.9 percent in 2008 (year-on-year), driven by rapid increases in international oil and food prices that occurred during the first 3 quarters of 2008. Although price subsidies on oil products were eliminated in February 2008, the fiscal deficit widened due to rising wages, transfers and food subsidies. Despite the large trade deficit in the first three quarters of 2008, the decline in international prices of oil and food in the last quarter of the year and the good performance of exports, net income receipts, and net current transfers brought the current account deficit down to 12.1 percent of GDP in 2008 from 17.7 percent in 2007. The decline in international prices of commodities, especially oil, since the latter part of 2008 is reducing inflationary pressures and improving the current account balance and reserves, but, if sustained, could also reduce capital inflows and workers' remittances from the oil-exporting Gulf countries. External debt declined from about USD 7.4 billion at the end of 2007 to USD 5.1 billion by the end of 2008. Although it is too early to assess the full effects of the global economic slowdown on the Jordanian economy, Jordan has shown good resilience to the international financial crisis so far and no major capital flight has occurred from the financial sector.

Jordan is not well endowed with traditional sources of energy, such as conventional fossil fuels or hydropower, and imports more than 95 percent of its primary energy needs, mostly crude oil, oil products, natural gas, and some electricity. Energy imports valued at about USD 3.7 billion constituted about 19 percent of total imports of goods and services (USD 19.1 billion) in 2008. The Government is making efforts to develop alternatives to electricity generation based on imported fuels, such as domestic wind power and oil shale, as well as nuclear energy. Nevertheless, the country is likely to remain heavily dependent on energy imports for the foreseeable future and, thus, exposed to fluctuations in international energy prices. Jordan used to heavily subsidize domestic energy prices, but the Government eliminated

these subsidies in February 2008 (except for liquefied petroleum gas (**LPG**) used by households), significantly reducing fiscal pressure coming from the energy sector.¹

The power sector in Jordan is well developed. Almost all households have electricity connections. Total installed electricity generation capacity is about 2,500 MW in six larger power stations. Peak demand in 2008 was 2230 MW and total electricity generation and net imports were about 14 billion kWh. The current power sector structure consists of three generation and three distribution companies, and a transmission and dispatch company, National Electric Power Company (**NEPCO**), which also operates the wholesale market. Two out of three generation companies and all three distribution companies are privately owned, with a significant cross-ownership; NEPCO is 100 percent state owned. The wholesale trading arrangements are based on a single buyer model, under which NEPCO buys electricity from the generation companies and exporting countries and, in turn, sells it to the distribution companies and directly to some large industrial consumers. Electricity purchase prices between NEPCO and generation companies are based on long-term agreements, whose terms in the case of private independent power producers (**IPPs**) are set through competitive bidding. The prices of electricity sold by NEPCO to distribution companies and industrial consumers are set by the Electricity Regulatory Commission (**ERC**), an autonomous agency, which also sets retail electricity tariffs between distribution companies and end consumers. NEPCO is also responsible for buying fuel for the power plants operated by generation companies. Such trading arrangements make NEPCO critical for the operation of the sector and for its financial performance and sustainability.

The sector receives no direct subsidies, although the Government guarantees NEPCO's off-take and payment obligations under its long-term power purchase agreements with private generation plants. Retail tariffs do contain cross-subsidies between consumer categories, with subsidies flowing to the domestic sector (and to lower-consuming households) from industrial and commercial consumers and higher-consuming households.

The Government intends to move eventually from the single-buyer trading model to a decentralized trading system based on bilateral contracts between generation, on the one side, and distribution companies, wholesale traders and end consumers on the other side. This would further strengthen commercial orientation of the power sector and pave the way for the government to reduce its role in the sector, including provision of guarantees. The complete privatization of electricity distribution in the summer of 2008 was a significant step in sector commercialization and creation of a decentralized wholesale trading system. Some important constraints to further liberalization still exist, such as in fuel supply and gas imports from Egypt that are negotiated at the level of the governments and, thus, need governmental guarantees. Some time is also needed to establish a track record of a successful performance of the government-controlled regulatory framework in the context of the newly privatized distribution and generation companies.

The most important priorities in the power sector at this stage are to strengthen security of energy supply and to manage volatility in international oil prices. The Al Qatrana project will directly and significantly add to the security of supply. Beyond Al Qatrana, Government's energy strategy, adopted in late 2007, envisages on the supply side development of power generation with increased emphasis on domestic resources (renewables, oil shale) and use of nuclear energy and, on the demand side, increased energy efficiency. The Government intends to rely on the private sector wherever possible.

