

The Egyptian IPP Experience

Anton Eberhard and Katharine Gratwick

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Program on Energy and Sustainable Development

At the Center for Environmental Science and Policy

Encina Hall East, Room 415

Stanford University

Stanford, CA 94305-6055

<http://pesd.stanford.edu>

About The Experience of Independent Power Projects in Developing Countries Study

Private investment in electricity generation (so called "independent power producers" or IPPs) in developing countries grew dramatically during the 1990s, only to decline equally dramatically in the wake of the Asian financial crisis and other troubles in the late 1990s. The Program on Energy and Sustainable Development at Stanford University is undertaking a detailed review of the IPP experience in developing countries. The study has sought to identify the principal factors that explain the wide variation in outcomes for IPP investors and hosts. It also aims to identify lessons for the next wave in private investment in electricity generation.

PESD's work has focused directly on the experiences with IPPs in 10 developing and reforming countries (Argentina, Brazil, China, India, Malaysia, Mexico, the Philippines, Poland, Thailand and Turkey). PESD has also helped to establish a complementary study at the Management Program in Infrastructure Reform & Regulation at the University of Cape Town ("IIRR"), which is employing the same methodology in a detailed study of IPPs in three African countries (Egypt, Kenya and Tanzania).

About the Authors

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 Gratwick currently a research consultant at the MIR Programme in Cape Town, has worked previously with the World Bank's Energy Sector Management Assistance Program (ESMAP) and the Oil, Gas, Chemicals Division as well as Poten & Partner's Liquefied National Gas (LNG) team, based in Washington and New York, respectively. Most recently, she served as a business consultant with KPMG in the United Arab Emirates. Ms. Gratwick obtained her M.A. in Energy Policy and Economics from Columbia University in New York.

Disclaimer

This paper was written by a researcher (or researchers) who participated in the PESD study *The Experience of Independent Power Investment in Developing Countries*. Where feasible, this paper has been reviewed prior to release. However, the research and the views expressed within are those of the individual researcher(s), and do not necessarily represent the views of Stanford University.

The Egyptian IPP Experience

Anton Eberhard¹ and Katharine Gratwick²

I. Introduction: IPP challenge

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 bi-lateral agencies to build and operate the country's roads, sewers and power plants.³ By the beginning of the decade however a consensus was growing among donors, which advocated that the private, not the public, sector should both finance and operate infrastructure projects. Limited public sector funding should target social sectors, such as health and education. The World Bank, among Egypt's foreign funders, championed this new change in resource allocation, backing an exit from infrastructure. According to several Egyptian government officials, aid was still available for roads, sewers and power plants, but conditions (e.g. loans were contingent on liberalizing electricity prices) were such that they made it politically unpopular to accept. Therefore Egypt like many of its peers throughout Africa and other developing regions opened up to private participation in infrastructure.

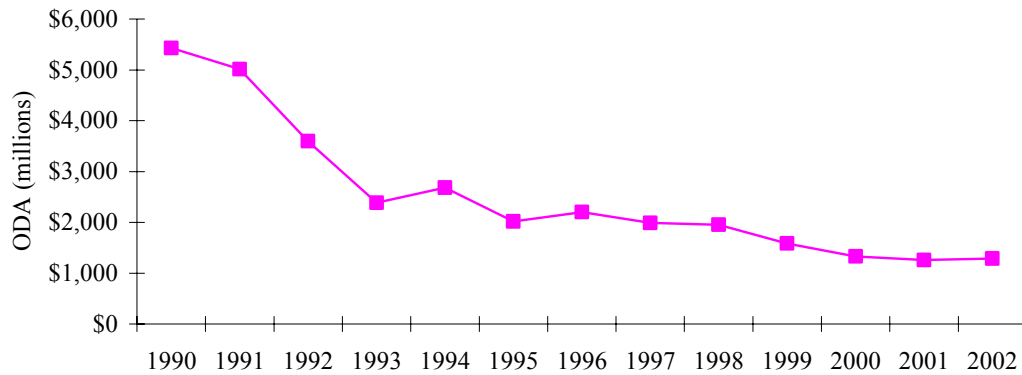
¹ Anton Eberhard
Director Management Programme in Infrastructure Reform and Regulation
Graduate School of Business
Tel: + 27 21 406 1361
Fax: + 27 21 406 1070
Email: eberhard@gsb.uct.ac.za

² Katharine Gratwick
Research Consultant, Management Programme in Infrastructure Reform and Regulation
Graduate School of Business
Tel: + 27 21 406 1361
Fax: + 27 21 406 1070
Email: grtkat002@gsb.uct.ac.za

³ 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 own transfer (BOT) project, originating in the second part of the 19th century (*BOT Regulations* 2003, p. 3).

Figure 1: ODA to Egypt 1990-2002 (current US\$)

Source: WDI online



This paper⁴ examines Egypt's experience with private participation in the electricity sector, focusing on three independent power projects (IPP) at the generation level.⁵ The first part of the paper provides a brief overview of the IPPs, followed by a discussion of the electricity sector including reforms undertaken to date. Part two 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 will be replicated in the future.

The Egyptian IPP experience is interesting in a number of respects. While the original deals have held and the three gas-fired IPP plants continue to provide reliable and affordable electricity, neither the original sponsors, nor the government, are keen to develop further IPP projects. A major devaluation of the currency doubled the local cost of power purchases from the dollar-denominated contracts. While power is still competitively priced by international standards (largely due to cheap state-supplied gas), government has once again charged the state-owned power utility with procuring further generation capacity, supported by development finance institutions. In the meantime, the original project sponsors have departed, or are negotiating their exit, and new equity partners have emerged. Interesting questions arise as to why and how these investments have survived and future prospects for private IPPs in Egypt and other African countries.

While the early 1990s ushered in a new model for financing infrastructure projects, by the end of the decade countries saw foreign direct investment drop precipitously. From a

⁴ The paper is part of a global IPP study, led by Stanford University's Program on Energy and Sustainable Development (PESD), which includes detailed reports on twelve different countries. The overarching purpose of the study is 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/docs/ipps.php> for information on PESD IPP study.

⁵ A country overview including population facts may be found in Appendix A.

high of US\$ 14 billion in 1996, investment in power projects in developing countries dropped to a mere US\$ 3 billion in 1999 and to zero in 2000 (Sader 1999). Meanwhile, with limited public funding currently available, countries are once again faced with the challenge of how to meet electricity demand going forward. The Egyptian country study aims to address this investment conundrum through a detailed analysis of past and present power sector developments.

II. IPP background

Egypt currently has three IPPs, with a combined capacity of approximately 2,050 MW or about 12% of the country’s installed capacity.

Table 1: Egypt’s IPPs

Projects	Size (MW)	Cost (US\$ million)	\$ per kWh	Fuel	Contract type	Contract Yrs	Project tender-Project operation
Sidi Krir	682.5	417.8	612.61	Gas-fired steam generator	BOOT	20	1996-2002
Port Said	683	340	497.80	Gas-fired steam generator	BOOT	20	1998-2002
Suez	683	338	494.87	Gas-fired steam generator	BOOT	20	1998-2003
Total	2048.5	1095.8	-	-	-	-	-

A. Sector reforms

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 (MoEE), 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.⁶

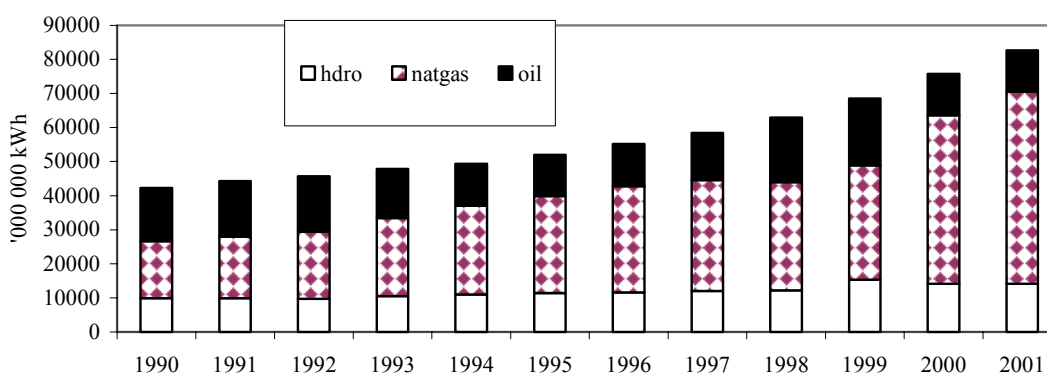
With the backdrop of the re-bundling of state utilities, privatization efforts were slowly taking hold. In 1996, Law 100 was issued which specified: “local and foreign investors may be granted public utility concessions allowing them to build, operate and maintain power generation stations,” (Article 7). In 1997, a new investment law was

⁶ Selected interviews with personnel from ADI, January 2005.

