



European Bank
for Reconstruction and Development

Power Sector Energy Efficiency Project

State Sector Project Assessment

Prepared in line with the EBRD's Access to Information Policy¹

Country	Egypt
Sector	Power and Energy
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Operation Description

The Bank committed to provide a USD 190m sovereign loan to the Arab Republic of Egypt ("the Borrower")., which was on-lent to the state-owned Egyptian Electricity Holding Company ("EEHC"). The loan was approved by the Bank's Board of Directors on 12 February 2014 and signed on 31 March 2014.

The client: The Arab Republic of Egypt, which on-lent the proceeds of the EBRD financing to the state-owned EEHC and its subsidiary East Delta Electricity Production Company (EDEPC). EEHC is a 100% state-owned holding company with 16 wholly-owned subsidiaries that owns most of the country's electricity generation facilities, the transmission system operator (with its affiliate EETC), and nine distribution companies.

EBRD's financing and deal structure: The proceeds of the EBRD loan were used by EEHC and EDEPC to convert two existing open cycle power plants, the 500 MW Damietta West plant and the 1,000 MW El Shabab plant, to combined cycle gas turbines (CCGT) in order to increase their total installed capacity by 750MW from their combined capacity of 1,500 MW to 2,250 MW and improve their overall efficiency ("the Project"). The Project implementation was successfully completed in December 2018. Total Project cost at the time of approval amounted to USD 892 million and was financed with equity and loans from EBRD, which had tenor of up to 15 years, European Investment Bank (EIB), Islamic Development Bank (IDB) and Saudi Fund for Development (SFD) that had a debt tenor of up to 15 years from signing date.

Agreed changes to the scope or design of the Project following approval: The EBRD loan was subsequently reduced to USD 128m in June 2020, as the Project implementation was completed below budget and significant Project savings were achieved. This is in part due to the devaluation of the Egyptian pound in 2016 and in part a result of the final contracts' price after public procurement being significantly lower than originally anticipated, reflecting the efficiency and effectiveness of the overall procurement process.

Previous Operations with the Client: N/A

¹ As required by Section IV paragraph 1.4.8 of EBRD's Directive on Access to Information (2019), the Bank shall disclose information (excluding Confidential information) contained in Operational Performance Assessment (OPA) reports for State Sector Projects selected for extended review, within 60 calendar days after completion of the relevant OPA report.

Project's primary objectives: The goal was to increase the plants' capacity and contribute to the improvement of the energy efficiency of the electricity sector in Egypt. The project not only increased the total installed capacity of the two plants to 2,250 MW, but also improved energy efficiency of each plant by over 50%. This helped address one of Egypt's most urgent socio-economic challenges – the lack of reliable energy, which was a major obstacle to the growth and development of small business, commerce and industry at the time of approving the Project. The Project has also achieved significant environmental benefits, with reduction in CO₂ emissions of around 3 million tonnes per annum. The Bank's engagement also promoted increased commercialisation of the sector, with the successful introduction of a compliance function within EEHC and its subsidiaries and support for IFRS adoption. Additionally, the Project introduced a compliance action plan to implement comprehensive institutional controls to manage corruption risks, among other key measures. A detailed compliance plan has now been completed by EEHC. EEHC appointed a Chief Compliance Officer (CCO) in 2016. The Bank and EIB closely monitored the implementation of compliance reforms.

Relevance

The Bank's Country Assessment for Egypt

The Project was aligned with the Country Assessment and Operational Priorities for Egypt and with the targeted approach for sovereign projects in the country defined by the Bank's Board on 17 September 2013. The Country Assessment highlighted large transition gaps, which have existed in the Egyptian energy sector, particularly energy efficiency. The Project helped narrow some of those gaps through improving generation efficiency and increasing installed capacity (without the need for additional fuel) of two existing power plants, thereby supporting energy security in a market previously characterised by widespread fuel and electricity shortages.

The Bank objectives at the time had been aligned with the Egyptian government's goals for the power sector. This included reducing energy inefficiency and carbon emissions, where the Bank's theme to support the country's goal was through improving energy efficiency to support energy security and enhance economic competitiveness. The Bank's priority for 2012-2013 for Egypt was to develop a vibrant private sector, where it is important to reduce energy inefficiency.