¹ The removal of subsidies was accompanied by social mitigation measures, part of which included one-time cash assistance to compensate for the removal of the gasoline subsidy, targeting private sector employees with yearly per capita income below USD 1,412. Another one-time cash assistance was introduced in January 2009 to compensate both public and private sector employees for the rise in the prices of kerosene. The Bank is conducting a study on fiscal and social impact of higher energy and food prices in 2008.

Jordan added substantial amounts of imported natural gas from Egypt to its energy mix through the recently completed Arab Gas Pipeline. This has greatly reduced electricity generation costs and exposure to volatility in oil prices, since the supply of natural gas is based on long-term contracts with more stable prices. The increased use of gas, a less polluting fuel, has also improved environmental performance of the sector. Power generation is now 80 percent gas-based. Nevertheless, the sector remains exposed to the risk of oil price increases, which should be mitigated by allowing full pass-through of fuel costs into retail electricity tariffs and further diversification of generation toward non-fossil fuel technologies.

2. Objectives

The project objective is to strengthen security of energy supply in Jordan in an economically and environmentally sustainable manner.

3. Rationale for Bank Involvement

Over the years, the World Bank has been an important partner to the Government of Jordan in the power sector, supporting the sector in its growth and development, including the most recent phase of demonopolization, commercialization, development of a modern legal and regulatory framework, and involvement of private sector. The successful experience with the first International Bank for Reconstruction and Development (**IBRD**) Partial Risk Guarantee (**PRG**) for the Amman East Power Plant Project² leading to the selection of a competent, experienced and credible project developer, demonstrated the viability of the new sector structure and the value of the Bank's involvement. The transition is, however, still in progress, as the new structure, institutions, policies and practices are establishing a track record. Recent developments – the instability of prices in the international oil markets and the global financial crisis – will make an important test for the sector and its evolving institutions.

The World Bank has no lending operations in the Jordan's energy sector at this time, but it has a number of other activities: a partial risk guarantee for private investment in generation (Amman East Power Station), and two Global Environment Fund (**GEF**) grants—one for development of wind power (USD 6 million for a promotional project of about 60 MW) and the other for energy efficiency (USD 1 million).³ The Bank is also providing technical assistance focused on implementation of the energy strategy, especially in relation to regional integration and renewable energy. The Bank is preparing a proposal for the Clean Technology Fund (**CTF**) for development of renewable energy at the regional scale, which is expected to include Jordan. A study on the impact of the global financial crisis on investment environment in the sector, funded by the Energy Sector Management Assistance Program (**ESMAP**), is being undertaken, which should help Government adjust its policies and the Bank adjust its assistance. The Bank is coordinating its activities with other donors, especially with the European Union (**EU**) on regional issues and with Agence Française de Développement (**AfD**) on renewable energy and energy efficiency.

As demonstrated by the bidding process for the Al Qatrana project for the selection of project developer, completed in April 2008, the project would not be bankable for commercial lenders without the support of international financial institutions, bilateral donors, and/or export credit agencies, given the large amount of private capital required and the perceived risks by investors. Deterioration in the

² Project Appraisal Document for Amman East Power Plant Project, Report 37098-JO, approved by the Board of Executive Directors on March 13, 2007.

³ Project Appraisal Document for a Promotion of a Wind Power Market Project, Report 43593-JO, approved by the Board of Executive Directors on June 26, 2008; Grant Agreement for GEF grant for energy efficiency is expected to be signed in March 2009.

international credit market since the bidding closed has further strengthened the need for risk mitigation instruments. The proposed financing structure for the project involves loans and guarantees from The Export-Import Bank of Korea (**Korea Eximbank**), European Investment Bank (**EIB**), Société de Promotion et de Participation pour la Coopération économique (**PROPARCO**), and IBRD. The commercial lenders see World Bank involvement as essential to mitigate their exposure to country risk and to help ensure undertakings by the government agencies for the project.

