

# **Sustainable Power Sector Reform in Emerging Markets - Financial Issues and Options**

**Joint World Bank/USAID Policy Paper**

**FULL CASE STUDIES**



Submitted by:  
**Deloitte Touche Tomatsu Emerging Markets, Ltd.  
(Emerging Markets Group)**

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## Chisinau/Centru/Sud Distribution Company – Divestiture

### Project Description

On February 9, 2000, the Spanish utility, Union Fenosa paid an estimated \$26.9Mn for three of the five unbundled Moldova distribution companies. These discos served a population of 746,000, throughout the capital city of Chisinau and the central and southern regions. The contract included a 25-year operating lease. In June 2001, the European Bank of Reconstruction and Development purchased 18.5% of UF's stake for \$5Mn. The project involved the rehabilitation of existing assets, improvement of collections systems and the provision of working capital requirements. The total project cost was estimated at \$132 Mn of which \$78 Mn was dedicated to a 5-year capital investment schedule.

### Country Summary: Moldova

Moldova remains a very poor country despite recent progress from its small economic base. It enjoys a favorable climate and good farmland but has no major mineral deposits. As a result, the economy depends heavily on agriculture, featuring fruits, vegetables, wine, and tobacco. Moldova must import all of its supplies of oil, coal, and natural gas, largely from Russia. Energy shortages contributed to sharp production declines after the breakup of the Soviet Union in 1991. As part of an ambitious reform effort, Moldova introduced a convertible currency, freed all prices, stopped issuing preferential credits to state enterprises, backed steady land privatization, removed export controls, and freed interest rates. The government entered into agreements with the World Bank and the IMF to promote growth and reduce poverty. The economy returned to positive growth, of 2.1% in 2000, 6.1% in 2001, 7.2% in 2002, and 5.3% in 2003. Further reforms will come slowly because of strong political forces backing government controls. The economy remains vulnerable to higher fuel prices, poor agricultural weather, and the skepticism of foreign investors.

#### Country Summary: Moldova

- ❖ **Government:** Republic
- ❖ **Country Risk Rating:** 18.7/100
- ❖ **Transparency Intl Rating:** 2.4/10 (2003)
- ❖ **Population:** 4.4Mn (2003)
- ❖ **Economic Growth:** 6.5% (2002)
- ❖ **Per Capita GDP (PPP):** \$2500 (2002)
- ❖ **Electricity Coverage:** 75%

### Industry Power and Governance Structure

Moldova's power sector operates under a quasi-competitive market model. The unbundling process started as early as 1997 when the state monopoly, Moldenergo, separated into 16 functional and autonomous businesses. Of these businesses, three were generation, five were distribution and one was transmission. All the entities were corporatized and legally registered as joint-stock com-

#### Industry Power and Governance Structure

- ❖ **Power Market Model:** Wholesale
- ❖ **Level of Competition:** Wholesale
- ❖ **Total generation capacity:** 3.4GW (2001)
- ❖ **Regulatory Framework:** Independent-Contracted
- ❖ **Trends:** The Communist government in power has sought to renegotiate numerous power agreements with foreign investors.

panies but still remained under state ownership. The National Energy Regulatory Agency (ANRE) was also established in 1997 with the objective to separate politics from sound economic decisions and to return the sector to reasonable profitability. ANRE currently regulates power distribution, generation, and transmission and dispatch companies. The World Bank has played an active role in restructuring Moldova’s power sector. With its assistance, the government of Moldova enacted a new energy law in 1999 allowing private ownership of generation and distribution, though transmission was kept under state ownership.

**Finance and Risk Structure**

The total estimated project cost over a five-year period (2000-2005) was \$132Mn of which \$78Mn was allocated to a 5-year investment program. Of the \$132Mn, approximately \$87.2Mn was financed through a combination of equity and debt. After the post-privatization equity sale to EBRD in June 2001, UF had a remaining equity stake worth \$21.9Mn while EBRD’s was \$5Mn for a total equity of \$26.9Mn. On the debt side, IFC and EBRD contributed \$25Mn each for a term of five years. UF contributed \$10.3Mn. MIGA also stepped in by providing political risk insurance for all the debt. The total \$60.3Mn in loans was to be allocated to the investment program. The remaining \$44Mn project cost over and above the combined debt and equity total of \$87.2Mn was to be self-financed through operations.

**Finance and Risk Structure**

- ❖ **Total cost:** \$132.0Mn investment over 5 years /\$87.2 (initial)
- ❖ **Equity participants:** UF (\$21.9Mn), EBRD (\$5.0Mn)
- ❖ **Debt participants:** EBRD (\$25Mn), IFC (\$25Mn), UF (\$10.3Mn)
- ❖ **Debt/equity ratio:** NA
- ❖ **Other:** MIGA insurance (\$61Mn); investment internal financing of \$44Mn.
- ❖ **Government/Private ownership:** 0%/100%
- ❖ **Foreign/domestic Ratio:** 100%/0%
- ❖ **Government/MDB guarantee:** None
- ❖ **Financial Risk Structure:** Privatization
- ❖ **Financial Closure Date:** Feb. 2000

**Key Structure and Success Factors**

In the late 1990’s, it was said that an average of 30 percent of power disappeared after reaching distribution companies, of which about 20 percent was due to thefts. Such non-technical losses were considered socially acceptable to the extent that one could supposedly buy books offering over one hundred ways to steal power. Furthermore, the Moldova’s economy was struggling and the political and legal environments were aggressively against foreign investments. However, since the privatization to Union Fenosa, there have been improvements in the discos both operationally and financially. For example, the number of electricity cut off hours has dropped from as high as 4710 hours in 1999 to 163 total hours in the period between 2000-2002. In addition, net sales per employee grew 50% between 2000 and 2002. The World Bank worked closely with the government of Moldova on reforming the power sector and facilitating the privatization tender. The 1999 electricity reform act opened the door to UF’s purchase of the Chisinau/Centru/Sud discos, but a number of key factors contributed to the successful financing and performance improvements.

- ❖ **Active Multilateral Participation in Financing and Risk Management:** Multilateral bank support has been instrumental to project success from the earliest sector reform measures to financial closing and political backstopping after the March 2001 elections in which the Communists came back to power. The World Bank and USAID set the foundation through its sector advisory and disco tendering process. Both the IFC and EBRD provided critical debt financing necessary for the discos' capital investments. EBRD also provided post-privatization support by purchasing 18.6% of UF's equity stake thereby reducing the utility's investment risk. MIGA's political risk insurance covered the project against several risks including war, transfer restrictions, breach of contract, expropriation, etc. UF's executive president, Ignacio Ibarra observed, "A key part of UF's decision to go ahead with the purchase was MIGA insurance coverage." Yet MIGA has also been able to play the "honest broker" role between UF and the new Moldova government, which has sought to reconsider the privatization that occurred. UF currently faces numerous financial and servicing obstacles but with the help of the multilaterals, UF, so far, has been able to face up to the challenge.
- ❖ **More Favorable Tariff Structure:** The regulatory agency, ANRE, was an active partner in the negotiations with UF during the time of sale and agreed to a tariff methodology that was attractive to UF. In March 2000, the retail tariff was 5.15 cents/kWh. By October 2001, it rose to 5.28 cents/kWh. As a result of an international audit of UF's true disco operating costs, an agreement was negotiated with ANRE to raise the tariff further and solidify it for the next seven years. Actual implementation was delayed but it was the first step in establishing a more favorable cost-recovery multi-year tariff.
- ❖ **Quality Investment in Human Resources:** Acknowledging the role of staff in disco productivity, UF restructured much of the staffing. Between the years 2000-2002, the aggregate the labor pool was reduced from 3200 to 2500. However, the present 2500 employees incorporates the hiring of 300 younger employees from the best educational institutions, to offset the outsourcing of another 300 employees. Furthermore, 150 of the top employees underwent extensive skills training either in Moldova or in Spain at UF's corporate university. In short, UF sought to elevate the quality of its staff.
- ❖ **Focused Technical and Collections Losses Reduction:** UF's strategy for loss reduction revolved around applying new technology and understanding the customer better. For example, by November 2001, UF adopted the new SGC bill collection system throughout all three discos. Combined with active meter reading by UF staff, this system computerized the tracking of electricity consumption, losses on transformers and other technical data. It also updated the quality of information on invoices sent to customers while automatically issuing any orders for work to be done for them. Based on consumer usage analysis, UF decided to tackle collection losses creatively by segregating delinquent payers between big and small. Big delinquent payers could face electricity access denial, replacements with new theft reducing meters and other control measures. Smaller delinquent payers might have their meters relocated in a public setting and be more subject to normative testing. UF also set up theft inspection teams, and various bad debt restructuring programs often requiring asset collateral from high-risk customers. These measures were not always easy to implement and some had mixed results but the reforms improved collections in order to fund elevated service.