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 annum and increasingly dominated by natural gas.⁷ In 1980 the share of gas amounted to only 20%, with hydro accounting for 51%, and oil making up the balance; by 1990, 40% of the production mix was natural gas and only 24% was hydro. As of 2004, natural gas dependence approached 80%. 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 62 Trillion cubic feet (*World Development Indicators Online Database 2004*; Energy Information Agency 2004).

Figure 2: Electricity production by resource 1990-2001



NOTE: Although not captured above, Egypt's wind capacity contributed to 0.2% of generated power (204 GWh) in 2002-2003 (EEHC, Annual Report 2002-2003, p.16).

Following the issuance of law 100, bids for a series of gas-fired steam generators were tendered and subsequently awarded in 1998 and 1999 (discussed in detail in Section IIb). At 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 (*Special Report Power 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 2001*; Galal 2001).⁸ Each generation and distribution subsidiary was established as a separate corporate entity with its own board and

⁷ Interviews and correspondence with selected personnel from EEHC, January, February 2005.

⁸ "Additional information obtained from selected interviews with personnel from EEHC, ERA and ADI.

external reporting. An internal pool was created for bidding-in power although ex post price adjustments in the pool substantially undercut its potentially positive incentive effects.

The corporatization of EEHC was intended as a step to prepare shares for privatization, however, as of 2005, this process has not yet begun. Through EEHC, the government still controls about 90% of all generation and maintains a monopoly over transmission and distribution. Cross-subsidization is rife (although cessation of this practice has been targeted as a goal). Finally, corporate governance regimes have not been strong and are characterized by significant involvement of the Minister of Electricity and Energy, who chairs the EEHC, in the operating decisions of agency’s subsidiaries.

It is important to note that these reforms 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 Egyptian Electric Utility and Consumer Protection Regulatory Agency (ERA), with a grant from USAID, began in January 2002.⁹ Thus, the regulator came into force only after the IPP PPAs had been concluded and changes to EEA/EEHC had taken place as well.

In terms of future ESI reforms, ERA’s main goal 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 industrials/commercial users, which consume a significant portion of the total electricity in the country, source 20% of their incremental, per annum, increase in demand from bilateral contracts with BOOTs and other generators, thereby phasing in a new regime. 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. 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 to the large industrials together with the necessary gas feed.

EEHC cites the following reform goals for the future: retail tariffs to cover costs by 2009; the establishment of an independent system operator which promotes wholesale competition; and commercialization of electricity distribution companies through re-engineering their business practices.

Table 2: Egypt electricity sector developments

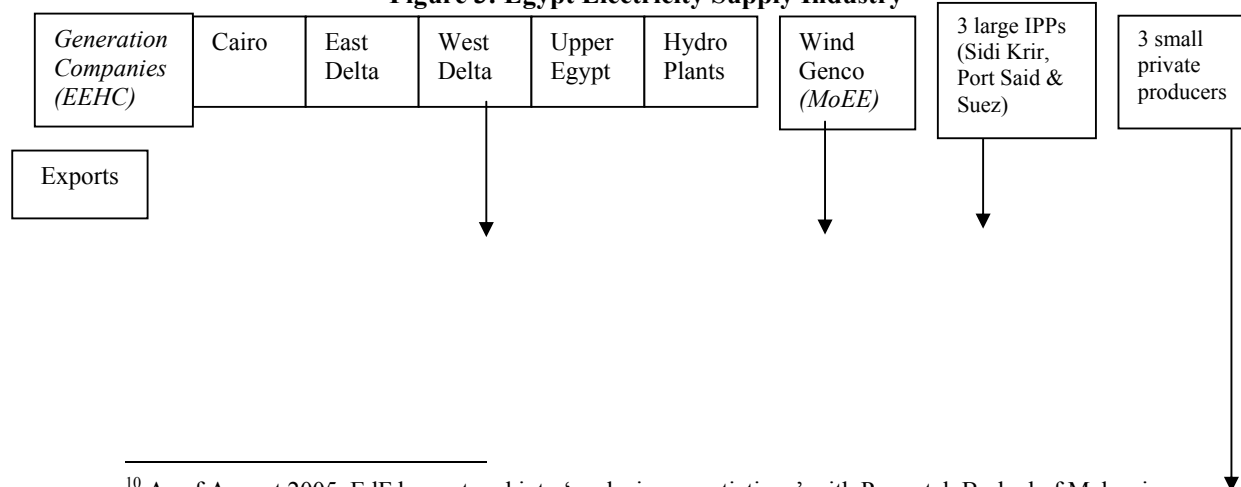
Date	Development	Law
1964	National utility unbundled: 8 distribution companies formed	
1976	Egyptian Electricity Authority (EEA) formed	Law 12

⁹ Selected interviews with personnel from ERA, January 2005.

1992	8 distribution companies transferred to the Ministry of Public Enterprises for corporatization	
1996	Provision allowing for IPPs in generation issued	Law 100
1997	Presidential decree for establishment of electricity regulator issued, but no action taken	
1997/2000	Investment incentives and guarantees offered by government for private sector developments; further tax incentives offered in 2000	Law 8, Law 162
1998-99	8 distribution companies transferred to EEA, then re-bundled with generation units, forming seven state monopolies, plan aborted to offer shares on Egyptian Stock Exchange	
1998-99	3 PPAs signed with InterGen and EdF, respectively, to build 3 independent power plants, with plants coming online in 2002 and 2003	
2000	EEA corporatized and re-organized as Egyptian Electricity Holding Company (EEHC)	Law 164
2000-2004	Evolving new conditions for IPPs/BOOTs primarily regarding local and foreign currency financing	
2000-2	2 nd Presidential decree for establishment of electricity regulator issued, regulatory body staffed by 2002	Decree 339 of 2000
2001	Unbundling of generation and distribution assets (still under EEHC)	
2004	Annual tariff changes instituted of approx 5% per annum for next 5 years	

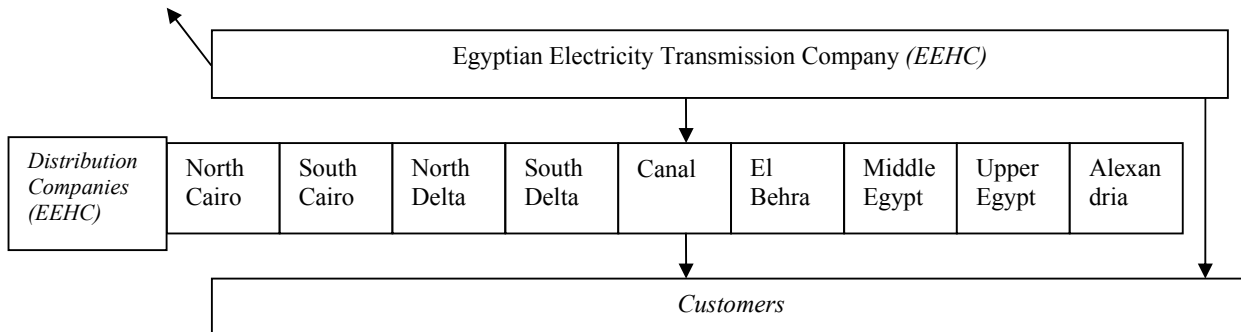
Immediately below is an outline of the current ESI. As of 2005, the Egyptian ESI consists of: five generation utilities; nine distribution utilities; and one transmission company. All of these entities are state-owned and fall under the direct management of the EEHC. In addition there exists one wind generating company, which falls under the direction of the New Renewal Energy Authority within the MoEE, three independent power projects, owned by Globeleq (as of December 2004, but developed and operated by InterGen and Edison prior to that) and EdF¹⁰, respectively and three small private entities involved in both generation and distribution primarily at tourist resorts.¹¹ As of 2000, 94% of the Egyptian population had access to electricity.

Figure 3: Egypt Electricity Supply Industry



¹⁰ As of August 2005, EdF has entered into 'exclusive negotiations' with Powertek Berhad of Malaysia, which is a wholly owned subsidiary of Tanjong Public Limited Company (*Egypt* 2005, Issue 30).

