

SUBJECT : EGYPT - PROPOSAL FOR AN ADB LOAN OF U\$ 550,000,000 TO FINANCE THE SUEZ 650 MW STEAM CYCLE THERMAL POWER PLANT PROJECT *

Please find attached a copy of the Appraisal Report on the above-mentioned Loan proposal.

The Loan Agreement is being negotiated.

The Outcome of Negotiations and draft Resolution will be submitted for your approval, once the Negotiations are completed.



AFRICAN DEVELOPMENT BANK

**PROJECT : SUEZ 650 MW STEAM CYCLE THERMAL
POWER PLANT PROJECT**

COUNTRY : ARAB REPUBLIC OF EGYPT

PROJECT APPRAISAL REPORT

Date: 22 SEPTEMBER 2010

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Currency Equivalents
As of July 2010

UA	=	1.51852 USD
UA	=	8.37704 EGP
USD	=	5.51658 EGP

Fiscal Year
July 1st – June 30th

Weights and Measures

1 metric tonne	=	2204 pounds (lbs)
1 kilogramme (kg)	=	2.200 lbs
1 metre (m)	=	3.28 feet (ft)
1 millimetre (mm)	=	0.03937 inch (“)
1 kilometre (km)	=	0.62 mile
1 hectare (ha)	=	2.471 acres
1 Kilovolt (kV)	=	1000 volts
1 Kilowatt (kW)	=	1000 watts
1 Kilovolt ampere (kVA)	=	1000 volt ampere
1 Megawatt (MW)	=	1000 kW
1 Gigawatt (GW)	=	1000 MW
1 Megavolt (MVA)	=	1000 kVA
1 Kilowatt hour (kWh)	=	1000 watt hour

ABBREVIATIONS

ADB	African Development Bank
CAO	Central Auditing Organisation
CSP	Country Strategy Paper
CTF	Clean Technology Fund
CWDS	Circulating Water Discharge System
DP	Development Partner
DPG	Development Partners Group
EDEPC	East Delta Electricity Production Company
EEA	Egyptian Electric Authority
EEAA	Egyptian Environmental Affairs Agency
EEHC	Egyptian Electricity Holding Company
EEUCPRA	Egyptian Electricity Utilities Consumer Protection Regulatory Agency
EGFO	Egypt Field Office
EHS	Environmental Health and Safety
EIB	European Investment Bank
EIRR	Economic Internal Rate of Return
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan

EU	European Union
FE	Foreign Exchange
FIRR	Financial Internal Rate of Return
FNPV	Financial Net Present Value
FY	Financial Year
GDP	Gross Domestic Product
GEP	Generation Expansion Plan
GOE	Government of Egypt
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
HP	High Pressure
HSE	Health, Safety and Environment
HV	High Voltage
ICB	International Competitive Bidding
ICT	Information Communication Technology
IDB	Islamic Development Bank
IP	Intermediate Pressure
LC	Local Cost
LE	Egyptian Pound
LP	Low Pressure
LRMC	Long Run Marginal Cost
LV	Low Voltage
MEE	Ministry of Electricity and Energy
MOP	Ministry of Petroleum
MV	Medium Voltage
NDP	National Development Plan
NGO	Non-Governmental Organisation
NPV	Net Present Value
O & M	Operation and Maintenance
p.a	Per Annum
PCR	Project Completion Report
PGESCO	Power Generation Engineering and Service Company
PIT	Project Implementation Team
QPR	Quarterly Progress Report
SPRL	Suez Petroleum Refinery Laboratory
SWAP	Sector Wide Approach
UN	United Nations
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
UPS	Unified Power System
USAID	United States Agency for International Development
V/C	Volume-to-Capacity
VHV	Very High Voltage
WACC	Weighted Average Cost of Capital
WB	World Bank

Loan Information

Client's information

BORROWER: The Arab Republic of Egypt

EXECUTING AGENCY: The Egyptian Electricity Holding Company (EEHC)

Financing Plan

Sources of financing	Amount (UA)	Instrument
ADB	362.2	Loan
IDB	40.0	Loan
EEHC	238.5	Equity
Total cost	640.7	

ADB's key financing information

Loan currency	USD
Interest type	6 Month libor Interest Rate
Interest rate spread	20 basis points
Other fees	None
Tenor	20 Years
Grace period	6 Years
FIRR, NPV (base case)	12.4%, USD 256 million
EIRR (base case)	(18%, US\$ 495.83 Million)

Timeframe - Main Milestones (expected)

Concept Note approval	March 2010
Project approval	December, 2010
Effectiveness	March 2011
Last Disbursement	December 2015
Completion	April 2015
Last repayment	January 2037

Project Summary

1. PROJECT OVERVIEW

The purpose of the Suez Power Plant Project is to increase the power generation capacity in Egypt leading to the enhancement of socio-economic development. It involves the construction of a 650 MW steam cycle power plant at a site located in the vicinity of Suez city approximately 150 km east of Cairo. Power will be evacuated from the plant to the UPS through 220 kV network by rehabilitating the existing double circuit over-head transmission line and implementing two additional underground cables. Other justifications for the project site include the availability of natural gas, the primary fuel for the plant.

The power generated will be used for industrial and commercial activities countrywide thus contributing to job creation, increase in productivity, electricity connection rates and improvement in the quality of life. Other direct project beneficiaries include the people living around the project site who will benefit from employment during project implementation and operation, contractors and consultants who will supply goods and provide services, and EEHC and EDEPC whose technical staff will receive training on the new equipment.

2. NEEDS ASSESSMENT

Egypt is planning to realize an annual GDP growth rate of up to 5.5% by 2015. Concurrently, the country aims to maintain national electricity coverage at the current rate of 99.3% by fully meeting demand increases, and ensure system reliability by increasing the currently low reserve capacity of 10% to a targeted 20% by 2017. Within this context, the Egyptian Electricity Holding Company has developed a generation expansion plan (2012-2017) based on annual load growth rates of 5.9%. The plan involves adding 12, 400 MW generation capacity through the construction of new, or expansion of existing power plants, (among which is the proposed Suez project), with total investments amounting to USD 7.3 billion excluding the projects which will be constructed by private sector. The GOE can only provide up to 40% of this investment needs. It is in this context that Government requested the Bank to finance the Suez project.

3. BANK'S ADDED VALUE

Continuous and reliable supply of electricity is required for the socio-economic development of Egypt. The Bank has been involved in the power sector since 1974 and has, during the course, acquired wide experience in working with the GOE to effectively meet the power sector needs in the country. The Bank has significantly contributed towards making the sector efficient and continues to play a key role in the development of the sector and ensuring sustainable development of the generation capacity to the benefit of the Egyptians. The Bank will also benefit from the project to consolidate its cooperation with other financing partners.

4. KNOWLEDGE MANAGEMENT

The size of this generation project is large compared to the average project size in many other African countries. While Egypt has mastered the technology involved, most of the other African countries are still using smaller units. As their demands and systems expand, there will be need to use the same technology and larger-size units. The knowledge gained by the Bank staff working on the project will be helpful in the future in other member countries, many of which have substantial gas resources. Furthermore, the experience and capacity gained by EEHC technical staff through this project will be beneficial for the implementation of future projects of the same or similar size and technology.

Result-based Logical Framework

HIERARCHY OF OBJECTIVES	EXPECTED RESULTS	REACH	PERFORMANCE INDICATORS	INDICATIVE TARGETS TIMEFRAME	ASSUMPTIONS / RISKS
<p>Goal:</p> <p>To promote economic growth and improve the standard of living of the population of Egypt by developing the supporting power infrastructure.</p>	<p>Impact:</p> <ol style="list-style-type: none"> 1. High GDP growth rate maintained. 2. Increased access to social services including Participation of women in economic sectors improved 	<p>Beneficiaries:</p> <p>Rural and urban population.</p> <p>Economic sectors (industry, agriculture, commerce, etc).</p> <p>Social sectors (schools and health centers).</p>	<p>Impact Indicators:</p> <ol style="list-style-type: none"> 1.1 GDP growth rates 1.2 Contribution of the energy sector to GDP 1.3. Electricity supply to social sectors <p><i>(Source & Method)</i> Government statistics and bulletins. EEHC, EDEPC, EEUCPRA, MEE Annual Reports. National household survey/Bureau of statistics UNDP National Human Development Report. Poverty Assessment/ Ministry of Economic Development</p>	<p>By 2015:</p> <ol style="list-style-type: none"> 1.1 GDP growth rates increased from 6% in 2008/09 to 8% in 2015 1.2 Contribution of Energy to GDP growth rate at least 6.4% 1.3. Electricity supply to social sector maintained at least at 5.6% 	<p>Assumption statement:</p> <p>GoE commitment to full implementation of the energy sector reforms and programs</p> <p>Political and economic stability of the country</p> <p>The current electricity demand continues to grow at the projected rate</p>
<p>Project purpose:</p> <p>To increase the capacity and maintain the reliability of the power generation system to contribute toward meeting the electricity demand on the Unified Power System (UPS) in the short-to-medium term</p>	<p>Medium term Outcomes:</p> <ol style="list-style-type: none"> 1. Installed electricity generation capacity increased 2. Supply of electricity to the UPS increased 3. Availability of power to partially meet new demand 	<p>Beneficiaries:</p> <p>Transmission company, big industries and distribution companies. Women (at least 10% of operation workforce)</p> <p>Commercial, tourism and, agricultural sectors.</p> <p>Households and other Social sectors (schools and health centers).</p>	<p>Outcome indicators:</p> <ol style="list-style-type: none"> 1. Installed electricity generation capacity 2. Electricity generated and supplied to the UPS from the power plant 3. EEHC annual supply growth rate 4. no of consumers increased 	<p>Progress anticipated in the medium term: By December 2017</p> <ol style="list-style-type: none"> 1. The power plant produces max. 650 MW. 2. Total UPS installed generation capacity increases from 23,616 MW in 2009 to at least 41,000 MW. 3 EEHC annual supply growth rate reaches 6.2% to meet demand increase 4 Number of consumers increases from 24.7 million in 2008/9 to 34 million 5. increase reserve capacity from 10% to 20%. 	<p>Assumption statement:</p> <p>Gas for power generation availability assured.</p> <p>Other on-going power generation projects are successfully completed as planned.</p> <p>Electricity distribution infrastructure is developed and maintained to serve new consumers.</p>