- ❖ **Supportive Community Intervention:** In parallel to loss reduction efforts, UF sought to improve community relations. This included charity efforts such as daily free entrance canteens for the poor and material aid in the form of medicine and clothing. UF also funded cultural programming such as 400 tickets per month to adult theaters, a 35-member choir, and sports events. These public relations endeavors seek to connect closer with the public and thereby raise positive awareness of UF in the people’s minds.

Political and legal events in Moldova continue to challenge the sustainability of the Chisinau/Centru/Sud distribution companies. Some have observed that Union Fenosa’s initial successes may have tempted the Communist government to pursue a strategy of creeping expropriation of the discos purchased. The privatization of the remaining two discos in Moldova has been hotly contested and the GOM has opposed UF extending its ownership to them. The presence of EBRD and the World Bank Group has hedged some of the political risk and Union Fenosa’s balance sheet has allowed it to persevere in Moldova at a time when many power players are withdrawing from the emerging markets. Despite the continuing obstacles, Union Fenosa materially contributed to the welfare of the people through improved electricity service and has committed to improving financial performance. The combination of multilateral support, progressive tariff structures, human resources improvements, loss reduction strategies and community intervention has not solved all of Union Fenosa’s problems, but they have set the Chisinau/Centru/Sud discos on a positive path and served as positive benchmarks for the remaining two state-owned discos.

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## Luz del Sur - Divestiture

### Project Description

Luz del Sur, an electricity distribution company, serves over 700,000 customers throughout southern and eastern Lima. After passing the Law of Electrical Concessions (LCE) in 1992, the government unbundled and privatized the vertically-integrated Electrolima as four distribution companies and one generation company. The creation of privatized distribution concessions was intended to expand electricity accessibility, reduce losses, improve the utility's financial standing, and foster additional investment in technology and management.

### Country Summary: Peru

Like Ecuador and Bolivia, two other Andean countries with which Peru shares many features, Peru has relied on exports of mineral and agricultural commodities since colonial times. At present, Peru is one of the world's largest producers of copper, silver, lead, and zinc; it is also a major exporter of fishmeal used for cattle feed, and has been struggling for years to reduce illegal exports of cocaine and its raw material, coca leaf. After major macroeconomic problems during the 1980s, the economy has grown at an annual average rate

exceeding 5% in recent years, with the exception of a dip in 2001, while keeping inflation very low. The country is still plagued, however, by significant political and social problems. About half of the country's population of aboriginal Quechua and Aymara stock, with another third of mixed Indian and European race. As in Bolivia and Ecuador, the entrenched deep poverty and marginalization of the Indian population has historically resulted in major regional and social divisions, and led to the emergence of violent insurrections and populist movements that have failed to redress long-standing grievances. After the authoritarian President Fujimori was ousted in 2001, Alejandro Toledo was elected as the first president with Indian ancestry in the country's history, but despite solid economic growth he has disappointed voters and is at present highly unpopular. Likewise, the success of the adjustment programs undertaken during the 1990s has not dispelled deep mistrust of the pro-market policies. In 2002, the privatization of two generation companies after major riots in Arequipa, Peru's second largest city.

#### Country Summary: Peru

- ❖ **Government:** Constitutional Republic
- ❖ **Country Risk Rating:** 21.0 (1994)
- ❖ **Transparency Intl Rating:** 3.7/10 (2003)
- ❖ **Population:** 28.4Mn (2003)
- ❖ **Economic Growth:** 4.8% (2002)
- ❖ **Per Capita GDP (PPP):** \$4800 (2002)
- ❖ **Electricity Coverage:** 67% (2002)

### Industry Power and Governance Structure

Peru's electric power industry went through a major reform in 1992 that set the basis for the divestiture of state-owned assets and the entry of private capital following very closely the Chilean reform of 1982. The vertically integrated state power companies were split into separate generation, transmission, and distribution companies. To foster competition, several generation and distribution companies were created, and in 1997, a new law was passed limiting a company's market share in any of the three segments of the industry and limiting vertical integration.

Private participation in hydroelectric and geothermal generation, transmission, and distribution is only allowed through concessions for indefinite terms. The public sector still owns several generators and non-controlling stakes in several of the privatized companies, but the management of the transmission network was awarded in 2002 to a consortium of Colombian companies. The government is in charge of indicative planning and the award of concessions. It also controls the regulatory commission, which sets transmission and distribution charges and computes the prices for the sale of electricity to regulated consumers. The commission also includes representatives from the generators and the distributors, and is funded through a levy on electricity transactions. Spot market prices for energy are based on short-term marginal costs of energy (including opportunity cost of water); the prices for sale to regulated customers are based on a four-year forecast of marginal costs prepared by the regulator. Capacity prices reflect the unit cost of the cheapest plant that can provide additional peaking capacity. Transmission and distribution charges are based on the costs of a model efficient company, adjusted for the density of population of the service area in the case of distribution. Unregulated customers can purchase electricity at freely negotiated prices. Subsidies are provided by the government for household consumers with minimal levels of use.

#### **Industry Power and Governance Structure**

- ❖ **Power Market Model:** Wholesale
- ❖ **Level of Competition:** Wholesale
- ❖ **Total generation capacity:** 5.9GW
- ❖ **Regulatory Framework:** Independent-contracted
- ❖ **Trends:** Despite the attempt to encourage greater local participation in the privatization of regional distribution companies by reducing the stakes to be privatized to 30%, public hostility to privatization has limited new divestitures. The huge Camisea natural gas project seems to be finally making progress and is expected to commence delivery of natural gas to Lima by August 2004, helping the country diversify away from overdependence on hydroelectric sources for its electricity supply.

#### **Finance and Risk Structure**

The controlling stake for the Luz del Sur concession (then known as Edelsur) was won in 1994 by a consortium of North American companies (Public Service Enterprise Group (PSEG), Sempra Energy International, Ontario Hydro, FondElec) and investment funds (see box) acting through their Chilean subsidiary Chilquinta; another 10% was sold to company employees. In 1996, the remaining 30% government stake was sold for \$173Mn to Peruvian citizens through a Citizen Participation Program (60% of the stake), to FondElec (13.5% of the stake) and to local institutional buyers. Subsequently, PSEG and Sempra Energy International (Sempra) bought the stakes of Ontario Hydro and FondElec, becoming in effect the owners of about 80% of Luz del Sur. Most of the other 20% is held by local shareholders. At the end of 2002, long-term debt amounted to nearly one half of the company's equity.

### **Finance and Risk Structure**

- ❖ **Total cost (1994):** \$212Mn + \$300Mn Cap. Inv.
- ❖ **Equity participants (1994):** Sempra Intl/PSEG (42%), FondElec (33%), Ontario Hydro (25%)
- ❖ **Debt participants:** Balance sheet financing
- ❖ **Debt/equity ratio (2002):** 33%/67%
- ❖ **Other:** Internally-financed capital investment between 1994-2002 approximately \$300Mn
- ❖ **Government/Private ownership (1994):** 70/30%
- ❖ **Foreign/domestic Ratio (1994):** 40%/60%
- ❖ **Government/MDB guarantee:** None
- ❖ **Financial Risk Structure:** Divestiture
- ❖ **Financial Closure Date:** 1994

### **Key Structure and Success Factors**

Luz del Sur provides evidence that privatization can lead to improvements in both social welfare and investment returns. Over the period 1994 to 2002, the utility targeted service, operational and financial improvements. The number of customers increased by one third to 700,000, with roughly 90% of them being residential customers, and yet collections were improved alongside with service. By 1999, the average time to install a new connection was down to 5 days, from 90 days in 1994; energy losses dropped from 20% to 8.4% between 1994 and 2002. Despite the ability of customers with peak demand in excess of 1MW to freely choose their supplier of electricity, energy sales grew from 2,400 GW to 3,900 GW over the period—a 52% increase; in fact, sales to unregulated customers grew from 500 GW in 1997 to 665 GW in 2002. Increased productivity contributed to Luz del Sur's positive net income stream, which has averaged \$50 million in the last three years (2000-2002) on sales of about \$300Mn, and resulted in payment of dividends at least since 1996. The number of customers per employee increased from 426 to 1,039 over the 1994-2002 period, with cumulative investment over the same span of time reaching nearly \$300Mn. Luz del Sur posted a \$50.5Mn profit for 2003. Finally, public perceptions of the utility's future prospects improved such that from 2001-2003, Luz del Sur's stock price grew from \$8 to \$18 – a total return of 125%.

