From state to market and back again: Egypt’s experiment with Independent Power Projects

Anton Eberhard and Katharine Nawaal Gratwick

Working paper
October 2007

University of Cape Town Graduate School of Business
Breakwater Campus
Private Bag
Rondebosch 7701
Cape Town, RSA

www.gsb.uc.ac.za/mir
The Management Programme in Infrastructure Reform & Regulation (MIR) strives to be a leading centre of excellence and expertise for Africa and other emerging and developing economies. Based at the University of Cape Town’s Graduate School of Business, MIR aims at enhancing understanding and building capacity to manage reform and regulation of infrastructure sectors, in support of sustainable development. MIR’s main focus at present is in the electricity and water sectors, but growth is expected in gas, transport and potentially in telecommunications. MIR works on three fronts, providing: executive and professional short courses; research related to the frontiers of infrastructure reform and regulation in Africa; and professional support and policy advocacy.

**Author biographies**

**Anton Eberhard**  
Director Management Programme in Infrastructure Reform and Regulation  
Graduate School of Business  
Tel: +27 21 406 1361  
Fax: +27 21 406 1070  
Email: eberhard@gsb.uct.ac.za

Professor Anton Eberhard directs the Management Programme in Infrastructure Reform and Regulation at the University of Cape Town’s Graduate School of Business. He is a former Board Member of the National Electricity Regulator of South Africa. His research and teaching focuses on the restructuring and regulation of the electricity sector and linkages to sustainable development issues such as widened access to services, and investments in renewable energy and energy efficiency. He has worked in the energy sector for more than 20 years and was the founding Director of the Energy and Development Research Centre. Anton has more than 70 publications to his credit and has undertaken numerous assignments (both locally and abroad) for governments, utilities, regulatory authorities, and donor and multi-lateral agencies. Professor Eberhard has a PhD from the University of Edinburgh.

**Katharine Nawaal Gratwick**  
Senior Researcher, Management Programme in Infrastructure Reform and Regulation  
Graduate School of Business  
Tel: +27 21 406 1361  
Fax: +27 21 406 1070  
Email: gratwick@gsb.uct.ac.za

Katharine Nawaal Gratwick, a senior researcher with MIR in Cape Town, leads the Programme’s survey of Independent Power Projects (IPPs) throughout Africa, including detailed case studies in Egypt, Kenya and Tanzania (completed in 2005) and Nigeria, Morocco and Tunisia (completed in 2006). Ms. Gratwick obtained her M.A. in International Energy Management and Policy from Columbia University in New York.
# Table of contents

Author biographies......................................................................................................... 2  
Table of contents ............................................................................................................ 3  
Acronyms ....................................................................................................................... 4  
Acknowledgements ........................................................................................................ 5  
Executive Summary: from power plants to LNG .......................................................... 6  
1. Introduction: the funding dilemma............................................................................. 7  
2. Egypt’s electricity sector: past and present ............................................................... 9  
   2.1 Sector reforms that made the IPPs, and some that didn’t............................... 9  
   2.2 Snapshot of the current Egyptian ESI: results of the reforms ....................... 12  
   2.3 IPP frameworks, old and new........................................................................ 15  
      2.3.1 The first IPP framework ....................................................................... 16  
      2.3.2 The second IPP framework ................................................................ 18  
3. A balance achieved? ............................................................................................... 19  
   3.1 Exogenous stresses ......................................................................................... 20  
   3.2 Country level factors ....................................................................................... 21  
      3.2.1 Abundant low cost fuel: how long will it last? ...................................... 24  
   3.3 Project level factors that impacted IPPs ......................................................... 26  
      3.3.1 Favourable equity arrangements ......................................................... 28  
      3.3.2 Favourable debt arrangements ........................................................... 31  
      3.3.3 Secure and adequate revenue streams and other risk management .......... 34  
      3.3.4 Positive technical performance and strategic management ................. 36  
4. Final outcomes and conclusions.............................................................................. 36
### Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADI</td>
<td>Al-Ahly for Development &amp; Investment</td>
</tr>
<tr>
<td>Bcm</td>
<td>billion cubic meter</td>
</tr>
<tr>
<td>BOT</td>
<td>Build Operate Transfer</td>
</tr>
<tr>
<td>BOOT</td>
<td>Build Own Operate Transfer</td>
</tr>
<tr>
<td>CBG</td>
<td>Central Bank Guarantee</td>
</tr>
<tr>
<td>CDC</td>
<td>Commonwealth Development Corporation</td>
</tr>
<tr>
<td>D/E</td>
<td>Debt equity ratio</td>
</tr>
<tr>
<td>DFI</td>
<td>Development Finance Institution</td>
</tr>
<tr>
<td>EDF</td>
<td>Electricity de France</td>
</tr>
<tr>
<td>EEA</td>
<td>Egyptian Electricity Authority</td>
</tr>
<tr>
<td>EEHC</td>
<td>Egyptian Electricity Holding Company</td>
</tr>
<tr>
<td>EETC</td>
<td>Egyptian Electricity Transmission Company</td>
</tr>
<tr>
<td>EJILLST</td>
<td>Egypt, Jordan, Iraq, Lebanon, Libya, Syria, Turkey Interconnector</td>
</tr>
<tr>
<td>ELNG</td>
<td>Egyptian Liquefied Natural Gas</td>
</tr>
<tr>
<td>EPC</td>
<td>Engineering procurement construction</td>
</tr>
<tr>
<td>ERA</td>
<td>Egyptian Regulatory Agency</td>
</tr>
<tr>
<td>ESI</td>
<td>Electricity Supply Industry</td>
</tr>
<tr>
<td>FDI</td>
<td>Foreign Direct Investment</td>
</tr>
<tr>
<td>ICB</td>
<td>International competitive bid</td>
</tr>
<tr>
<td>IFC</td>
<td>International Finance Corporation</td>
</tr>
<tr>
<td>IPP</td>
<td>Independent Power Project</td>
</tr>
<tr>
<td>ISP</td>
<td>Independent Service Provider</td>
</tr>
<tr>
<td>KEPCO</td>
<td>Korea Electric Power Company</td>
</tr>
<tr>
<td>kW</td>
<td>Kilovolt</td>
</tr>
<tr>
<td>kWh</td>
<td>Kilowatt hour</td>
</tr>
<tr>
<td>LE</td>
<td>Egyptian pound</td>
</tr>
<tr>
<td>LIBOR</td>
<td>London Interbank Offered Rate</td>
</tr>
<tr>
<td>LNG</td>
<td>Liquefied Natural Gas</td>
</tr>
<tr>
<td>Mcf</td>
<td>Thousand cubic feet</td>
</tr>
<tr>
<td>MoEE</td>
<td>Ministry of Electricity and Energy</td>
</tr>
<tr>
<td>MW</td>
<td>Megawatt</td>
</tr>
<tr>
<td>Norad</td>
<td>Norwegian Agency for Development Cooperation</td>
</tr>
<tr>
<td>O&amp;M</td>
<td>Operation and Maintenance</td>
</tr>
<tr>
<td>ODA</td>
<td>Official/Overseas Development Assistance</td>
</tr>
<tr>
<td>OPEC</td>
<td>Organization of Petroleum Exporting Countries</td>
</tr>
<tr>
<td>PEL</td>
<td>Pendekar Energy Limited</td>
</tr>
<tr>
<td>PESD</td>
<td>Stanford University’s Program on Energy and Sustainable Development</td>
</tr>
<tr>
<td>PPA</td>
<td>Power Purchase Agreement</td>
</tr>
<tr>
<td>PT</td>
<td>Piasters (100 PT = 1 LE)</td>
</tr>
<tr>
<td>SEGAS</td>
<td>Spanish Egyptian Gas Company</td>
</tr>
<tr>
<td>SPA</td>
<td>Share purchase agreement</td>
</tr>
<tr>
<td>UHV</td>
<td>Extra High Voltage</td>
</tr>
<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
</tr>
<tr>
<td>WDI</td>
<td>World Bank’s World Development Indicators</td>
</tr>
</tbody>
</table>
Acknowledgements

The authors acknowledge generous support from the Norwegian Agency for Development Cooperation (Norad) and Stanford University’s Program on Energy and Sustainable Development (PESD). The authors thank Erik Woodhouse, David Victor and Thomas Heller, for insights into the research methodology and findings. The authors are grateful to Al-Ahly for Development & Investment (ADI), Egyptian Center for Economic Studies (ECES), Egyptian Electricity Holding Company (EEHC), Egyptian Regulatory Authority (ERA), Electricite de France (EDF), Globeleq, International Finance Corporation (IFC), Poten & Partners, Tanjong Public Limited Company, the World Bank and local Egyptian banks. Numerous individuals from these organizations deserve thanks for their extensive contributions in the form of personal interviews, data, and correspondence. A special thanks goes to Tom Thomason for his inexhaustible capacity for responding to questions and to SAD-ELEC for probing the final findings. Finally, the authors wish to thank the University of Cape Town Graduate School of Business, without which this research would be possible.
Executive Summary: from power plants to LNG

Privately owned generation projects emerged in Egypt in the 1990s largely due to changes in donor priorities. After 1993, availability of donor funding (primarily through the World Bank) became contingent on Egypt undertaking major reforms including raising tariffs to ensure cost-reflective pricing. Such reforms were, however, politically untenable. Instead, the country opted to fill the funding gap by inviting private sector firms to build, own, operate and transfer plants under 20 year power purchase agreements with the state utility and guaranteed by the Central Bank.

This paper showcases Egypt’s three independent power projects, which were tendered in 1996 and 1998, evaluating the context in which they were developed as well as how the context has evolved. Changes to the legal framework were made in the mid-1990s to allow for privately-owned generation as well as to provide a range of investor incentives. Thereafter the Egyptian government announced plans for 15 independent power projects (IPPs). The first three IPPs, developed by InterGen/Edison (1 project) and Electricité de France (EDF) (2 projects), yielded among the lowest generation tariffs across the developing world at 2.5 US cents per kilowatt hour (kWh). These plants all relied on domestically sourced natural gas, and one plant secured substantial financing in US dollars from Egyptian banks.

After the currency devaluation of 2002-3, however, immediate plans for the remaining twelve IPPs were shelved by the Government. Around the same time, new funding streams by a wide range of donors—including the European Investment Bank, Arab Fund for Social & Economic Development, Kuwaiti Fund, African Development Bank, Islamic Development Bank, Organization of Petroleum Exporting Countries (OPEC) Fund and the World Bank—opened up. Current expansion plans, through to 2007, are now being executed by the state-owned Egyptian Electricity Holding Company (EEHC), with concessionary funding provided by multilateral and bilateral agencies. No use of Egypt’s capital markets, as seen during the IPP program of the late 1990s, has been made.

EEHC has indicated that it is open to additional IPPs, but under different terms and conditions than available in the late 1990s: sponsors must now secure funding from abroad, their own off-takers (i.e. bilateral contracts directly with industry, not the state utility), and prove a substantial domestic contribution in the form of contractors, designers and manufacturers. To date, there have been no takers of these terms.