<u>Inputs and activities:</u>	<u>Outputs:</u>	<u>Beneficiaries:</u>	<u>Output indicator:</u>	<u>Progress anticipated in the short term: By December 2014:</u>	<u>Assumption statement:</u>
<p>A. Civil works B. supply and installation of equipment C. Installation of Environmental Monitoring system D. Wrap-up Insurance and project management</p> <p>Estimated total cost of the project is USD 972.8 million including FE of USD 643.5 million and LC of USD 329.3 million with scheme of financing as under: ADB : USD 550 million IDB : USD 60.8 million EEHC : USD 362.1 million</p>	<p>A. Civil works constructed B.1. Steam Generators installed. B.2. Steam turbine generator installed B.3. Electro-mechanical Equipment installed. B.4. Switchyard erected B.5. Pumps & Drives installed B.6. Desalination Plant installed B.7. Water and Wastewater treatment plant installed B.8. Instrument Control installed C. Environmental monitoring system installed. D. 1 Project Management team recruited and D.2 Wrap-up Insurance secured</p>	<p>EEHC/EDEPC Suppliers Contractors Consultants Technicians and workers Women (at least 5% of construction workforce) Local community</p>	<p>1. In take structure 2. steam generator installed 3. steam turbine generator installed 4. Number of heat exchangers installed 5. Number of storage tanks 6. Number and capacity of installed transformers 7. Switchyard erected 8. Pumps & Drives installed 9. Desalination Plants installed 10. Water and Wastewater treatment plants installed 11. Instrument Control installed 12. a functioning environmental monitoring system 13. Number of local population employed 14. Awareness and Prevention campaigns for communicable diseases 15. Services for Project Management and Wrap-up Insurance secured</p>	<p>1. All civil works completed including intake and discharge structures 2. one steam generator installed 3. 1x650 MW steam turbine generator & condenser installed 4. Eight (8) heat exchanger installed 5. Two storage tanks installed. 6. Three (3) transformers installed 7. One switch yard installed. 8. fourteen (14) Pumps and drives installed. 9. One water & wastewater treatment Plant installed. 10. One desalination plant installed. 11. An Instrument and control system installed. . 12. All ESMP environmental monitoring equipment installed. 13. At least 85% of workforce to come from Suez area of which 5% will be women during implementation; and of the 350 jobs, 10% be women during operation 14. All workers to receive awareness and prevention information and materials during project implementation on HIV/AIDS/STI and TB, 15. Service contracts signed for Project Management and Wrap-up Insurance secured</p>	<p><i>Risk factors and conditions vital to success</i></p> <ul style="list-style-type: none"> • Increase in equipment cost due to possible increases in prices of oil and materials • High turnover of young professionals at EEHC and EDEPC due to poor remuneration. <p><i>Mitigation strategies</i></p> <ul style="list-style-type: none"> • Price contingencies of 5% on local costs, 3% on foreign costs are used in cost estimate. • EEHC is training more staff and trying to improve the conditions of service • Support to EDEPC from the Engineering Consultant on project management

REPORT AND RECOMMENDATION OF THE MANAGEMENT OF THE AFRICAN DEVELOPMENT BANK TO THE BOARD OF DIRECTORS ON A PROPOSED LOAN TO EGYPT FOR SUEZ 650 MW STEAM CYCLE THERMAL POWER PROJECT

Management submits the following Report and Recommendation on a proposed ADB loan for UA 362.2 million on 6 months Libor Interest Rate to finance the Suez Steam Cycle Power Project in Egypt.

I – STRATEGIC THRUST & RATIONALE

1.1. Project linkages with country strategy and objectives

1.1.1 The sixth National Development Plan (NDP) for Egypt (2007-2012) emphasises socio economic development and poverty reduction as its overall goal. The Plan aims at achieving high annual economic growth rates of up to 8%, to be mainly driven by the private sector, leading to employment generation, cutting down unemployment rate to 5.5% and increased average per capita income by 6% per year. Various measures are adopted for achieving these objectives such as the strengthening of the production and technological capabilities of the Egyptian economy in which the expansion of electricity infrastructure is among top priorities.

1.1.2 Government policies in the energy sector are aimed at securing long-term sufficient and affordable energy supplies to meet the requirements of all segments of the economy, improve sector efficiency, optimize both domestic utilization of the country's energy resources and energy export, fostering regional integration through the implementation of transboundary energy projects, and promoting environmentally sound supply and consumption of energy. Because of the abundant gas reserves, Government policy is to implement an effective natural gas development and domestic utilization strategy to reduce domestic oil consumption with a view to becoming at least self-sufficient in oil supply. GoE is also pursuing a strategy to diversify its energy sources through the development of new and renewable energy resources, particularly wind and solar. The target is to provide 20% of the electrical energy from renewables, mainly hydro and wind, by 2020. The strategy to secure the country's energy supply also includes the promotion of end user efficiency as well as increasing efficiency in the production and transformation processes.

1.1.3 The electricity sector in Egypt has achieved remarkable progress. Access to electricity is almost universal throughout the whole country with coverage over 99%. Electricity has been made available to the various sectors of the economy including industry, tourism, transport, agriculture, the commercial and social sectors. The availability of affordable and reliable electricity has significantly contributed to the growth of the economy. This has also been one of the main factors that helped Egypt attract significant foreign direct investment in the recent years.

1.1.4 Nonetheless, several challenges still remain as demand for electricity has been growing fast as a result of the flourishing economy, population growth and life style enhancement, rapid growth in energy-intensive industries, shifting the economy to cleaner energy (e.g. wide replacement of diesel driven irrigation pumps with electric ones), and extreme and abrupt changes in the weather in Egypt as part of the global climate change.

1.1.5 With a highly urbanized population and a high growth rate of electricity demand, systematic expansion and reinforcement of the electricity infrastructure are imperative should this sector be able to continue to support the planned economic growth and social advancement. Against this background, the Government has made the expansion of electricity infrastructure, including generation, one of its priorities under the 2007-2012 NDP. The overall target is to achieve a 9.1% annual real growth rate of the electricity sector domestic product throughout the NDP, to be realised through increasing the generation capacity by around 7% per year. This should provide the country with sufficient resources to accommodate the expected increase in the number of consumers to 34 million by 2017, hence help maintain the universal electricity coverage that has already been achieved.

1.1.6 The objective of the Suez Project is to enhance the socio-economic development of Egypt by providing infrastructure for increasing the generation capacity in the country to partly meet the electricity demand on the Unified Power System (UPS). When completed, the project will contribute 5.5% of the targeted increase in the installed generation capacity to reach 41 GW by 2017. The Plant will use state-of-the-art technologies firing natural gas in line with GOE efforts to help mitigate climate change and move towards a greener economy.

1.2. Rationale for Bank's involvement

1.2.1 In line with the envisioned economic growth under Egypt's 6th NDP, the EEHC has developed a generation expansion plan based on an annual load growth rate of 5.8% to meet the demand increase and maintain system reliability between 2007/08 and 2016/17. Under this plan, power plants to generate additional 19,400 MW are either under construction or at an advanced project preparation stage, among which is the proposed Suez project. The intervention of the Bank in this project has been requested as a result of the country's need for sustaining its economic growth through the expansion of the enabling infrastructure including electricity. The total investment required for generation expansion up to 2017 is estimated as USD 7.3 billion out of which the Government can only provide no more than 40%. The Bank loan will finance part of the total costs of the project and is within the country's sustainable lending limits for 2010. Without the Bank's support to the Suez project, EEHC might not be able to fill the financing gap, especially that significant portion of the project cost is in foreign currency.

1.2.2 The Bank has always been one of the dominant partners supporting the socio-economic development agenda of the Government of Egypt. Closely aligned with the 6th NDP, the Bank's Country Strategy Paper (CSP) for Egypt (2007-2011) seeks to support two strategic pillars; namely: (i) promoting the private sector and (ii) promoting social development. Supporting the development of infrastructure (power, water and transport) is highlighted in the CSP as one of the key mechanisms to providing the enabling environment for achieving these two strategic pillars. Indeed, the Suez power project is fully aligned with the CSP objectives for various reasons: 1) the availability of electricity to the various sectors of the economy including job-creating sectors such as industry, tourism and agriculture helps the government achieve its objective to reduce unemployment; 2) with today's advanced technology and innovation, the social sectors such as health and education will benefit from the project as hospitals and schools would be able to work longer hours and be equipped with modern equipment; 3) the project will create and strengthen the necessary electricity infrastructure that is essential to support private sector development; 4) specifically within the power sector, the project will help the already well established local manufacturing capacity and capability to further grow by sustaining the local market for equipment and services; and 5) the exposure of the local contractors to such complex projects and by working closely with their international counterparts will help this industry gain wider experience and expertise.

1.2.3 The Bank has developed a track record of expertise in the electricity sector in Egypt and is currently financing three other power projects. In view of the long-term nature of investments in this sector and to reduce transactions costs and uncertainties, the Bank should continue to provide assistance in the expansion of electricity infrastructure to nurture and sustain the envisioned economic growth. The Egypt CSP Mid-Term Review envisioned the Bank support to the power sector to contribute 4,100 MW to Egypt's UPS between 2009 and 2014. The Suez project will comprise 15.8% of this capacity increase. In addition, the continuous support to this sector in Egypt is in line with the Bank's current Medium Term Strategy (2008–2012) which is articulated around stronger sectoral emphasis with significant commitments to infrastructure investments, especially for transport, power and ICT. The proposed project is therefore in line with the Bank CSP and the Government 6th NDP.

1.2.4 Moreover, the strong relationship that the Bank has established with the power sector in Egypt has helped the Bank explore new avenues for engaging with the sector. The Bank, together with the WB, will be helping Egypt exploit some of its ample renewable energy resources, especially wind and solar power, with the aid of the Clean Technology Fund (CTF). Those projects have the prerequisite characteristic of being

replicable, hence should open the door for further investments in these technologies. Egypt is aiming at securing 20% of its energy from renewable by 2020. The private sector is envisioned to provide 60% of the required investments. The Bank is very well positioned to support both public and private renewable energy projects in Egypt based on its solid experience with the sector.

1.3. Donor coordination

1.3.1 Coordination and harmonisation among development partners in Egypt is formally achieved through the Development Partners Group (DPG)¹. Membership of the DPG comprises a wide list of institutions including multilaterals such as the Bank, the World Bank (WB), EIB and EU; bilaterals such as the USAID, Germany, France, the Netherlands and Japan; and UN organisations. Formal exchange among the DPG members takes place through regular monthly meetings, in which EGFO represents the Bank. Besides, coordination among the partners continues bilaterally through various means of communication. In addition to the main DPG, which focuses on general development-related policies and issues, thematic sub-groups tackle sectoral issues such as the one on Environment and Energy which is relevant to the power sector.