- ❖ **Domestic capital market access** – Luz del Sur's listing on the Lima Stock Exchange provided financial resources for capital investment. But perhaps of greater importance, the ownership of shares by employees and local investors aligned their interests with those of the foreign investors in seeking productivity gains and financial returns in the utility, while helping maintain domestic support for the divestiture in the midst of local skepticism about privatization.
- ❖ **Use of a concession structure** – The decision to divest distribution companies as indefinite concessions rather than outright property sales may have also maintained political support for the company by retaining formal ownership of the assets in public hands.
- ❖ **Government commitment of subsidies**- To expand and insure coverage among the low-income communities, residential customers with less than 30kWh per month usage are provided with subsidies, which cover 50% of the economic cost of service. These subsidies are paid for primarily through taxes. With a relatively low per capita income in the country, and in the context of difficult structural reforms that led to major price increases for basic products, including electricity, the establishment of a subsidy program undoubtedly helped limit the adverse impact of the electricity reform process on the some of the most vulnerable groups and reduced the potential for a political backlash. It is estimated that between 1989 and 1999, residential electricity rates increased by almost 1000%, while income per capita

only grew by 19%. This meant that Peruvian households spent 21% of their income on fuel and power in 1998, whereas Argentine households spent only 11% and Brazilian ones 3%. Programs of this nature make a lot of sense in the electricity sector, because the negative impact of adjustments of price to the full cost of supply is much more immediate than the positive impact of loss reductions and service improvements. In Peru, by 1996 these effects were beginning to be felt and residential rates were reduced over the subsequent years back to 1994 levels. Moreover, in contrast with other Latin American countries like the Dominican Republic or Guatemala, where subsidies are provided for up to 300 kWh/month, the 30 kWh limit set in Peru, while low, appears to be much better targeted, thus ensuring greater financial viability for the subsidy and hence for Luz del Sur's incentive to continue to expand coverage for, and provide service to, low-income areas.

- ❖ **Progressive power sector reforms** – Peru improved upon the reform model that it copied so closely from Chile. The industry was split vertically and horizontally, creating favorable conditions for competition. The competitive structure was strengthened by the legal prohibition of vertical or horizontal concentration in 1997. Also, the use of concessions for the transmission system mobilized foreign capital to build the interconnection between the southern and northern grids, creating a larger, nationwide market. Vertical separation and increased competition facilitated the regulation of distribution utilities and put downward pressure on the price of electricity paid by regulated consumers.
- ❖ **Appropriate regulatory framework** – The regulatory framework, based on the already tried and tested Chilean model, provided reasonable assurance of revenue stability by limiting rate reviews to every four years and ensuring full pass through of electricity purchase costs to regulated customers, while incentivizing efficiency improvements through the use of a model utility rather than a cost-plus arrangement.
- ❖ **Multiple distribution concessions** - Instead of awarding the entire metropolitan Lima area to a single concessionaire, as was done in the case of Santiago in Chile, the creation of two separate concessions (plus additional ones for other areas of the country) created the possibility of comparative assessments of performance and provided an added incentive for the operators to improve their productivity, quality of service, and service coverage.

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## North Delhi Power Limited – Divestiture

### Project Description

In July 2002, the Delhi government unbundled and privatized the distribution component of the Delhi Vidyut Board (DVB), the Delhi vertically integrated state utility. Three distribution companies were created. BSES purchased controlling stakes in two of them. Tata Power purchased a 51% share in the North Delhi Power disco, which covered a population of 800,000 throughout the north and northwest zones.

### Country Summary: India

India's economy encompasses traditional village farming, modern agriculture, handicrafts, a wide range of modern industries, and a multitude of support services. Overpopulation severely handicaps the economy and about a quarter of the population is too poor to be able to afford an adequate diet. Government controls have been reduced on imports and foreign investment, and privatization of domestic output has proceeded slowly. The economy has posted an excellent average growth rate of 6% since 1990, reducing poverty by about

10 percentage points. India has large numbers of well-educated people skilled in the English language; India is a major exporter of software services and software workers; the information technology sector leads the strong growth pattern. The World Bank and others worry about the continuing public-sector budget deficit, running at approximately 10% of GDP in 1997-2002. In 2003 the state-owned Indian Bank substantially reduced non-performing loans, attracted new customers, and turned a profit. Deep-rooted problems remain, notably conflicts among political and cultural groups. (Source: World Fact Book 2003)

#### Country Summary: India

- ❖ **Government:** Federal Republic
- ❖ **Country Risk Rating:** 47.3/100 (2002)
- ❖ **Transparency Intl Rating:** 2.8/10 (2003)
- ❖ **Population:** 1Bn (2003)
- ❖ **Economic Growth:** 4.3% (2002)
- ❖ **Per Capita GDP (PPP):** \$2450 (2002)
- ❖ **Electricity Coverage:** 60% (2002)

### Industry Power and Governance Structure

The 1948 Electricity Supply Act defined much of India's current power market through its delegation of generation, transmission and distribution responsibilities to the individual states. These states structured their power sectors into vertically integrated State Electricity Boards (SEBs). The SEBs set tariffs within their regions and were financed by state loans. The central government's authority was confined to general policy, long-term planning, project approvals and technical assistance through the Power Ministry, Planning Commission and

#### Industry Power and Governance Structure

- ❖ **Power Market Model:** Single-buyer
- ❖ **Level of Competition:** Entry level
- ❖ **Total generation capacity:** 1040GW
- ❖ **Regulatory Framework:** Independent-Contracted
- ❖ **Trends:** India has hesitantly set the foundations for a more investor-conducive environment through a series of reforms and the decentralization of the project approval process. Examples include the following:
  - The unbundling process of State Electricity Boards (7 States to date)
  - Automatic approval of foreign equity: no upper limit

Central Electricity Authority. The 1998 Electricity Regulatory Commission Act established state and central-level electricity regulatory commissions (ERCS) to regulate the private licensees on top of SEBs. There remains discrepancy on the authority of the state versus the regulatory commissions in regards to the tariff system and other elements of the regulatory system. The new Electricity Act 2003 supersedes and consolidates previous electricity acts. It attempts to clarify many open issues including licensing, metering, theft punishment, transmission access, and policy and tariff authority in relation to the yet-to-be announced National Tariff Policy.

**Finance and Risk Structure**

Tata Power paid \$37.5Mn for the 51% stake in the North Delhi disco. SBI Capital Markets, an Indian investment bank, advised the Delhi government on the privatization process in which only two out of six bidders remained in the final round: BSES and Tata Power. These domestic power players submitted their bids based on their capacity to reduce technical and commercial losses over a five-year period. Their submissions were about 10% below the minimum values specified by the government but the other participants, including the international investors had withdrawn for a variety of reasons. The Delhi government accepted what was available and proceeded to negotiate on acceptable loss reduction targets, moratorium period on prior debt obligations owed to the State by the discos and the amount of contingent liabilities passed on to the discos from the DVB holding company.