Despite major changes to the macroeconomic situation and future electricity sector plans, it has been mostly business as usual for the existing IPPs. Although capacity charges (in Egyptian pound equivalency) doubled with the devaluation, the power purchase agreements signed with each of the IPPs have held. Furthermore, while the establishment of a regulatory agency in other countries may have had an impact on IPP project development, a new regulatory body created in Egypt has had virtually no effect on the existing contracts. Gas agreements remain intact despite increasing demand for Egyptian gas from Egypt’s immediate Middle Eastern, North African and European neighbors. The primary change in projects, evidenced to date, is the equity turnover: all original sponsors have sold their stakes to firms with more interest in this evolving environment.

Although IPPs represented a short-term fix to the funding gap, by reforming only a small portion of its sector, Egypt set itself up for an unsustainable situation in the longer-term, namely the state utility does not generate sufficient and appropriately denominated revenue to finance dollar-backed PPA obligations, which fluctuate with global currency movements. An evaluation of the Egyptian IPP experience begs the question of how local capital markets can play a more significant role going forward (or possibly even in the refinancing of present projects) to ensure that countries benefit from private sector expertise and are not as susceptible to macroeconomic shock.

Finally, what is the role of Egypt’s highly demanded gas in present and future power developments? In just two years, the country has gone from no exports to becoming the world’s 6th largest exporter of liquefied natural gas (LNG). Additional power plants are being set up near LNG facilities to fuel/facilitate LNG development, but it remains unclear whether LNG and natural gas exports will shift locally subsidized gas for power prices to more economic levels.
1. Introduction: the funding dilemma

The 1990s ushered in a major change for Egyptian infrastructure projects. Prior to this period, Egypt relied primarily on government funding together with soft loans from multi- and bilateral agencies to build and operate the country’s roads, sewers and power plants.\(^1\) By the beginning of the decade, however, according to stakeholders at Egypt’s Ministry of Electricity and Energy (MoEE), a consensus was growing among donors, which advocated that the private sector, not the public sector, should take the lead in financing and operating infrastructure projects. What existed of limited public sector funding should primarily target social sectors, such as health and education. The World Bank, among Egypt’s foreign funders, championed this new change in resource allocation, backing a general exit from infrastructure and reserving loans only if a commitment was demonstrated to reform the power sectors by introducing commercial practices, including by liberalizing prices, and competition (Egyptian Electricity Holding Company per com 2005).\(^2\)\(^,\)\(^3\)

With the loan conditions deemed politically unfeasible, however, and limited public funding available (from either Egypt’s own funds or other donors) Egypt opted for private sector participation in its generation sector in the mid-1990s. Subsequently, between 1996 and 2003, the private sector contributed an addition of approximately 2,000 megawatts (MW) in power, in the form of three independent power projects (IPP), accounting for about 10 per cent of the country’s installed capacity. Power purchase agreements (PPA) with a duration of 20 years were signed with the state utility, and debt financing was provided by both local and foreign banks as well as institutional investors and multilateral development institutions.

The Egyptian IPP experience is interesting in a number of respects, which are all probed further in this paper.\(^4\) While the original deals have held and the three gas-fired IPPs continue

---

1. The public funding of infrastructure projects was the norm for Egypt until the 1990s, however the country did have experience with private sector funding. The Suez Canal was a build operate transfer (BOT) project, originating in the second part of the 19\(^{th}\) century.
2. The arguments conveyed to Egypt were largely those spelled out in the 1993 World Bank Electricity policy document, which set forth the Bank’s official policy with regard to power sector reform (World Bank 1993).
3. It should be noted, however, that no official document would be signed outlining any course of action or conditions, between the World Bank and Egypt.
4. The authors of this paper also contributed findings on IPP experiences in Egypt, Kenya and Tanzania to a global IPP study, led by Stanford University’s Program on Energy and Sustainable Development (PESD). The overarching purpose of the PESD IPP study was to evaluate the IPP experiences across a number of countries and projects and thereby glean best and better practices for the future. See http://pesd.stanford.edu/ipps for information on PESD IPP study. It should also be noted that this research was part of a broader assessment of African IPPs undertaken by the Management Programme for Infrastructure Reform & Regulation (MIR) that went beyond those studies included in the Stanford PESD analysis. The authors of this paper have also been co-authors of studies on Morocco (Malgas, Gratwick and Eberhard, 2007a) and Tunisia (Malgas, Gratwick and Eberhard, 2007b). Forthcoming are
to provide reliable and affordable electricity, neither the original sponsors, nor the government, are keen to develop further IPPs along the same terms and conditions. Power provided by IPPs is still competitively priced by international standards (largely due to cheap state-supplied gas), but a major devaluation of the currency doubled the local cost of power purchases under the US dollar denominated contracts. In the aftermath of the devaluation and with concessionary funding now more abundant, the Government of Egypt has charged the state-owned power utility with procuring further generation capacity, supported by development finance institutions (DFI). In the meantime, the original project sponsors in the three IPP projects have departed, and new equity partners have stepped in. Since 2004, the country has also launched its liquefied natural gas (LNG) industry, and after just two years Egypt ranked as the sixth largest LNG exporter in the world. With reserves less plentiful than originally expected, however, presently (mid-2007) a debate rages at the government level and ruling party level about how best to allocate natural gas reserves, which could ultimately impact on availability of gas for power as well as investment priorities. Interesting questions arise as to why and how the IPP investments have survived and what the future prospects are for private IPPs in Egypt and other African countries.

The first part of the paper provides a brief overview of the electricity sector including reforms undertaken to date related to IPPs. The second part involves an analysis of the development and investment outcomes (namely the extent to which the country and the investors benefited from the projects and whether such projects may be replicated in the future) as well as the major factors that led to such outcomes.

The authors adopted an inductive research approach, initially conducting a review of reform and project documents, followed by meeting with stakeholders. Conclusions were drawn from studies on Cote d’Ivoire (Malgas 2007c) and Ghana (Malgas 2007d). In addition, an as of yet unpublished survey of Nigerian IPPs was conducted by the authors of this paper in collaboration with researchers at the Centre for Energy Research and Development at Obafemi Awolowo University in Ile-Ife, Nigeria. Further information on the MIR IPP research may be found at http://www.gsb.uct.ac.za/gsbwebb/default.asp?intpagenr=309.

5 Approximately two dozen interviews were conducted with about 20 stakeholders in January, February, August, November and December 2005 in Cairo, Washington D.C. and via teleconference in New York. Interviews were followed by email correspondence to clarify discussion points, with the last review of data conducted between May and July 2007, including with new stakeholders in Kuala Lumpur. Stakeholder interviews included present and former directors and managers at Al-Ahly for Development & Investment, Egyptian Centre for Economic Studies, Egyptian Electricity Holding Company (EEHC), Egyptian Regulatory Authority (ERA), Electricite de France, Globeleq, the International Finance Corporation (IFC), Poten & Partners, Tanjong Public Limited Company, the World Bank and local Egyptian banks. Due to sensitivity of data, the names of stakeholders, who have been the primary source of data for this paper, have largely been left out of the discussion; most stakeholders are only identified, if at all, by organizational affiliation in the text. As a result, much of the data, which forms the basis of this analysis, is not cited. In certain instances, however, where
the evidence examined and assessment of broad lessons gleaned from Egypt’s IPP experience. The details presented on IPPs and reforms were confirmed across a range of sources. Any errors and omissions are the responsibility of the authors.

2. Egypt’s electricity sector: past and present

2.1 Sector reforms that made the IPPs, and some that didn’t

Efforts to reform the Egyptian Electricity supply industry (ESI) originated as early as 1964, when the national utility was unbundled and eight distribution companies were formed. This arrangement remained until 1992, when the distribution companies were transferred from the Egyptian Electricity Authority (EEA), under the auspices of the Ministry of Electricity and Energy, to the Ministry of Public Enterprises, with the aim of further corporatizing the entities. By 1998, with little progress achieved, a decision was taken by the MoEE to transfer the entities back to the EEA, then re-bundle the distribution and generating entities into seven subsidiary, state monopolies (still under the control of the EEA)—an activity charged by some observers as counter to reform.

With the backdrop of the re-bundling of state utilities, privatisation efforts were slowly taking hold. In 1996, Law 100 was issued which specified: “local and foreign investors may be granted public utility concessions allowing them to build, operate and maintain power generation stations” (Republic of Egypt People's Assembly 1996). In 1997, a new investment law was introduced, which spelled out a number of investor incentives including government guarantees to secure projects.

At the time, the sector was averaging peak demand growth of 7.6 per cent per annum and increasingly dominated by natural gas as the primary fuel for power generation. In 1980 the share of gas amounted to only 20 per cent, with hydro accounting for 51 per cent, and oil making up the balance; by 1990, 40 per cent of the production mix was natural gas and only 24 per cent was hydro. As of 2004, natural gas dependence approached 80 per cent (Energy Information Agency 2004; World Bank 2006). It is anticipated that the gas share will continue to rise as oil-fired plants are converted to gas, for which proven reserves currently measure 69.5 trillion cubic feet (Tcf). However, as will be discussed in section 4.3.2, presently the allocation of reserves is being debated, which may in turn impact on electric generation. (Centre International d'Information sur le Gaz Naturel et tous Hydrocarbures Gazeux 2006; Schewe 2006; Egypt Staff 2007).

stakeholders have indicated their willingness, citations do include names and the designation of “per com” for personal communication.
the same time, shares of the seven state monopolies were prepared to be offered on the Egyptian Stock Exchange, but with little interest by investors, this plan was never realized (Janet Matthews Information Services 2000).

The last major stage of reform was the reorganization of the EEA into the Egyptian Electricity Holding Company (EEHC) in 2000, through Law 164. Selected personnel at EEHC consider this change from EEA to EEHC to be corporatization, in part because EEHC is now expected to finance its own projects. The change also involved the unbundling of the seven vertically integrated subsidiaries and the subsequent separation of generation, transmission and distribution (Egypt Restructures: may sell shares and assets but blows IPP program 2001; Galal 2001). Each generation and distribution subsidiary was established as a separate corporate entity with its own board and external reporting. An internal pool was created for bidding in power, although ex-post price adjustments in the pool substantially undercut the potentially positive incentive effects.

The corporatization of EEHC was intended as a step to prepare shares for privatisation, however, as of early 2007, this process has not yet begun (and it does not look likely to happen in the near future). Through EEHC, the government still controls close to 90 per cent of all generation capacity and maintains a monopoly over transmission and distribution. Cross-subsidization is rife. Finally, corporate governance regimes have not been strong and are characterized by significant involvement of the MoEE, who chairs the EEHC, in the operating decisions of the agency’s subsidiaries.