¹¹ EEHC, Annual Report 2002-2003 and selected interviews with personnel from EEHC and ERA, January, 2005.



Total installed capacity as of 2002-2003 amounted to 17.6 GW, with peak load demand requiring 14,401 MW.¹² Thirty-eight grid connected plants account for the bulk of supply; an additional 37 off-grid plants, with total installed capacity of 202 MW, make up the balance, supplying primarily to tourist projects along the Red Sea and Sinai. Transmission and distribution losses across the network averaged 12% in the period 1990-2001, with almost no variation.

EEHC is currently implementing a Fast Track Power Generation Program, which will add an additional 4500 MW of combined cycle gas plants at four different sites to the grid by 2006. The new builds are expected to help absorb the projected 7.5% increase in demand per year from the present until 2006. An additional 8,375 MW are planned, 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% (EEHC, Annual Report 2002-2003, p.7).

As of 2005, ERA¹³ has licensed all twenty-two entities listed in figure 2 (however licensing of the IPPs was concluded only in 2004 after project developers 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 (Presidential Decree, No. 339 of the year 2000, Article II).

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 (EEHC, Annual Report 2002-2003, p.15).

¹³ The organization currently consists of 48 full-time staff. Its annual operating budget in 2003-2004 was US\$0.7 million, which is generated through a number of sources, including, funds allocated by the national budget, proceeds from the issuance and renewal of licenses, donations, subsidies and grants and proceeds from investments of its funds (interviews with selected personnel from ERA, January 2005).

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. The Agency is also developing shadow tariffs.¹⁴

Electricity tariffs are highly subsidized. According to figures published by EEHC and ERA (2003), average residential electricity tariffs amount to US\$0.025 while average commercial rates are just US\$0.056, based on (US\$1 = 5.76 LE, 2/17/05). The persistent subsidy could help explain the strong growth in residential demand.

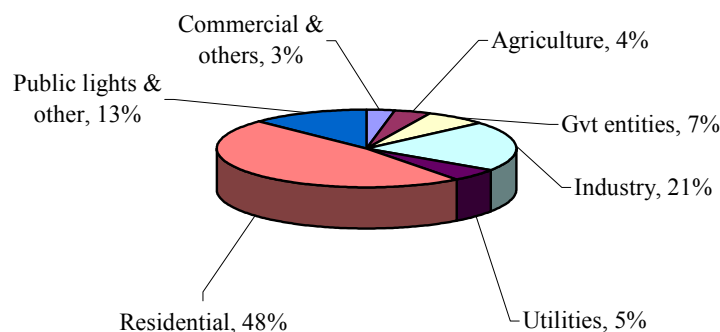
Table 3: Electricity customer categories and tariffs

Sector	Energy Tariff PT/kwh	Energy TariffUS \$/kwh	Sector	Energy Tariff PT/kwh	Energy TariffUS \$/kwh
Residential			Commercial		
0-50 kwh/month	5.00	0.009			
51-200 kWh/month	8.30	0.014	0-100 kWh/month	18.00	0.031
201-350 kWh/month	11.00	0.019	101-250 kWh/month	26.00	0.045
351-650 kWh/month	15.00	0.026	251-600 kWh/month	33.20	0.058
651-1000 kWh/month	21.00	0.036	601-1000 kWh/month	41.00	0.071
>1000 kWh/month	25.00	0.043	>1000 kWh/month	43.00	0.075
Avg res		0.025	Avg commercial		0.056

Note: PT = 100 LE; 1 LE = US\$0.1734 February 17 2005; tariffs do not reflect 5% increase decided in late 2004. Appendix C includes UHV and MHV rates as well.

Source: EEHC, Annual Report 2002-2003; and ERA website www.egyptera.com accessed on February 14, 2005.

Figure 4: End-use by consumer 2002-2003



Source: EEHC Annual Report 2002-2003.

NOTE: recent estimates of industrial use are over 35% according to one source (selected correspondence with Globeleq, April 2005).

¹⁴ Selected interviews with personnel from ERA, January 2005.

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 percent for the next five years, with the aim of covering costs by 2009 (a stated EEHC reform goal, as noted previously). In 2010, a further evaluation is expected to ascertain whether additional adjustments are necessary. Assuming the domestic gas price remains under-priced, however, economic costs will remain only partially reflected.¹⁵

B. IPP frameworks and projects developed

Egypt's first IPP framework yielded three generation facilities, built by InterGen with Edison and EdF, respectively, for a total of 2048 MW. Despite a large currency devaluation, there have been no renegotiations of contract terms, but there has been high equity turnover.¹⁶ As noted by numerous stakeholders, it is unlikely that the current framework will be replicated in the future should Egypt opt for additional IPPs.¹⁷ Instead a new framework is evolving to accommodate future developments.

Table 4: Egyptian IPP frameworks

1st framework (3 IPPs)

- BOOT structure
- 20 year PPA
- EEA/EEHC sole off-taker
- 65-70% take-if-tendered
- Backed by Central Bank Guarantee

2nd framework underdevelopment (none)

- foreign currency must be obtained from abroad
- local designers, contractors, and manufacturers must contribute substantially to projects
- local costs must be paid in local currency
- bids with an increased equity-financing stake and a larger local investment component favored.

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. An IPP risk matrix manual published by the World Bank was also scrutinized. Numerous seminars were conducted on the subject. In 1996, the EEA hired a consortium of consultants from Sargent & Lundy, Arthur Andersen and 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 IPP infrastructure. The EEA refused the offer, opting instead to conduct

¹⁵ 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 (Selected interviews with EEHC personnel, April 2005).

¹⁶ 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 (selected correspondence with Globeleq, April 2005).

¹⁷ Selected interviews with personnel from EEHC, ERA, local bank and ADI in January 2005.

a series of competitive, international bids, which involved four distinct phases, namely pre-qualification and short-list selection, preparation of the request of proposal, evaluation and selection of the best bidder and negotiation and execution of project agreements (EEA 2000).¹⁸

The first bid was organized in 1996 and awarded two years later in 1998. The tender was for a 20 year Build Own Operate Transfer (BOOT) gas-fired steam generator, of 682.5 MW. The contract stipulated project financing, rather than balance sheet financing, and a take-if-tendered condition, i.e. the plant must be prepared to deliver electric energy if asked to do so at 70% capacity. Fuel cost (i.e. natural gas as main fuel and fuel oil as back-up), based on a formula stated in the PPA, was to be passed through, although not directly, to the EEHC/off-taker. All EEHC payments were to be made in US dollars and would be backed by an Egyptian Central Bank Guarantee (CBG).

The 1997 Investment Law, mentioned in the previous section, 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 (Law No. 8/1997, Article 16; Law No 162/2000, Article 1; Thomason 2004; EEA 2000).

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 characterized as among the lowest electricity prices for developing country IPPs at US\$0.0254 per kWh from InterGen and Edison, the project developers for the first IPP. This low tariff is partly attributable to the low gas price (EEA 2000; *Egyptian Gas Prices* 2005). Other significant features of the project include 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, albeit 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 the next section.

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 have opted to sell their assets. InterGen sold its 60% share to Globeleq in December 2004; Edison followed suit in May 2005. As of August 2005,

¹⁸ Selected interviews with personnel from EEHC, January 2005. Correspondence with EEHC personnel, February 2005.

EdF is in exclusive negotiations with with Powertek Berhad of Malaysia, which is a wholly owned subsidiary of Tanjong Public Limited Company, a gaming and power company. Korea Electric Power Company (Kepco) allegedly made an unsuccessful bid for the plants. Negotiations are expected to be completed by November 2005 at the latest (*Tanjong in Talks 2005; Powertek bids 2005; Egypt 2005*). Despite this notable equity turnover, there has been no change made to the PPAs to date.

As indicated at the beginning of this section, a second 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.¹⁹ In addition, the bids that have both a larger equity-financing stake and a larger local investment component will be favored. 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 financing and off-take arrangements, with the state recognizing more fully foreign private sector costs, especially associated after the recent currency devaluation. To date, however, no new IPP projects have been undertaken within this second regime.