1.3.2 The main Development Partners (DPs) supporting the power sector in Egypt, besides the Bank, are the WB, EIB, KfW/Germany, EU/EC, Japan, Spain, Denmark, Islamic Development Bank, Arab Fund for Economic and Social Development (AFESD), Kuwait Fund for Arab Economic Development (KFAED) and the OPEC Fund. Assistance is usually in the form of project finance, whether to co-finance investments or to support capacity building and technical assistance. The energy sector in Egypt has neither a SWAP nor does it have a common basket of resources. However, the EU is currently assessing the need to provide budget support to the energy sector, following the successful completion of a similar program for the water sector over the past three years. The main objective for the EU budget support would be to maintain or better accelerate the pace of ongoing sector reforms. The bulk of the interventions by the DPs goes for supporting the expansion and reinforcement of the energy infrastructure, mainly power generation and transmission. In this regard, the WB, EIB, Kuwait Fund, Islamic Development bank, Organization for Petroleum Exporting Countries (OPEC), Saudi Fund, Abu Dhabi Fund and Arab funds are currently supporting the Giza North and Banha Combined Cycle power plant projects, which form part of the 2017 generation expansion plan together with the Suez project. Wind power projects, whose cost is still relatively higher than conventional power, are typically supported by the bilaterals due to the high concessionality of their finance. The WB and some European Partners are also supporting a transmission expansion project, specifically to connect the planned wind capacity on the Red Sea to the UPS. More details on the key related projects financed by the Bank and other DPs in the country are available in Appendix III.

Sector or sub-sector	Size		
	GDP	Exports	Labor Force
[Electricity sub-sector]	[1.8%]	[0.5%]	[1.36%]
Players - Public Annual Expenditure (average 2007 - 2014)**			
Government	Donors	[ADB]	[14.6%]
[UA 254 m]	[UA 450 m]	[WB]	[13.7%]
[36%]	[64%]	[EIB]	[9.5%]
		[AFSED]	[7.7%]
		[KFAED]	[6.8%]
		[IDB]	[3.4%]
		[Others]	[8.2%]

¹ Formerly called Donors Assistance Group (DAG)

Level of Donor Coordination	
Existence of Thematic Working Groups	[Y]
Existence of SWAPs or Integrated Sector Approaches	[N]
ADB's Involvement in donors coordination	[M]***

** Information related to investments in new power generation projects only

*** M: member but not leader, none: no involvement

1.3.3 During the Bank preparation and appraisal missions, the team discussed with the key development partners in Egypt energy sector issues including Government's plans for making the sector more open to private sector involvement and the measures being implemented towards the restructuring of the energy sector tariffs. The common goal of all the development partners involved in the energy sector in Egypt is to ensure that the GOE continues to rationalize energy prices and to enhance private sector participation in the sector in order to make it more efficient and capable of maintaining adequate supplies to the country at the least cost. Also discussed, were plans for clean energy development in utilization of the Clean Technology Fund (CTF). Egypt is among the countries that are expected to benefit from the CTF. In this regard, the WB and ADB are exploring the possibility of cooperating in financing the first projects using CTF support.

1.3.4 The Suez project will be parallel financed by the Bank and IDB. Experience from the Abu Qir project, which is also co-financed by the two institutions, raises no concerns in terms of conflicts in the rules and procedures. The same Suez project PIT will be utilized by both institutions. Reporting requirements will also be harmonized as applicable. In this regard, the same project progress reports will be used by both the Bank and IDB, whereas project audit reports are only required by the Bank.

II – PROJECT DESCRIPTION

2.1. Project components

To objective of the project is to increase the capacity and maintain the reliability of the power generation system to contribute toward meeting the electricity demand on the Unified Power System (UPS) in the short-to-medium term

The project involves the design, supply, construction and commissioning of a 650 MW steam power plant to be located in the vicinity of Suez city approximately 150 km east of Cairo. The power station will be dual (gas / mazout) fired with a gross installed electrical generating capacity of (650 MW). To evacuate the power generated from Suez power plant it is planned to interconnect to the 220 kV network through the rehabilitation of the existing double circuit over-head transmission line to Suez (2) and implementing two additional 220 KV underground cables. The Egyptian Electricity Transmission Company is responsible for network expansion, upgrading, ownership and operation; therefore the transmission line costs were not included in the overall project cost.

The outcome of the project is the increase in the Installed electricity generation capacity towards the midterm target of 41,000 MW, increase in the supply of electricity to the UPS to meet the annual demand increase of 6.2 % and guarantee the availability of power to increase the number of consumers from 24.7 million in 2008/9 to 34 million in 2017.

The main components of the project are:

- A. Civil Works,
- B. Supply and installation of the following major equipment,
 - B.1 One outdoor dual fuel fired (natural gas and mazout) steam generator, subcritical and Auxiliaries.
 - B.2 one indoor condensing steam turbine generating unit rated at 650 MW with and Auxiliaries,
 - B.3 Necessary balance of plant auxiliary equipment,
 - B.4 Switchyard,
- C. Environmental Monitoring, and
- D. Project Management and
- E. Wrap-up Insurance.

Appendix IV outlines the main components of the project including their cost estimates and the procurement packages involved in each component , including Designing, Fabrication, Furnishing and Installation , start-up and commissioning (more detailed description of the project is available in Annex C).

2.2. Technical solution retained and other alternatives explored

2.2.1 The demand for power in Egypt in the last ten years has been mainly through construction of various types of thermal power plants located on the coast of the Mediterranean Sea or in gulf of the Red Sea and river Nile. The decision to construct thermal power plants was arrived at after a study for the generation sequencing of power plants concluded that: (i) major hydropower sites in Egypt had already been developed and (ii) imports from neighbouring countries with which Egypt is interconnected is limited as Egypt has been a net exporter to these countries.

2.2.2 Currently several thermal plants including combined cycle, steam and supercritical plants are under construction in various parts of the country. Each plant being built has been carefully selected in accordance with the study which has established a mix which should not be exceeded due to technical considerations. The proposed project will be constructed in existing Suez power plant 150 km northeast of Cairo after removing the existing old units. The site is located in the boundary of Suez city. Gas will be used as main fuel and mazout as a back-up for firing the boilers. Mazout will be supplied from the refinery adjacent to the power plant site. The gas line supplying the Sokhna power plant is at 2-3 km distance from the project site. The gas supply company is studying options on the reinforcement and extension of the pipeline to the Suez power plant site. There is an existing double circuit 220 kV transmission line to evacuate the power with a need to implement additional double circuit 220 kV underground cables. The power is required by the 1st quarter of 2015 and the subcritical steam cycle power construction period is 45 months, i.e. 8-10 months shorter than the time required to implement a supercritical steam cycle power plant. The main reasons for selecting the subcritical steam cycle plant are indicated in the table below:

Table 2.2: project alternatives considered and reasons for rejection

	Description of Technology	Reason for rejection
Alt.1	Importing electricity	Egypt is interconnected to Libya and Jordan and is exporting electricity to both countries. As they are net importers, there is currently not much scope for electricity imports to Egypt from interconnections
Alt.2	Rehabilitation of existing power plants	EEHC has concluded that the rehabilitation option is cost effective in seven of its existing power plants, and these sites have already been or will be rehabilitated. However, these efforts are not enough to cope with the growing demand for electricity.
Alt.3	Hydropower plants	Large sites have already been developed. Only 10% of the potential mainly mini-hydro remain to be harnessed
Alt.4	Gas turbine / Combined cycle	<ul style="list-style-type: none"> Extremely polluted emissions from the refinery adjacent to the power plant which would cause excessive maintenance interruptions and eventual damage to the gas turbine. The existing Suez plant site is limited to 66475 m2 which encompass one unit steam turbine plant and the estimated area for a combined cycle module of 650 MW requires around 80000 m2.
Alt. 5	Supercritical steam cycle	The Supercritical plants have 8 to 10 months longer implementation period than the Subcritical. Egypt is currently facing severe electricity shortage and needs to bring the new plant into operation in the shortest possible time.

2.3. Project type

The proposed project is a stand alone project and conforms to the objectives of the energy sector strategy to which other financiers are abiding. Given the multiplicity and size of contracts, stand alone type is preferred as opposed to budget support.

2.4. Project cost and financing arrangements

The cost of the project is estimated in US dollars based on recent contract prices of similar steam cycle power plants undertaken in Egypt in the recent past or under construction (Abu Qir, Ain Sokhna, Cairo West). The cost of the project, excluding Interest During Construction (IDC) but including physical contingencies (10%), price contingencies (3% for foreign exchange cost and 5% for local costs) and custom duties is estimated at US\$ 972.8 million (UA 640.7 million), of which US\$ 643.5 million (UA 423.8 million), 66 % is in foreign exchange and US\$ 329.3 million (UA 216.9 million) 34% is in local costs. While the detailed cost estimates are presented in Annex B5, the summary of the cost estimates by component, sources of financing, project cost by category of expenditure and expenditure schedule by component are shown in tables 2.3, 2.4, 2.5 and 2.6 below.

Table 2.3: Project cost estimates by component

Components	Estimated Cost (Mil. US\$)			Estimated Cost (Mil. UA)			FC, %
	FC	LC	TOTAL	FC	LC	TOTAL	
Civil	38.0	74.3	112.3	25.0	48.9	74.0	34%
Project management & Wrap-up insurance	26.0	23.9	49.9	17.1	15.8	32.9	52%
Environmental monitoring	1.0	0.6	1.6	0.7	0.4	1.1	63%
Supply and installation	503.0	117.8	620.8	331.2	77.6	408.8	81%
Total base cost	568.0	216.7	784.7	374.0	142.7	516.8	72%
Physical contingency	56.8	21.7	78.5	37.4	14.3	51.7	72%
Price Contingency	18.7	11.9	30.7	12.3	7.8	20.2	61%
Custom	0.0	79.0	79.0	0.0	52.0	52.0	0%
Total project cost	643.5	329.3	972.8	423.8	216.9	640.7	66%

It is envisaged that ADB, IDB and the Generation Company EDEPC shall in parallel finance the project.