It is important to note that the reforms described above took place in the absence of an independent regulator. Despite the issuance of a presidential decree to institute a regulator as early as 1997, no progress was made. A second such decree was issued in 2000. Thereafter, a board of directors was formed and a managing director appointed in May 2001. Staffing of the Electricity Regulatory Authority (ERA), with a grant from the United States Agency for International Development (USAID), began in January 2002.7 Thus, the regulator came into force only after the IPP PPAs had been concluded and changes to EEA/EEHC had taken place as well, diverging from the steps of the standard model for power sector reform, where the regulator is introduced before the introduction of IPPs.8

---

7 As of 2007, the organization consisted of approximately 50 full-time staff. Its annual operating budget is estimated at approximately US$900,000, with operating funds provided exclusively via licensing fees.
8 The standard model for power sector reform has been roughly defined as a series of steps that move vertically-integrated utilities toward competition, and generally include the following activities, in the following order: corporatization, commercialization, the passage of the requisite energy legislation, the establishment of an independent regulator, the introduction of IPPs, restructuring/unbundling, divestiture of generation and distribution assets and the introduction of competition (Bacon 1999:4)
ERA’s founding document has, among other things, clear references to lawful competition (Egyptian Presidential Decree 2000: Article III). In keeping with one of its original mandates, therefore, ERA’s main goal, in terms of future ESI reforms, is to create conditions where bilateral contracts between producer and consumer are the norm, and third party access to the transmission system is allowed. In an ideal arrangement, according to ERA, IPPs would compete in the market as well (unlike at present with 20 year PPAs with EEHC). ERA has recommended that 70 industrial/commercial users, which consume a significant portion of the total electricity in the country, source 20 per cent of their annual incremental increase in demand from bilateral contracts with the IPPs, thereby phasing in a new regime. The details of such arrangements have not been spelled out to the public; needless to say, for such arrangements to be financeable, it would be necessary to craft agreements related to pricing, guarantees, damages and other key issues with extreme care, and contracts would be markedly different from those for existing IPPs.

To date, the Minister of Electricity and Energy has been reluctant to accept any such plan, arguing that neither the market nor the end user is sufficiently prepared for such an arrangement. While not official policy, it should, however, be noted that prices for large industrial consumers (those with transmission connections greater than 66 kilovolt, kV) have been increasing, with the blessings of the MoEE. Furthermore, although also not an official policy, the government, via the MoEE, has been limiting electricity and gas supply to large industrial consumers, indicating that such consumers, which make up about 80 customers and approximately 23 per cent of current consumption, should negotiate/build their own supply. Some firms have responded by leaving, others by starting to put up their own plants and/or negotiating contracts with independent service providers (ISP), described below; still others are simply waiting for the official policy. This change is viewed as a transition to wholesale market competition. Meanwhile, official policy is in the making, with efforts to discuss a policy document slated for end-2007. Furthermore, as of 2007, six ISPs have been licensed by ERA to provide generation and distribution services. The ISPs identify their own customers, which are primarily in tourist

(Adamantiades, Besant-Jones et al. 1995:6-7; Besant-Jones 2006:11; Williams and Ghanadan 2006:822). Important to note that although this model, which was based largely on the early power sector reforms carried out in the England and Wales, Chile and Norway, came to represent a standard, it is arguable that not all steps were relevant to the conditions on the ground in most developing countries.

One other possibility to introduce gradual sector reform, according to ERA, is that the natural gas utilities develop their own generation companies, which could then sell electricity to the large industrials together with the necessary gas feed. As with the previous proposition, details are not publicly available.

The six ISP are as follows: Sendeian Company for Paper Industry, Alexandria Carbon Black, National Electricity Technology Company, Mirage Company, Om El Goreifat Company and Global Energy
areas along the Red Sea and Sinai, have no government guarantees, and also work independently of EEHC. Contracts are approximately one year in duration, with provision for renewal, i.e. no long-term contracts like Egypt’s IPPs. Although the total installed capacity of the ISPs is only approximately 300 MW, or about 1 per cent of the country’s installed capacity, the firms are expanding their activities, including most notably Global Energy, which was awarded a concession in 2006 to provide distribution services in Cairo, and could potentially pave the way for more private sector participation in the market.

EEHC cites the following reform goals for the future: the establishment of an independent transmission systems operator (TSO), which would promote wholesale competition; the commercialization of electricity distribution companies through re-engineering their business practices; and retail tariffs to cover costs by 2009. Work is underway on all of the three goals, with the establishment of the TSO slated for mid-2008 (originally for mid-2007). The TSO is expected to reside in EEHC for the first year of its operation, then be spun off from EEHC, but remain government owned. Furthermore, under consideration is a fund administered by EEHC directly to distribution companies to help eliminate cross subsidization and improve transparency of accounts. Finally, retail tariffs are already (slowly) on the rise, with annual increases of 5 per cent implemented since 2005, as will be discussed in greater detail below.

2.2 Snapshot of the current Egyptian ESI: results of the reforms

Figure 1 below is an outline of the current ESI. As of mid 2007, the Egyptian ESI consists of: six generation utilities; nine distribution utilities; and one transmission company. All of these entities are state-owned and fall under the direct management of the EEHC.

In addition there exist: one wind generating company, which falls under the direction of the New Renewal Energy Authority within the MoEE; three independent power projects, one owned by Globeleq (since December 2004, but developed and operated by InterGen and Edison prior to that) and two by Kuasa Nusajaya, a wholly owned subsidiary of the privately-owned Malaysian firm Tanjong Energy (since March 2006, but developed and operated by Electricite de France, EDF, prior to that). In May 2007, Globeleq entered into a conditional share purchase agreement (SPA) with Pendekar Energy Limited (PEL), a joint venture between Tanjong Energy and the Saudi Arabian firm Al Jomaiah for all shares in the Sidi Krir, with deal closure expected within six months time—a subject that will be further probed in section 3.3.1

---

Company. Investors are primarily Egyptian and Jordanian, with one partnership currently under consideration, the Egyptian Chinese Joint Venture, which could introduce still more diversity into the supply mix.
In addition, as discussed above, several ISPs involved in both generation and distribution primarily at tourist resorts provide power. As of 2000, 94 per cent of the Egyptian population had access to electricity.

**Figure 1: Egypt Electricity Supply Industry**

Note: not depicted in the Figure above are the 6 small private producers (ISP) that include generation and distribution.

Total installed capacity amounts to approximately 22,500 MW as of mid-2007, (with peak load demand of about 18,000 MW). More than forty grid connected plants account for the bulk of supply; furthermore approximately six off-grid plants, owned and operated by the ISPs, discussed above, with total installed capacity of 300 MW, make up the balance. Transmission and distribution losses across the network averaged 12 per cent in the period 1990-2001, with almost no variation.

EEHC has just concluded its Fast Track Power Generation Programme, which added an additional 4,500 MW of combined cycle gas plants at four different sites to the grid in between 2002 and 2007. The new builds are helping to absorb the approximate 7.5 per cent increase in

---

11 This SPA includes all of Globeleq’s Asian assets as well, namely six additional power plants in Bangladesh, Pakistan and Sri Lanka, which with Sidi Krir, total 1,810 MW in terms of their gross installed capacity (CIMB Investment Bank Berhad 2007:14). The deal is contingent on: the approval of Tanjong’s shareholders (which was received in July 2007); the agreement of the lenders in each of the seven plants; and, the agreement of the Bermuda Monetary Authority, due to the fact that Globeleq was incorporated in Bermuda, in 2003 (CIMB Investment Bank Berhad 2007:3).

12 EEHC indicates that the use of installed capacity fluctuates significantly over the year, with capacities of the hydro plants (particularly High Dam, Aswan Dam 1 & 2 and Esna) decreasing during the period of minimum irrigation discharge; other plants are constrained during the hot summer months.
demand per year during the same period. An additional 8,375 MW of capacity is in the works, half of which are expected to be combined cycle and the other half steam, at 11 different sites for the period 2007-2012 when annual demand growth is projected at 6.6 per cent (Egyptian Electricity Holding Company 2003; Egyptian Electricity Holding Company 2004).

ERA has licensed all entities listed in Figure 1, above (however licensing of the IPPs was concluded only in 2004 after project developers had ascertained that there would be no violation of their PPAs). ERA’s mandate specifically states that the Agency must:

Regulate, supervise and control all matters related to the electric power activities [in generation, transmission, distribution and consumption] to ensure availability and continuity of supply so as to satisfy demand for the various aspects of usage at the most equitable prices, taking into consideration environmental protection, the interests of the electric power consumers, as well as the interest of the producers, transmitters and distributors. The Agency aims also at preparing for lawful competition in the field of electricity generation, transmission and distribution, and avoiding any monopolization within the Electric Utility (Egyptian Presidential Decree 2000, article II).

ERA’s main limitations are two-fold: the Agency has no tariff setting power and it is chaired by the Minister of Electricity and Energy, which ultimately compromises the Agency’s independence in regulating the sector. Should current tariffs be adjusted, the change would originate from the EEHC in consultation with the MoEE. ERA is, however, currently developing performance indicators that could serve as a proxy for tariff adjustments in the near term, with better performing utilities rewarded by reduced license fees.

Electricity tariffs for residential consumers in Egypt have been highly subsidised. According to figures published by EEHC and ERA (in 2006), average residential electricity tariffs amount to 3.7 US cents per kilowatt hour (kWh) while average commercial rates are 6.6 US cents/kWh, based on (US$1 = 5.74 Egypt pounds (LE), 5/31/07). Although on the decline, the persistent subsidy throughout the past decade could help explain the strong growth in residential demand, which accounts for approximately half of all end-use consumption.

Between 1992 and 2004, there were no changes to the tariffs. Then in October 2004, the Cabinet of Ministers approved annual nominal tariff increases of approximately five per cent per annum for the next five years, with the aim of covering costs by 2009 (a stated EEHC reform goal, as previously mentioned). It should be noted that such increases were enacted in

---

13 As of mid-2007, the roll-out of these new capacity additions appears to be on schedule.
both 2005 and 2006. In 2010, a further evaluation is expected to ascertain whether additional
adjustments are necessary. This timeline may not, however, be moving sufficiently swiftly or
convincingly. As part of a loan package for the El Tebbin gas-fired power station (discussed in
the next section), the World Bank has included a technical assistance component, specifically
to address financial performance and pricing structure in the sector (Egypt: World Bank agrees
El Tebbin support 2006:3).

2.3 IPP frameworks, old and new

Egypt’s first IPP framework, discussed in detail below, yielded three generation facilities for a
total of 2,048 MW. Table 1 provides some project specifics. Despite a large currency
devaluation, there have been no renegotiations of contract terms, but there has been high equity
turnover. As noted by numerous stakeholders, it is unlikely that the current framework will be
replicated in the future should Egypt opt for additional IPPs. Instead a new framework is
evolving to accommodate future developments.