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 current five-year plan (2003-2007) has been financed by development finance institutions. Approximately 1/3 of project costs are domestic and the foreign portion is significantly less expensive than that negotiated through commercial banks as seen with first round of IPPs. For the next five year plan (2007-2012), 50% 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, OPEC Fund and the World Bank. 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 should ultimately lead to cheaper power given the significantly cheaper financing. But is there sufficient public funding to meet all future power needs? Most stakeholders counter “no”. The concern about continuing availability of “soft loans” remains a significant factor, as it did in the late 1990s, which begs the question of how the next IPP process will actually unfold.

¹⁹ It is important to note in this context, however, that the first three IPPs utilized local labor, supported by only a small number of expatriate supervisors and maximized the use of local materials and equipment to minimize costs (selected correspondence with Globeleq, April 2005).

III. Analysis of outcomes

The value of IPP projects for investors and host countries and the sustainability of these projects (i.e. if contracts hold and future investments are made) depend on whether investment and development outcomes remain broadly in balance. Returns to investors have to be adequate, investment opportunities should grow and the price and reliability of power should be satisfying for electricity consumers. These investment and development outcomes are influenced by a number of country-level and project-level factors.

A. Country-level factors

A review of the international experience of IPPs reveals a number of country-level factors, which are particularly important in evaluating development and investment outcomes.²⁰ These factors, namely exogenous shocks, the investment climate and the electricity market, have often determined the fate a project. For instance, macroeconomic shock forced workouts in numerous projects throughout South America and East Asia.

Table 5: Country level factors that affect outcomes

Factors	Components
Exogenous shocks	<ul style="list-style-type: none"> • macroeconomic shock (especially currency devaluation) • drought • war/civil unrest
Investment climate ²¹	<ul style="list-style-type: none"> • recent local and foreign private investment , i.e. precedent of private sector participation • investor perception based partly on history as well as: <ul style="list-style-type: none"> -state of the economy -political stability and independent and established legal system -level of corruption -sovereign credit rating -multilateral and bilateral donor commitments -security guarantees (including availability of sovereign guarantees)
Electricity Market	<ul style="list-style-type: none"> • market structure (e.g. single buyer model), including role of state utility

²⁰ As noted in footnote 2, this paper is part of a larger study led by Stanford's PESD program, surveying the global IPP experience.

²¹ The 'electricity market' also figures prominently in investors' decision making, but for the purpose of this study, the 'electricity market' will be treated as a separate section rather than a component of the 'investment climate'.

	<ul style="list-style-type: none"> • role and strength of regulator • wholesale and retail price cost/coverage • electricity supply/demand balance • incumbent fuel • sector procurement policy • prevalence of back-up generators and degree to which industrial/commercial base rely on grid • extent of interconnections with other countries
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1) Macroeconomic shock

In the case of Egypt, neither drought nor civil war/unrest figured prominently in the country's IPP experience (unlike in Cote D'Ivoire and Kenya, where civil unrest and drought have had a major impact on IPP outcomes).²² It is instead currency devaluation that 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. As of early 2005, six pounds were equal to one US dollar. 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).²³

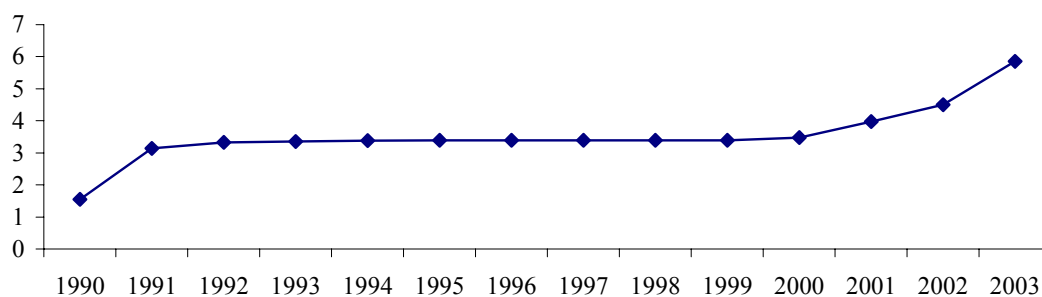
Pressure to float the Egyptian pound came as early as 1992 from the World Bank and IMF. Egypt resisted these pressures for more than a decade, even as the pound became increasingly overvalued. Reasons cited for the resistance include the lack of political will and capacity of the former Prime Minister (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\$ market, which it did in December 2004 (World Bank 2003).²⁴

²² See MIR publications: Africa IPP Experience and Kenya IPP Experience available at <http://www.gsb.uct.ac.za/gsbwebb/default.asp?intpagenr=309>

²³ Selected interviews with EEHC personnel, January 2005. Correspondence with EEHC personnel, February 2005.

²⁴ Additional information provided from selected interviews with personnel from ADI.

Figure 5: Official exchange rate (Egyptian pound to US\$)



Source: World Bank Development Indicators, online database

While there is a general consensus among stakeholders in 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 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/Globelec 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.²⁵ 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% of the total charge.²⁶ With Sidi Krir, the change is an informal agreement between the project’s general manager and EEHC. With Port Said and Suez, the agreement has gone through negotiations with IFC, but EdF may choose to return to US\$ payments at any time, i.e. it is not contractually bound.

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

2) Investment climate

²⁵ Correspondence with InterGen/Globelec, February 2005.

²⁶ EEHC provided the following breakdown of the PPAs:

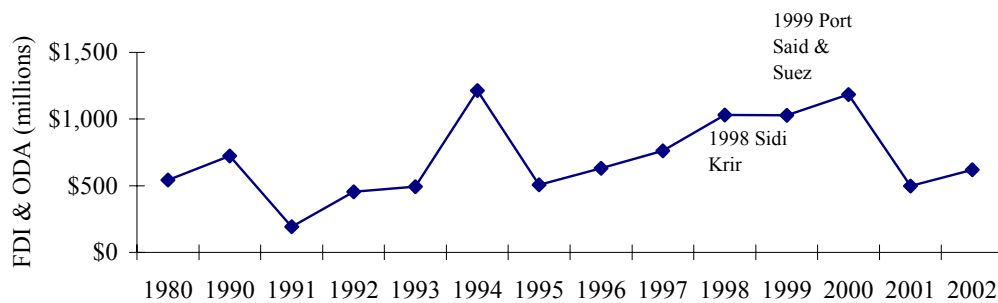
- Capital reimbursement rate: 100% US\$ denominated
- Fixed O&M: domestic O&M: currently paid partially in local currency; foreign O&M: US\$ denominated
- Variable O&M: domestic O&M: currently paid partially in local currency; foreign O&M: US\$ denominated

The investment climate, a key country-level factor affecting new IPP investments, presents a challenge in this analysis as it is both ever-changing and perceived differently by different investors. Given its nature, it has proven difficult to quantify. This section focuses briefly on two elements of the investment climate: the precedent for investment in a country (as measured by FDI) and the general perception by investors (based on the general state of the economy, political stability, level of corruption and other factors detailed below).

a) Precedent for investment

Foreign direct investment trends in Egypt were generally on the rise when investors negotiated their PPAs, as seen in figure 6 below.

Figure 6: FDI 1980-2002



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. 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 decision made by firms.

b) Perception of investment climate and electricity market by investors

In addition to the above noted conditions, at the time of IPP tendering, Egypt's investment climate was generally perceived 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 labor 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.²⁷

These factors combined with the large natural gas discoveries and strong demand for electricity made for particularly favorable investment prospects. Furthermore a total of 15 BOOT IPP developments were identified by the MoEE, 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.²⁸

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.²⁹ 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 program, was offset by the positively perceived investment climate together with the government guarantees.

B) Project-level factors

In addition to macroeconomic shock and the favourable investment climate, a series of factors have emerged that further distinguish projects and shape outcomes. Chief among these factors are the equity and debt arrangements adopted by sponsors.

Table 6: Project level factors that affect outcomes

Factors	Components
Project partners	<ul style="list-style-type: none"> • local/international investors • multilateral agencies • firms' commitment to sector/country • equity turnover
Project finance	<ul style="list-style-type: none"> • debt vs. equity • sources • seniority of debt
PPA	<ul style="list-style-type: none"> • off-take agreement (including ownership/transfer and risk allocation) • degree of sovereign or other guarantees for agreement • provisions for dispute settlement • impact on off-taker
Fuel type and agreements	<ul style="list-style-type: none"> • imported or locally available fuel • exposure to FX risk • government or other supplier

²⁷ Interviews and correspondence with selected personnel from EdF, InterGen/Globelec, ADI, January-April 2005.

²⁸ The plan to develop 15 IPPs has since been aborted.