Bank's Strategy for Egypt

The Project is also aligned with the more recent strategy for Egypt approved by the Board in 2022, which highlights the importance of both "enhancing Egypt's competitiveness by supporting private sector growth and strengthening governance" and "accelerating Egypt's Green Economy Transition". The first involves improving the business environment, which the Project achieves through securing electricity sources for the private sector. The Project provided improved quality and sustainability of electricity through providing a secure energy supply. The Al Shabab and Damietta West power plants have increased their capacities by 50% up to 2,250 MW from their previous combined capacity of 1,500 MW. The Project has also helped reduce gas consumption from around 350 to 240 m³/MWh, and reduce carbon emissions from c.0.6 to c.0.4 t/MWh, which has improved efficiency and environmental sustainability, and helping accelerate Egypt's green economy transition.

Bank's Energy Sector Strategy

Meanwhile, the EBRD 2014-2018 Energy Sector Strategy (ESS) was in line with the Egypt Country Strategy, which called for a "shift towards an energy efficient low carbon economy supporting energy security and economic competitiveness". The ESS was organised around seven main themes that range from implementing demand side measures to rethinking systems and reducing emissions. In context,

the Project is a very good example of the Bank's skilful coordination of the policy dialogue with impact-driven investment that supported both the country and sector strategies. Finally, the Project has contributed to two of the five Operation Performance Indicators (OPIs) set forth in the 2014-2018 ESS demonstrated by their ability to improve energy efficiency, and reduce carbon intensity. Evidence of achieving these indicators is presented in sections below and are mainly summarised in the Project's ability to successfully introduce standards for energy generation, improving generation efficiency, and increasing installed capacity of two existing open cycle power plants.

The EBRD 2014-2018 ESS stressed the importance of improving energy efficiency and energy savings due to its being crucial for the whole economy, through reducing losses that occur every day in the production and delivery of power. The Project was able to upgrade inefficient equipment and investment into best available techniques through the construction of the more efficient CCGT technology rather than the open cycle facilities that were used for the plants. In this context, the Project provides a great example of the Bank's experience in improving available energy sources to establish a robust energy framework.

The Project is consistent with the Bank's Country Assessment for Egypt, the Bank's Country Strategy for Egypt, and the Bank's Energy Sector Strategies.

The Project was signed with a long-term 15-year tenor from signing, which enables the client to spread repayment over a long period. Project risks were shared amongst four lenders (EBRD, EIB, IDB, SFD) to accommodate any unforeseen implementation, operational, and/or borrower risk. However, no major issues rose during the Project implementation, and the Project was completed below budget.

The primary dimension of the Project's transition impact arises from improving the quality and sustainability of the electricity through creating a demonstration effect from the conversion technique and related efficiency improvements through the conversion of two existing open cycle power plants to CCGT.

The second dimension of the Project's transition impact arises from contributing to alleviating the shortfall in gas supply at the time and increasing generating capacity in Egypt by providing a secure energy supply, allowing the Project to contribute to developing a growing private sector. In an environment of frequent and unpredictable blackouts, or unavailability of new gas or electricity connections, businesses were reluctant to invest in the face of excessive costs and burdens. The existing shortfalls in gas supply and generating capacity in Egypt result in unstable and inadequate electricity supply, constraining the opportunities for private enterprises to flourish. The Project has contributed to alleviating both these problems.

The Project's objectives included implementing IFRS accounting standards and adhering to certain financial covenants for the first time by the Client in any of its borrowings. In addition, EEHC and EDEPC implemented specific corporate-level environmental standards under the Environmental and Social Action Plan ("ESAP") agreed with the Bank. When completed, these steps will help prepare EEHC for a more liberalized, commercially-oriented environment and be critical first steps in improving the sector's transparency. The Bank worked closely with EEHC on a compliance action plan, which was one of the conditions precedent to the effectiveness of the Bank's loan. This action plan put in place comprehensive institutional controls to manage corruption risks, among other key measures.

The Transition Impact (“TI”) benchmarks related to alleviating the shortfalls in gas supply and generation capacity and demonstration effect by conversion of further plants to CCGT were adequate and resulted in a positive demonstration effect.