<table>
<thead>
<tr>
<th>Projects</th>
<th>Size (MW)</th>
<th>Cost (US$ million) (D/E)</th>
<th>$ per kWh</th>
<th>Fuel/ Cycle</th>
<th>Contract Type</th>
<th>Contract Years</th>
<th>Project tender-COD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sidi Krir</td>
<td>682.5</td>
<td>[413.9]¹⁶ (33/67)</td>
<td>606.45</td>
<td>Natural gas/Steam cycle</td>
<td>BOOT</td>
<td>20</td>
<td>1996-2002</td>
</tr>
<tr>
<td>Port Said</td>
<td>683.0</td>
<td>[340.0] (25/75)</td>
<td>497.80</td>
<td>Natural gas/Steam cycle</td>
<td>BOOT</td>
<td>20</td>
<td>1998-2002</td>
</tr>
<tr>
<td>Suez</td>
<td>683.0</td>
<td>[338.0] (25/75)</td>
<td>494.87</td>
<td>Natural gas/Steam cycle</td>
<td>BOOT</td>
<td>20</td>
<td>1998-2003</td>
</tr>
<tr>
<td>Total</td>
<td>2,048.5</td>
<td>1,091.9</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Notes: D/E, debt/equity ratio; BOOT: Build own operate transfer; COD: Commercial operation date

¹⁶ Assuming that the price of domestic gas used as fuel for the power plants remains under-priced,
however, economic costs will remain only partially reflected. The exact level of under-pricing remains
unknown by EEHC and other agencies as there is not one export price against which the domestic price
can be compared.

¹⁵ Other than the equity turnover, discussed in 3.3.1, the only changes that have occurred to date are
related to the payment of local operating and maintenance costs, however, the PPAs contained a
mechanism to escalate these costs and therefore the change does not constitute a renegotiation per se.

¹⁴ Previously project costs were estimated at US$417.8 million, however, following negotiations with
Egyptian customs authorities costs were reduced to US$413.9 million.
2.3.1 The first IPP framework

The MoEE charged the EEA and later its successor, the EEHC, with leading the IPP process, albeit in constant consultation with MoEE. In 1994, the EEA began evaluating IPP agreements, including those of Pakistan, Turkey and Ghana. The World Bank and USAID’s Submission and Evaluation of Proposals for Private Power Generation Projects in Developing Countries was scrutinized (World Bank and USAID 1994). Numerous seminars were conducted on the subject. In 1996, the EEA hired a consortium of USA-based consultants from Sargent & Lundy, Arthur Andersen and the law firm McDermott, Will and Emery to help manage the IPP process. During this early period, the utility was approached by Enron, which offered an unsolicited bid to develop the country’s IPPs. The EEA refused the offer, opting instead to conduct a series of competitive, international bids, which involved four distinct phases, namely: pre-qualification and short-list selection; preparation of the request for proposals; evaluation and selection of the best bidder; and negotiation and execution of project agreements (Egyptian Electricity Authority 2000).

The 1997 Investment Law, mentioned in section 2.1, provided developers with a number of additional key features: tax exemption (for the first five years), currency conversion, full repatriation of profits as well as protection against nationalization and expropriation (Egyptian Law No. 8/1997; Thomason 2004).

17 It is worth noting that all three organizations, headquartered in the USA, have been involved in USA electricity reform programmes, albeit with some of the USA consulting work occurring at the same time rather than preceding the Egyptian reforms; therefore there is little evidence to support the fact that reform models that were used in the USA were subsequently exported abroad by consultants (Sargent & Lundy per com 2007) (McDermott Will and Emery 2007).
Table 2: Key IPP provisions, framework 1

<table>
<thead>
<tr>
<th>Provision</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sale and purchase of energy and</td>
<td>20 year, US dollar denominated power purchase agreement exclusively between IPPs and EEHC</td>
</tr>
<tr>
<td>capacity</td>
<td>Take-or-pay provisions for capacity factor of 65% (Sidi Krir), 70% (Port Said and Suez)</td>
</tr>
<tr>
<td>BOOT</td>
<td>IPPs to transfer plants to EEHC after 20 years in condition of “repair, cleanliness, and appearance which is consistent with Prudent Utility practices”</td>
</tr>
<tr>
<td>Capacity payments</td>
<td>From COD EEHC to make monthly capacity payments, equivalent to capacity purchase price multiplied by the dependable capacity</td>
</tr>
<tr>
<td>Energy payments</td>
<td>From COD EEHC to make monthly energy payments, equivalent to the energy purchase price multiplied by net electrical output</td>
</tr>
<tr>
<td>Dispute resolution</td>
<td>If parties unable to resolve disputes through mediation of experts, arbitration may be sought following UNCITRAL Arbitration rules, in Cairo, or if parties request, at the International Chamber of Commerce in Geneva</td>
</tr>
<tr>
<td>Additional</td>
<td>PPA will come into effect only if the Fuel Supply Agreement and the Central Bank Guarantee have each come into effect.</td>
</tr>
<tr>
<td>Government Guarantee</td>
<td>Sovereign guarantees signed between the Egyptian Central Bank and IPPs to cover EEHC payments including termination payment</td>
</tr>
<tr>
<td>Fuel Supply Agreement</td>
<td>Gas agreement signed between Gasco and IPPs</td>
</tr>
</tbody>
</table>

More than 50 firms (including project developers and equipment suppliers) applied to pre-qualify for Sidi Krir and a large number of firms were retained for the actual tender, which ensured that the competition was intense (Second thoughts on BOT projects 2001). Even without an independent regulator overseeing the tendering, Egypt was able to secure what has been characterised as among the lowest electricity prices for developing country IPPs at 2.54 US cents per kWh from InterGen and Edison, the project developers for the first IPP. This low tariff is partly attributable to the low gas price but also to the developers perceptions about a favourable investment climate, no currency risk in the project and perceived long-term opportunities to built up a portfolio of generation assets (Egyptian Electricity Authority 2000; Egyptian Gas Prices 2005). Other significant features of the project included the large amount of local debt, albeit in dollar denominated terms.

Port Said and Suez, Egypt’s second and third IPPs, were achieved along virtually the same lines, although somewhat faster, with the same set of conditions extended by the government. Tenders were comparable for two plants at approximately 683 MW each, which were awarded to EDF in 1999. The main differences between the two sets of projects (i.e. Sidi Krir on the one hand and Port Said and Suez on the other) apply to the financing arrangements, elaborated on in section 3.3.2.
After just two years of operation by InterGen and Edison and about the same by EDF (i.e. a 10th of the 20 year PPA), these firms opted to sell their assets. InterGen sold its 60 per cent share to Globeleq in December 2004; Edison followed suit in May 2005. In August 2005, EDF entered into exclusive negotiations with Tanjong Public Limited Company, a Malaysian-based gaming and power company. Negotiations were reported as concluded in December 2005; and as of March 2006 all EDF subsidiaries were sold to Kuasa Nusajayas (a subsidiary of Tanjong, for which the only assets are Port Said and Suez). Korea Electric Power Company (KEPCO) allegedly made an unsuccessful bid for the plants. Despite this notable equity turnover, there has been no change made to the PPAs to date.

2.3.2 The second IPP framework

A second IPP framework has been evolving since 2000 and currently includes a series of new provisions for IPPs, namely: all foreign currency must be obtained from abroad, rather than being sourced from domestic banks; local designers, contractors and manufacturers must contribute substantially to the execution of the projects; and local costs must be paid in local currency. In addition, the bids that have both a larger equity-financing stake and a larger local investment component will be favoured. Finally, project developers must bring their own customers with them, i.e. EEHC will not be the sole buyer.

These new provisions represent a significant change in developer risks, including financing and off-take arrangements, with the state recognising more fully the costs of the foreign private sector, especially those associated with the recent currency devaluation. To date, however, no new IPP projects have been undertaken within this second regime, other than the ISPs referenced in section 2.1 and 2.2. From a developer perspective, the new terms may be viewed as less attractive than those applied to the initial three IPPs and, hence, the lack of interest is understandable.

The state (through the EEHC) has now once again taken the lead role in the expansion of the power system. All 4,500 MW required for the recently completed five year plan (2002-2007) has been financed by multilateral and bilateral development institutions. Approximately one

---

18 It is important to note in this context, however, that the first three IPPs utilised local labour, supported by only a small number of expatriate supervisors and maximised the use of local materials and equipment to minimize costs.

19 There is no discussion, however, of the role of Egypt’s local capital markets providing pound-denominated financing.

20 As of mid-2007, one aluminum plant is presently considering whether to build a 500 MW coal plant and feed excess supply to the grid, but no plans have been formalized.

21 The returns achieved under the first round of IPP projects were already fairly modest, and a requirement to increase the amount of equity financing will certainly not improve on this situation.
third of project costs are domestic and the foreign portion is significantly less expensive than that negotiated through commercial banks as seen with the first round of IPPs. For the next five year plan (2007-2012), 50 per cent is already covered by concessionary funding including from the European Investment Bank, Arab Fund for Social & Economic Development, Kuwaiti Fund, African Development Bank, Islamic Development Bank, Organization of the Petroleum Exporting Countries (OPEC) Fund and the World Bank, which as noted previously includes a technical assistance component for financial performance and pricing reform in the ESI, together with energy efficiency.\(^{22}\)

There is considerable doubt among existing IPP stakeholders that these publicly financed and operated plants will attain the same levels of efficiency as the IPPs, due to the fact that government plants often take longer to build and employ more staff. Even accounting for a reduction in efficiency, however, the soft loans may ultimately lead to cheaper power given the significantly cheaper financing. But is there sufficient public funding to meet all future power needs? The consensus among major stakeholders in the sector is that soft loans may actually be insufficient in the long-term, which begs the question of how the next IPP process will actually unfold, if at all.

3. A balance achieved?

The central question raised by this paper is whether the sustainability of IPPs depends on development and investment outcomes remaining in balance. If returns to investors are inflated at the expense of host countries or if host countries win out at the expense of investors, will such IPP deals hold in the future? If balancing outcomes is the trick, what leads to such an equilibrium, particular given exogenous stresses?

In Egypt, IPPs are providing reliable power, which is deemed among the lowest electricity price for IPPs across developing regions (negotiated at approximately 2.54 US cents/kWh) (Egyptian Electricity Authority 2000:6). Development outcomes therefore appear to be positive. In terms of investment outcomes, returns on investments have been considered fair (although somewhat less than expected). However, none of the firms have grown their portfolios of assets.

What do these development and investment outcomes in turn mean for the sustainability of the projects? Will quality, affordable power continue to be supplied with equity being reasonably

---

\(^{22}\) In February 2006, the World Bank approved a US$260 million loan for Egypt’s El Tebbin gas-fired power project. The project involves a 700 MW power plant made up of two 350 MW steam turbines and boilers using natural gas as fuel, expected online in 2009/10. The loan will meet more than half the estimated US$450 million cost of the project, with the majority of the remaining contribution coming from EEHC (Egypt: World Bank agrees El Tebbin support 2006).
rewarded and debt serviced into the future? While there is no evidence for expropriation of assets (creeping or outright), all the original project sponsors have left. The introduction of new sponsors has not, however, led to any change in the PPAs, which would indicate that outcomes are indeed sustainable.