<b><u>Finance and Risk Structure</u></b>	
❖ Total cost: \$37.5Mn	❖ Foreign/domestic Ratio: 0%/100%
❖ Equity participants: Tata Power	❖ Government/MDB guarantee: None
❖ Debt participants: None	❖ Financial Risk Structure: Divestiture
❖ Debt/equity ratio: NA	❖ Financial Closure Date: July 2002
❖ Government/Private ownership: 49%/51%	

**Key Structure and Success Factors**

The Tata Power North Delhi divestiture, along with the BSES disco divestitures, was part of the broader Delhi Vidyut Board utility unbundling and privatization process. Prior to July 2002, the Delhi Vidyut Board (DVB) state utility had a number of physical, financial, operational and regulatory issues that challenged the survival of the distribution companies it planned to divest. Capital investments required to repair the distribution system was calculated at \$214Mn over the next five years. The Delhi government already had to provide \$200-\$300Mn in subsidies per year. DVB receivables totaled \$400Mn. The limited to non-existent customer data made the possibility of collections to reduce these receivables, remote. Transmission and distribution losses were estimated at 50% due to theft, inadequate metering, and poor billing and collections. Finally the regulatory system governing tariffs placed serious burdens on the discos’ long-term viability. However, on July 1, 2002, the Delhi government privatized the DVB’s discos with Tata Power purchasing a 51% stake in one of the discos within the north and northwest zones. Key factors that assisted in the transaction’s completion include the following:

- ❖ **Solid Political Support**: The value of high political support cannot be underestimated in any privatization. Starting with the Chief Minister, the government of New Delhi was a solid advocate for the divestitures. In addition, a number of senior Delhi government officials had both the understanding and authority to rapidly respond to problems. It should also be noted that resistance to the divestitures was relatively low. Public discontent with DVB’s service reduced employee union resistance and made it easier for the Delhi government to support the privatizations. Agricultural users were also fairly quiet about the transactions. They tend to be heavily subsidized and therefore oppose privatizations. Perhaps, because the DVB primarily serves an urban customer base, the agricultural interests were not as affected.
- ❖ **Open Multi-tariff System Experimentation**: The adoption of a multi-tariff system has been a gradual process. Traditionally, retail tariffs were based on an annual cost of service approach. However, in May 2002, the Delhi Electricity Regulation Commission (DERC) started to explore the multiyear tariff system. But according to the recent World Bank study on the Delhi disco divestitures, the system is “partial in the sense that only some of the performance elements (loss improvements) and cost elements (bulk supply costs) were specified on a multi-year basis prior to privatization. However, other elements such as operating expenses and capital expenses will continue to be reviewed and approved by the regulator on a year-to-year basis using general criteria rather than a specific formula.” The recent 2003 Electricity Act should further clarify the government’s legal authority on multiyear tariffs as well as create an electricity tribunal to arbitrate power sector disputes. The tariff system still has a way to go, nevertheless, the multiyear tariff approach was a major step forward in boosting the confidence of investors on the stability of cash flows.
- ❖ **Conservative Asset Valuation**: Many privatizations, such as the Orissa case, sought to maximize government revenues by encouraging the highest bid. The tradeoff is that the investors, at some point, require higher tariffs to compensate for the sale price. In contrast, the Delhi government’s intent was to preserve the discos long-term viability by encouraging efficiency gains and keeping the bid price low so as to minimize tariff increases. The key was in a conservative valuation. Rather than adopt a standard asset valuation based on insufficient or opaque financial statements, the Delhi model used a business valuation based on future cash flows. This revealed the liability burden on disco sustainability. As a result, the government shifted over 85% of the debts to the state-holding company. This essentially cleared the disco balance sheets for privatization.
- ❖ **Progressive Linkage Between Incentives and Performance**: A cornerstone of the discos’ sustainability lay in technical and commercial/collection loss reductions. To assist and incentivize the Tata operators, both targeted subsidies and a revenue sharing system were established.
  - **Targeted 5-year Subsidy**: Prior to privatization, disco revenues only covered 70% of average costs leaving a huge revenue-cost gap that current subsidies could not fill. The divestitures were meant to bring in private participation to close this gap through efficiency gains and thus eliminate the need for subsidies which were costing the government \$200-\$300Mn per year. However, recognizing that loss reductions were not going to happen immediately, the Delhi government instituted a five-year targeted subsidy by which the discos received discounted electricity from Transco, the Delhi state transmission entity. The 2-cent/kWh loss incurred by Transco would be made up by state loans during the period. In short, due to the Delhi government commitment of a \$720Mn budgeted subsidy

for the three discos over a five year period, the discos had some breathing space.

- **Revenue Sharing System:** To accelerate the loss reductions, the Delhi government pursued a revenue sharing agreement whereby 50% of the revenues generated over the agreed upon loss targets would go to the disco operators such as Tata. This approach was intuitively simple to understand and, relative to a profit-sharing arrangement, less complex to calculate.

For both the subsidy and revenue-sharing arrangement, no guidelines exist for what happens after the 5-year expiration. Furthermore, it is not clear if the loss reduction targets established by the government were too ambitious. Regardless, both incentive systems provide important foundations in turning around the discos.

A sustainable privatization ultimately depends on economic viability without subsidies and continued political support. By this definition, it is still too early to evaluate the success of the North Delhi privatization. Many questions remain regarding regulation, tariffing, subsidy provisions and so forth. The bidding process did not attract foreign investors either. However, the absence of foreign investors, could be argued, was due to larger India and global market events outside this transaction. Yet in the end, the transaction proceeded fairly smoothly with solid domestic investors like Tata and BSES. Most importantly, the privatization highlights the factors that can improve future transactions in India. These improvements include strong political support, clear regulatory adoption of a multiyear tariff system, conservative asset valuations and progressive incentive systems.

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## **Edenor – Concession**

### **Project Description**

In 1992, Empresa Distribuidora Norte S.A.(Edenor), the Company, was established under a 95 year government concession to provide electricity distribution services in northern Buenos Aires. The concession was won in a competitive bidding process by a consortium of EDF, SAUR (France), Endesa (Spain), and Astra, an Argentine company. The service area for the concession was one of the three zones in which the territory of the former government-owned utility, Servicios Eléctricos del Gran Buenos Aires (SEGBA) was split for concession to private operators. SEGBA was the only operator of electricity distribution service owned by the federal government, and the first one to be privatized in Argentina. The Buenos Aires metropolitan area was split into two zones, with a third one for the city of La Plata. Edenor's service area comprises approximately 2.2 million customers of a total population of some seven million people. The company's efforts have been directed towards improving the quality of service through replacement and expansion of the physical infrastructure and through better management practices, reducing theft and increasing collections, and increasing the company's efficiency through staffing reductions and reduction of non-technical losses. To implement these actions, Edenor underwent two \$400Mn dollar investment programs over the 1992-2000 period. IFC provided loans in the first program (1992-1995). IDB provided loans in the second program (1996-2000).

### **Country Summary: Argentina**

Argentina's recent economic and political history is notorious for the country's downfall from one of the world's highest per capita incomes in the first half of the 20th century, to a deeply troubled society that has had great difficulty in realizing its growth potential over a sustained period of time. During the early 1990s, a deep economic crisis following the restoration of democracy and including some of the world's worst hyperinflation on record, led the new Peronist government to embark in a radical program of economic reform under the direction of Economy Minister Domingo Cavallo. Starting in 1991, one of the world's most ambitious privatization programs was carried out, with extensive technical and financial support from the World Bank. In the electricity sector, major blackouts during 1988-89 (due to a combination of drought and poor maintenance of thermal plants) were a catalyst for a fundamental reform of the sector.