Table 2.4: Sources of financing

Sources of financing	Mil. USD			Mil. UA				% total
	FC costs	LC costs	Total Costs	FC costs	LC costs	Total Costs	% of FC	
ADB Group	550.0	0.0	550.0	362.2	0.0	362.2	100%	57%
IDB	20.9	39.9	60.8	13.8	26.3	40.0	34%	6%
EEHC	72.7	289.4	362.1	47.9	190.6	238.5	20%	37%
Total project cost	643.5	329.3	972.8	423.8	216.9	640.7	66%	100%

Table 2.5: Project cost by category of expenditure

Categories of expenditure	Mil. USD			Mil. UA			% of Category
	FC costs	LC costs	Total Costs	FC costs	LC costs		
Works	542.0	192.8	734.8	356.9	127.0	483.9	76%
Services	20.0	20.8	40.8	13.2	13.7	26.9	4%
Miscellaneous	6.0	82.1	88.1	4.0	54.1	58.0	9%
Total base cost	568.0	295.7	863.7	374.0	194.7	568.8	89%
Physical contingency	56.8	21.7	78.5	37.4	14.3	51.7	8%
Price Contingency	18.7	11.9	30.7	12.3	7.8	20.2	3%
Total project cost	643.5	329.3	972.8	423.8	216.9	640.7	100%

Services = consultancy services

Miscellaneous = Customs + insurance

Table 2.6: Expenditure schedule by component [amounts in million UA equivalents]

Components	Yr1	Yr2	Yr3	Yr4	Yr5	Yr6	Total
A. Civil Works	0.00	0.00	37.92	35.35	33.12	9.59	115.97
B. Supply & installation of equipment	0.00	53.40	70.84	125.16	86.00	31.44	366.84
C. Environmental monitoring	0.00	0.00	0.16	0.82	0.00	0.09	1.08
D. Project management & Wrap up insurance	3.67	5.18	7.02	6.82	4.99	5.19	32.88
Total Base Cost	3.67	58.58	115.95	168.15	124.11	46.30	516.76
Physical Contingency	0.00	0.00	0.00	0.00	10.10	10.10	20.19
Price Contingency	0.00	0.00	0.00	0.00	25.84	25.84	51.68
Customs	0.00	0.00	2.96	24.30	23.38	1.38	52.02
Grand Total	3.67	58.58	118.90	192.45	183.42	83.62	640.65

2.5. Project's target area and population

The Suez site is located about 3km south of the city of Suez, Ettaqa District, in Suez Governorate, on the northern shoreline of the Suez Gulf; approximately 150 km East of Cairo. The proposed 650 megawatts (MWe) power plant site is within an existing walled compound covering an area of approximately 90,549 m². The site is within an industrial area occupying a piece of land assigned to by the Suez Petroleum Refinery Laboratory (SPRL). The direct beneficiaries of the project are the population of Ettaqa District and those of Suez Gulf Governorate with an estimated population of 0.511 million (2006). Since the power to be generated will feed into the national grid through the UPS, the overall beneficiaries will be the national population that will benefit from an increase in reliable power supply. Egypt is experiencing unprecedented demand growth for electricity estimated at an annual rate of 6.2%. The national electricity access rate is already at 99.3% implying that the outcomes of the project will be realized within both urban and rural populations where it will boost the formal and informal sectors in industry, agriculture, and tourism in so doing contribute to employment creation. Additionally, the quality of social services especially schools and hospitals will improve with access to stable and affordable electricity supply.

2.6. Participatory process for project identification, design & implementation

2.6.1 The Suez Power Plant is a project with national importance hence its identification was within the context of the priorities in the energy sector strategy (2012-2017). The overall national development programs in the seventeenth Five-Year Development Plan (2012-2017) identified increased investments in electricity and energy as a priority necessary ingredient for economic and social development of Egypt. The preparation and adoption of the Plan is a process that embraces participation among different facets of the population through to the legislative representation. The plan is supported by the private sector which is in dire need of adequate and reliable electricity supply.

2.6.2 The site selection and technological design were as a result of several assessments of alternatives. The final decision on site settled on the existing piece of land allocated to previous Egyptian Electricity Authority (EEA - today EEHC) by Contract signed with the SPRL which was renewed between the EDEPC and SPRL in 2007. There are a wide variety of potential designs for the proposed 650 MW power plant which considered technical, economic and environmental issues. Key design features of the power plant was a recommendation of the Consulting Engineers assigned to carry-out the feasibility studies and endorsed by EEHC according to national policies and plans in power generation technology mix.

2.6.3 Interests of stakeholders (local communities, government agents, NGOs, civil society) were considered during design, planning and development of Suez Power Project through consultations conducted as part of ESIA study. Stakeholders' interests were taken into consideration and will continue to be received during construction and operation. Development agencies have participated and shared their views through the energy sector group deliberations

2.7. Bank Group experience, lessons reflected in project design

2.7.1 Since 1974, the Bank supported the expansion of the power sector in Egypt through co-financing the development of seven power generation plants, one transmission project and two rural electrification projects. The Bank also provided grant funds for the studies of solar heat and conservation, Egypt-Zaire power interconnection with the Grand Inga Hydropower site, and the Eastern Nile Power Trade Program Study which aimed at promoting regional power trade between Egypt, Ethiopia and Sudan. All the projects were successfully completed and the Project Completion Reports (PCRs) or Project Performance Evaluation Reports were prepared (except for the studies and few of the very early projects). A review of the Bank assistance to the power sector² revealed that the projects were consistent with the country's overall development plans. The development objectives of the projects were met as a result of the projects achieving their planned outputs and deliverables. In quantitative terms, by the end of 2004, the Bank-supported power generation projects provided some 4,000 MW to the UPS (about 31% of the installed capacity then) while the rural electrification projects connected three towns and close to 200 villages. Indeed, the projects have been effective in making a significant contribution to the development of the main power infrastructure considered to be an engine for Egypt's socio-economic development.

2.7.2 Currently, the Bank is co-financing three ongoing power generation projects: Kureimat Combined Cycle Power Plant Project (Module III); Abu Qir 1300 MW Steam Power Plant Project; and the Ain Sokhna 1300 MW Steam Power Plant Project. These projects represent a cumulative lending amount of UA 666.99 million, accounting for about 50.5% of the active portfolio's net commitment value. Generally, the last Country Portfolio Performance Review (CPPR)³ undertaken in May 2008 identified the following major problems affecting smooth implementation of some of the ongoing projects in Egypt: i) delays in lapse of time between approval, effectiveness and first disbursement; (ii) non-adherence to Bank procurement and disbursement rules and procedures due to lack of understanding of those rules by the PIUs; (iii) non-compliance with the reporting requirements by PIUs; and (v) weak capacity of some PIUs, especially in the social sectors. Both the Bank and GOE worked steadfastly to address these issues, as observed by the recently concluded CSP mid-term review for Egypt. Several factors contributed to the improvement, including: (i) stricter supervision of the projects; (ii) continuous dialogue and improved working relationships between EGFO, GOE and counterparts in the relevant ministries; (iii) increased awareness among PIUs regarding Bank procedures through routine training workshops; and (v) efforts to reduce the delays of official responses by the Bank.

2.7.3 Some of these problems affected the ongoing Bank projects in the energy sector, in addition to other sector specific issues. Examples of the challenges faced in power projects implementation include financial shortfall for some projects due to the global rise in material costs and high demand on equipment, multiple packages without adequate oversight/involvement by the consultant in preparing the detailed engineering and design, annual audit reports that fell short of Bank standards, and unsatisfactory performance of some contractors. More recently, a power project proposed for Bank finance faced opposition by the local population due to unsatisfactory public consultation process, which eventually led to suspension of the project. Nonetheless, the overall implementation progress of the ongoing power projects was rated satisfactory by the last field supervision. Generally, the projects are progressing well and according to the planned schedules. The Kureimat project is due for completion by the end of 2010, experiencing a delay of six months which is acceptable given the complexity of such projects. Experience with the co-financing of the ongoing projects with other DPs and the GOE (EEHC and its subsidiaries) is also very positive. In fact, the financing plans of the projects were designed so as to allow the DPs to parallel finance the foreign costs of the various project components, with EEHC co-financing the local costs. This arrangement has been working very efficiently so far and no project delays were experienced because of lack of funding.

2.7.4 On the other hand, the longstanding collaboration between the Bank and the sector has gained both parties valuable experience. For instance, EEHC's familiarities with Bank policies and procedures have been

² ADB/BD/WP/2005/43 (29 April 2005)

³ ADF/BD/WP/2008/76 (26 August 2008)

timely. With regards to reporting, non-compliance with Bank audit and environment reporting requirements has been an issue in the Kureimat project only, mainly because the executing agency was relatively new and lacked the full familiarity with Bank rules. Measures have been put in place to ensure compliance for subsequent projects, and the projects have been able to meet this requirement successfully.

2.7.5 All this experience gained from previous projects has influenced the design and will help implementing the Suez project. For example: (i) the cost of the project is estimated based on recent contract prices of similar technology power plants undertaken in Egypt in the recent past or under construction, including price contingencies providing enough room for price fluctuations; (ii) an experienced engineering consulting firm will provide project design and site supervision; (iii) a private auditor will be engaged to audit project finances according to Bank requirements; and (iv) the Egyptian Electricity Holding Company (EEHC) has provided a competent team to assist the East Delta Electricity Production Company (EDEPC), its subsidiary, to implement the project with the support of the consulting firm. Moreover, the Bank will closely monitor the preparation and implementation of the environmental and social impacts and safeguards of the project, including the public consultations, to ensure that they meet Bank and international requirements. The Bank is also assessing the need to provide capacity building to EEHC for strengthening their capability in dealing with environmental and social issues.

2.8. Key performance indicators

2.8.1 The key performance indicators for the project will be (i) installation of the various project components in a timely manner, (ii) total installed capacity at the new power station, (iii) amount of power generated into the national grid, (iv) compliance with the environmental and social management plan, and (v) timely project completion. The source of data to confirm these indicators will be EEHC's statistical reports. Progress during implementation will be monitored by establishing an effective project implementation team, regular Bank supervision, timely commencement of the works, timely disbursements, and timely submission of quarterly progress, environmental monitoring, and annual audit reports.

III – PROJECT FEASIBILITY

3.1. Economic and Financial Performance

Table C.1: key economic and financial figures

FIRR, FNPV	12.4%, USD 256 million
EIRR, ENPV	(18%, US\$ 495.83 Million)

The project is the least cost option to provide 650 MW generation capacity to the UPS by FY2014. It is technically feasible, financially and economically viable (FIRR 12.4%, and EIRR= 18%). Moreover, the sensitivity analyses at different adverse scenarios relative to the base case scenario give estimates of the FIRR ranging from 8.9% to 19.5% and an EIRR ranging from 5% to 23%, which provide comfort as to the robustness of these estimates against identified downside risks. Annex B.7 presents the basic assumptions used.