The following sections of this paper seek to unpack how such outcomes came about (by exploring exogenous stresses, followed by a detailed discussion of the elements that contributed to success, if at all, and how the sustainability of the projects discussed here relates to the broader ESI and power sector reform framework.

3.1 Exogenous stresses

In the case of Egypt, neither drought nor civil unrest figured prominently in the country’s IPP experience. Instead currency devaluation is considered the most significant exogenous shock. Since the signing of the PPAs for Sidi Krir, Port Said and Suez, the Egyptian pound has undergone a major devaluation, losing almost half of its value. At the time of PPA signing, 3.2 Egyptian pounds were equal to one US dollar. By May 2003, this had reached 6 pounds (to US$1), hitting 6.3 pounds by November 2004. The Egyptian Electricity Transmission Company (EETC), which pays the capacity charges to the IPPs on behalf of EEHC, has therefore seen its monthly bill double in terms of Egyptian pound equivalency (compared to the dollar denominated capacity payments specified in the PPAs).

Pressure to float the Egyptian pound came as early as 1992 from the World Bank and IMF. Egypt resisted these pressures for more than a decade, even as the pound became increasingly overvalued. Reasons cited for the resistance include the lack of political will and capacity of the former Prime Minister (a new Prime Minister was appointed in July 2004). In the black market, there was a particularly steep rise (i.e. from 4.50 Egyptian pounds = US$1 to 7.50 pounds = US$1) in the year and a half before the float occurred, caused in part by 9/11 related recession. Finally, a decision to float the pound was made in end-January 2003, which sent shocks through the entire economy. It took almost another two years for government to adopt stabilizing measures, namely the introduction of the Interbank/US dollar market, which it did in December 2004 (World Bank 2003:8).

While there is a general consensus among stakeholders involved with the IPPs—from the local banks to the project developers and utilities—that the pound was over-valued, the extent and speed of the devaluation surprised all. Furthermore, since the devaluation, the MoEE has backed away from its plans to develop a total of 15 IPPs, which it billed as Egypt’s electricity
future starting in 1998. This decision came as a particular surprise to project developers InterGen and EDF, which had their eyes set on more than one project. Although future developments have been aborted, despite the turn in events, there has been no formal renegotiation of existing IPP contracts. InterGen/Globeleq did indicate that EEHC approached Sidi Krir management when Egypt was experiencing an acute scarcity of dollars to request payment in pounds to the maximum extent feasible, but that due to its dollar denominated debt the firm was unable to acquiesce. Minor changes, since the devaluation, are limited to partial payment of the local operating and maintenance component (both fixed and variable) in local currency, which amounts to approximately 4 per cent of the total charge. With Sidi Krir, the change is an informal agreement between the project’s general manager and EEHC. With Port Said and Suez, the agreement went through negotiations with the International Finance Corporation (IFC), but EDF was given the option to return to US dollar payments at any time, i.e. it was not contractually bound. It should be noted that the sale to Kuasa and potential sale to PEL have not changed these agreements.

The devaluation has therefore had no appreciable effect, positively or negatively, on either InterGen/Globeleq or EDF’s investments, due to the fact that all PPAs were US dollar denominated, as per the specifications of EEA’s tenders.

3.2 Country level factors
An exploration into the country level factors that impacted on Egypt’s IPP outcomes reads like a check list, with nearly all the items checked off. Evidence for a favourable investment climate? Yes. Proof for a clear policy framework? Yes. Signs of coherent power sector planning as well as international competitive bid (ICB) processes? Yes. Abundant low cost fuel apparent, together with the willingness of the government to share risks. The list then contains only two main items, which have not been deemed as contributing elements to success, which, along with the other factors will be discussed briefly below. Contributing elements to success that relate to the host country purview are summarized briefly in the following table.

---

23 EEHC provided the following breakdown of the PPAs:
Capital reimbursement rate: 100 per cent US$ denominated
Fixed operating and maintenance (O&M): domestic O&M: currently paid partially in local currency; foreign O&M: US$ denominated
Variable O&M: domestic O&M: currently paid partially in local currency; foreign O&M: US$ denominated

24 It remains to be seen what will happen if and when the sale is finalized with PEL.
Table 3: Contributing elements to successful IPP investments within the purview of host governments

<table>
<thead>
<tr>
<th>CES</th>
<th>Details</th>
</tr>
</thead>
</table>
| Favourable investment climate    | - Stable macro-economic policies  
                                 |- Legal system allows contracts to be enforced, laws to be upheld, arbitration  
                                 |- Good repayment record and investment grade rating  
                                 |- Requires less (costly) risk mitigation techniques to be employed which translate into lower cost of capital and hence lower project costs and more competitive prices  
                                 |- Potentially more than one investment opportunity  |
| Clear policy Framework           | - Policy framework enshrined in legislation  
                                 |- Framework clearly specifies market structure and roles and terms for private and public sector investments (generally for single buyer model, not, yet, wholesale competition in African context)  
                                 |- Reform-minded ‘champions’, concerned with long-run, lead and implement framework  |
| Clear, consistent and fair regulatory oversight | - Oversight improves general performance of private and public sector assets  
                                 |- Transparent and predictable licensing and tariff framework improves investor confidence  
                                 |- Cost-reflective tariffs ensure revenue sufficiency  
                                 |- Consumers protected  |
| Coherent power sector planning   | - Energy security standard in place; planning roles and functions clarified  
                                 |- Power planning vested with lead, appropriate (skilled, resourced and empowered) agency  
                                 |- Power sector planning takes into consideration the hybrid market (public and private stakeholders and their respective real costs of capital) and fairly allocates new build opportunities among stakeholders  
                                 |- Planning has built-in contingencies to avoid emergency power plants or blackouts  |
| Competitive bidding practices     | - Procurement process is transparent and competition ultimately drives down prices  |
| Abundant low cost fuel & secure contracts | - Cost-competitive with other fuels  
                                 |- Contract safeguards affordable and reliable fuel supply for duration of contract  |

Note: Competent contracting capacity is also emerging as a critical piece of the equation, which may lead to more favourable outcomes. Such capacity may ultimately be best located in a single-buyer office. Fair dispatch, namely the equitable dispatching of state-owned and privately-owned plants has also emerged as a critical piece of the equation, but is beyond the scope of the present study.

Foreign direct investment (FDI) trends in Egypt were generally on the rise when investors negotiated their PPAs, as seen in Figure 2 below. The country had an investment grade rating

---

25 Competent contracting capacity is also emerging as a critical piece of the equation, which may lead to more favourable outcomes. Such capacity may ultimately be best located in a single-buyer office. Furthermore, fair dispatch, namely the equitable dispatching of state-owned and privately-owned plants appears to be of significant importance, but both areas are beyond the scope of the present study.
(of BBB-) from major credit ratings as well (which would dip to one notch below investment grade in 2001).

Figure 2: Egyptian FDI 1980-2002

![Graph showing FDI & ODA (millions) from 1980 to 2002]


Not only were InterGen, Edison and EDF following a larger trend in FDI, the companies also had prior experience in Egypt. For InterGen, its shareholders (Shell and Bechtel) were both operating in Egypt. Bechtel especially had long-term involvement with the MoEE and was keen to land a large IPP construction contract. EDF had a long-term relationship with Egypt in terms of providing technical assistance. Commonwealth Development Corporation (CDC), from which Globeleq was spun off in 2002, also had prior experience in the country. Each of these existing networks and relationships helped facilitate the investment decisions made by the firms.

In addition to the above noted conditions, at the time of IPP tendering, Egypt’s investment climate was generally perceived by investors as positive, which went a long way in attracting and cementing bids. Among the advantageous features cited by potential investors were: political stability (and a pro-western orientation), an active capital market, an efficient banking system, the degree to which contracts were enforced, the relative absence of corruption, the availability of a well educated and productive labour force at reasonable rates and a growing economy with a focus on increasing the private sector’s role. Country risk was perceived to be minimal, and all investment conditions appeared to be primed for further improvement.26

26 It should be noted in its press release announcing the conditional sale agreement re: Sidi Krir in May 2007, Tanjong indicated similar favourable conditions, as well as the passage of a recent tax code that reduces corporate income tax rates by 50 per cent, and efforts to modernise treasury cash management and budget classification (CIMB Investment Bank Berhad 2007:6-7).
These factors, combined with the large natural gas discoveries, which will be discussed in greater detail below, offering a low cost fuel supply and a strong demand for electricity, made for particularly favourable investment prospects. Furthermore a total of 15 BOOT IPP developments were identified by the MoEE (all to be tendered via ICBs) including technology and site location as of 1998, which served to assure investors of the strong possibility for more than one project, thereby exploiting economies of scale.27

Of negligible importance to investors were the retail tariff subsidies. Allegedly, the absence of an independent regulator at the time also made no difference to investors as the projects were stand-alone deals with the Government of Egypt, with rights and obligations clearly set forth in the PPA and Central Bank Guarantee. Both InterGen and EDF have confirmed that such a guarantee was necessary for them to enter the market. Lastly, the re-bundling of EEA’s distribution and generation entities did not feature in investors’ concerns.

In sum, the inherent risk posed by the electricity sector and its delayed reform programme, was offset by the positively perceived investment climate, clear policy and planning framework and abundance of natural gas.

3.2.1 Abundant low cost fuel: how long will it last?

Although it has already been acknowledged that abundant low cost fuel was among the key pieces that helped attract and cement deals, given recent developments, the discussion of fuel deserves further attention. It should be noted at the outset that the fuel charge accounts for approximately 40 per cent of the total capacity charge (assuming approximately 75 per cent capacity factor) and has been instrumental in keeping charges low. The fuel relationship is governed by an agreement between Gasco, the national gas company, and the IPPs. Fuel costs are denominated in US dollars and are compensated to the project sponsors via a formula stipulated in the PPA. They are not a direct pass-through to the utility, i.e. project sponsors pay Gasco and are subsequently reimbursed by EEHC.

The gas price that the generators28 pay appears to be non-economic (i.e. potential export prices are higher than those charged to the IPPs). The subsidy is roughly calculated as the average national selling price (of pipeline and LNG) minus the supply sector cost (which Gasco provides to all IPPs and EEHC own plants).

Important developments are happening in the natural gas industry, however, which may impact future IPPs and possibly the three existing projects. First, the price of gas has been increasing.