#### **Country Summary: Argentina**

- ❖ **Government:** Republic
- ❖ **Country Risk Rating:** 26.2 (1992)
- ❖ **Transparency Intl Rating:** 2.5 (2003)
- ❖ **Population:** 38.7Mn (2003)
- ❖ **Economic Growth:** -14.7% (2002)
- ❖ **Per Capita GDP (PPP):** \$10,200 (2002)
- ❖ **Electricity Coverage:** 95+% (2003)

### **Industry Power and Governance Structure**

Argentina's power sector underwent a process of vertical and horizontal separation and privatization during the 1990s, starting with the Electricity Law of 1991. The Law created a wholesale electricity market governed by a multi-stakeholder board, and an independent regulatory entity that would set retail rates and quality of service levels for distribution companies. The Law also set the stage for the privatization and increased vertical and horizontal separation of the industry. The federally-owned utilities were split vertically into generation, transmission, and distribution companies. Thermal power

plants were fully privatized, whereas hydroelectric plant and transmission and distribution companies were sold to private interests for up to 95-year concessions; private ownership of power plants and concessions was widely and purposely dispersed. The federal government only retained full ownership of the country's two nuclear plants (which use a unique fission technology), and several bi-national hydroelectric plants, which by virtue of international treaties could not be privatized. The distribution utilities outside the cities of Buenos Aires and La Plata were owned by the provincial governments. Several of them have been privatized since 1992 under concession contracts similar to those of the former federal utilities. The regulatory framework is based on the British price cap model. The regulator has been widely regarded as competent and quality of service levels improved significantly in the years following the reform, with the exception of a major Edesur blackout in Buenos Aires in 1998. However, the regulatory system has been disrupted as a result of the convertibility crisis (see box below). At the wholesale level, a highly competitive market was created through the horizontal separation of generating units under different ownership and the parallel development of the similarly privatized hydrocarbons sector. Strong competition plus abundant gas and water pushed wholesale prices down from close to USD 50/MWh in 1992 to a range of USD 25-30/MWh by late 1999. Although this trend affected the returns on generation assets purchased on the assumption of higher prices, it did not adversely impact investment in generation, which has taken advantage of Argentina's abundant resource base to export electricity to Chile and especially to Brazil. The greatest controversies for the Argentine power sector before the convertibility crisis revolved around expansion of the transmission system, where existing governance mechanisms have proven cumbersome. After experimenting with different systems, a new transmission line from Comahue to Buenos Aires was approved in 1997.

#### **Industry Power and Governance Structure**

- ❖ **Power Market Model:** Wholesale competition
- ❖ **Level of Competition:** Wholesale
- ❖ **Total generation capacity (2003):** 23.5GW
- ❖ **Regulatory Framework:** Independent
- ❖ **Trends:** By the late 1990's, the electricity sector was virtually unbundled into competitive markets for generation, transmission and distribution. The 2002 economic and political crisis led to a devaluation and revenue freeze in the power sector while most debts of utilities were in hard currency. Renegotiations with the Argentine government by foreign investors such as EDF and others are still in process. This has slowed down or entirely interrupted additional investment into Argentina's power sector.

#### **Financing and Risk Summary**

The purchase of 51% of the company in 1992 mobilized \$427Mn, all in the form of equity investment. In 1995, Endesa Spain paid another roughly \$160Mn for an additional 19.5% of stock sold by the federal government, and EDF paid \$164Mn in 1996 for the remaining 19.5% of stock held by the government. The rest of the shares are owned by former employees of SEGBA. Upon completion of the successful takeover of Endesa of Chile by Endesa of Spain in 2000, Endesa was required to sell its stake in Edenor since Endesa of Chile was already the owner of the Edesur distribution concession in Buenos Aires and the law forbids control of the two companies by the same entity. Endesa therefore

sold its stake in Edenor to EDF in 2001, together with Astra, leaving EDF in full control. At the end of 1995, Edenor's capital structure comprised 40% debt and 60% equity. Over time, the company has increased the relative use of debt to fund its investment programs. At the end of 1999, Edenor's debt had an average maturity of four years. Dollar-denominated debt was rated BBB- (investment grade) by Standard & Poor's, above Argentina's sovereign rating at the time. This is especially notable given that little of the company's debt had multilateral guarantees, and none had sovereign guarantees. After registering losses of more than \$100Mn. by the end of 1993, the company became profitable from 1994 on as improvements in collections, reductions in losses and staff, and efficiency improvements started to pay off.

### **Key Structure and Success Factors**

#### **Finance and Risk Structure**

- ❖ **Total capital investment:** (1992-1995) \$400Mn; (1996-2000) \$394Mn; (2001-present) In-process due to Argentine crisis
- ❖ **Concession Period:** 95 Years
- ❖ **Concessionaire:** Edenor (Company)
- ❖ **Shareholders (1992):** Endesa Spain (38.4%), EDF(32.4%), Astra(9.7%), Employees (10.0%), SAUR(6.0%), Others(3.6%)
- ❖ **Debt Providers:** IFC -\$30Mn(1994); IDB-\$120Mn(1996)
- ❖ **Government/Private ownership:** 100%/0%
- ❖ **Foreign/domestic Ratio:** 84%/16%
- ❖ **Government/MDB guarantee:** None
- ❖ **Financial Risk Structure:** Concession
- ❖ **Financial Closure Date:** 1992

Despite initial losses in 1992-1993, Edenor has experienced significant improvements both financially as well as operationally. Energy losses were reduced from 30% in 1992 to 10% in 1999. Quality of service was improved, average interruptions per customer and year (SAIFI) decreasing from 13 in the first year of operation to 5.7 five years later, and the average duration of interruptions (SAIDI) from 22 to 8.6 hours per annum. Access of poor households to electricity supply service (300,000 illegal connections in Edenor's concession area in 1992) was ensured through agreement with community organizations and government entities; 554,000 users legalized by 1998. Employee productivity was raised through manpower reductions, increasing the number of customers per employee from 240 in September 1992 to 795 in June 1999. In addition, Edenor reached an investment grade rating after 1996 that was above Argentina's sovereign rating. The country's 2002 crisis led to rate freezes and effective contract breach by the government upon abandonment of convertibility. The key success factors were:

- ❖ **Good wholesale market design and performance:** Argentina's performance-based regulatory regime allowed pass through of the distributors' cost of supply under power purchase agreements and spot market purchases. The highly competitive nature of the wholesale market, together with the successful utilization of the country's abundant energy resources (hydro and natural gas) reduced wholesale electricity prices over time. This reduction was passed on to consumers, reducing electricity bills for many and thus building consumer goodwill towards the reform. The contrast with the telecommunications sector, where a protected market was granted to the two major private operators over a ten-year period, thus limiting the extent of price reductions to consumers, was quite striking.

- ❖ **Appropriate regulatory framework:** The regulatory framework provided revenue stability and appropriate incentives for distribution concessionaires. During the first ten-year period of the concessions, rates in pesos were only adjusted for changes in the peso/dollar exchange rate and for US inflation; no productivity adjustment factor was included. This limited uncertainty about revenues and created cost recovery and return incentives for the operators to eliminate cost inefficiencies. At the same time, the regulatory regime included the obligation to provide service to all those who request it within the concession area, as well as detailed quality of service standards and significant penalties for failing to meet service and quality requirements, providing inducement for the operators to increase the coverage and quality of service.
- ❖ **Credible regulator:** Unlike the experience with the Argentine telecommunications regulatory entity, which was subject to overt political manipulation and frequent organizational changes during the first years of its existence, the electricity regulatory entity was designed so as to minimize political manipulation or private interest capture. Regulatory decision-making was entrusted to a board with overlapping terms for its members, funded by a quasi-fiscal charge on electricity transactions. Board members must be selected from a list prepared by a professional recruitment firm from candidates meeting certain professional qualifications, and appointments must be confirmed by the legislature. Moreover, the government did not attempt to subvert these arrangements. In addition, the regulatory entity developed transparent mechanisms for decision-making, especially the use of public hearings. As a result, the regulator gained credibility and legitimacy among regulated companies and the broader public. This meant that the incentives provided by the law and the concession contracts for improvements in service coverage and quality were taken seriously by the operators and put into practice, further strengthening political and public support for the reform process. A major test of the credibility of the regulator took place in 1998, when an error made by a subcontractor to Edesur during an equipment upgrade resulted in a multi-week blackout for a central area of Buenos Aires. Despite complaints about Edesur and accusations of regulatory laxity, neither the Peronist government then in power nor their opposition successor thought it necessary to change any features of the regulatory framework.
- ❖ **Use of multiple concessions:** Instead of awarding the entire metropolitan Buenos Aires area to a single concessionaire, as was done in the case of water and sanitation, the creation of two separate concessions (plus another one for the city of La Plata) created the possibility of comparative assessments of performance and provided an added incentive for the operators to improve their productivity, quality of service, and service coverage.
- ❖ **Consensus-building capacity:** As in other developing countries, the problem of electricity theft and service quality and coverage in marginalized urban areas was a potentially destabilizing factor in Buenos Aires, with some 700,000 households reportedly without legal electricity service when the concession contracts were awarded. The ability of all stakeholders—several levels of governmental authorities, the concessionaires, and neighborhood associations—to reach a consensus to provide affordable service to the affected households led to a permanent solution to the problem in 1994 through an agreement that remains a landmark in Latin America to the present day. The main limitation to electricity service for the poor was primarily its price. As a result, Edenor proposed to sell electricity at wholesale to the community with the government covering a portion of the costs. In addition, a media campaign was created which emphasized electricity payment as a civic duty. In return, Edenor contrib-

uted funds for local public works such as parks.