3.2. Environmental and Social impacts

Environment

3.2.1 The project is classified as category 1, according to the Africa Development Bank's Public Sector Environmental and Social Assessment Procedures (ESAP 2001) and due to the size of the plant, which exceeds generation capacity of 30 MW. Therefore, PGESCo, an independent Egyptian environmental consulting firm, prepared a comprehensive Environmental and Social Impact Assessment (ESIA) report for the project. The ESIA includes an Environmental and Social Management Plan (ESMP), detailing institutional settings, mitigation measures, and monitoring plan for the potential impacts expected during the construction and operation phases. A full ESIA Summary was posted on the Bank's Public Information Centre on July 23, 2010 with reference P-EG-FAA-016.

3.2.2 The key environmental issues associated with the plant include emission of oxides of nitrogen to the air; generation and disposal of liquid effluents including cooling water. Other environment impacts are expected to be non-significant, reversible and non-cumulative primarily construction related such as increased dust, noise, and vibration, etc., in addition to water quality related impact from construction of the water intake and discharge structures on the Suez. Furthermore, traffic impact may be expected to occur during a short period at peak construction in the form of increased congestion on the main roads to the power plant. All of these impacts are expected to be localized, short lived, and reversible. Mitigation measures are included in detail in the ESMP. All the mitigation, monitoring and management measures proposed will be adopted by the EDEPC and imposed as conditions of contract on the contractor and any sub-contractors employed to build or operate any part of the power plant. The assessment of the potential impacts are within the acceptable limits of Egyptian and World Bank pollution abatement guidelines and no significant environmental impacts will occur on the ambient air quality or the aquatic environment. The total cost for the mitigation and monitoring is estimated as \$2.8 Million, of this USD500 – 800 thousand will be used for monitoring the ESMP for demolition. Although the project is not expected to trigger major social impacts, measures have been put into place to avoid or minimize any negative impacts that may potentially occur.

3.2.3 Following the review of the environmental and impact assessment of the Suez Power Plant Project, it has been recognized that the ESIA for the Suez Project and other related projects have been drawn on area specific impacts assessments (ESIAs) and mitigation measures. The Bank raised the need for the Egyptian Government to consider assessing the cumulative impacts caused by the past projects and the potential impacts of the future projects. Of significant importance are the potential impacts of the cooling water returning to the sea. The Bank has, therefore, recommended that a Strategic Environmental Assessment (SEA) for the Suez Gulf and the Gulf of Aqaba be carried out. The Bank will follow-up with the Egyptian Authorities and validate the needs and scope of the assessment to be conducted including the jurisdictional boundaries, duration and sources of funds. Additional information about the proposal is provided in Annex B8.

3.2.4 **Heated cooling water** will be discharged into the Suez Gulf via the cooling water discharge structure at a temperature of no more than 8°C at the point of discharge. Thermal modelling of the discharge plume shows that, during lowest flow at full load operation, the point at which the plume has decreased in temperature to 3°C above ambient, lies at approximately less than 100 m from the point of discharge. The mixing zone has been defined by the HRI/MWRI to be 100-150 m from the point of discharge at the Nile waters and 150-300m at the sea waters. The temperature of the returned cooling water at the point of discharge conforms to the Egyptian Standard, and the discharge as modelled satisfies the World Bank standard of a maximum increase of 3°C above ambient at the edge of the mixing zone (100m from the point of discharge). In addition, the area affected by the highest temperature increases and therefore where aquatic ecology is likely to be most affected, is localized and the aquatic habitats in this area have been found to already be relatively impoverished. Outside this area, more marginal increases in the Suez Gulf shoreline water temperature are likely to create new or improved habitats for flora and fauna

Climate Change

3.2.5 Natural gas has been selected as the main fuel for the power plant. Compared to other fossil fuel generating technologies, gas fired steam generators have relatively low emissions of carbon dioxide (CO₂), moderate emission levels of nitrogen oxides (NO_x) and the lowest emission levels (almost traces) of sulphur dioxide (SO₂) and particulates. For power generation processes, CO₂ is the key emission of concern, as methane and CFCs are not emitted by power plants and none of the other greenhouse gases are emitted in sufficient quantities from power generation to be considered critical in terms of the greenhouse effect.

Gender

3.2.6 The project is not expected to cause any major negative impacts on either women or men both during construction and implementation. At implementation stage, the project will offer employment opportunities to both men and women. While the nature of work and work environments may be viewed to disfavour

women, never-the-less, and based on feedback received from the EDEPC, it is expected that about 5% of the total workforce will be women mainly working in administration and services such as catering and cleaning. Further indirect jobs of cleaning and catering will be created to serve the estimated 800 employees who will come into Suez from outside. This will create an estimated 160 jobs or 20%. During operation, approximately 350 jobs will be created out of which 10% will be women.

3.2.7 The Egyptian Government working with development partners such as UNFPA are supporting the National Council for Women in promoting gender mainstreaming in national planning at the national and local levels and monitoring and evaluation of gender projects in the 29 governorates. The program also provides training on Gender Budgeting and Performance Based Budgeting for Central Ministry personnel and planners on the governorate level. This aims at promoting women's leadership in the public and productive spheres of politics, economy, and society; in parliament, business, media, culture, religious institutions, trade unions and civil society institutions.

3.2.8 Much of what is being promoted is seen at EEHC and EDEPC where women are present in executive and managerial positions. Example of positions held by women within EEHC include: the executive board member for affiliate companies; the sector head of the following departments: Strategic Planning; Costing, Commercial and Administrative Affairs for the Companies; Human Resources; Economic and Financial Studies for Companies; in addition to a large number of women holding general manager positions. Within EDEPC, one of six board members is a woman. Furthermore, gender sensitization is being given greater prominence, with the recent creation of gender focal points within the EEHC and its affiliated companies. At EDEPC, a focal point has been nominated whose responsibilities will include training and creation of gender disaggregated employment data.

Social

3.2.9 Egypt is no longer classified as a subsistence economy although it still has an estimated 23.2% of its population considered poor. Unemployment is relatively high at 8.9% (2007) although the number of the jobless has fallen from 32% in 1998 to 24% in 2009. The Suez Governorate, however, is better-off in many respects across the country ranked at number 2 out of 13 Governorates with the GDP index estimated at 0.811 compared to the national average at 0.689 and Cairo at 0.748. The Suez Power Plant will have positive socio-economic impact on the wider Suez Governorate and Giza through the creation of employment opportunities, enabling supply contracts, effects of project expenditures within the local economy, and attraction of economic investment into the area. The power plant is expected to employ approximately 2000 - 2500 workers during the three year period of implementation. Out of this about 85% will come from within Suez area and the rest from Cairo metropolitan. While most of the fabrication will take place prior to delivery to the site, all erection of structures and installation of equipment will use local craft labour. During operation, the power plant will employ approximately 350 people. Given an estimated average pay level of USD 150 per month for semi-skilled and unskilled labour, the total wage bill will be approximately USD 3.8 million per year for 3 years. Thereafter, during operation, the power plant will have a payroll (including benefits and overtime) of approximately US\$ 1.9 million per year. The local economy will receive a stimulant assuming that 70% of the income will be spent in Suez area.

3.2.10 Most of the negative social impacts coming out of the project will be confined to the construction period where the area will be experiencing noise, dust and traffic congestion caused by heavy vehicles bringing in materials. These impacts will be experienced both during the demolition of the existing plant and during construction of the new plant. Mitigation measures have been elaborated in the ESMP of the project. Among the communicable diseases of concern in the area are hepatitis, and Tuberculosis (TB). The prevalence of TB was estimated to be 32 in every 100,000 people. Government is conducting programs to combat its spread through among other programs, DOTS (Directly Observed Treatment Short courses) whose treatment success rate was at 70% in 2005. The existence of HIV/AIDS in Egypt is very low at less than 0.1%. Although the prevalence is low, development partners such as USAID, UNFPA, UNICEF and others are working with Government to enhance awareness which is also very low. According to the EHDR (2010) only 7% of women and 18% of men had comprehensive knowledge about AIDS. On its part, the

project has incorporated a component of HIV/AIDS, TB and hepatitis awareness and prevention through workshops, information leaflets and peer education for construction workers as part of the ESMP measures through an independent service provider.

Involuntary resettlement

3.2.11 The power plant will be constructed on an existing plot belonging to EDEPC, and power will be evacuated through existing transmission lines. In this context, the project does not impact on any settlements or assets belonging to other parties. This has been verified and validated by the ESIA findings that the project will have no direct impacts on land use or terrestrial resources for communities around the project area. The socio-economic impact that will arise is mostly to do with potential job losses among the estimated 300 employees under the existing power plant. Present work force has been granted the right to choose where they will go to work within the entire EDEPC whose management has set quite fair rules for re-employing all members of the old Suez Staff with no-loss of their employment rights, including salaries, overtime, insurance, health care and social & cultural benefits. Hence EDEPC has taken measures that have ensured that all employees be absorbed either directly by EDEPC or take leave without pay to work for the companies that are carrying out the demolitions. Of the 300 employees, 250 will be retained on the new Suez Power Plant pay-roll and 50 will be redeployed to EDEPC. Although a considerable number of workers will be re-employed elsewhere in the greater EDEPC area, their families/homes will remain in Suez, i.e. no resettlement or loss of income will take place as a result of the re-deployment.

IV. IMPLEMENTATION

4.1 Implementation arrangements

Institutional

4.1.1 The EDEPC through EEHC will be the Executing Agency and Beneficiary of the proposed Bank loan. The Power Plants Projects Department of EEHC will be assigned to oversee the overall implementation of the project and to liaise with the Bank. The direct implementation of the project will be under the responsibility of the East Delta Electricity Production Company (EDEPC). The day-to-day implementation of the project will be under the responsibility of a Project Implementation Team (PIT). The PIT will be set up from the existing staff of the EDEPC, following a similar structure to those in previous projects financed by the Bank in the energy sector in Egypt. The PIT will comprise a Project Manager, 1 Mechanical Engineer, 1 Electrical Engineer, 1 Instrument and Control Engineer, 1 Civil Engineer, 1 Environmentalist, 1 Finance Expert and 1 Procurement Expert. All members of the PIT must have at least university degrees in their respective disciplines and minimum 10 years work experience of which 3 years in project supervision. The involvement of an engineering consultant will reinforce the capabilities of EEHC/EDEPC.

4.1.2 Implementation of the measures stipulated in the ESMP and all environmental permits will be enforced and supervised by the Assistant Plant Manager who will have direct responsibility for the Environment, Safety and Quality Assurance program on site during demolition, construction and operation.