27 The plan to develop 15 IPPs has since been aborted, as discussed in section 3.4.1.
28 According to sources within EEHC as of February 2005, IPPs pay the same rate as EEHC’s other plants.
The current domestic gas rate, as of May 2007, is US$1.25 for 1,000 cubic feet (Mcf). The price is determined by Egypt’s Minister of Petroleum; thus price changes involve a ministerial decree. Since IPP project inception, several such decrees have been issued. Between 2001 and March 2004, the price was $US 0.643 per Mcf. Then between March 2004 and September 2004 the price was raised to US$0.85 per Mcf. As of September 2004, it was raised a second time to US$1 per Mcf, and most recently by 25 per cent to US$1.25 per Mcf.

Presently this increase in gas prices is absorbed wholly by EEHC, due to the pass through nature of the energy charge from IPPs to the utility, and the lack of a pass through provision to the consumers. Going forward, however, with potentially increasing gas prices, will EEHC be able to absorb the full cost of gas? It is not inconceivable that existing IPPs could be pressured to adapt gas arrangements to provide for some greater level of flexibility, including moving away from a dollar denominated transaction.

Increases in the gas price are largely a product of the increasing demand for Egypt’s gas—both from abroad and home. In terms of foreign demand, presently Egyptian gas is fuelling markets across North Africa, the Middle East and Europe with more developments on the horizon.

- **Jordan/pipeline:** In 2003, the first part of the 10 billion cubic meters (Bcm) a year Arab gas pipeline was put in service, running from El Arish in Egypt across the Gulf of Aqaba into Jordan. Jordan’s Aqaba power station has been converted to burn Egyptian natural gas as of April 2004. The pipeline has also since been extended northward as far as Rehab (Jordan) and is presently supplying approximately 1 Bcm/year. All new generation in Jordan in the medium term is to be gas-fired, which will translate into even greater demand for Egyptian gas (Egypt: Now Lebanon eyes interconnector 2005:3; Egypt: Jordan study sees greater linkages 2006:3).

- **Europe/LNG:** As of 2006, Egypt ranked as the sixth largest LNG exporter in the world (after less than two years exporting LNG), a position it maintains in 2007 as well (Egypt Staff 2007). Egypt has two LNG facilities: Spanish Egyptian Gas Company (SEGAS) and Egyptian LNG (ELNG). SEGAS, a joint venture between Spain’s Union Fenosa, Italy’s ENI, the Egyptian Natural Gas Holding Company and Egyptian General Petroleum Corporation, is located at Damietta and has export capacity of 7.56 Bcm/year. ELNG is a joint venture among the above-noted government entities and Malaysia’s Petronas and British Gas (BG), with capacity of approximately 10 Bcm/year. Egypt exported a total of 10.54 bcm of LNG in 2005 and is expected to reach full capacity of 17.2 bcm in 2006 (Schewe 2006).
The country is also experiencing a sharp increase in domestic demand, most notably due to the growth of energy-intensive industries, largely for export, such as cement, which until recently have also benefited from the subsidy discussed above. This heightened demand led the government to issue a temporary moratorium on new industrial developments (which has since been removed) as a general allocation of gas is determined. Furthermore large industrial consumers (those with transmission connections in excess of 66 kV), amounting to approximately 23 per cent of total national consumption, are seeing prices increase slowly; such consumers are being encouraged (albeit informally) to consider putting up their own power installations, as was previously mentioned in section 2.1. Although natural gas reserves are plentiful, they will not be able to sustain the forecasted activity of domestic electricity consumption, LNG export and industrial growth. A debate is presently raging at both the government level and the ruling party level about which sector should be the primary beneficiary and when. While 25 new cement factories and three new steel factories have (since the lifting of the moratorium) been licensed, pending are new LNG contracts as well as a plans to develop several aluminium smelters (England 2007). Meanwhile, under consideration by EEHC are the roles of nuclear power and wind energy. A new energy policy/strategy is expected by end-2007, which should lay down the natural gas allocation and the role of other energy sources.

With this backdrop, it is possible that existing IPPs may see their own terms of trade under pressure. Furthermore, it is unlikely that any future IPPs will be able to negotiate similar terms. Sidi Krir, Port Said and Suez were all able to take advantage of the nascent gas market, which in just a few years has matured substantially.

3.3 Project level factors that impacted IPPs

The aforementioned currency devaluation and country level factors, including the now controversial nature of the Egypt’s abundant low cost natural gas, go a long way in explaining both the development and investment outcomes for IPPs. These factors are not, however, the whole story. Of interest in this analysis is whether equity and debt arrangements were considerable favourable, as well as the extent to which revenue streams have been deemed both adequate and secure. What other risk management and mitigation measures safeguarded
contracts? What about the technical performance of the three plants? Finally, how has strategic management and relationship building impacted on outcomes, if at all? Contributing elements to success that relate to the project purview are summarized briefly in the following table.

**Table 4: Contributing elements to successful IPP investments, project issues**

<table>
<thead>
<tr>
<th>CES</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Favourable equity partners</td>
<td>- Local capital/partner contribution, where possible&lt;br&gt;- Risk appetite for project&lt;br&gt;- Experience with developing country project risk&lt;br&gt;- Involvement of a DFI partner (and/or host country government)&lt;br&gt;- Reasonable, fair ROE&lt;br&gt;- Development-minded firms</td>
</tr>
<tr>
<td>Favourable debt arrangements</td>
<td>- Low cost financing&lt;br&gt;- Local capital/markets mitigate foreign exchange risk&lt;br&gt;- Risk premium demanded by financiers or capped by off-taker matches country/project risk&lt;br&gt;- Some flexibility in terms and conditions (possible refinancing)</td>
</tr>
<tr>
<td>Secure and adequate revenue stream</td>
<td>- Commercially sound metering, billing and collections by the utility&lt;br&gt;- Robust PPA (stipulates capacity and payment as well as dispatch, fuel metering, interconnection, insurance, <em>force majeure</em>, transfer, termination, change of law provisions, refinancing arrangements, dispute resolution, etc.)&lt;br&gt;- Security arrangements where necessary (escrow accounts, letters of credit, stand-by debt facilities, hedging and other derivative instruments, committed public budget and/or taxes/levies, targeted subsidies and output-based aid, hard currency contracts, indexation in contracts)</td>
</tr>
<tr>
<td>Credit enhancements and other risk management and mitigation measures</td>
<td>- Sovereign guarantees&lt;br&gt;- Political risk insurance&lt;br&gt;- Partial risk guarantees&lt;br&gt;- International arbitration</td>
</tr>
<tr>
<td>Positive technical performance</td>
<td>- Technical performance high (including availability)&lt;br&gt;- Sponsors anticipate potential conflicts (especially related to O&amp;M, and budgeting) and mitigate them</td>
</tr>
<tr>
<td>Strategic management and relationship building</td>
<td>Sponsors work to create good image in country through political relationships, development funds, effective communications and strategically manage their contracts, particularly in the face of exogenous shocks and other stresses</td>
</tr>
</tbody>
</table>

Notes: ROE: return on equity; O&M: operation and maintenance

To frame this discussion, Figure 3 below highlights the range of different contractual relationships in which Egypt’s IPPs entered.

**Figure 3: Egyptian IPPs and associated contractual relationships**
3.3.1 Favourable equity arrangements

Engaging local partners has been used by many firms as a means to mitigate country risk, with India and China representing among the most striking examples (Woodhouse 2006:193-198). Absent from any of the Egyptian IPPs, however, are local partners. Instead, these projects were developed exclusively by multinational firms: InterGen together with Edison (for Sidi Krir) and EDF (for Port Said and Suez). Important to note in this context is that the firms had considerable prior experience in Egypt, which may have served to mitigate perceived country risk.

Multilateral development institutions were also absent, in terms of project equity, but figured prominently in EDF’s debt for Port Said and Suez, which will be discussed in the next section. This lack of equity involvement stands in strong contrast to other African IPP experiences, namely in Kenya and Tanzania where DFIs held significant equity shares in projects. Like local partners, this aspect does not appear to have strong explanatory power in terms of project outcomes, clearly reflecting a different investor perception of risks and rewards.

A more significant aspect that appears to be shaping outcomes is the firms’ commitment to the country and equity turnover, which mimics activity in power sectors throughout the developing

---

Notes: SK: Sidi Krir; PS&S: Port Said and Suez; EPC: engineering, procurement and construction; O&M: operation and maintenance

EDF cited that Egyptian investment was part of the firm’s strategy toward global expansion which started in 1995-6. At this time, EDF focused on obtaining either existing companies or developing new assets. As part of its strategy, EDF made an initial bid, with Alstom, for Sidi Krir but was outbid by InterGen.
world. Although both InterGen and EDF had prior involvement in Egypt, both firms have since sold their shares. InterGen’s reason for selling its interest in Sidi Krir to Globeleq in 2004 was based on the fact that its shareholders (Bechtel and Shell) made a strategic decision to move out of the business of owning and operating private power facilities. For Bechtel this meant moving back to its core business of designing, engineering and building plants, but not operating and maintaining them, and for Shell, it meant focusing on the petroleum exploration and production business. Contrary to speculation from some stakeholders, the reason behind InterGen exiting Egypt was not a function of the firm prematurely recuperating its investment. Similarly, Edison has sold much of its global portfolio because of a decision to return to its core business in Italy. EDF also cites its plans of concentrating its investments in Europe.

With the Sidi Krir sale motivated by a strategic decision taken by InterGen’s shareholders, the firm is known to have compromised its expected investment returns in the plant. The Sidi Krir sale has been estimated at US$115 million (Egypt: Tanjong unveils $307m deal with EDF 2005:3), against an original equity contribution of US$139.2 million. Thus the change in equity turnover has directly affected investment outcomes. The opposite may be the case with EDF, with the firm selling its equity in the two plants for a reported US$307 million, in contrast to the original equity contribution of US$210, however, there was no signal by stakeholders that investment returns were more or less favourable than expected (Egypt: Tanjong unveils $307m deal with EDF 2005:3).

While Shell, Bechtel, Edison and EDF’s interest in owning emerging market IPPs has dwindled, along with many European and USA-based firms, Globeleq’s mission revolves around power projects in emerging markets, with one important qualifier. Although the firm benefited from the early exit of investors like InterGen and Edison by buying assets at a discount, it has since decided to sell Sidi Krir, reflecting not a pull-out from developing markets, but rather a plan to focus on actual greenfield development. “Globeleq's business plan had contemplated since the beginning that we would acquire operating power assets during a period of time when those assets were available and undervalued by the market and, when market conditions shifted, devote more time and resources to greenfield development” (Globeleq per com 2007). Thus, according to the firm, the recent conditional sale to Pendekar Energy Limited is in keeping with its long-term strategy.