²⁹ Selected interviews with personnel from EEHC, InterGen/Globelec and EdF, January 2005.

Political & Public perception	<ul style="list-style-type: none"> • what did the politicians and general public think (and why)? • to what extent did the general public and political process influence the project and future projects?
Project management	<ul style="list-style-type: none"> • O&M • Budgeting

1) Project partners

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.³⁰ 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).³¹ 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 involvement was also absent, in terms of project equity, but figured prominently in EdF's debt for Port Said and Suez, which will be discussed at length in the subsequent section, 'project finance'. This lack of equity involvement stands in strong contrast to other African IPP experiences, namely in Kenya and Tanzania where multilateral agencies held significant equity shares in projects. Like local partners, this aspect does not appear to have strong explanatory power in terms of project outcomes.

A more significant aspect that appears to be shaping outcomes is the firms' commitment to the country and equity turnover. Although both InterGen and EdF had prior involvement in Egypt, InterGen has since sold its shares and EdF is reportedly in the midst of doing so. InterGen's reason for selling its interest in Sidi Krir to Globeleq in 2004 was based on the fact that its shareholders made a strategic decision to move out of the business of owning and operating private power facilities i.e. for Bechtel moving back to its core business of designing, engineering and building plants, but not operating and maintaining them, and for Shell, focusing on the petroleum exploration and production business.³² Contrary to speculation from some stakeholders, the reason behind InterGen's exiting Egypt was not a function of the firm prematurely recuperating its investment.³³ Similarly, Edison has sold much of its global portfolio because of a decision to return to its core business in the US market. EdF cites plans of concentrating its investments in Europe.

³⁰ See PESD country studies available at: <http://pesd.stanford.edu/docs/ipps.php>.

³¹ 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 (selected interviews with EdF personnel, January 2005).

³² Of InterGen's 20 assets held worldwide as of January 2005, five have been sold and ten are in the process of being sold as a group (selected correspondence with InterGen/Globeleq personnel, January 2005).

³³ Selected interviews with InterGen/Globeleq staff, January 2005. Correspondence with InterGen/Globeleq staff, February 2005.

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. Thus the change in equity turnover has directly affected investment outcomes. The same may ultimately hold true for Edison and EdF, however, at this time, there has been no verification. In contrast, while Shell, Bechtel, Edison and EdF's interest in owning emerging market IPPs has dwindled, Globeleq's mission revolves around power projects in emerging markets.³⁴ In fulfilling its mandate it appears that Globeleq is also benefiting from the early exit of investors like InterGen by buying assets at a discount. Investment outcomes may therefore prove quite favorable to Globeleq.

2) Project finance

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 multilateral agency. Total project costs for each of the three IPP plants ranged between US\$338 and 417 million (at an average of US\$535/kW), with lower costs negotiated for each subsequent plant, to yield the lowest IPP electricity prices in the developing world, as noted above. With project finance stipulated in the tender, equity accounted for about a third of the project costs: 33% in Sidi Krir and approximately 30% in Port Said and Suez.

Project debt is where one observes the greatest difference between the two sets of plants. In the case of Sidi Krir, the majority of project debt (59%) was sourced from local Egyptian banks, but denominated in US dollars; the remainder came from a suite of international banks, with no multilateral involvement. For Port Said and Suez, however, the debt was sourced by the International Finance Corporation (IFC) together with a syndicate of international banks and institutional investors, and the projects saw no local bank involvement.

Table 7: Project costs

Project (US\$ million except \$ per kW below)	Sidi Krir	Port Said	Suez
Total project costs	417.8	340	338
\$ per kW*	612.61	497.80	494.87
Equity	139.2		210
Total debt	278.6		468
Local debt	164.3	<i>None</i>	<i>None</i>
International (private) debt	114.3		378**
Multilateral financing	<i>None</i>		90 (IFC)

NOTE: * This does not refer to millions. **Of which IFC arranged a US\$ 350 million syndication

³⁴ Selected interviews and correspondence with personnel from Globeleq (in Tanzania—all previous references refer to Globeleq personnel in Egypt), February 2005; www.globeleq.com accessed on March 14, 2005.

Source: Tom Thomason. "Sidi Krir Egypt's First Power BOOT." InterGen/Globeleq. Power point presentation, September 2004; Africa Energy Net Forum Marketsite, www.energynet.co.uk, accessed on October 15, 2004; and World Bank Private Participation in Infrastructure Database, <http://ppi.worldbank.org/> accessed on October 15, 2004.

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 dollars was denominated in US dollars. Reasons given for the 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 favor of US\$;
- IPP earnings were denominated in US\$; 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 mobilize these resources for power plants. 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.³⁵

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 US\$350 million syndication, with maturities of 17 and 12 years.³⁶ Among the largest holders of debt in the syndication is the US-based insurance firm John Hancock with US\$100 million lent.³⁷ In contrast, for the Sidi Krir project, there was no need to engage a multilateral partner to secure funding. Although Sidi Krir was the first IPP in Egypt, the local, dollar-denominated debt component provided the assurance that international banks needed to participate (Thomason 2004).³⁸

In sum, Sidi Krir was able to access competitively priced dollar denominated financing from local banks, which also helped assuage international banks. EdF was provided with no such financing option, and as a result, EdF had to seek multilateral involvement (although it in turn did engage a significant institutional investor in the form of John Hancock). Following

³⁵ The same environmental issues were not, however, raised by European banks for the Sidi Krir project (selected correspondence with Globeleq, April 2005).

³⁶ Interview with selected personnel from EdF and IFC, January 2005. Correspondence from personnel at InterGen/Globeleq, EdF, ADI and local banker, February 2005.

³⁷ 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.

³⁸ Additional information provided from selected interviews with Globeleq personnel, January, 2005.

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.

3) PPAs & public perception

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. 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.³⁹ 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. 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 following table highlights 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.

Table 8: Risk allocation

Phase	Risk	Risk component/description	Allocation
Development	Financing risk	Developer may not be able to obtain sufficient financing	Developer: EEHC entitled to performance guarantee of US\$20 million
	Permitting risk	Failure of developer to timely obtain permits	Developer: EEHC entitled to performance guarantee of US\$20 million (EEHC, however, assists and bears the risk provided gvt delays)
Construction	Increased construction cost	Cost overrun due to developers own cost	Developer
		Construction cost increase due to contractor	Developer
	Delay in project completion	Contractor default	Developer: PPA details daily damages to be paid by Developer
		Failure to complete transmission facilities	EEHC: PPA details daily damages to be paid by EEHC
		Force Majeure (FM) events	Developer AND EEHC (Developer excused and deadline adjusted)
	Legal risks	Change in law	EEHC: if changes cause increased costs, prices will be modified

³⁹ Selected interviews with personnel from ERA, January 2005.

Operating	Dispatchability	Based on assumption that plant is fully dispatchable by EEHC in accordance with economic loading	EEHC, i.e. take-or-pay contract
	Capacity and availability conditions	Sustain capacity: risk that plant output or availability degrades over time	Developer: capacity payment in accordance with tested net capacity
	Fuel charge	Risk fuel price changes	EEHC*
		Heat rate risk: risk that efficiency of plant degrades overtime	Developer
		Minimum take-or-pay under fuel agreement	EEHC
	Force Majeure risks (FM)	FM leading to interruption in operation	EEHC: will continue to pay capacity charge
		FM leading to additional cost	Developer AND EEHC
	Legal risks	Change in law	EEHC: if changes cause increased costs, prices will be modified
Conditions of plant at time of transfer	If plant output or heat rate are lower than guaranteed values	Developer	

NOTE: *Fuel price is not, however, a direct pass-through.

Source: adapted from EEHC. "Private Sector Participation in BOOT Power Projects in Egypt." Powerpoint. 2000.

All financial obligations by the off-taker, namely EEHC, as specified in the PPA, are backed by a Central Bank guarantee, which serves as a sovereign guarantee. The guarantee agreements were signed directly between the Central Bank and each of the project developers. According to developers, these guarantees were a necessity given the immature IPP market in Egypt, as noted in the context of investor perception.

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 Center for Commercial Arbitration, under Egyptian law, in English. Should either party request it, however, arbitration proceedings may be conducted in Paris/Geneva and settled in accordance with the rules of the International Chamber of Commerce (EEA 2000). To date, no disputes have required arbitration.