4.1.3 EEHC and its subsidiary generation companies have the technical and managerial ability to implement the project as already demonstrated by the successful implementation of similar existing power generation projects in different regions of Egypt. In general, the Bank experience with EEHC through the implementation of the three ongoing power projects has been very positive. EDEPC is the generation company currently executing the Bank financed Ain El-Sokhna power project. With nearly two years of project execution already elapsed, EDEPC's performance in the Ain Sokhna project is commendable. Through this project, EDEPC has become very familiar and comfortable with Bank rules and procedures. EDEPC has been keeping good track of all the reporting requirements under Ain Sokhna, with some reports, e.g. on project progress and environment, being submitted more frequently than is actually required by the Bank. It is anticipated that EDEPC will be able to successfully implement the Suez project without difficulty.

Procurement

4.1.4 According to the project financing plan, all Bank financed packages will be under the Works category. Procurement of all packages financed by the Bank will be through International Competitive Bidding (ICB) in accordance with the Bank's Rules and Procedures for Procurement of Goods and Works. The two-envelope bidding system (separate technical and financial bid envelopes), currently successfully utilized in on-going Bank financed large infrastructure projects, will also be used in the Suez project. The procurement of all packages financed under this loan, except these two packages, (i.e., 1. Steam generator (boiler) and 2 .Steam turbine generator and condenser) shall be procured using the Bank's standard bidding document (SBD). Procurement will be subject to prior-review, so the Executing Agency will submit to the Bank the various documents that require Bank review and approval before the documents are finalized and become effective. Both EDEPC and the project engineering consultant (PGESCO) have become very familiar with the Bank procurement rules and procedures through the implementation of the Ain El-Sokhna power project. A procurement plan for all the packages anticipated under the project has been prepared by EEHC and submitted to the Bank (Annex B5). In order to meet the tight project implementation schedule, the borrower has expressed willingness to request Advance Contracting in which case the necessary procedures shall be followed to consider the request. More details on procurement are provided in Annex B.5.

Disbursement

4.1.5 The Direct Disbursement and/or Reimbursement Guarantee/Letter of Credit methods will be used for the ADB financed components. However, other Bank disbursement methods will be used if necessary with prior Bank approval. Further details are provided in Annex B.4.

Financial Management

4.1.6 The project implementation team (PIT), with support from the EDEPC Finance Department, will assume responsibility for the project financial recording, budgeting, reporting requirements, and handling the loan disbursement arrangements, including supporting documentation. The same arrangements have proven satisfactory and effective under the implementation of previous and on-going Bank funded projects. Annex B.4.1 provides more details on the overall implementation arrangements and financial management responsibilities of the PIT as well as an assessment of the country systems in place.

4.2. Monitoring

4.2.1 The project will be implemented over a period of 57 Months. Some activities have already started in July 2010 for preparation of preliminary designs and tender documents. The contract for supervision and management, which is financed by EDEPC, has already been awarded through competitive bidding. According to the current plan the project is expected to be completed in April 2015. The critical dates for the implementation of the project are given in Annex B.9 table B.9.1.

4.2.2 The Project will be field supervised from headquarters at least once a year from 2011 through to 2014. In addition, the Egypt Field Office (EGFO) will carry out field supervisions once a year or on a need basis. The coordination of the missions will be done by the Ministry of International Cooperation in collaboration with EEHC and EGFO. The field missions will be undertaken in accordance with the tentative schedule presented in Annex B.9 table B.9.2.

4.2.3 The PIT, in liaison with the consultant, will prepare and submit to the Bank quarterly progress reports. In addition an audit report, complying with the Bank's draft TORs for external auditors, will be prepared and submitted to the Bank six months after the end of every financial year. During implementation, monitoring of ESMP will be done by EDEPC's Environment Division through PIT and annual environmental reports will be prepared by the PIT and submitted to EEHC, the Bank, and, on request, to EEAA. During operation, monthly reports will be prepared by EDEPC (Plant Environmentalist) and submitted to EEHC and EEAA, accordingly.

4.2.4 ESMP Monitoring during implementation will be carried out by the Project Implementation Team (PIT), which includes the Environmental Management Staff (EMS) in accordance with Egyptian Environmental Affairs Agency (EEAA) techniques and standards. Monitoring during operations will continue to be with the PIT/EMS under direct supervision of the Plant Manager who reports directly to the Chairman of EDEPC.

4.3. Governance

4.3.1 EEHC was established in 2000 by Law 164/ 2000 as a wholly state owned joint stock company under the Companies Act. The principal responsibility of EEHC is to provide for generation, transmission and distribution of electricity in Egypt through its 16 subsidiaries: six generation companies, one transmission company and nine distribution companies.

4.3.2 The EEHC's Board of Directors include a representative from the Ministry of Electricity & Energy, Ministry of Planning, Ministry of Finance, and Ministry of Petroleum, and the Central Bank of Egypt; five professionals with expertise in different fields; and one representative from the labor union. The Board, which holds two monthly meetings, deliberates on policies and provides strategic direction to the Company's operations; reviews performance of the Holding Company and its subsidiaries.

4.3.3 The EEHC is committed to good corporate governance. Under the Chairman of the Board of Directors is a Board member responsible for financial and administrative matters. The internal control environment at EEHC and its subsidiaries is adequate, with effective prior review of expenditures and commitments provided by the compliance sections of the respective accounting departments. Responsibility for external audit of EEHC's financial statements is statutorily vested in the Central Auditing Organization which carries out annual audits for all parastatal entities in the country. However, a private audit firm, with terms of reference approved by the Bank, will carry out annual audits of the project accounts for submission to the Bank. At the EDEPC level the PIT will include a dedicated accountant to maintain accounting and financial records.

4.3.4 With regards to *the governance of energy sector* as a whole, Egypt has emerged as a strong supporter of transparency and reform in oil and gas sub sector. The People's Assembly of Egypt voted to ratify the UN Convention on Anti-Corruption in December 2004 and the country deposited the instrument of ratification on 25 February 2005, to be the 18th country to ratify the convention. In addition, the French government has been working with the Ministry of Justice (MOJ) to further enhance Egypt's participation in implementing the requirements of the Convention against Corruption. This was further given impetus by the ongoing energy forum between the EU and MENA states where oil and gas revenues transparency features prominently because of the EU Transparency Obligation Directive. In fact, the directive requires EU states to promote public disclosures of payment to government by extractive companies listed in the European stock exchange. Furthermore, a National Committee on Transparency and Integrity was established in 2007 to support efforts to combat corruption and enhance transparency and accountability in public affairs. It involves both administrative and civil society representatives and acts to support the implementation of the UN Convention on Anti-Corruption.

4.4. Sustainability

4.4.1 GOE's commitment to the project and its objectives is strong as the project is absolutely necessary to secure the provision of energy supply in a sustainable manner through investment in new generation capacity. Evidence of this commitment is manifested in the accelerated way project preparation documents were submitted to the potential donors, the hiring of an engineering firm for project supervision and management. Commitment of the Government to the financial sustainability of the sector as a whole is also manifest in the track record of annual adjustments in tariff rates since 2004.

4.4.2 The project design is based on a well-established technology that can deliver the anticipated output over the economic life of the plant. EEHC has both the technical and managerial capacity to operate and maintain the plant while Egypt has a large pool of well-qualified personnel from which the utility can readily replenish its manpower requirements over the project life.

4.4.3 The financial sustainability of the project, and indeed EEHC's long-term institutional sustainability is not at risk. The financial analysis shows that the project will be able to generate adequate funds to cover the annual operating costs (O&M and fuel costs), which average 83 million annually. These operating costs represent about 35% of the project's average annual financial benefits, estimated at 157 million.

Tariffs

4.4.3 The tariff rates in Egypt are classified under 6 end-user customers, namely, power services on very high voltage, high voltage, medium and low voltage, residential, commercials and public lighting. According to the 2008 tariffs structure, the tariff rates are also varying among different end-users as indicated in Annex. It's worth noting that residential customers are divided into 6 categories depending on level of electricity consumption in order to protect the most vulnerable group of society.

4.4.4 Since 2004 Government has embarked on a medium term strategy that is leading to the financial sustainability of the sector. The strategy involves a progressive return to full-cost recovery tariffs, better disconnection policy and clearing of government arrears. In this respect Government approved an 8% tariff adjustment in 2004 and a further 7.5% annual tariff adjustment up to FY2013/14, during which period Cabinet approval will not be required. By introducing full cost recovery tariffs progressively over a number of years, the strategy will ensure that tariff changes do not adversely affect economic performance and welfare in a dramatic way.

4.4.5 Furthermore, in August 2007, the government agreed to a three year subsidies removal plan on gas and electricity tariffs for energy-intensive industries (targeting specifically the steel, cement, aluminum and fertilizer companies). In June 2008, this plan was accelerated for the increases to be implemented with immediate effect at the following prices: 20.2 Pt/kWh (3.8US¢/kWh), 24.5 Pt/kWh (4.6US¢/kWh) and 33.4 Pt/kWh (6.3US¢/kWh) for UHV, HV and Medium voltage respectively. For other industrial consumers (e.g., engineering, food, textile and pharmaceutical sectors), the energy prices was increased to 13.9 Pt/kWh (2.53US¢/kWh), 16.8 Pt/kWh (3.05US¢/kWh) and 23 Pt/kWh(4.18US¢/kWh) for the UHV, HV and Medium voltage respectively over a three year period. Further changes have been effected from July 2010 whereby the time of use tariff came into use. (See Annex B.7, Table.7.1- Tariff structure)

4.4.6 The renewables are subject to feed in tariff different from the one above. At the moment it is based on the competitive bid and the support from the renewable fund. a renewable energy fund has been established between the Ministry of Electricity and Energy (MEE) and the Ministry of Petroleum (MOP) funded from the difference between the international and local price of fuel saved by using renewables. This difference is split equally between the two ministries. The share of MEE is directed to supporting the renewable energy program under the New and Renewable Energy Authority (NREA) established in 1986 to implement the renewable strategy. Another incentive tool is that the Egyptian Electricity Transmission Company (EETC) bears the cost of wind farms connection to the 220 kV transmission lines until and including 22 kV in addition to paying a tariff per kWh about 10% higher than that paid to conventional generation companies.

4.4.7 For natural gas, the price to energy-intensive industries has increased to US\$3/mmbtu, while for other industries the increase is US\$2.65/mmbtu. In 2009 due to the financial crises, increase in regular industry prices for electricity and gas was put on hold have as indicated above some price increase have been resumed in 2010.