Out of the 6 benchmarks set out for the Projects, 4 have been completed in a timely manner. However, one benchmark partially fell short due to an over-ambitious target for completion and one was adjusted. The following targets have been completed (i) commissioning of an additional 750 MW of capacity, (ii) reducing gas consumption from around 320 to 214 m³/MWh, which was achieved by the end of 2021, (iii) reducing CO₂ emissions from c.06 to c.04 t/MWh, and (iv) converging at least two open-cycle facilities to CCGT. The target that partially fell short involves adopting IFRS accounting standards because IFRS adoption required more time and support than initially expected. A second benchmark, which required to achieve ISO 14001 and OHSAS 18001 certifications was adjusted. The consultant has completed the required elements for the certification. However, to issue the certificates, EEHC would be required to pay an initial and annual amount, which is why the certificate in itself is no longer a requirement given the extra costs additional to the grant.

The additionality of the Bank’s involvement was adequately reflected in the Board Document for the Project. The Bank was highly additional to the Project due to:

- Terms: Long-term USD financing
- EBRD attributes: Promoting efficiency
- Conditionalities: EBRD environmental and social requirements

Terms: Long-term USD financing

The Bank was highly additional because long-term debt financing from commercial banks was limited in Egypt. At the time, other IFIs had either reached their country limits or have already committed financing to other projects in Egypt; thus their long term finance was also limited. The Project was reasonably advanced in preparation with other co-lenders but were held back by the gap in financing which EBRD was able to bridge effectively.

EBRD attributes: policy dialogue

The Bank has brought its specific conditionality related to its focus on commercialisation and corporate management structures. This accordingly was the first project with an IFI where EEHC agreed to financial covenants. Further additionality stemmed from the stabilising and confidence-building signals the Bank’s involvement gave. The Bank has been leading policy dialogue to assist the authorities in developing a legal and contractual framework geared for private sector lead and financed renewables projects (including ensuring their bankability with appropriate risk allocations), initially focused on the solar feed-in-tariff programme announced by the government at the end of 2014.

Conditionalities: EBRD environmental and social requirements

As part of the financing the Bank has agreed on an ESAP for each of EDEPC and West Delta Electricity Production Company (“WDEPC”), requiring the companies to comply with the Bank’s Performance Requirements in the implementation and operation of the power plants. The ESAP included the requirement to develop Environmental, Health and Safety and Social management systems in accordance

with best international practice, such as ISO 14001 and OHSAS 18001 and attainment of certification under these standards. Training to EDEPC staff was completed for 6 out of 6 modules in July 2022. The requirement to attain the certification has been cancelled; however the companies have continued to develop the elements required for its implementation. While the entities had the institutional capacity to implement the Bank's Performance Requirements, institutional strengthening and additional capacity building was required to meet good international practices. At the time, EDEPC and WDEPC have had environmental, social, health and safety ("ESHS") management structures based on the legal and regulatory requirements of Egypt. The ESAP was agreed prior to the Project's signing but was amended in agreement with the Bank in 2018 to reflect realities on the ground and was further aligned with the Borrowers' needs. The client has been compliant with all respective performance requirements.

Effectiveness

The Project expected output was:

- **Conversion of two existing open cycle power plants to CCGT**

The Project implementation was successfully completed largely on time and below budget. The three turbines achieved commercial operation in 2018. The plants have been operating in line with expectations, which have been set out, reducing specific gas consumption of the Project and specific CO₂ emissions. The Project has allowed for an increase in the generation efficiency of each plant in line with international best practice: among others, the EU's Best Available Techniques ("BAT") for power generation.

- **Implementation of ESAP**

In order to fully implement the Bank's requirements and as part of improving its own corporate governance, EEHC has been provided with assistance to aid strengthening its subsidiaries' environmental, social and health and safety management systems. It was also consistent with the Bank's Country Assessment for Egypt, which notes that "the Bank will pay particular attention to environmental issues... and will assist Egypt in the process of alignment with international standards". The Environmental and Social Impact Assessment (ESIA), Non-Technical Summary, ESAP, and Stakeholder Engagement Plan (SEP) were disclosed in English and Arabic in 2015. An updated ESAP was approved by the client YE2018 following monitoring findings and delays incurred in the Project implementation. The ESAP implementation support consultant resumed work as of April 2019. The Consultant has had an excellent rapport with the client, and is very familiar with the local context, which was demonstrated in their flexibility in further tailoring the assignment to the clients capacity and needs. The Environmental & Social management procedures of both plants have been updated in line with international ISO standards and national requirements. Training to EDEPC staff was completed with 6 of the 6 modules in July 2022.