4) Fuel contracts

Project costs were able to be kept to a minimum due to several key factors, among them the contract arrangement for domestic gas. It should be noted at the outset that the fuel charge accounts for approximately 40% of the total charge and 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 current domestic gas rate, as of January 2005, is US\$1 for 1000 cubic feet (Mcf), which is equivalent to US\$1.13 per Giga joule (Gj). The price has been increasing gradually since IPP project inception. 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 the current level of US\$1 per Mcf. IPPs pay the same rate as EEHC's other plants.⁴⁰

Gas prices are probably non-economic (i.e. potential export prices are higher than those charged to the IPPs). However, the extent of the subsidy is not publicly known, due to the fact that there is not one, fixed export price for gas against which the domestic rate may be compared. Gas is sold into the international market via long-term liquefied natural gas (LNG) contracts.⁴¹ As of 2003, gas is also exported to the Aqaba power station via the Egypt-Jordan gas transmission pipeline—although as with LNG, the price is not publicly known (Devi 2004).

5) Project 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% rather than 15-18%, 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% of the debt was hedged.

For EdF, Port Said and Suez have been relative investment successes with the company making modest profits, achieved primarily through management of technological risk.

IV. Final outcomes

At first sight, 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

⁴⁰ Selected correspondence with personnel from EEHC, February 2005.

⁴¹ Selected interviews and correspondence with personnel from World Bank, Globeleq, Poten & Partners, January-March 2005.

held, which has obviously been good for investors; less so for the off-taker, although cheaply sourced local gas has meant that PPAs are still competitively priced by international standards.

It may be concluded that investment outcomes (chiefly adequate returns) have been in broad balance with development outcomes (reliable and competitively priced power). Yet a closer examination of the IPP experience reveals a slightly less happy picture. Tellingly, neither the original project sponsors, nor the government, consider future IPP investments in Egypt likely.⁴²

The Egyptian government once again relies 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 development finance institutions. The original decision to open its market to private IPPs was probably not embraced enthusiastically or spontaneously and was more a result of advice from multi-lateral agencies, such as the World Bank, who were withdrawing from infrastructure finance in the 1990s. 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. The 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.

IPPs now face new rules that require partial local currency denominated PPAs that have to be concluded directly with large customers – a prospect that seems unlikely given the structure of the electricity market and current electricity prices offered by EEHC. 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? It appears that 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) is actively negotiating an exit. Reasons for exiting probably relate more to their global retreat

⁴² See Appendix D for a diagram detailing development and investment outcomes. Appendix E provides stakeholder comments followed by commentary.

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.^{43 44} We have also seen the emergence of new project sponsors, such as Globeleq, who have a more long term strategy of investing in Africa. What remains to be seen, is whether policy shifts will once again occur to facilitate private investment in the power sector in Egypt and other African countries in order to respond to growing needs for new capacity.

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⁴³ Local currency financing has been recently employed by AES in Cameroon for the 80 MW Limbe power station. The local offices of Standard Chartered Bank, Ecobank, Afriland First Bank and the Commercial Bank of Cameroon provided short-term local currency financing for the AES project, which served as a bridge to longer term dollar denominated debt (*The role of local banks in financing power projects*, Issue 30).

⁴⁴ Stakeholders involved in Namibia's Kudu gas-to-power project are also raising the possibility of local currency financing, which could slowly help to change the face of African power, by introducing a new level of financial sustainability for all those involved. Kudu involves commercializing domestic (Namibian) gas and the construction of an 800 MW plant, initially intended mainly for export to RSA.

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Appendix A: Country overview

With a population of 66.5 million as of 2003 and a growth rate of 2.1 percent, Egypt is among the most densely populated countries in the world.⁴⁵ Land itself is not scarce (the country measures 1,001,450 sq km), but only five percent of the territory is considered habitable. With projected annual growth of 1.5% a year, it is expected that the population will total 80 million by 2015. The country faces significant employment pressures: official

⁴⁵ The country also takes in approximately 5 million tourists a year.

unemployment measures 9%, but unofficial figures amount to between 15 and 25 percent. These figures will no doubt increase with the anticipated population pressures. Hosni Mubarak, the President of Egypt, has reigned over the country for almost twenty five years. While Mubarak has maintained relative peace in the country over the past two decades, the gap between rich and poor has been widening and proves among the country's greatest challenges going forward.⁴⁶

Appendix B: Investment climate

As of December 2003, Egypt scored a 66 on the International Country Risk Guide (ICRG) Composite Index, which comprises 22 variables in three subcategories of risk: political, financial, and economic (0 = highest risk, 100 = lowest risk). Egypt's score was slightly below the world average of 68.9 as well as the average of 70.5 for Middle East and North African countries, but above the average of 58 for sub-Saharan African countries. The rating has been steadily improving since 1990 (the date for which the first figures are available) and currently indicates a relatively favorable emerging market climate for investors as well as among the most favorable climates on the African continent.⁴⁷

Country risk ratings

Time/comparison	ICGR Rating	Notes
Most recent rating (2003)	66	
Average (1990-2003)	66	Timeframe for which figures are available
Max (1984-2003)	72	Max occurred in 1994
Min (1984-2003)	48	Min occurred in 1990
Average 1997-1999	69.6	Corresponds with IPP negotiations
Sub-Saharan Africa avg (2003)	58.0	Egypt is currently significantly above SSA average
Middle East & North Africa avg (2003)	70.5	Egypt currently stands below the Middle East & North Africa average
World avg (2003)	68.9	Egypt's current rating is slightly less than the world average at present

Egypt's Gross domestic product (GDP) has been growing at an average rate of 4.2% per year in the period 1990-2003 and as of 2003 stood at US\$85.8 billion (in constant 1995 US\$). GDP growth peaked between 1998 and 1999 when it hit 6.3%, as depicted on the chart below. Meanwhile, per capita GDP as of 2003 measured US\$1,269 (in constant 1995 US\$); adjusted for purchasing power parity (PPP) this amounted to US\$3,434 (in constant 1995 international \$), which places Egypt 132nd in the world in terms of PPP. GDP per capita growth adjusted for PPP has averaged 1.9% per year over the period 1990-2003.⁴⁸

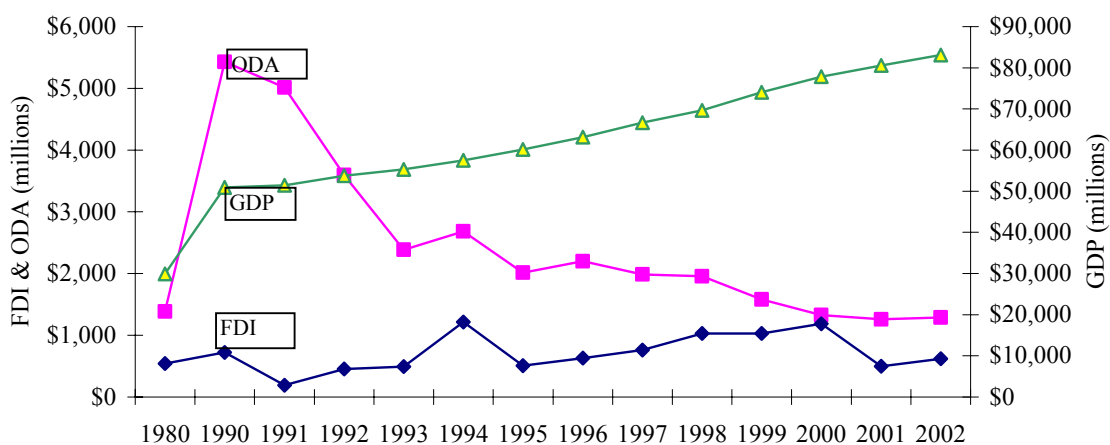
⁴⁶ Paul Geday et al. Egypt Almanac. Cairo: American University in Cairo Press, 2003; The World Bank. World Development Indicators 2004; Energy Information Agency. Egypt Country Analysis Brief. February 2004.

⁴⁷ The World Bank. World Development Indicators 2004. "Investment Climate".

⁴⁸ The World Bank. World Development Indicators Online Database. Accessed on February 14, 2005.

Net foreign direct investment (FDI) amounted to US\$619 million (in current US\$) in 2002, the last year for which data is available.⁴⁹ Meanwhile, official development assistance (ODA) during this period tapered off in both relative and absolute terms, accounting for 13.7% of gross national income in 1991 but only 1.4% (or US\$1.2 billion) by 2002. The chart immediately below depicts GDP, FDI and ODA, respectively.