30 As of 2005, InterGen had developed 20 assets worldwide (since 1995). Of its original 20, the firm sold off 11, retaining just nine. Furthermore, in 2005, InterGen was sold by its then owners, affiliates of Bechtel Corporation and Shell Generating Limited, to affiliates of AIG Highstar Capital II, LP and The Ontario Teachers' Pension Plan.
Tanjong, the lead shareholder in PEL, and the exclusive shareholder in Kuasa, is on the cusp of owning Sidi Krir, Port Said and Suez, all large-scale IPP generation in Egypt. There is, however, more to this tale, as previously indicated. With Globeleq putting all of its existing plants on the market (with the exception of those in Sub-Saharan Africa, which did not attract favourable indicative bids), Tanjong Energy and Globeleq have agreed to a conditional sale for Sidi Krir as well as all of the firm’s Asian assets, which include six additional plants, for a total of 1,810 MW, valued at approximately US$493 million (Hin and Whitley 2007). When and if the sale is realized, Tanjong will have increased its generation portfolio by 25 per cent. What has motivated this privately owned firm, which is traded on the Kuala Lumpur Stock Exchange (and controlled by T. Ananda Krishnan) to undertake such a major acquisition? With excess generation capacity in Malaysia at approximately 40 per cent, there is little room for the energy arm of the firm to grow. Thus seeking to position itself as a global provider of O&M services and power generation assets, Tanjong Energy looked abroad and found EDF’s offering followed by Globeleq’s to match its aspirations. In 2005, it also bought up a generation and water desalination facility in the United Arab Emirates (Egypt: Tanjong unveils $307m deal with EDF 2005:3).

PEL’s minority shareholder, with 45 per cent, is of a slightly different breed. The Saudi Arabian-based Al Jomaih Automotive Company, a private limited company, incorporated in 1996, focuses on the wholesale and retail trading of vehicles and auto parts (CIMB Investment Bank Berhad 2007:4). It is the largest General Motors dealer in the Middle East. Unlike the original developers in Egypt’s IPP, Al Jomaih has no previous experience in power generation. While Al Jomaih’s foray into North African and Asian electric generation is the subject of speculation, the investments, all with long-term PPAs with state-owned utilities, represent a stable cash flow as well as an immediate income stream as plants are all in operation. Although Al Jomaih motives have yet to be fully unearthed, Tanjong has indicated that its partnering with Al Jomaih may be particularly useful as the firm contemplates further investments in the Kingdom (of Saudi Arabia).

It should be noted in closing that government stakeholders indicate that this equity turnover has not been disruptive and that plants continue to provide an important benchmark to the sector.

31For the fiscal year that ended 31 January 2007 (which does not reflect the PEL acquisition), Tanjong’s power generation segment constituted: 74% of Tanjong’s earnings per share and 69% of Tanjong’s revenue (Tanjong Public Limited Company 2007:9-10).
3.3.2 Favourable debt arrangements

Total project costs for each of the three IPP plants ranged between US$338 and US$413.9 million (at an average of US$530/kW), with lower costs negotiated for each subsequent plant, to yield among the lowest IPP electricity prices in the developing world, as noted above. Of the US$413.9 million in project costs for Sidi Krir, approximately US$373 million accounted for the capital cost with about 10 per cent of the remaining being the financing costs of the plant (a similar breakdown is not available for EDF’s IPPs).

The two sets of projects diverge in their financing, with the EDF plants more representative of IPP projects across Africa, given the involvement of a DFI. With project finance stipulated in the tender, equity accounted for about a third of the project costs: 33 per cent in Sidi Krir and approximately 28-29 per cent in Port Said and Suez. Table 3 summarizes debt, both the source of the debt and the purpose to which it was allocated, where information is available, for the IPPs.

In the case of Sidi Krir, the majority of project debt, approximately 60 per cent, was sourced from local Egyptian banks, but denominated in US dollars; the remainder came from a suite of international banks, with no DFI involvement.

---

32 It should be noted that this level of equity participation is quite conservative (with more aggressive examples of only 25 per cent or 20 per cent equity seen in other IPP projects, particularly in lower risk markets such as Egypt). In this context, the proposed increase in equity participation in new projects appears potentially counterproductive as it may further reduce investors return on equity.
<table>
<thead>
<tr>
<th>Amount (US$ million)</th>
<th>Interest Rate</th>
<th>Tenure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sidi Krir D/E (33/67)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available: US$342.5</td>
<td>-</td>
<td>-</td>
<td>Debt structure set up in 5 tranches (B and C have amounts outstanding as of 2006). All tranches unsubordinated and rank pari passu with each other</td>
</tr>
<tr>
<td>Drawn down: US$339.1</td>
<td>1.75% over LIBOR</td>
<td>12 years</td>
<td>Tranche A: shareholder funding to fund ongoing costs during construction (considered part of equity in D/E ratio calculated by sponsors)</td>
</tr>
<tr>
<td>(278.6)²</td>
<td>Paid off shortly after COD</td>
<td></td>
<td>Tranche B: US dollar facility provided by local Egyptian banks. Rate of 1.75% over LIBOR up to COD and 2% thereafter</td>
</tr>
<tr>
<td>US$35</td>
<td></td>
<td></td>
<td>Tranche C: US dollar facility provided by international lenders (but with some local Egyptian banks also included in final syndication)</td>
</tr>
<tr>
<td>US$164.3</td>
<td>1.75-2% over LIBOR</td>
<td>9 years</td>
<td>Tranche D: US dollar working capital facility to cover costs in the event of delay of customer payments (not included in total debt costs)</td>
</tr>
<tr>
<td>US$114.3</td>
<td>1.75-2% over LIBOR</td>
<td></td>
<td>Tranche E: US dollar Letter of Credit or performance guarantee required by PPA under construction and reduced to US$5.2 million thereafter (not included in total debt costs)</td>
</tr>
<tr>
<td>US$6</td>
<td>1.75% over LIBOR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>US$19.5 (presently revised to US$5.2, equivalent to approximately 1 month capacity charge)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Port Said &amp; Suez D/E (75/25)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available: US$495</td>
<td>-</td>
<td>-</td>
<td>All loans unsubordinated and rank pari passu with each other, no corresponding allocation of funds as per Sidi Krir available at this time</td>
</tr>
<tr>
<td>Drawn down: US$468</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>US$45 million per project</td>
<td>Not Available (NA)</td>
<td>19 years</td>
<td>IFC A loan: IFC’s own account</td>
</tr>
<tr>
<td>Total of US$90</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>US$152 million per project</td>
<td>NA</td>
<td>19-17 years</td>
<td>IFC B loan: IFC syndicated loans</td>
</tr>
<tr>
<td>Total of US$305</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>US$50 million per project</td>
<td>NA</td>
<td></td>
<td>IFC facilitated: Institutional Investor Debt (John Hancock)</td>
</tr>
<tr>
<td>Total of US$100</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: compiled by authors, based on unpublished Sidi Krir and EDF data

Notes: ¹ Due to sensitivity of data, much of the information is not publicly available (NA); ² Total of 5 debt tranches for Sidi Krir described in table add up to US$339.1 million not US$278.6 million as Tranche A is treated as equity in Debt/Equity ratio and neither Tranche D nor E are counted as part of the direct project debt; ³ LIBOR: London Interbank Offered Rate.
For Port Said and Suez, however, the debt was sourced by the International Finance Corporation together with a syndicate of international banks and institutional investors, and the projects saw no local bank involvement. The difference in debt financing between the EDF and InterGen/Globeleq plants is closely related to how the debt was denominated. Although sourced by local banks, the Sidi Krir local debt of US$164 million was denominated in US dollars. Reasons given for the US dollar denominated debt are four-fold:

- the loans were available at comparable rates with other, international banks;
- the difference in the interest rates in both currencies was in favour of US dollars;
- IPP earnings were denominated in US dollars; and finally
- using dollars, rather than Egyptian pounds, helped eliminate all currency risk premiums from the bidders’ quoted tariff prices thereby leading the government to secure the lowest possible bids, but also shifting the currency risk to the government.

While EDF was also eager to obtain local, Egyptian dollar denominated debt, the government did not make any such loans available (Egyptian-pound denominated debt was not acceptable to the firm for reasons related to currency risk). Allegedly dollars were still abundant in local Egyptian banks, but there was insufficient political will to mobilise these resources for power plant developments.³³ With European commercial banks reluctant to invest in what they deemed insufficiently environmental projects (i.e. plants were for gas-fired steam generators and not combined cycle), EDF turned to a multilateral, namely IFC to help secure additional debt.³⁴

IFC subsequently provided to EDF a US$90 million loan with a maturity of 19 years and arranged, together with Societe Generale and Barclays, a multi-million dollar syndication, with maturities of 19 and 17 years. Among the largest single holders of debt in Port Said and Suez is the USA-based insurance firm John Hancock with US$100 million lent.³⁵ In contrast, for the Sidi Krir project, there was no need to engage a development finance institution to secure funding. Although Sidi Krir was the first IPP in Egypt, the local, US dollar denominated debt

³³ One recent indication from local bankers is that Egypt’s local capital markets/banks may be used for future investments planned for metro, roads and ports, but no plans are on the table to target these funds for the power sector, which is being financed largely by concessionary loans.

³⁴ The same environmental issues were not, however, raised by European banks for the Sidi Krir project.

³⁵ The presence of an institutional investor in emerging market power projects is noteworthy. If replicated, such involvement could transform electricity developments given the size of institutional investors.
component provided the assurance that international banks needed to participate (Thomason 2004).

In sum, Sidi Krir was able to access competitively priced dollar denominated financing from local banks. EDF was provided with no such financing option, and as a result, EDF had to seek out a multilateral development institution (although it in turn did engage a significant institutional investor in the form of John Hancock). Following on EDF’s experience, the next IPP framework clearly stipulates that all foreign currency must be sourced from abroad. This change in policy may imply a negative development outcome, which the Government of Egypt is now seeking to rectify.36

3.3.3 Secure and adequate revenue streams and other risk management

Just as the government may be seeking to alter the structure of financing for future IPPs, steps have been taken to ensure that no more PPAs are signed with the same conditions as granted to the first three developers, as described in section 2.3.2, with the largest difference related to new IPPs being required to come up with their own off-takers to consume the power. The new IPP framework has not, however, had any impact on the existing PPAs—even despite the fact that capacity payments in Egyptian pound equivalency have doubled for the off-taker.

The three PPAs signed by InterGen/Edison and EDF are similar in nature. The PPAs stipulate a BOOT project structure for all three IPPs. The rationale provided by EEHC for such a structure is that there was general public concern over ownership.37 The “T” or transfer component helped reduce political pressure, by assuring the public that after 20 years plants would be returned to the state. EEHC would then operate them for an additional 20 years (as plant life was estimated at 40 years). The Table immediately below presents the allocation of risks in the PPAs over the course of the development, construction and operation phases. The developers assume the majority of the risk during the first two stages, with the off-taker taking on the bulk of the risk in the operation stage.