- ❖ ***Concession duration flexibility***: The concession is subdivided into “management periods” of 10 years (15 years for the first one) at the end of which there is a public auction. The concessionaire will retain the concession if its offer is the highest, or sell it to whoever presents the highest offer and receive the price of the highest offer. This provides an exit mechanism for the concessionaire without creating an “end of concession” problem (whereby concessionaires may stop investing in operational improvements and capacity expansion if they wish to exit the concession), as the concessionaire obtains the price of the winning bidder, so any investments near the end of the management period can potentially be recovered by increasing the market value of the concession.

Edenor’s success prior to the convertibility crisis of 2002 highlights the potential for well-designed concession contracts, together with other elements of reform packages, to create substantial benefits for investors, operators, and consumers. The convertibility crisis, however, has become a very significant challenge. Many Argentines blame it on the foreign companies that bought privatized assets. The current government, responding to populist pressure and instinct, is determined not to compensate utilities for the impact of the massive devaluation of the peso and is content to feed public outrage, however misguided. A key warning from the Edenor case is that investors should be careful not to overlook country risk when investing in a well-designed project within a sound sector framework. However, the lessons of Edenor are still positive despite the enormous damage done by the exogenous macroeconomic events.

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## **Lyonnaise des Eaux de Casablanca (LYDEC) – Concession**

### **Project Description**

In April 1997, the Lyonnaise des Eaux Casablanca (Lydec) consortium signed a 30-year multi-utility concession with the Casablanca Urban Community (CUC) municipal government “to provide the urban area of Casablanca with electricity, water and sewerage services in the most efficient way possible.” The consortium consisted of Ondeo, Elyo, EDF, Endesa and Aguas de Barcelona. As of 2002, this multi-utility reaches 590,000 customers for water and 625,000 customers for electricity. Initial equity was \$80Mn (Lydec 51%; CUC 49%). Approximately \$3Bn will be invested over the 30-year concession period. Capital investment is jointly decided by the Lydec consortium and the Casablanca municipal government. Roughly \$338 Mn has been invested to date of which Lydec covered \$194Mn. The balance was covered by the municipal government.

### **Country Summary: Morocco**

Morocco faces the problems typical of developing countries - restraining government spending, expanding private activity and foreign trade, and achieving sustainable economic growth. Following structural adjustment programs supported by the IMF, World Bank, and the Paris Club, the dirham is now fully convertible for current account transactions, and reforms of the financial sector have been implemented. Droughts depressed activity in the key agricultural sector and contributed to a stagnant economy in 1999 and 2000. During that time, however, Morocco reported large foreign exchange inflows from the sale of a mobile telephone license and partial privatization of the state-owned telecommunications company. Favorable rainfall in 2001 led to a growth of 6.5%. Good harvest conditions continued to support GDP growth in 2002. Formidable long-term challenges include: servicing the external debt; modernizing the industrial sector; preparing the economy for freer trade with the EU and US; and improving education and attracting foreign investment to boost living standards and job prospects for Morocco's youth.

#### **Country Summary: Morocco**

- ❖ **Government:** Constitutional Monarchy
- ❖ **Country Risk Rating:** 40.9/100 (1997)
- ❖ **Transparency Intl Rating:** 3.3/10(2003)
- ❖ **Population:** 31.5 Mn (2003)
- ❖ **Economic Growth:** 3.2% (2002)
- ❖ **Per Capita GDP (PPP):** \$3900(2002)
- ❖ **Electricity Coverage:** 50% (2002)

### **Industry Power and Governance Structure**

The state entity, Office of National l'Electricite (ONE) regulates Morocco's generation and transmission operations. A 1994 Decree liberalized the generation sector allowing IPPs to sign contracts with ONE for electricity production of greater than 10MW. Transmission remains a state monopoly. ONE oversees distribution in several provinces particularly in rural areas. However, the municipal governments generally supervise distribution in the urban centers with the exception of the cities Casablanca, Rabat, Tangier and Tetouan which private concessionaires, such as Lydec, service. The retail tariff is fixed by decree by the Prime Minister, except in the event of private concessionaires where tariffs are defined contractually. In the water sector, the supervising body is the National Drinking Water Office (ONEP), which is concerned with national-level planning, urban production implementation and distribution throughout except for

Casablanca, Rabat, Tangier and Tetouan. In these cities, electricity, water and sanitation are jointly provided by multi-utilities managed by private concessionaires also known as delegatee companies.

### **Industry Power and Governance Structure**

- ❖ **Power Market Model:** Single
- ❖ **Level of Competition:** Multi-utility monopoly in Casablanca (Population: 4.5Mn)
- ❖ **Total customer connection base:** Water (590,000); Electricity (625,000) as of 2002
- ❖ **Regulatory Framework: Ministry-based:** Tariffs decreed by Prime Minister except in private concession circumstances where tariffs are negotiated in the contract.
- ❖ **Trends:** Since 1994, the electricity market in Morocco has been gradually opened to private suppliers and investors. Concession projects need to address not only service coverage but also environmental and poverty reduction issues in order to gather support from the government.

### **Finance and Risk Structure**

Lyonnaise des Eaux de Casablanca started with a contributed capital base of \$80Mn of which 51% was sourced from foreign investors and 49% sourced from local partners. Approximately \$3Bn will be invested into the multi-utility over the 30 year concession. Of this sum, \$900Mn will be allocated for electricity, \$500Mn for water and \$1600Mn for sanitation. Between 1997-2002, approximately \$338Mn for water, sanitation and electricity was invested of which Lydec provided 57% (\$194Mn) of the total while the municipal government, through its Works Fund, provided the other 43%. Investment financing derives from four pools:

- ❖ **Works Fund:** This is under the discretion of the municipality and is not taken into consideration in the tariff. This source of financing is kept mainly for acquisition of land, support activities, and network extension.
- ❖ **Delegatee company (Concessionaire) financing:** Made up traditionally of capital contributions, loans, auto-financing..
- ❖ **Operations Account:** This financing is derived from subscriber usage to cover operating costs.
- ❖ **Capital Investment Account:** This is an estimated amount of expenditure levied on concessionaire proceeds to cover capital expenditures.

Lydec committed to \$3Bn in capital investments over the 30-year concession. Approximately \$194Mn was invested by Lydec (excluding CUC Works Fund contributions of \$144Mn) in a time frame (1997-2002) one-sixth of the concession period. This suggests that Lydec's investment schedule is not linear and will have to be accelerated in the later years. (Actual annual capital investments of \$40Mn per year is below the estimated \$100Mn per year plan according to a \$3Bn/30-year straight-line investment schedule.)