GDP, ODA & FDI 1980-2002



Another indicator of Egypt’s investment climate is the sovereign long and short-term ratings (as measured by the performance of foreign and local currency), which according to Fitch rating agency, has varied moderately since 1997. The trend since 1997, which marks the beginning of the IPP era in Egypt, is that both the long- and short-term ratings have been on the decline, with a negative outlook registered in 2002.

Date	Foreign currency rating		Outlook/watch	Local currency rating
	Long-term	Short-term		
December 2004	BB+	B	Stable	BBB
August 2002	BB+	B	FC stable, LC negative	BBB
January 2002	BBB-	F3	Negative	BBB+
August 2001	BBB-	F3	Stable	BBB+
September 2000	BBB-	F3	Stable	A-
August 1997	BBB-	F3	-	A-

NOTE: for long-term, scale of AAA to D, with AAA being the best rating and ratings from AA through CCC being modified by plus/minus. AAA through BBB all represent investment grade ratings, thereafter all ratings are speculative, until “D” which signifies default; for short-term, scale is as follows: F1, F2, F3, B, C, D, with F1 representing the best rating and F1 through F3 representing investment grade, thereafter all ratings are speculative until “D” which signifies default.

Source: www.fitchratings.com, accessed on March 21, 2005.

An additional host of current indicators that gauge Egypt’s relatively favorable investment climate are captured in the table immediately following.

⁴⁹ Ibid.

Indicator	Definition	Rating
Creditor rights (2003)	Measures the extent of creditors rights within a given country (scale of 0-4, with 4 being strongest)	Egypt = 1 World = 2 Middle East & NA = 1 SSA = 2
Institutional investor credit rating (2003)	The probability a country will default (scale of 0-100, with 0 indicating the greatest probability and 100, the least)	Egypt = 41.1 World = 30.4 Middle East & NA = 38.5 SSA = 17.5
Euromoney country credit-worthiness rating (2003)	Measures the risk of investing in an economy (scale of 0-100, with 0 representing the highest risk and 100, the lowest)	Egypt= 49.2 World = 39.6 Middle East & NA = 44.1 SSA = 28.7
Time (days) to enforce a contract (2003)	Number of calendar days from the time a plaintiff files a lawsuit in court until final determination and, where required, payment	Egypt = 202 World = 307 Middle East & NA = 281 SSA = 334
Procedures to enforce a contract (2003)	Independent actions required by court/law between relevant parties	Egypt = 19 World = 25 Middle East & NA = 23 SSA = 30
Moody's sovereign long-term debt rating (January 2004)*	Measures a risk of government default (scale of AAA to C, with AAA being the best rating and ratings from Aa through Caa modified by 1-3, with 1 the most favorable)	Foreign currency = Ba1 Domestic currency= Baa1
S&P's sovereign long-term debt rating (January 2004)*	Also measures a risk of government default (scale of AAA to CCC, with AAA being the best rating and ratings from AA through CCC modified by plus/minus)	Foreign currency = BB+ Domestic currency= BBB-

NOTE: *These ratings only apply to Egypt, no world or regional figures available.
Source: WDI 2004.

Appendix C: Customer categories and use

TARIFFS	Energy Tariff PT/kwh	Energy TariffU S\$/kwh	Sector	Energy Tariff PT/kwh	Energy TariffU S\$/kwh	Sector	Energy Tariff PT/kwh	Energy TariffU S\$/kwh	Sector	Energy Tariff PT/kwh	Energy TariffU S\$/kwh
						Residential			Commercial		
UHV (220,132 kV)			Housing companies			0-50 kwh/month	5.00	0.009	0-100 kWh/month	18.00	0.031
Kima Company	4.70	0.008		10.70	0.019	51-200 kWh/month	8.30	0.014	101-250 kWh/month	26.00	0.045
Oth consumers	6.80	0.012	MV			201-350 kWh/month	11.00	0.019	251-600 kWh/month	33.20	0.058
HV (66,33 kV)			> 500kW	15.35	0.027	351-650 kWh/month	15.00	0.026	601-1000 kWh/month	41.00	0.071
	11.34	0.020	Up to 500 kW			651-1000 kWh/month	21.00	0.036	>1000 kWh/month	43.00	0.075
Public Lighting			Agriculture	7.00	0.012	>1000 kWh/month	25.00	0.043	Avg commercial		0.056
	30.00	0.052	Other consumers	18.00	0.031	Avg res		0.025			

PT = 100 LE

1 LE = US\$0.1734 feb 17 2005

All UHV, HV and Housing Companies also have a power factor charge, as well as all MV except agriculture

A demand charge tariff LE/kW/month is specified for MV "all consumers of >500 kW" only of 7.3 LE, US\$1.27

Appendix D: Development and investment outcomes

The chart immediately below provides another perspective on the development and investment outcomes by addressing them in the context of country-level and project-level factors.⁵⁰

Country-level factors	Details	Relative importance on investment outcome	Relative importance on development outcome
Political and institutional context for investors	Egypt's political and institutional context have remained favourable as attested by no renegeing on contracts during/post devaluation and change of government	medium	medium
Electricity reform strategy	Reform allowed for IPP entry, but has also led to IPP curtailment by recently increasing conditions for new investors	high	high
Incumbent fuel	Natural gas incumbent fuel, and fuel of IPPs, i.e. no competition between the two	low	low
Macroeconomic shock and contagion	Currency devaluation of 2003 led to doubling of capacity payments (in terms of Egyptian pound equivalency—the PPA dollar stated amounts have remained unchanged)	medium	high(est)
Project-level factors	Details	Relative importance on investment outcome	Relative importance on development outcome
Type of investor	InterGen, Edison and EdF are now retrenching on their respective home turf, while Globeleq's mission is investing in emerging market power	medium	medium
Financial structure	Dollar-denominated deals, which have become costly for EETC in the aftermath of the devaluation but were the primary reason why the gvt was able to secure such low rates in the first place	high(est)	high(est)
Regulatory framework	Regulator has been only remotely involved in IPPs	low	low
Fuel and technology	Natural gas sold at domestic rate of US\$1 per Mcf and indirectly passed through, making fuel a non-cost for investors but may be a serious opportunity cost for the state going forward with competing options for gas export	high	high
PPA	Risks in PPA allocated between developer and off-taker, with the former bearing more risk in development stage and latter bearing majority in operation stage, both parties deemed "fair allocation of risks", and PPAs proved durable withstanding even a major currency devaluation	medium	medium

⁵⁰ These country-level and project-level factors were developed by PESD for the global IPP study, as first referenced in Section I, paragraph 3. A detailed discussion of the factors is available in Victor, David et al. The Experience with Independent Power Projects (IPPs) in Developing Countries: Introduction and Case Study Methods. Working Paper #23, 2004. Available at <http://pesd.stanford.edu/publications/20528/>.

Appendix E: Stakeholder comments

In the section below, a synopsis of each of the individual stakeholders' views is provided, starting with the national utility, then the regulator, project developers (InterGen/Globelec and EdF) and financiers, followed by additional commentary in italics.

National utility-EEHC: EEHC maintains that the IPP experience has been a positive one for both the country and the investors for the following reasons. The necessary power was and continues to be supplied, and all plants are running well. There has been no controversy regarding the development of the plants. The utility learned about private power investments (which was deemed a necessary process for EEHC); as one example, the Sidi Krir IPP was built alongside a government-owned plant (Sidi Krir 1&2), with the instruction from the Minister of Electricity and Energy to optimize learning from the new plants. Furthermore, EEHC maintains that it has the "best prices" for any developing country IPPs, even post-devaluation. Finally, at the request of both the Sudanese and Yemeni governments, EEHC has since consulted on IPP developments. The only negative development has been the currency devaluation of 2003, which has seen a doubling of the capacity payments (from EEHC's perspective as it sells electricity to consumers in Egyptian pounds but is committed to pay the IPPs in dollars to enable them to meet their dollar-based loan commitments to the lenders). Each month EETC pays US\$20 million to IPPs on behalf of EEHC.⁵¹

In the end, the currency devaluation was decisive: this one event has led to a doubling of capacity payments, the impact of which should not be underestimated. Plans for the 15 IPPs have been abandoned in the aftermath of the devaluation, and the new IPP framework stipulates, among other things, that developers must bring their own customers, rather than rely on EEHC as the sole buyer, which places developers in the position of taking the risk of the commercial offtaker's long term creditworthiness and business success/viability. Unfortunately, a cost comparison between IPPs and EEHC new builds is not available, however, given the penchant for EEHC new builds (via public funding from domestic and foreign sources) in the current and next five year plan, it is reasonable to conclude that the state prefers non-IPPs.