- **Regulatory changes developed and promoted to the Government of Egypt**

As part of its engagement in the Project, the Bank worked with the Ministry of Electricity and Renewable Energy ("MoERE") and EEHC towards the preparation of the sector to become more liberalized and commercially-oriented. Additionally, the Project focused on enhancing the transparency and financial reporting of the energy sector through implementing IFRS accounting standards, and requiring to comply with certain financial covenants, which require IFRS implementation, for the first time in any of its borrowings. This however has been delayed. The Bank

also supported enhanced governance by supporting the implementation of a compliance action plan to implement comprehensive institutional controls. The support included establishing an audit committee, hiring a CCO, developing compliance policies and procedures, and training on compliance activities, among other key action points. The action plan has been completed with support from the Bank, which continues to offer support on implementation. More broadly, the Bank's engagement has already positioned it to support the government with the implementation of renewable energy framework. This was first supported through the solar feed-in-tariff programme policy dialogue initiatives in 2014-2015 and later in implementation of ongoing tenders in renewable energy.

The Project outcomes mainly focused on narrowing the gaps that exist through improving generation efficiency and increasing installed capacity (without the need for additional fuel) of two existing open cycle power plants, thereby supporting energy security in a market that was characterized by widespread fuel and electricity shortages.

Expected Outcome		Target/Timing	Result
Expansion of competitive market interactions in other sectors – contributing to alleviating the existing shortfalls in gas supply and generation capacity in Egypt	Commissioning of additional 750 MW of capacity	By end 2016 – achieved 2018 as the start of commercial run of the combines cycle	Achieved
	Reduction of specific gas consumption from around 320 to 214 m ³ /MWh		Achieved
	Reduce specific CO ₂ emissions from c.0.6 to c.0.4 t/MWh and total carbon emissions in excess of 3 million tonnes of CO ₂ annually based on an 85% capacity factor.		Achieved
Demonstration of new replicable behaviour and activities	Adaptation of IFRS	By end of 2018	To be completed
	Achieving IOS 14001 and OHSAS 18001 certification	By end 2015 (canceled)	On-going
Demonstration of new replicable behaviour and activities – creation of an enabling environment for further construction of CCGTs and/or conversion of existing open cycle facilities to CCGTs in Egypt	Conversion of at least two other open cycle facilities to CCGT	By end of 2018	Achieved

- Expansion of competitive market interactions in other sectors – contributing to alleviating the existing shortfalls in gas supply and generation capacity in Egypt:** The most important dimension of the Project is that it was able to provide secure energy supply that is important to the development of Egypt's growing private sector. It does so by decreasing the amount of repeated and unpredictable blackouts, and the unavailability of new gas or electricity connections, which prevented businesses from investing or face excessive costs and burdens. It is further enhanced by the demonstration effect of the successful conversion from open cycle to combined cycle and the successful operation of combined cycle. The Project has also reduced CO₂ emissions (around 3 million tonnes per year).

- **Demonstration of new replicable behaviour and activities:** The Project provided support to the reform agenda, allowing to promote the transition agenda through policy dialogue, technical cooperation, and further targeted investment. EEHC undertook to implement IFRS accounting and, for the first time in any borrowing, abide by financial covenants. This has been slightly delayed.

The MoERE is the principal policy agency in the Egyptian electricity sector and acts as the legal owner of the state owned electricity assets through EEHC. The Bank's policy dialogue initiative in Egypt has come in the context of the Bank's active engagement in Egyptian energy sector. The Bank has leveraged this first engagement to strengthen its policy dialogue, in particular to promote the successful development of private power investments. The Bank used the Project to begin to introduce some elements of commercialization to the sector and to leverage this first engagement into promoting the successful development of the private power investments the Egyptian authorities were promoting.

Despite the devaluation of the EGP in 2016 and the difficult macroeconomic situation that was facing the Egyptian economy, the electricity sector reform plan is still in place and the government has continued to implement its strategy of increasing electricity tariffs to fully remove the subsidy. Prior to the outbreak of the pandemic, the government was on track to fully remove the subsidy by 2022 but has recently applied a freeze on industrial tariffs for the next 5 years and will delay the full removal of subsidies to 2025.

Beyond the policy dialogue, in the context of renewable projects, the Bank has been engaging with the authorities on various domains to facilitate integration of renewable energy into the national grid and strengthening the overall structure of the sectors.