4.4.8 Thus in preparation to a liberal energy market a plan has been set to lift the energy subsidy to the energy intensive industries over three years. A five year plan is in place to reduce subsidy to the residential

sector and medium and small industries as currently there is cross subsidization among the consumer categories. An awareness program is underway targeted at the residential and other manufacturing consumers to use energy efficient lamps and some improvements in use of CFL lamps in residential and street lighting with over 7 million units already distributed. Thus, Egypt has taken a number of steps and measures to mitigate the growth of energy consumption in the buildings sector, such as the various energy efficiency codes for buildings, the labeling program for appliances and the efficient light bulb programs.

Private sector participation

4.4.5 Generally, the Government of Egypt has gone a long way in creating conducive business environment to enhance and strengthen the role of the private sector in developing the economy. Indeed, since 1997, the GOE has made significant changes in the policy and legal framework aimed at restructuring the electricity sector to attract investment and revamp the sub-sector. Law No. 164 was passed in the year 2000 transforming the incumbent, vertically integrated state utility, the Egyptian Electricity Authority (EEA), into an asset holding company, the EEHC. The law also allows private equity holding in the affiliated companies up to maximum shareholding of 49%, but all assets of the new companies are currently owned by the state through the EEHC.

4.4.6 The government opened the door for private investment in the power sector when the first three (03) independent power producers (IPPs) were launched in the late 1990s through BOOT arrangements. These projects currently contribute about 2,100 MW, or 9% of the total capacity. Although there was a pause in the privatization drive subsequently due to the devaluation of the Egyptian Pound against the US Dollar, the program has recently been resumed by launching some new projects for private investment in conventional and renewable power generation through BOO arrangements. Currently, some 1,750 MW IPPs are in the tendering phase, and have already been well received by the international market as evidenced by the good response to the tender calls. Based on this encouraging market response, the government has also announced plans to tender additional 1,000 MW for wind IPPs by the end of 2010. All these project (will) enjoy government guaranteed long-term power purchase agreements, until sufficient confidence builds up in the consumers market to enter into agreements with private power operators directly.

4.4.7 On the long term, a new electricity act, expected to be approved by parliament next year, will lay the ground for market liberalization and enhanced private sector participation. The Act will empower EEUCPRA to oversee tariff setting and ensure cost recovery, while retaining life line tariffs for the lower consumer groups. It will also allow for a feed-in tariff to stimulate private investment in renewable energy. Some customers will also be able to enter into direct agreement with private power providers.

4.5. Risk management

4.5.1 The major risks associated with the project are (i) implementation delays, (ii) high increase in fuel and equipment costs, and (iii) high staff turn-over. Mitigation measures include: (a) EEHC's experience in implementing projects of this type and size, (b) the major components being procured on package system basis, (c) the engagement of a supervision consultant with sufficient experience, (d) close supervision by the Bank during project implementation, (e) EEHC training more staff and improving the conditions of service, (f) long term contracts for gas supplies and (g) inclusion of contingencies in cost estimates.

4.5.2 Another risk during operation of the plant is failure to operate, and maintain the plant in an environment-friendly and sustainable manner. These are mitigated by installing a continuous Air Emission and Air Quality Monitoring equipment in the power plant to ensure that its operation is in compliance with international and EEAA guidelines. The temperatures of the thermal discharge from the cooling process would also be monitored to ensure compliance with EEAA guidelines. EEHC performance would also be monitored by EEAA on regular basis and this would be further complimented by Bank's supervision. In the event of any major exceedance of air quality requirements, EEHC will have an emergency preparedness and evacuation plan. These measures would be in line with similar measures put in place at other power plant projects financed by the Bank such as the El Kureimat III, Abu Qir Phase II, and El Ain Sokhna.

4.6. Knowledge building

4.6.1 In the proposed project, EEHC intends to implement a steam cycle power plant with one generating unit of 650 MW rating. These are quite large and are not used by many African countries. While Egypt has mastered the technology involved, most of the other Africa countries are still using smaller units. As their demands and systems expand, there will be need to use the same technology. The knowledge gained by the Bank staff working on the project will be helpful in the future in other member countries, many of which have substantial gas resources. Furthermore, with south to south cooperation the knowledge gained by the Egyptians will help since experts from Egypt could be hired at a much lower cost than hiring experts from more advanced countries.

4.6.2 The ESIA and the ESMP for the project conducted by EEHC conform to international best practice on Health, Safety and Environment (HSE) standards. Implementation of the ESMP including the monitoring system will allow the EEHC to promote best international practice in operating thermal power plants. EEHC's knowledge building resulting from the Bank's intervention will help GOE to attract more investment in the power generation sector. In turn the Bank will also learn from the lessons learned from its planned supervision on how best to promote high HSE standards.

V – LEGAL INSTRUMENTS AND AUTHORITY

5.1. Legal instrument:

The legal instrument for the project used is a loan which will be given to the Egyptian Government and the proceeds of the loan on-lent to EEHC on terms acceptable to the Bank.

5.2. Conditions associated with Bank's intervention

5.2.1. Conditions Precedent to Entry into Force: The entry into force of the Loan Agreement shall be subject to the fulfilment by the Borrower of the provisions of Section 12.01 of the General Conditions Applicable to Loans and Guarantee Agreements of the ADB.

5.2.2. Conditions Precedent to First Disbursement of the Loan: The first disbursement of the loan shall be subject to Borrower having submitted to the Bank, a Subsidiary Loan Agreement concluded between the Borrower and the Executing agency in terms and conditions satisfactory to the Bank.

5.2.3 Other Conditions: a) The Borrower shall, no later than 30 September of each year from 2011 to 2015 inclusive, provide evidence acceptable to the Bank of the implementation of the ESMP in accordance with International Standards; b) The Borrower shall communicate to the Bank a Strategic Environmental Impact Assessment Study.

5.3. Compliance with Bank Policies

5.3.1 This project complies with all applicable Bank policies.

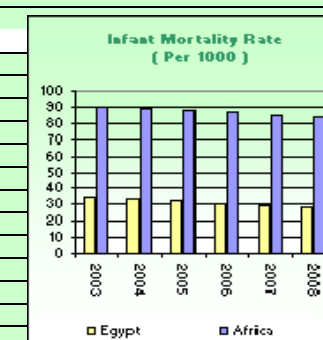
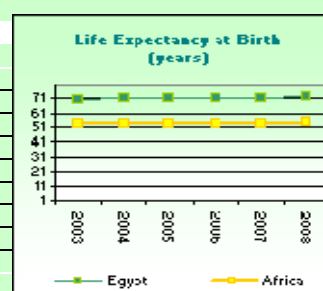
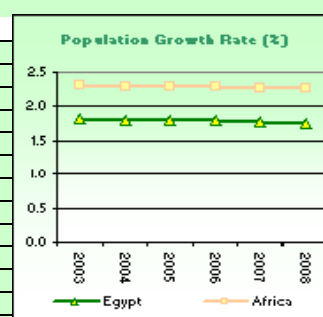
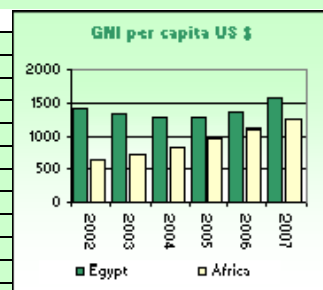
VI – RECOMMENDATION

6.1 Management recommends that the Board of Directors approve the proposed loan of UA 362.2 million to the Government of Egypt for the purposes and subject to the conditions stipulated in this report and the Loan Agreement.

Appendix I

EGYPT COMPARATIVE SOCIO-ECONOMIC INDICATORS

	Year	Egypt	Africa	Developing Countries	Developed Countries
Basic Indicators					
Area ('000 Km ²)		1 001	30 323	80 976	54 658
Total Population (millions)	2008	76.8	985.7	5 523.4	1 226.3
Urban Population (% of Total)	2008	42.8	39.2	44.0	74.4
Population Density (per Km ²)	2008	76.7	32.5	23.0	49.6
GNI per Capita (US \$)	2007	1 580	1 226	2 405	38 579
Labor Force Participation - Total (%)	2005	38.8	42.3	45.6	54.6
Labor Force Participation - Female (%)	2005	33.2	41.1	39.7	44.9
Gender -Related Development Index Value	2002	0.634	0.482	0.694	0.911
Human Develop. Index (Rank among 174 countries)	2006	116	n.a.	n.a.	n.a.
Popul. Living Below \$ 1 a Day (% of Population)	2000	16.7	34.3	25.0	...
Demographic Indicators					
Population Growth Rate - Total (%)	2008	1.8	2.3	0.3	1.2
Population Growth Rate - Urban (%)	2008	1.8	3.3	2.5	0.5
Population < 15 years (%)	2008	32.5	40.9	16.6	27.4
Population >= 65 years (%)	2008	5.0	3.4	16.7	8.0
Dependency Ratio (%)	2008	60.0	79.5	47.7	53.9
Sex Ratio (per 100 female)	2008	100.2	99.3	94.3	101.5
Female Population 15-49 years (% of total population)	2008	25.9	24.2	24.3	25.8
Life Expectancy at Birth - Total (years)	2008	71.6	54.5	76.7	67.5
Life Expectancy at Birth - Female (years)	2008	73.9	55.6	67.5	80.3
Crude Birth Rate (per 1,000)	2008	23.9	35.7	11.0	20.1
Crude Death Rate (per 1,000)	2008	5.6	13.0	10.4	8.6
Infant Mortality Rate (per 1,000)	2008	28.3	83.9	7.1	48.5
Child Mortality Rate (per 1,000)	2008	32.6	137.4	8.8	72.3
Total Fertility Rate (per woman)	2008	2.8	4.6	1.6	2.5
Maternal Mortality Rate (per 100,000)	2005	130.0	683.0	450	9
Women Using Contraception (%)	2005	59.2	29.7	61.0	75.0
Health & Nutrition Indicators					
Physicians (per 100,000 people)	2005	227.3	39.6	78.0	287.0
Nurses (per 100,000 people)	2005	283.3	120.4	98.0	782.0
Births attended by Trained Health Personnel (%)	2005	74.1	51.2	59.0	99.0
Access to Safe Water (% of Population)	2006	98.0	64.3	84.0	100.0
Access to Health Services (% of Population)	2004	99.0	61.7	80.0	100.0
Access to Sanitation (% of Population)	2006	66.0	37.6	53.0	100.0
Percent. of Adults (aged 15-49) Living with HIV/AIDS	2007	0.00	4.5	1.3	0.3
Incidence of Tuberculosis (per 100,000)	2006	24.0	315.8	275.0	19.0
Child Immunization Against Tuberculosis (%)	2007	98.0	83.0	89.0	99.0
Child Immunization Against Measles (%)	2007	97.0	83.1	81.0	93.0
Underweight Children (% of children under 5 years)	2005	6.0	25.2	27.0	0.1
Daily Calorie Supply per Capita	2004	3 286	2 436	2 675	3 285
Public Expenditure on Health (as % of GDP)	2005	2.3	2.4	1.8	6.3
Education Indicators					
Gross Enrolment Ratio (%)					
Primary School - Total	2007	104.7	99.6	106.0	101.0
Primary School - Female	2007	101.7	92.1	103.0	101.0
Secondary School - Total	2005	86.0	43.5	60.0	101.5
Secondary School - Female	2005	83.0	40.8	58.0	101.0
Primary School Female Teaching Staff (% of Total)	2007	55.8	47.5	51.0	82.0
Adult Illiteracy Rate - Total (%)	2007	28.0	38.0	21.0	1.0
Adult Illiteracy Rate - Male (%)	2007	16.4	29.0	15.0	1.0
Adult Illiteracy Rate - Female (%)	2007	39.3	47.0	27.0	1.0
Percentage of GDP Spent on Education	2006	4.6	4.5	3.9	5.9
Environmental Indicators					
Land Use (Arable Land as % of Total Land Area)	2005-08	2.8	6.0	9.9	11.6
Annual Rate of Deforestation (%)	2000-08	-3.4	0.7	0.4	-0.2
Annual Rate of Reforestation (%)	2000-08	2.0	10.9
Per Capita CO2 Emissions (metric tons)	2005-08	2.2	1.0	1.9	12.3