Regulator-ERA: ERA's assessment of development outcomes is that BOOT projects were a good solution to the country's predicament, i.e. growth in power demand and limited public sector financing. There was, however, insufficient risk assessment, particularly with regard to a possible currency devaluation. The government's response post-devaluation, i.e. not to seek further IPPs, is considered a hindrance to liberalization of the sector.

⁵¹ Selected interviews with EEHC personnel, January 2005. Correspondence with selected EEHC personnel, February 2005.

ERA speculates that outcomes of IPP developments for investors have been mixed. The negative aspect of the outcome stems from the fact that project developers were ultimately looking for more than one investment (as confirmed by EdF and InterGen). The positive aspect of the outcome is based on the fact that contract-terms are considered favorable, and IPPs receive the same treatment as government utilities, namely that they had a secured buyer via the EEHC. There has also been no renegotiation of contracts, including after the currency devaluation.

While ERA may judge the outcome as generally positive, the regulator has virtually no oversight over the IPPs. To date ERA's primary involvement has been in licensing the three IPPs, which only happened after developers were assured that licensing would not interfere with any aspects of their PPAs. The agency's lack of involvement is largely a function of three factors: it was established only after the signing of the PPAs; it has no tariff-setting authority; and it has little independence from EEHC and the Ministry of Electricity and Energy. Considering that even a major devaluation did not lead to any renegotiation in contracts, it is unlikely that the agency will see its own role with the existing IPPs change. Future IPPs could experience greater regulatory oversight, particularly as the agency develops performance indicators tied to licensing costs and advocates bilateral contracts, but for now, no such IPPs are planned, making these issues moot.

1st Project Developer-Sidi Krir: For Globelec, it purchased InterGen's interest in Sidi Krir in 2004 and Edison's in 2005, and depending on the long term outcome of its financial and commercial investment assumptions, Sidi Krir has the potential to be a successful investment. The plan fits into the firm's strategy to develop a geographically diverse portfolio in developing countries. For InterGen, its investment in Sidi Krir would have been a moderate success (but at a much lower return on equity than the 20+% that is often considered commensurate with developing country risk) had the firm held its stake over the long term. However due to a strategic decision taken by InterGen's shareholders to divest from the private power sector the initially anticipated investment return potential was not realized.

Positive attributes of the deal and investment outcome, according to the stakeholder, are attributed to the fact that the PPA was considered to have a fair allocation of risk particularly with the Central Bank guarantee; the mechanism for obtaining and paying for fuel was solid; and the firm had a reasonable return.

The negative aspects are attributed to factors related to investor risk assessment and economics, which was associated with a lower than expected return, i.e. 8-10% rather than 15-18%, initially expected. These factors 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% of the debt was hedged.

InterGen/Globeleq maintains that it has been a clear development success for the country due to the following factors: the project brought significant foreign investment to Egypt (i.e. US\$139 million in equity and US\$290 million in debt financing), which led to increased private sector participation in economy (15 years ago, 65% of GDP generated by government, today only 30%); the government received the requisite power without burdening its own balance sheet, i.e. it was able to use funds for other social sectors; Sidi Krir also represents a source of revenue through tax and other payments; and lastly, it has been and continues to be a source of employment: during construction, 1200 Egyptians employed, during O&M, 100 Egyptians employed.⁵²

Although a change in corporate strategy by Sidi Krir's owner InterGen is given as the reason why InterGen sold the plant to Globeleq, would this necessarily have happened had Egypt rolled out the 15 IPPs, initially planned? This change in original plans, which were part of the enticement for the firms investing in the late 1990s, greatly shifted the playing field for both InterGen and EdF, providing them with little opportunity to capitalize on branding and economies of scale. If an assessment of actual outcomes is made on the basis of expected and/or potential outcomes, namely multiple IPPs instead of just one, might InterGen's evaluation of the anticipated investment outcome be less than a "moderate success"? Although Globeleq was able to buy Sidi Krir for a favorable price given InterGen's swift exit, in the near term, it seems unlikely that Globeleq will benefit from any new builds. The current provisions for IPPs stipulate that firms must bring with them their own customers and enter into bilateral contracts with those other than EEHC, but Globeleq has no precedent for doing this, and Egypt's bilateral market is not yet developed (i.e. IPPs could not compete with low average prices offered by EEHC), which would mean Globeleq assuming an inordinate and unacceptable amount of risk.

2nd project developer-Port Said & Suez: Port Said and Suez have been relative investment successes for EdF with the company making modest profits, achieved primarily through management of technological risk. The firm, like InterGen, had expected more than one investment. For this reason, its bids for Port Said and Suez were on very favorable terms for the government as it was interested in establishing a brand/base in the sector. The

⁵² Selected interviews with personnel from InterGen/Globeleq, January 2005. Correspondence with personnel from InterGen/Globeleq, February 2005.

government's decision to rescind its 15 project IPP plan has therefore proved a disappointment to EdF and its own development strategy.⁵³

While the firm noted "relative success", EdF is in the process of selling its two plants to concentrate on its home/European market. As with InterGen, the imminent sale may represent a shift in strategy, but would such a strategy have been implemented had the firm been able to grab more market share at a favorable value without incurring excessive risk? It may therefore be more accurate to judge the outcomes in less positive terms, again, taking into consideration 'what could have been' with the 15 IPPs.

Local bank (involved in Sidi Krir): Sidi Krir had a positive impact with regards to enabling Egypt to attract foreign capital to the country to help the electricity sector implement its capacity expansion plan. The project was executed in a timely manner, and the plant was available on schedule. Egyptian banks gained exposure to project finance as well as a solid debt structure, given the Central Bank guarantee. EEHC gained experience in negotiating contracts with international investors. The quoted price for electricity was the cheapest in the world at US 2.5 cents/kwh which is still competitive in US dollar terms. Unless soft loans are provided- the local bank believes that IPPs are not more expensive than government-funded plants. Although the BOT concept received considerable negative coverage, the IPP model did allow the government to focus its limited resources on areas where they are most required, namely social services.

Given the devaluation of the Egyptian pound and the fact that EEHC's revenue sources are purely in local currency, electricity purchased today from the plant is considered expensive. A combined EGP/USD payment structure may have been more beneficial to the Egyptian economy.

EdF and InterGen have, however, indicated that they would not have accepted such a deal at the time, at the inception of the IPP experience in Egypt. EEHC has also indicated that such a structure would have meant it would have received less competitive bids.

Multilateral-IFC: For IFC both the development and investment outcomes are deemed positive, with the only unfavourable issue being the currency devaluation, which has burdened the off-taker. Going forward, it advocates a more balanced structure to accommodate currency risk.

Given the present circumstances, however, the next IPP developments appear to be a ways off. If the new provision that IPPs must bring their own customers holds, then a

⁵³ Selected interviews with personnel from EdF, January 2005. Correspondence with personnel from EdF, February 2005.

restructuring of EEHC pricing would also need to be implemented to ensure a market for IPPs.

The following table summarizes the views of stakeholders, which, given the above-noted commentary in italics, paints a far more favourable picture than what may have actually taken place.

Stakeholder	Development outcome	Reason	Investment outcome	Reason
EEHC	Initially positive, now marginal	Requisite power supplied at cheap rates, but gvt now burdened due to devaluation	Positive	Contracts deemed favourable to investors, fully protected from currency risk
ERA	Generally positive	Requisite power supplied, but aborted development plan has stalled reform	Mixed	Investors were only able to develop 1 project, but favourable PPAs
InterGen & Edison	Positive	Requisite power supplied at cheap rates	Negative	Strategic decision by shareholders to leave sector prematurely
Globeleq	Positive	Requisite power supplied at cheap rates	Potentially positive	Only acquired plant in Dec 2004
EdF	Positive	Requisite power supplied at cheap rates	Mixed	Sound contract, but only 1 project obtained
Local bank	Generally positive	Requisite power supplied at cheap rates, but gvt now burdened due to devaluation	Positive	Developers received sound proof contracts
Multilateral	Generally positive	Country received the necessary power at favourable rates, but has suffered since devaluation	positive	Deals were well structured to ensure investor returns