**Finance and Risk Structure**

- ❖ **Total planned investment:** \$3Bn over contract period
- ❖ **Concession Period:** 30 years
- ❖ **Concessionaire:** Lyonnaise des Eaux Casablanca (Lydec)
- ❖ **Lydec Shareholders:** Ondeo (35%), Elyo (5%), EDF (18%), Endesa (18%), Aguas de Barcelona (24%)
- ❖ **Government Partner:** Casablanca Urban Community
- ❖ **Initial Equity:** \$80Mn (51% Lydec, 49% Local partners)
- ❖ **Government/Private ownership:** 100%/0%
- ❖ **Foreign/domestic Ratio:** 51%/49%
- ❖ **Government/MDB guarantee:** None
- ❖ **Financial Risk Structure:** Multi-utility Concession
- ❖ **Financial Closure Date:** April 1997

**Key Structure and Success Factors**

Lydec is modeled off the “Concession a la Francaise” (French-model concession). Generally, operation and commercial risks are handled by the private sector (a.k.a. delegatee company, or concessionaire), but the asset ownership and capital investment responsibilities can vary between the public and private sectors. This concession may be closer to an affermage or lease, which lies somewhere between a management contract and BOT in terms of private capital at risk. Lydec was brought in under a 30-year concession/affermage contract with no transfer of assets. There was no competitive bidding because it was believed that Lydec had the sufficient capacity to provide the best service. The contract is to be reviewed every five years against a series of performance measures encompassing coverage ratios, network output, unaccounted for electricity and water and poverty alleviation. Since 1997, Lydec has improved along a wide range of performance measures. For example between 1997-2002 water connections increased from 440,000 to 590,000. Electricity connections increased from 510,000 to 625,000. Sewage connections increased from 65% to 85%. Customer satisfaction for the quality of Lydec services rose from 53% to 93%. More than 280,000 trainings hours were provided to Lydec staff. Key success factors include the following:

- ❖ **Modern Managerial Reforms:** Lydec streamlined its total labor force by 22% between 1997-2002. In addition, it improved its managerial processes by adopting modern practices such as performance appraisals. As a result, productivity increased dramatically. Furthermore, procurement costs were estimated to have dropped by 15% as a result of competitive sourcing and auditing of bribery cases.
- ❖ **Focused Technical and Commercial Loss Reduction Strategy:** Lydec has focused on improving efficiency by closing the aggregate technical and commercial loss gap. Since 1999, the company has targeted achieving an electricity loss of under 5% by 2004-2005. This has involved multiple audits on usage and analyzes on innovative process improvements. For example, in 1998, a pilot project was carried out to supply electricity to the low-income neighborhood, Nen M’Sik, with its 21,000 inhabitants. In order to reduce theft potential, the electricity was supplied through underground lines. Furthermore, collective meters were installed in the outskirts of the slums while individual hookups were installed by the inhabitants themselves.

- ❖ **Close Linkage Between Performance and Tariff Revisions:** The concession contract is output oriented not means oriented. Lydec was given clear targets to achieve along a range of performance measures that were directly linked to the financial and operational sustainability of the utility. Furthermore, these measures included service to the poor and firm environmental standards. More importantly, these measures were defined up front during the contract's design stage and were based on reality. For example, electricity tariffs were frozen for the first year of the contract until service quality improvements were such to justify the increase in the second year. Ever since Lydec's management started, tariffs have increased 20% for water, 8% for electricity and 44% for sanitation. However service quality has also gone up with customer satisfaction increasing from 50% to 93% between 1997-2002.
- ❖ **Collaborative Concession Management:** Beyond approving the investment program, tariff revisions and Works Fund contribution, the Casablanca municipal government plays a relatively hands-off supervisory role. Under the chairmanship of the municipal government, a Technical Committee advises and recommends on contract implementation. Committee representatives were drawn from the municipality, Lydec as well as the Ministry of the Interior. Key areas of oversight include the following:
  - Definition and five year updating of the work plan;
  - Any issues inherent to valuation such as tariffs;
  - Draft deals, contracts, conventions to be concluded directly or indirectly between concessionaire and the municipal government;
  - Any other duty entrusted to it by the government.

In addition, a Local Supervisory Commission was created to assist in monitoring implementation and processing documents related to Lydec.

- ❖ **Enforced Regulation by Contract:** To date, there is no legal definition of concession in Moroccan law or any regulatory text governing its application. Acknowledging this gap, in 1999, an Inter-ministerial Commission was set up to clarify the legal, regulatory and institutional framework of public service concessions. The bill is still in review. In the absence of concession law, Lydec has successfully operated since 1997 under regulation by contract. Agreed upon by Lydec and Casablanca Urban Community, the contract clearly stipulates tariff rates, modification periods (5 years), performance measures and risk mitigation, configuration of services, sources of financing, and capital investment requirements.
- ❖ **Cultivated Community Support:** Lydec has cultivated community relations through the support of social intermediaries. A typical arrangement is in the Faregir shanty town located in the middle of Casablanca. Farengir is made up of 160 families who are divided into blocs of 20 families each. An agreement was signed with each bloc stipulating a connection fee of \$163 payable over a two-year period and a limited electricity usage tariff subscription of \$1.5 per month. There is a representative under Lydec contract for each bloc. He collects on the monthly user fees, oversees his bloc's equipment and involves the community on utility related decisions. Collection delinquencies have dropped as a result but more importantly, Lydec and the community are kept in close communication on service improvements.

With seven years under its belt, Lydec's multi-utility operation is starting to break even. The in-

vestors see the next twenty-three years as the opportunity to earn modest IRR returns perhaps in the range of 10-15%. On January 9, 2003, the majority shareholder, Suez, announced a five-point “Action Plan” which included reducing its exposure to developing countries by one third and reducing its debt by selling existing assets. Thus far, Lydec is safe from a sale. Barring unforeseen financial crises, Lydec is, in fact, on the path of generating positive cash flow through its focused blend of cost cutting, tariff cost recovery, service quality increases, community involvement and balanced government relations.

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## Societe d’Energie et d’Eau du Gabon – Concession

### Project Description

In 1997, Gabon awarded the 20-year concession of its electricity and water utility, Societe d’Energie et D’eau du Gabon (SEEG), to Vivendi. SEEG was unique not only as Gabon’s first major private sector participation but also as the first electricity and water concession in Africa where the concessionaire is completely responsible for both capital investments and management. Among the initial 60 companies contacted for the tender, the Vivendi/Electricity Supply Board of Ireland (ESBI) consortium won based on its proposed 17.25% reduction in average tariffs. ESBI later withdrew for various reasons. Total investment over the 20-year concession is expected to be \$600Mn. Vivendi’s contractual investment commitment covers at least \$135Mn though it was willing to add an additional \$130Mn. Through a following IPO, Vivendi purchased 51% equity in the asset company of SEEG (11.6Mn Euros) with 44% retained by the public and 5% held by employees. However, the government retained a “Golden Share” which gave them two representatives on the SEEG board and a consultative voice. Out of a population of 1.2Mn, SEEG serves electricity to 40% of the population and water to 66% of the population.

### Country Summary: Gabon

Gabon enjoys a per capita income four times that of most nations of sub-Saharan Africa. This has supported a sharp decline in extreme poverty; yet because of high-income inequality a large proportion of the population remains poor. Gabon depended on timber and manganese until oil was discovered offshore in the early 1970s. The oil sector now accounts for 50% of GDP. Gabon continues to face fluctuating prices for its oil, timber, and manganese exports. Despite the abundance of natural wealth, poor fiscal management hobbles the economy. Devaluation

of its Francophone currency by 50% on 12 January 1994 sparked a one-time inflationary surge, to 35%; the rate dropped to 6% in 1996. The IMF provided a one-year standby arrangement in 1994-95, a three-year Enhanced Financing Facility (EFF) at near commercial rates beginning in late 1995, and stand-by credit of \$119 million in October 2000. Those agreements mandate progress in privatization and fiscal discipline. France provided additional financial support in January 1997 after Gabon had met IMF targets for mid-1996. In 1997, an IMF mission to Gabon criticized the government for overspending on off-budget items, over borrowing from the central bank, and slipping on its schedule for privatization and administrative reform. The rebound of oil prices in 1999-2000 helped growth, but drops in production hampered Gabon from fully realizing potential gains. In December 2000, Gabon signed a new agreement with the Paris Club to reschedule its official debt. A follow-up bilateral repayment agreement with the US was signed in December 2001. Short-term progress depends on an upbeat world economy and fiscal and other adjustments in line with IMF policies.

#### Country Summary: Gabon

- ❖ **Government:** Multiparty president regime
- ❖ **Country Risk Rating:** 25.7/100 (1997)
- ❖ **Transparency Intl Rating:** NA
- ❖ **Population:** 1.3Mn (2002)
- ❖ **Economic Growth:** 2.9% (2002)
- ❖ **Per Capita GDP (PPP):** \$5700 (2002)
- ❖ **Electricity Coverage:** 40% (2002)

**Industry Power and Governance Structure**

- ❖ **Power Market Model:** Vertically-integrated electricity and water multi-utility
- ❖ **Level of Competition:** Entry-level
- ❖ **Total generation capacity:** 0.3GW
- ❖ **Regulatory Framework:** Ministry-based – Direction Generale de l'Énergie et des Ressources Hydrauliques (DGERH) Ministry
- ❖ **Trends:** Given Gabon's small market, the electricity and water services will continue to be provided through a ministry-controlled, vertically integrated multi-utility. However, the advent of SEEG's 1997 privatization represented a major step towards inviting private participation into service delivery and utility ownership.

