1. Key development issues and rationale for Bank involvement

1. The electricity sector in Egypt has gone through some important structural and institutional changes over the last decade, while at the same time coping with sustained and substantial increase in electricity demand from the growing economy. The electricity utility has been unbundled in order to prepare the power industry for demonopolization, introduction of more competitive trading arrangements, more transparent financial management, cost reflective pricing, and increased private participation, all with the objective of ensuring reliable and efficient power supply through adequate investments and better commercial and operational performance of the sector while reducing the government subsidies and contingent liabilities.

2. The sector reform is still very much work in progress. The power supply industry is dominated by the government-owned Egyptian Electricity Holding Company (EEHC), a holding structure which includes six power generation companies, nine regional distribution companies, and a transmission-and-dispatch company (Egypt Electricity Transmission Company – EETC) which also acts as a single-buyer of electricity at the wholesale level\(^1\). This is seen as an interim arrangement which should transit into a more competitive structure by opening end-user market for bilateral contracting with electricity generation companies.

3. There are three privately owned independent power producers (IPPs) with total generation capacity of about 2,049 MW (9 percent of the total), which started operations in 2002-2003 under 20-year long power purchase agreements with EEHC. The IPP program was stopped in 2003, however, after a major devaluation of Egyptian pound (LE), which doubled the prices of the IPP contracts in local currency as the PPAs were denominated in US$. An important structural element is the presence of National Renewable Energy Agency (NREA), which has about 430 MW of wind power plants in operation or under construction. NREA is also constructing a 143-MW hybrid solar-thermal power plant at Kureimat, which includes a 20-MW concentrated solar

\(^1\) The wholesale market, established in 2002, is based on cost-based power pool and bilateral agreements between generation companies and EETC on the power purchase side, and EETC and wholesale power buyers (distribution companies and high-voltage consumers) on the power sale side.
plant (CSP) financed in part by a US$50 million GEF grant administered by the Bank. There are also six licensed independent service providers (ISP), with total capacity of about 300 MW, which generate and distribute electricity and operate largely with tourist resorts in the Red Sea and Sinai areas.

4. The Egyptian Electric Utility and Consumer Protection Regulatory Agency (EEUCPRA) has been operational since 2002. The Agency licenses companies that operate in the sector and establishes performance benchmarks. The Agency’s mandate also includes creating conditions for competitive trading arrangements, but it has no tariff-setting powers, which is the prerogative of the Cabinet of Ministers.

5. A new Electricity Law was endorsed by the Cabinet in 2008 and is expected to be presented to the National Assembly in late 2009 or in early 2010 for adoption. The law, inter alia, stipulates that: the regulatory agency will have the mandate to set electricity tariffs; more competitive arrangements in the electricity market shall be introduced; EETC will be separated from EEHC into an independent entity; feed-in tariffs for renewable energy will be established by the Cabinet (competitive bids based on price can also be used); a "Fund for Development of Power Generation from Renewable Energy", affiliated with the Cabinet, will be established; all consumers with contracted capacity above 500 kW will have to hire a specialist for energy management; and electricity appliance and equipment shall be labeled for energy efficiency. The law also stipulates that the electricity market will have a two-tiered structure: regulated and competitive, with the competitive tier gradually increasing according to the policy established by the ME and the Cabinet.

6. **Main issues**: The main issues in the power sector at this stage include the following:

- **Electricity and fuel supply security**: The fast growing electricity demand (6-7% per annum during the last years) has eroded the available generation reserve margin and the power system operates with little or no reserve (required to be 10-15% of annual peak demand in most systems). The dispatchers had to resort to load shedding in the summer of 2008 and 2009. Although the demand growth may soften somewhat due to economic slowdown in 2008 and 2009 as result of global economic downturn, it is expected to remain brisk. The need to increase electricity generation is putting pressure on fuel supply as well, especially on the supply of natural gas which is facing increasing demand from domestic consumers beyond the power sector as well as from exports.

- **Investment financing**: As the electricity demand grows, so do the investment needs of the sector. Egypt’s 10-year electricity generation expansion plan envisages commissioning of about 24,000 MW in new power plants between 2008 and 2017, more than doubling the capacity of about 22,000 MW in place in 2007. With addition of the concomitant investments in transmission and distribution, there is an increasing realization that it would be difficult to fund all investments through the government-owned utility.