Sources : ADB Statistics Department Databases; World Bank: World Development Indicators; UNAIDS; UNSD; WHO; UNICEF, WRI, UNDP; Country Reports

Note : n.a. : Not Applicable ; ... : Data Not Available;

Last Updated: March 2009

Appendix II

ADB PORTFOLIO IN EGYPT

	Name	Type	Rating	Amount (UA million)	Date Approved
Energy (Power) Sector					
1.	El Kureimat Combined Cycle Power Plant	Loan		163.89	27 July 2005
2.	Abu Qir Thermal Power Plant	Loan		225.47	14 Nov 2007
3.	Ain Sokhna Thermal Power Plant	Loan		277.63	22 Dec 2008
	Total sector approvals			666.99	
Social Sector					
1.	Social Fund III: Support to SMEs	Loan		55.10	11 Oct 2006
		Grant		0.60	
	Total sector approvals			55.70	
Water/Sanitation/Agriculture					
1.	Gabal El Asfar Wastewater Treatment Plant	Loan	N/A	46.9	7 Oct. 2009
2.	Nubaria and Ismailia Canals Study	Grant	N/A	1.70	18 Oct 2007
3.	Zefta Barrage Feasibility Study	Grant	N/A	0.60	
4.	Master Plan for Major Hydraulic Structures	Grant	N/A	1.8	Nov. 2009
	Total sector approvals			51.00	
Private Sector					
1.	Rural Income & Economic Enhancement Project	Loan	N/A	46.2	9 Dec. 2009
2.	Egyptian Refinery Company (ERC)	Loan	N/A	148.5	17 March 2010
3.	Damietta Port Container Terminal	Loan		91.26	4 Dec 2007
4.	SME Support Project (2nd LOC to NBE)	Loan		121.69	12 Oct 2005
5.	Franchising Sector Support Programme	Loan	N/A	27.3	25 April 2009
6.	Windsor Garden City Hotel	Loan	9	8.52	21 May 1997
	Total sector approvals			443.47	
	Grant Total			1,217.16	

Appendix III

Key related projects financed by the Bank and other development partners in the country

Project	Power to be Generated (MW)	Financier(s)	Total cost* (USD million)	Year to be commissioned
El Kureimat III (CC)	750	ADB/NBE	450.0	2009/2010
Nubaria III (CC)	750	AFESD/EIB/AHLY United Bank	519.0	2009/2010
Tebbin (ST)	700	WB/NBE/OPEC	739.0	2010
El Kureimat (Solar thermal)	140	JBIC/GEF		2010
Sidi Krir (CC)	750	EIB/NBE/CIB	717.00	2009/2010
El Atf (CC)	750	AFESD/KFAED/EIB/NBE/CIB	595.0	2009/2010
Cairo West (ST)	700	AFESD/KFAED/OPEC/NBE	737.0	2010/2011
Abu Qir (ST)	1300	ADB/IDB/KFAED/AFESD/OPEC	1,647.0	2012
Ain Sokhna (ST)	1300	ADB/WB/AFESD/KFAED	2189.70	2013
Giza North (CC)	1500	WB/EIB/OPEC	1366.00	2013/2014
Banha (CC)	750	AFESD/KFAED/IDB/ OPEC/Abu Dhabi Fund/Saudi Fund	793.00	2013/2014

* All project costs include customs and taxes

CC = combined cycle gas turbines / ST = steam cycle

Appendix IV

Table 2.1: Project components

No.	Component Name	Estimated cost		Component description ⁴
		(USD million)	(UA million)	
1.	Civil Works (CP)	112.3	74.0	Providing associated services for piling, foundation, buildings, structure steel, underground piping and perform access roads for the project.
2	Environmental Monitoring (CP)	1.6	1.1	Required environmental Monitoring Station with all associated electrical instrumentation equipment.
3	220 KV Switchyard (CP)	12.1	8.0	Three bays 220 KV of indoor Gas insulated Switchyard "GIS" (Double bus bar one and half breakers) and one space for one bay for future including the building construction and the connection between the main transformers and switchyard , Protection and Communication, control systems and all related civil, mechanical, electrical works required for complete operational system.
4	Steam Generator (CP)	205.4	135.3	One outdoor dual fuel fired (natural gas and mazout)steam generator subcritical technology to produce steam for 650 MW steam turbine including the steam generator associated system and equipment, water walls, economizer, re-heater , super-heater , steam drum , safety valves, burners and ignition system , burner management system, soot blower, flue gas ductwork , regenerative air pre-heaters, forced draft fans, gas recirculation fans and associated pumps & motors, related mechanical and piping, related electrical, instrumentation and control
5	Steam Turbine Generator & Condenser (CP)	170.2	112.1	One four flow condensing steam turbine 650 MW, related mechanical and piping, electrical , instrumentation and control once through cooling condenser with its associated vacuum pumps including all necessary piping value, electrical and mechanical systems.
6	Yard tanks (CP)	4.5	3.0	Water tank / Condensate storage tank, Mazout oil (No.6) storage and daily tanks, Solar oil (No.2) storage tank and desalination tanks.
7	Wrap Up Insurance	9.1	6.0	Provision of insurance during the construction, start up, testing, and commission / construction period up to the end of warranty period.
8	Pumps & Drives (PO)	24.2	15.9	Turbine driven boiler feed pumps, motor driven start up feed pump, condensate pumps, circulating water pumps, raw water pumps, service water pumps and closed cooling water pumps.
9	Heat Exchangers (PO)	7.7	5.1	eight feed water heaters which consists of: four closed low pressure heaters, three closed high pressure heaters, deaerator and deaerator storage tank.
10	Water & Waste Water Treatment Systems (CP)	14.2	9.3	De-mineralized water system, condensate polishing system, hypochlorite system, chemical feed system and waste water treatment system with all associated electrical instrumentation and associated piping and valves.
11	Critical Piping & Valves (PO)	17.0	11.2	Critical piping & valves, supports, thermo-wells, thermocouples and flow elements for critical piping systems (main steam, cold reheat, hot reheat, feed water, extraction steam).
12	Power Transformers (PO)	14.6	9.6	One main power transformer (3 single phase and one phase spare), one unit auxiliary transformer, One Generator circuit breaker, Isolated phase buses for connection between Generator and main transformer.
13	Instrumentations & Control (PO)	2.6	1.7	DCS, Operator and Auxiliary control consoles, Auxiliary control devices and data high way cables
14	Desalination Plant (PO)	12.2	8.0	Multistage flash type desalination plant or multi effect thermal vapour compression type and necessary accessories and auxiliary system.

⁴ CP (Supply and Erected) stands for Contract Package while PO (Design and Supply) stands for Purchase Order

15	Electrical Equipment / Instrument Installation (CP)	20.4	13.5	Erected and commissioned DC equipment, electrical distribution panels, relay panels, UPS equipment, main and auxiliary transformer, medium, low voltage and control cables, cable trays, conduits and other miscellaneous electrical and instrumentation equipment.
16	Mechanical & Piping Installation (CP)	51.8	34.1	Erected and commissioned fire water suppression system, HVAC system, small bore piping, valves and supports, hydrogen generation system, auxiliary boiler and reboiler. Fire diesel pump, main AC fire pump and joky pump, air compressors, closed cooling water heat exchangers, diesel generator unit, non critical large bore piping, valves and shop fabricated tanks, (pumps and drives, heaters, desalination and owner furnished piping (critical piping and valve).
17	Offshore Facility (CP)	55.3	36.4	Intake and discharge structure and offshore piping including dredging and supporting structures.
18	Medium and low voltage Switchgear (PO)	4.7	3.1	(6.3 KV) Medium, low voltage Switchgears and motor control centers.
19.	Site Services (CP)	4.0	2.6	Construction buildings, construction power, Potable water system and Sewage system for construction and complete site preparation to be ready for civil constructions.
20	Engineering Services	40.8	26.9	Perform the professional services of the project management, engineering, design and procurement of the plant packages and their balance of plant.
	Total	784.7	516.8	
	Phys cont. 10%	78.5	51.7	
	Total (with Physical contingency.)	863.2	568.4	
	Price contingency	30.7	20.2	
	Total including physical and price contingencies)	893.8	588.6	
	Custom	79.0	52.0	
	Grand total	972.8	640.7	



SUBJECT : EGYPT - PROPOSAL FOR AN ADB LOAN OF U\$ 550,000,000 TO FINANCE THE SUEZ 650 MW STEAM CYCLE THERMAL POWER PLANT PROJECT

CORRIGENDUM *

Please find here below a **corrigendum** to the above-mentioned Appraisal Report.

In the Table titled “*ADB’s key financing information*” (page iii), the **interest rate spread** shall read “***40 basis points***” instead of “*20 basis points*”.