4. Description

The project includes development, construction, ownership, and operation and maintenance of a new gas turbine combined-cycle (**CCGT**) 373-MW power station by Qatrana Electric Power Company, a single-purpose joint company owned by subsidiaries of Korea Electric Power Corporation (**KEPCO**) and Xenel Industries, Ltd (**Xenel**), a Saudi Arabian investor (**Sponsors**). The power station will use natural gas as the main fuel and distillate fuel oil (**DFO**) as a back-up. The plant site is about 90 kilometers south of Amman and 250 kilometers north of Aqaba, in the vicinity of Al Qatrana town. The plant will be of a traditional design with two gas turbines (Siemens-supplied STG5-2000E with rated capacity of 168 MW), two heat recovery steam generators (**HRSGs**) (supplied by Daekyung Machinery), one steam generator (130 MW, supplied by Škoda Power a.s.), an air-cooled condenser, and other associated equipment and structures. The plant will include a black-start facility to enable the plant to be started without being connected to the power system. The power plant cost is estimated at about USD 464 million (see “Annex 5—Project Costs” for further details).

The plant will be connected to the power system through a 500-meters long 132-kV electrical transmission line. The cost is approximately USD 4.4 million, which will be absorbed by NEPCO. NEPCO will purchase all of the plant’s electrical output through a 25-year PPA.

NEPCO will be responsible for purchasing and supplying natural gas and DFO to the power plant. The project will use natural gas that will be supplied from the high-pressure AGTP, which carries natural gas from Egypt to Jordan and further on to Syria and passes next to the power plant site. There are two options that are being considered for connecting the Al Qatrana power plant to the AGTP: (i) a “hot-tapping” into the AGTP next to the power plant site, which would involve installing a new valve in the AGTP and connecting the power plant through a short new pipeline of few hundred meters that would go through Government-owned land; or (ii) construction of a new 12-inch pipeline that would run in parallel to the AGTP to an already-built AGTP connection station about twenty-two kilometers south of the power plant site. Final decision on gas connection should be made by summer of 2009.

Water will be supplied by WAJ, which will construct and own an approximately two-kilometer long water pipeline from a pumping station on the water main line to the delivery point at the project site at a cost of about USD 140,000, paid by the Qatrana Electric Power Company.

5. Financing

Source:	(\$m.)
NEPCO	18
IBRD Guarantee	50
Foreign Private Commercial Sources (unidentified)	414
Total	482

6. Implementation

Qatrana Electric Power Company, a Jordanian corporation and a consortium between KEPCO Middle East Holdings Company SPV (Bahrain) and Xenel International Power (Cayman Islands), will be

responsible for the overall project development and operation. The plant will be designed and constructed through an engineering, procurement, and construction (**EPC**) contract with Lotte Engineering & Construction Co., Ltd (**EPC Contractor**). The EPC Contractor will subcontract SNC-Lavalin and Fichtner (India) for plant design and engineering. The Qatrana Electric Power Company engaged an independent consultant to carry out the Environmental and Social Impact Assessment (**ESIA**). A project office has been established in Amman, headed by a chief executive. After financial close, the composition of the team will change with the inclusion of staff responsible for the construction and later the operational phase. Operation of the plant will be subcontracted to the Korea Southern Power Co., Ltd (**KOSPO**), a wholly owned subsidiary of KEPCO. The maintenance services will be subcontracted for the first six years of operation to Korea Plant Services & Engineering Co. (**KPS**), 80-percent owned subsidiary of KEPCO. Qatrana Electric Power Company will be responsible for financial reporting.

NEPCO will purchase all of the electric capacity and energy of the power station. It will also finance, own, and operate the transmission facilities required to evacuate the generated electricity. NEPCO will be responsible for supplying natural gas and DFO to the project. The Arab Gas Pipeline in Jordan is owned by the Jordanian Egyptian Fajr for Natural Gas Transmission & Supply Company (**Fajr**), which will construct the gas connection to the power station, financed by NEPCO.

The water supplier, WAJ, will supply all of the power station's water requirements under a long-term agreement, and will build the required water pipeline spur to be paid for by the Project Company.

The Government, acting through the Ministry of Finance/Department of Lands and Survey, will lease the site to Qatrana Electric Power Company under a long-term land lease agreement.

NEPCO has established a project management committee for the construction of the transmission interconnection, and oversight of the construction of the power station, water pipeline and connection, and gas pipeline spur and connection. To ensure coordination among stakeholders, a Joint Coordinating Committee will be established by Qatrana Electric Power Company and NEPCO to coordinate the design, construction, and commissioning of the power plant and associated infrastructure. It will also lead the coordination of power plant operations and maintenance.