- **Pricing and subsidies**: A recent study on energy pricing, funded by ESMAP, confirmed that there is significant under-pricing of all types of energy: oil products, natural gas, and electricity. Electricity prices were increased in 2004 for the first time after 1992, and are now increasing at the nominal rate of 7.5% per year. There is also a program for increasing fuel prices, although at a

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2 The Bank is pursuing a wind power scale up project as well as a regional initiative on solar power, as explained in a separate Project Concept Note.

3 Egypt exports natural gas through LNG terminals internationally, and through the Arab Gas Pipeline (AGP) to Jordan and Syria. The AGP has also reached Lebanon and should eventually be connected to the Turkish and, thus, the European gas network.
slower rate than needed to reach full cost recovery in the foreseeable future. A Cabinet decision of October 11, 2006 stipulates, e.g., an increase in the prices of natural gas for electricity generation from 157 Egyptian pounds (LE) per thousand cubic meters (tcm) (US$0.9 per mmbtu) to 290 LE per tcm (US$1.6 per mmbtu) in 2013. Natural gas price for energy intensive industries was set to US$3 per mmbtu in June 2008, with consequent increase in electricity prices for industrial consumers as follows (in USc/kWh): 6.3 for medium voltage; 4.6 for high voltage, and 3.8 for ultra high voltage consumers.

- **Electricity trading and market structure**: At this stage, EEHC power companies dominate electricity generation (with the exception of the three IPPs and the small ISPs mentioned above) and EETC has practically total monopoly on supply to distribution companies and direct consumers, and thus to all end-consumers (except for the small share covered by the ISPs). Generation companies sell only to EETC, as a “single buyer”. Therefore, although the sector is formally unbundled, it continues to operate in a similar fashion as a vertically integrated monopoly.

7. **Government strategy**: The following are key elements of Government’s strategy to address the sector issues:

- To **improve electricity supply security**, the investment program in the electricity supply infrastructure is to be aggressively pursued. Currently, all investment projects are implemented by EEHC, but going forward the Government wants to involve private sector as well. EEHC investment projects will continue to be funded through borrowing from international financing organizations, local commercial banks, public financial institutions, and sector’s internal cash generation. Private sector projects should be done in a way that facilitates opening up of the electricity market and reduces government’s involvement and exposure. To improve energy (fuel) supply security, the investment strategy in the power sector includes increased use of more efficient electricity generation technologies (CCGT plants and supercritical steam plants); scaling up of development of renewable energy to reach 20% share in the supply mix by 2020 (from 13% in 2008, including 12% from large hydropower); construction of nuclear power plants; and stepping up efforts to improve efficiency in end-use consumption through large scale use of efficient light bulbs, peak demand reduction through time of use pricing, and adoption of tighter standards and codes for equipment and buildings.

- Although there was a temporary freeze on energy price increase in 2009 in response to the financial crisis and economic slowdown, the price adjustments are expected to continue in early 2010. The ESMAP-funded energy pricing study, as well as other analytical work conducted during the last few years, provide an analytical basis for developing energy pricing policies that would lead to better cost recovery, reduced but better targeted subsidies, and bring the demand growth in line with economic fundamentals.

- The Government’s policy is to gradually liberalize end-user electricity market and reduce the role of the single buyer (EETC), eventually transiting to a market structure based on bilateral contracts complemented by a centrally-organized residual balancing market. As stipulated in the new Electricity Law, EETC is to be separated from EEHC into an independent entity, which should help reduce the potential bias – or a perception of it – toward EEHC generation. As the first step in market opening, the government has created a list of energy intensive industries which are obliged to ensure their own power supply outside EEHC for new or expanded production.

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4 The gas price of US$3 per mmbtu implies fuel cost of about 2 USc/kWh for electricity generated by a CCGT plant with 50% energy conversion efficiency.

5 The Government is prepared, though, to entertain such IPP projects in renewable energy (wind power), including government guaranteed long-term off-take agreements.
facilities. They can do it by constructing their own power plants and/or contracting with private developers for power supply to such facilities. This is to be followed by further opening of the market for consumers with interconnected capacity exceeding 20 MW, and then gradually reducing the limit until eventually all consumers become eligible to select their supplier in 10-15-year time.

- The New Electricity Law should make the institutional and regulatory arrangements more consistent with liberalization of the sector and provide stronger incentives for improved cost recovery and efficiency in investment and operation.

8. Rationale for Bank involvement: After resuming its lending program in 2006 with the approval of the $260 million IBRD loan for El Tebbin power project, the Bank has become an increasingly important development partner. The current portfolio developed since 2005 includes four investment projects under implementation. In addition to the El Tebbin project, the Bank is funding the 1300-MW Aih Sokhna steam power plant (a US$600 million IBRD loan approved in January 2009); the Kureimat hybrid solar-thermal project mentioned above (helped by a GEF grant administered by the Bank and approved in December 2007); and the Gas Connection project (US$75 million IBRD loan, approved in January 2008).