Efficiency

EBRD executed the Project well. It took the lead in due diligence, particularly in terms of technical, environmental, social, financial, compliance, and legal aspects. The Bank leveraged its expertise in dealing with sovereign entities and electricity sector experience from other countries of operation and mitigated risks faced elsewhere. Monitoring and reporting was done on a regular basis, with the EBRD Resident Office taking the lead on frequent interaction and coordination with the teams on the ground, and the authorities, addressing any areas of concern.

The Bank has maintained close involvement in all various stages of the Project and remained focused on monitoring both the physical implementation of the Project and transition impact components in order to ensure that its mandate was met and TI achieved.

Preparation, design and structuring: The Project was well designed to meet its objectives as well as to properly manage and mitigate potential risks, which was demonstrated by the fact that most of the Project's objectives have been achieved. It's however important to note that IFRS adoption was a much larger assignment than initially anticipated. In future large SOE commercialization efforts, a more elaborate assessment should be undertaken to understand the efforts and support required to deliver on the target. The transaction appraisal included an in-depth technical and environmental due diligence to confirm compliance of the Project with Bank's Country Assessment for Egypt and the Bank's Energy Sector Strategy.

Monitoring and reporting: Throughout implementation, the team maintained close contact with the Client and was aware of all issues concerning the Project. The

Client provided all reports on time and updated the Bank regularly on all issues. Monitoring reports were properly prepared and submitted in timely manner. The Bank had contracted Project Implementation Unit consultant to provide support. This was provided by Power Generation Engineering and Services Company (PGESCO). The consultant supported the Client in ensuring timely delivery of reporting and following up on respective requirements from the Bank. This ensured timely delivery of the Project. The Bank's technical environmental, and procurement specialists have reviewed the respective aspects of the Project throughout to ensure delivery of requirements in line with expectations. Disbursements, waivers, consents, and covenant compliance verifications were managed effectively.

Client relationship:

Total Project costs have in fact been finalized below initially agreed budget and on schedule, where the final Project cost was 36% lower than the initial cost estimate. The Bank processed a cancellation of part of the loan amount and reduced it to USD 128m by 2020. The reasons for the cancellation were (1) devaluation of EGP in 2016 resulted in decrease in utilization of USD facility, and (2) cost savings resulting from successful public procurement which has resulted in lower contracts' amounts. All respective signed loans have been reduced to match the reduction in Project costs.

The Bank has leveraged this first engagement to strengthen its policy dialogue, in particular to promote the successful development of private power investments. The Project has allowed for an increase in the generation efficiency of each plant in line with international best practice: among others, the EU's BAT for power generation. It will also provide additional capacity, alleviating the shortfalls that were seriously hampering social and economic life for households, small businesses, commerce and industry, and significantly improve the efficiency of the plants, saving over 1,400,000 tonnes of oil equivalent and avoiding over 3,356,388 tonnes of CO₂ emissions each year. Additionally, the Project has demonstrated a new replicable behaviour, with EEHC converting 3 additional plants to CCGT in the following years.

The Project has achieved 4 of its 6 TI objectives. The Project is yet to achieve the two benchmarks related to commercialization with IFRS adoption and ISO 14001 and OHSAS 18001 certification. EEHC continues to move forward on these, but have been significantly delayed. The certification requirement has been cancelled; however, EEHC continues to align with the requirements necessary to achieve the certification.

Implementation Summary

The Project introduced an additional capacity of 750MW, alleviating the shortfalls that existed and seriously hampered social and economic life for households, small businesses, and commerce industry. It also significantly improved the efficiency of the El Shabab and Damietta plants, saving over 1,400,000 tonnes of oil equivalent and avoiding over 3,356,388 tonnes of Co₂ emissions each year. The Project was delivered largely on time and below the initial budget. The Project has also had a strong demonstration effect with the conversion of 3 other plants to CCGT plants in the following years to the Bank's investment.

In addition to meeting these urgent Infrastructure needs, the Bank's engagement also promoted increased commercialisation of the sector with support for IFRS adoption and implementation of major certification standards. The requirement for certification has however retroactively been amended and IFRS adoption is

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significantly delayed. However EEHC remains engaged on these two requirements and aims to complete the elements required for certification implementation and complete IFRS adoption during the coming period. The Bank was also able to agree on an action plan, comprehensive with institutional controls, to manage corruption risks, and improve the overall transparency of the company.

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