7. Sustainability

Project sustainability depends on government support and commitment to its policy for using private at-risk investment for new power generation capacity, and on having the appropriate commercial environment for the viability of the project company. The sustainability also rests on the continuing need for the project output and on the ability of the project company to competently operate and maintain the plant.

Government has shown its commitment to private investment under project financing terms with the successful completion of the first phase of the Amman East Power Plant Project on which the Al Qatrana project is modeled. It has secured a dedicated portion of imported natural gas from Egypt required as fuel for the project. And it has set up a bulk power trading system designed to ensure that NEPCO is a credible counterparty for the project under the PPA. A key element is government's policy of allowing pass-through of project costs into the bulk supply tariff for power sold by NEPCO, and the reflection of these costs in the regulatory reviews of retail electricity tariffs.

The Al Qatrana Power Station will have a market for its output because Jordan is already short of the capacity reserve and the electricity demand is expected to increase substantially by the time that the plant is commissioned. Furthermore, the Al Qatrana Power Station will be able to compete with other sources of power generation in Jordan because of its efficiency and the fuel used (natural gas). Under

merit order dispatch of power plants, it will be one of the first to be dispatched to meet the base load on the power system.

Another determinant of the project's sustainability is how the more adverse project financing environment that is now evolving will affect project financing and whether it will put an unsustainable pressure on the rate of return of Qatrana Electric Power Company. This will be further assessed during project appraisal.

8. Lessons Learned from Past Operations in the Country/Sector

The recent successful experience with IBRD Guarantee for the Amman East Power Plant Project approved by the World Bank in March 2007, the first IPP in Jordan (currently under construction⁴), was carried over to Al Qatrana preparation. The commercial arrangement, social and environmental safeguards, and risk allocations mirror those of the Amman East project. In the meantime, the role of private investors has been further strengthened, as the Government privatized controlling interests in the existing generation capacity as well as all distribution companies in 2007-08.

The Bank's worldwide experience with IPP projects, in particular the Pakistan IPP program,⁵ emphasize the need: (i) for sector reform to precede private participation and not be its substitute; (ii) to ensure that IPP development is consistent with the least-cost expansion program; (iii) for transparent IPP solicitation and tariff setting; (iv) for the off-taker and overall electricity market to be commercially viable; and (v) for an efficient and secure fuel source. These lessons have been incorporated in both Amman East and Al Qatrana projects.

Al Qatrana attracted strong interest from potential developers: eleven developers were short-listed (including those who bid for Amman East), and four very competitive final bids were received. The bidders were informed by the Government at the bid invitation stage that the World Bank PRG was available. The recent downturn in the global financial market, which started developing in full strength after the bids were submitted, strengthened the need for credit enhancement. It is hoped that the need for government guarantees will be reduced once the global financial crisis is overcome, Jordan policy framework and regulatory systems prove robust enough to deal with external shocks (such as oil price volatility) and private owners, and the reformed and private-sector dominated power sector establishes a longer track record of credible commercial performance and good and efficient service to end customers.

9. Safeguard Policies (including public consultation)

Safeguard policies triggered by the project	Yes	No
Environmental Assessment (OP/BP 4.01)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Natural Habitats (OP/BP 4.04)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Pest Management (OP 4.09)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cultural Property (OPN 11.03, being revised as OP 4.11)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Involuntary Resettlement (OP/BP 4.12)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Indigenous Peoples (OP/BP 4.10)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Forests (OP/BP 4.36)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Safety of Dams (OP/BP 4.37)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

⁴ The first phase of the Amman East Power Plant (*i.e.*, construction of the gas turbines) was completed in July 2008 and the turbines are currently in operation. The second phase (*i.e.*, construction of the steam turbine) is expected to be completed in June 2009.

⁵ Including the Hub and Uch power projects for which the Bank provided partial risk guarantees and other support. (Also see *Lessons from the Independent Private Power Experience in Pakistan* by Julia M. Fraser, May 2005.)

Safeguard policies triggered by the project	Yes	No
Projects in Disputed Areas (OP/BP 7.60)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Projects on International Waterways (OP/BP 7.50)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

10. List of Factual Technical Documents

- ESIA for pipeline
- ESIA for power station, water interconnection, and electrical interconnection
- ESIA Scoping Study, Al Rawabi Environment and Energy Consultancies, November 2008
- IBRD Indemnity Agreement (draft)
- Integrated Safeguards Data Sheet
- Project Concept Note

11. Contact point

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