---

36 Project finance was arranged by Kuasa for both Port Said and Suez and would also be for Sidi Krir.
37 It should be noted that despite considerable equity changes, there has been no alteration to the project structure.
Table 6: Risk allocation in Egypt’s IPPs

<table>
<thead>
<tr>
<th>Phase</th>
<th>Risk component/description</th>
<th>Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development</td>
<td>Financing risk: Developer may not be able to obtain sufficient financing</td>
<td>Developer: EEHC entitled to performance guarantee of US$20 million</td>
</tr>
<tr>
<td></td>
<td>Permitting risk: Failure of developer to timely obtain permits</td>
<td>Developer: EEHC entitled to performance guarantee of US$20 million (EEHC, however, assists and bears the risk provided gvt delays)</td>
</tr>
<tr>
<td></td>
<td>Increased construction cost: Cost overrun due to developers own cost</td>
<td>Developer</td>
</tr>
<tr>
<td></td>
<td>Construction cost increase due to contractor</td>
<td>Developer</td>
</tr>
<tr>
<td>Construction</td>
<td>Delay in project completion: Contractor default</td>
<td>Developer: PPA details daily damages to be paid by Developer</td>
</tr>
<tr>
<td></td>
<td>Failure to complete transmission facilities</td>
<td>EEHC: PPA details daily damages to be paid by EEHC</td>
</tr>
<tr>
<td></td>
<td>Force Majeure (FM) events: Developer AND EEHC (Developer excused and deadline adjusted)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Legal risks: Change in law</td>
<td>EEHC: if changes cause increased costs, prices will be modified</td>
</tr>
<tr>
<td>Operating</td>
<td>Dispatchability: Based on assumption that plant is fully dispatchable by EEHC in accordance with economic loading</td>
<td>EEHC, i.e. take-or-pay contract</td>
</tr>
<tr>
<td></td>
<td>Capacity and availability conditions: Sustain capacity: risk that plant output or availability degrades over time</td>
<td>Developer: capacity payment in accordance with tested net capacity</td>
</tr>
<tr>
<td></td>
<td>Fuel charge: Risk fuel price changes</td>
<td>EEHC*</td>
</tr>
<tr>
<td></td>
<td>Heat rate risk: risk that efficiency of plant degrades overtime</td>
<td>Developer</td>
</tr>
<tr>
<td></td>
<td>Minimum take-or-pay under fuel agreement</td>
<td>EEHC</td>
</tr>
<tr>
<td></td>
<td>Force Majeure risks (FM): FM leading to interruption in operation</td>
<td>EEHC: will continue to pay capacity charge</td>
</tr>
<tr>
<td></td>
<td>FM leading to additional cost</td>
<td>Developer AND EEHC</td>
</tr>
<tr>
<td></td>
<td>Legal risks: Change in law</td>
<td>EEHC: if changes cause increased costs, prices will be modified</td>
</tr>
<tr>
<td></td>
<td>Conditions of plant at time of transfer: If plant output or heat rate are lower than guaranteed values</td>
<td>Developer</td>
</tr>
</tbody>
</table>

Source: adapted by authors from EEHC (Egyptian Electricity Authority 2000)
Note: *Fuel price is not, however, a direct pass-through.

Finally, an added assurance in the PPA is a provision for international arbitration. As a default, disagreements are to be settled at the Cairo Regional Centre for Commercial Arbitration, under Egyptian law, in English. Should either party request it, however, arbitration proceedings may
be conducted in Paris or Geneva and settled in accordance with the rules of the International Chamber of Commerce (Egyptian Electricity Authority 2000). To date, no disputes have required arbitration.

The PPAs for Sidi Krir, Port Said and Suez were contingent on two additional agreements coming into effect, namely: the fuel supply agreements (discussed at length in section 3.2.1) and the Central Bank guarantees, which were signed directly between IPPs and Gasco and the Central Bank, respectively. With regards to the Central Bank guarantee, all financial obligations by the off-taker, namely EEHC, as specified in the PPA, are backed by a Central Bank guarantee. According to developers, these guarantees were a necessity given the immature IPP market in Egypt, as noted in the context of investor perception.

3.3.4 Positive technical performance and strategic management

The way in which different projects were managed did not appear to make a significant impact, although there are minor instances worth noting. Stakeholders at InterGen highlighted unforeseen circumstances related to investor risk assessment and project management, associated with a lower than expected return, i.e. 8-10 per cent rather than 15-18 per cent, initially expected. These circumstances comprise: unanticipated premium increases in the world insurance market; i.e. one year premiums for Sidi Krir were US$5.2 million instead of US$1.2 million as budgeted; unrealized estimated availability of higher calorie fuel, which did not materialize; and finally the firm was unable to take advantage of low interest rate environment (interest rates decreased after the signing of the PPA) due to the fact that 80 per cent of the debt was hedged.

For EDF, Port Said and Suez have been relative investment successes with the company reporting that it made “modest profits” and ultimately met its profit targets (with the sale of its plants in March 2006), achieved in part through management of technological risk.38

4. Final outcomes and conclusions

The IPP experience in Egypt appears to be positive: private investments were made in three substantial gas-fired plants that continue to deliver reliable and affordable power. While original project sponsors have departed, new investors have been willing to take equity. And despite a massive currency devaluation, dollar denominated PPAs have held, which has obviously been good for investors; less so for the off-taker, although cheaply sourced local gas

38 Although EDF interviewees were not able to report the project’s target or actual ROE due to shareholder agreements, they did indicate that “[we] assume that [profit targets] match those of other IPP developers, but it is hard to say”. It remains unclear, however, whether EDF, a public utility, would indeed have the same profit targets as other private IPP developers.
has meant that PPAs are still competitively priced by international standards. It may be concluded that development outcomes (reliable and competitively priced power) have been in broad balance with investment outcomes (chiefly, adequate returns).

The main elements contributing to success are multi-fold. Egypt is characterized in part by its relatively favourable investment climate, which has gone a long way in attracting FDI into the electricity sector. Although not presently investment grade, Egypt is just one notch below (at BB+) (Chambers 2007). One stakeholder cited the following features that contributed to an attractive investment climate, dating back to the first IPP tenders:

…a proper business environment; political stability in the country and the region; the government’s economic policy (monetary and fiscal policy); an active capital market; an efficient banking system; a stable inflation and exchange rate; the repatriation of profits; the degree of enforcement of contracts; the degree of corruption; the country’s labour force and the availability of a well educated productive labour force at a reasonable cost; the expected demand for goods and services in the near future; the country’s geographical location; the ability to export to other near by markets based on signed trade agreements with EU countries, Arab countries & African countries (Egypt exports excess electricity to Jordan); and finally the experience of other local and international investors.

Reinforcing a favourable investment climate was Egypt’s first IPP policy framework and planning, which was also notable for its investor-friendly approach. Both of these elements have in turn been linked to a successful international competitive bid process as well as favourable equity partners and favourable debt arrangements. Abundant low cost fuel and secure fuel arrangements have also helped pave the road to success, as have positive technical performance. The 2002-3 currency devaluation, among the most significant stresses to the country’s macroeconomic state since the inception of the IPPs, has caused a change in the power sector reform programme but not altered any of the existing IPP contracts. There has evidence neither of contracts unraveling nor creeping expropriation, which is generally attributable in the case of Egypt to: robust and equitable contracting arrangements as well as strong local management and relationships—although equity turnover has been substantial. Of little significance throughout has been the role of the regulator, established shortly after the PPAs for all three IPPs had been negotiated.

Yet a closer examination of the IPP experience reveals a slightly more nuanced picture, as neither the original project sponsors, nor the government, consider future IPP investments
(along the same conditions) in Egypt likely. Thus, existing projects appear to be sustainable, but not the overall framework. What then does this say about power sector reform?

After its initial IPP experience, the Government of Egypt once again relies primarily on the national electricity utility (EEHC) to build new generation plants. This decision was influenced in part by the unhappy experience of being exposed to foreign denominated financing which doubled local PPA costs as the currency collapsed, and partly because of the renewed availability of concessionary finance from DFIs (albeit with conditions as seen in the recent World Bank loan for the El Tebbin gas-fired plant to address issues related to the utility’s financial performance and pricing structure). It appears that the original decision to open its market to IPPs was largely a result of advice from multi-lateral agencies, such as the World Bank, who were withdrawing from infrastructure finance in the 1990s, and was not home-grown. International consultants, schooled in their own countries power sector reform programmes, may have reinforced this decision as well. While there has been no serious attempt by Egypt to renegotiate these PPAs, or to expropriate IPP assets, the country has effectively shelved future IPP plans, following its first framework. The original plans to build 15 BOOT projects that were advertised with site, technology and schedule, and were among the most attractive elements of the IPP market for InterGen and EDF in the late 1990s, no longer exist. Instead, new IPPs now face rules that require partial local currency denominated PPAs that have to be concluded directly with large customers (thereby substantially increasing the commercial risks). EEHC is no longer interested in assuming such risks and instead, an attempt at a bilateral market and wholesale competition is in the making.

Tanjong, which may soon own all of the large-scale IPPs in Egypt, has indicated that it would potentially be interested in such new IPP investments, provided there is a sufficiently robust policy framework (including favourable resolution of the current natural gas debate), as well as creditworthy off-takers. This stands in direct contrast to Globeleq and EDF, who, when asked whether they would entertain such investments, responded negatively. Thus a new equilibrium appears to be emerging with new market players.

Unresolved, however, is the natural gas debate. As Egypt develops its gas export market via both LNG and pipeline, will low gas prices be available to future IPPs? If not, how will the next series of IPPs, now responsible for bringing their own customers, foreign currency (from abroad) and substantial domestic financing, be in a position to outbid government and take home a profit? Are the cards are stacked against future developers at least for the near-term? Investors were originally willing to enter the Egyptian market because they perceived a favourable investment climate and a promising prospect of new IPP orders. They were also
able to minimize risk through a Central Bank guarantee, a 20 year PPA with a single-buyer, EEHC, which also helped assuage any concerns that could have arisen with an immature regulatory environment. However, within a few years, the original project sponsors of Sidi Krir (InterGen and Edison) departed and the developer of Port Said and Port Suez (EDF) has sold its assets. Reasons for exiting probably relate more to their global retreat from emerging markets – although the above shift in policy by the Egyptian state has no doubt contributed to their decision.

Had local currency financing been acceptable to investors, the Egyptian story may have had a very different ending. The devaluation would not have led to a doubling of capacity payments (in Egyptian pounds) and plans for additional IPPs may have been pursued. At the same time, the more organic push for wholesale competition may also have been stunted. What remains to be seen, is whether policy shifts will once again occur to facilitate private investment in the power sector in Egypt to respond to growing needs for new capacity.
Bibliography


Egypt Restructures: may sell shares and assets but blows IPP program (2001). Electric Utility Week. August 6


Egyptian Electricity Holding Company per com (2005). Personal communication, January 6,9,12 re: IPP development in Egypt.


Egyptian Law No. 8/1997 Investment Guarantees and Incentives.


Globeleq per com (2007). Personal communication, May 2 re: Globeleq's strategy and outcomes.


Sargent & Lundy per com (2007). Personal communication, August 2 re: Sargent & Lundy's involvement in Egyptian and US power sector reforms.