9. In addition to project financing, the Bank has provided technical assistance through its own funding and grant-financed (mainly ESMAP and PPIAF) activities in a number of areas: gas and energy pricing; options for private public partnerships in traditional electricity generation; time-of-use pricing of electricity; commercial framework for large scale wind power development; workshops on combined cycle gas turbine technology, demand side management, and carbon capture and storage. These studies and workshops were well received by Egyptian authorities and have helped shape the energy policy of the country.

10. The proposed project – together with the Wind Energy Scale Up project (see a separate PCN) and the work on development and implementation of a regional solar initiative -- will further deepen the partnership between the Government and the Bank. The Giza North power plant will make an important and urgently needed contribution to improving the security of electricity supply. The project will also enable the Bank to continue its engagement at the policy front, which is reaching some important decision points related to private sector involvement, energy pricing, market development, development of renewable energy and energy efficiency, and strengthening legal, institutional and regulatory framework. The intensive engagement and patient policy dialogue undertaken over the past few years have positioned the Bank well to play this role. During the recent mission in July 2009, the Government requested the Bank to provide advice on the complex of fiscal/market/contracting/regulatory issues at the core of any re-engagement with the private sector, and to organize a joint Bank-IFC mission to brainstorm with the Ministry of Electricity and Energy and other stakeholders about how Bank Group instruments could support the re-engagement.

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6 This was the first loan approved since 1992, when the last Bank loan in the power sector was approved prior to the one for El Tebbin (the Kureimat power project, Ln. 3441-EGT).

7 The Bank is to undertake a study on promoting energy efficiency in Egypt through strengthened institutional arrangements and priority investment initiatives.
2. Proposed objective(s)

11. The proposed project development objective is to assist the Government of Egypt to improve the security and efficiency of electricity supply through investment in new generation capacity based on combined-cycle gas turbine technology.

3. Preliminary description

12. The proposed project is a 1,500-MW combined cycle gas turbine (CCGT) power plant comprising two blocks of 750 MW. Each block will include two 250-MW gas turbines and two heat recovery steam generators feeding a 250-MW steam turbine. The plant will use natural gas as the main fuel and diesel as the back-up. The plant will be connected to the electricity transmission network through a gas-insulated substation and a relatively short new high-voltage transmission line. Natural gas will be supplied from a nearby trunk pipeline connected to the pant through a dedicated gas pipeline. Land has been acquired by EEHC for the power plant site.

13. A draft feasibility study has been prepared for the project and is under review by the World Bank Project Team. The study identifies the proposed plant as an efficient addition to EEHC’s power system and as part of its least cost long-term expansion plan. CCGT is the most efficient large scale electricity generation technology available today.

14. The project will be implemented and operated by the Cairo Electricity Production Company (CEPC), an EEHC subsidiary, which is also implementing El Tebbin project. EEHC is in the process of retaining a firm that will provide assistance to CEPC in engineering, detailed design, procurement, and construction management and supervision. This contract will be financed with EEHC’s own resources. Environmental and social impact assessment has been initiated and is on the critical path of project preparation.

15. The proposed project will support, through its on-going technical assistance and in-depth policy dialogue, the development and implementation of policies and regulations that will help create conditions conducive to efficient public and private investments and improvements in sector’s operational performance. This will include work on electricity pricing, market structure, and institutional and regulatory framework, as well as possibly assistance on the transaction side with private sector. A TA program for the next three years has been included in the Bank budget, inter alia, for this purpose. Additional TA funds will be sought through grants, and may be included in the IBRD loan as well, subject to the need and interest of the borrower.
4. Safeguard policies that might apply

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The Egyptian Electricity Holding Company has finalized terms of reference for the Environmental and Social Impact Assessment (ESIA) work with input from the World Bank and is in the process of retaining an independent consulting firm to undertake this task. A draft ESIA and Resettlement Policy Framework (RPF)/Resettlement Action Plan (RAP) are planned to be available in November 2009, while the final ESIA report, and RPF/RAP will be completed in December 2009. Consultations with stakeholders and project affected people are planned to be carried out at least twice, during the scoping stage and as soon as the draft ESIA and RPF/RAP have been completed. Environmental and social impact assessment of the high voltage transmission line connection and the gas pipeline connection will be included in the ESIA of the project.

5. Tentative financing

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Total 1330

6. Contact point

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