**Industry Power and Governance Structure**

Given Gabon's small market, the electricity and water services will continue to be provided through a ministry-controlled, vertically integrated multi-utility. However, the advent of SEEG's 1997 private sector participation represented a major step towards inviting private participation into service delivery and utility management. Within the Ministry of Energy and Water, the Direction Generale de l'Énergie et des Ressources Hydrauliques (DGERH) Ministry controls concession contract management. Its functions include:

- ❖ Defining overall policy for both water and electricity sectors
- ❖ Carrying out large investments in both sectors
- ❖ Organizing service provisions in rural areas outside of concessionaire's service area.
- ❖ Managing special funds for electricity and water which provide financing for infrastructure

**Finance and Risk Structure**

- |   |   |
|---|---|
| ❖ <b>Total capital investment:</b> \$600Mn                      | ❖ <b>Government/Private ownership:</b> 100%/0%              |
| ❖ <b>Concession Period:</b> 20 Years                            | ❖ <b>Foreign/domestic Ratio:</b> 5%/95%                     |
| ❖ <b>Concessionaire:</b> Societe d'Énergie et d'Eau du Gabon    | ❖ <b>Government/MDB guarantee:</b> None                     |
| ❖ <b>Project Shareholders:</b> Vivendi (51%), Gabon gov't (44%) | ❖ <b>Financial Risk Structure:</b> Multi-utility Concession |
|   | ❖ <b>Financial Closure Date:</b> July 1997                  |

**Finance and Risk Structure**

In 1997, the Vivendi/ESBI partnership won the privatization bid for the SEEG asset company by offering a 17.5% reduction in average tariffs. The underlying assets are still owned by the government. Vivendi (ESBI dropped out later) is contractually obligated to provide \$135Mn for the rehabilitation of the water and electricity infrastructure. Roughly 60% of the funds will go to water; the other 40% will go to electricity. Total investment over the 20-year concession is expected to be \$600Mn. Vivendi's contractual investment commitment at least \$135Mn though it will add an additional \$130Mn with the remainder being self-financing. While Vivendi only owns 51% of the SEEG asset company, it holds six out of nine of the board seats in order to maintain operational control of SEEG.

## **Key Structure and Success Factors**

By many benchmarks the 1997 SEEG multi-utility concession/divestiture has been a success. Actual service coverage for both electricity and water surpassed not only year 2000 targets, but in the case of electricity, even surpassed 2015 coverage targets for certain regions in Gabon. Investment commitments by Vivendi have also been fulfilled at accelerated rates. For example, by 2001, a total of \$108Mn was invested into rehabilitating the water and electricity infrastructure. This amount was equivalent to 80% of the contractual commitment yet was achieved by the fifth year of a twenty year concession. Most surprisingly, SEEG has maintained healthy profits and paid ever-increasing dividends above the contractual rate of 6.5%. Yet these results were not all instantaneous. There were a number of factors that contributed not only to SEEG's successful privatization but also to its continued financial sustainability.

- ❖ **Committed Government Preparation Prior to Privatization:** Since the late 1980's, Gabon experimented with private participation in its water and electricity sector. Despite mixed results, a number of critical reforms took place which substantially eased Vivendi's acquisition of SEEG:
  - **Sound Legal Reforms:** Prior to 1997, SEEG was already corporatized. It needed only a decree allowing for IPPs and operations control of state-owned assets. In addition, the Directorate of Energy and Water, (DGERH) a proxy regulatory agency within the Energy and Water Ministry, was established to oversee and guide concession management.
  - **Pre-emptive SEEG Labor Adjustments:** From 1989-1997, the government oversaw a 27%+ headcount reduction of almost 600 employees. This lowered the total labor force from 2100 to a more optimal 1500. In its contract, Vivendi made a commitment to maintain at least 90% of the employee base (1355) at the beginning of the concession. As productivity had already doubled from 40 employees per 1000 connections to 20 employees per 1000 connections, Vivendi did not have difficulty fulfilling its labor pool obligation. Today, staff levels remain between 1450-1500. Vivendi benefited from the government's proactive labor adjustments and avoided the public criticism of creating unemployment.
  - **Rapid Customer Metering:** Prior to the 1980's reform, 5% of the population had working meters. By 1996, 98% of private customers were metered and 100% of public administration connections were metered. In addition, prepaid metering was introduced. Consequently, SEEG had a much better grasp of its collections risk.
  - **Progressive Tariff Rationalization:** Tariffs were steadily increased and came closer to cost recovery levels from 1987-1996. Furthermore, the tariff structure was simplified. Low voltage water and electricity tariffs became standard across the country. Medium voltage tariffs varied regionally on the basis of differing generation costs. Social tariffs continued to be subsidized by higher-end users.
- ❖ **Sustained Multi-utility Approach:** Gabon had considered unbundling water from electricity but eventually decided against it. Given Gabon's small population (1.2Mn) this decision seems to be appropriate for various reasons. First of all, SEEG's size relative to an unbundled scenario allowed for economies of scale to promote competitive bidding for contracts, which led to an average cost reduction of 30% per contract. Second, at the headquarters level, staffing was consolidated to keep costs and decision-making duplication down. Finally, investment planning could be coordinated between electricity, which generated 80% of the revenues, and water, which needed the most investment.

- ❖ **Improved Collections:** Collections improved over the years. The government, which makes up 20% of the billing, started to pay after it received an international debt moratorium in 1999. In addition, automated payment processes for industrial and commercial users were introduced. Perhaps most important, prepaid meters for electricity only, were utilized on a mass scale. This reduced billing costs and allowed the meter-reading staff to be reallocated over to customer relations.
- ❖ **Sound Contract Design Regulation:** The SEEG contract defined clear output-driven coverage targets by region for both water and electricity. It granted Vivendi a limited amount of flexibility on quality of service so as to promote coverage faster. It provided Vivendi very generous tariff guidelines which were broken into three categories:
  - **Automatic Adjustments:** These allowed for small quarterly adjustments in the event of increased factor prices such as in fuel, personnel, imported goods, etc.
  - **Annual Adjustments:** Annual tariff reviews were allowed except for social tariffs which could not increase by more than 1% per year.
  - **Exceptional Adjustments:** If factor prices were to change by more than 50% or inflation by 20%, a major tariff adjustment was allowed pending legislative change.

SEEG is not without its challenges. The government's own independent efforts at electricity and water infrastructure investment have conflicted with SEEG's. This has led to different technical standards on equipment and servicing. Clear definitions of service coverage and quality standards remain lacking. Coverage extension to the most rural areas also requires further thinking. Nevertheless, SEEG has many of the elements necessary for continued self-sustainability. For example, SEEG's tariff structure almost looks like a cost-plus arrangement. If this is broadly true, then Vivendi's private capital at risk is relatively low. Indeed, Vivendi accelerated 80% of its investment commitment into the first five years of the 20-year concession but still successfully maintained utility profits while extending coverage. Combined with Gabon's pre-1997 reforms, SEEG's collections improvements, and retention of the multi-utility model, the SEEG privatization has thus far proven to be a win-win situation for the foreign investor, the government and the population.

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- (3) Bayliss, Kate, Water Privatization in Africa: lessons from three case studies, Public Services International Research Unit, University of Greenwich, May 2001.
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## **Pamir Private Power Project Concession**

### **Project Description**

Pamir is Tajikistan's first private power project. It was structured under a 25-year concession to enhance the Gorno Badakshan Autonomous Oblast's (GBAO) electricity supply in a financially, environmentally and socially sustainable way through an Output-Based Aid mechanism. The project was sponsored by the Aga Khan Fund for Economic Development (AKFED) and the International Finance Corporation (IFC) of the World Bank under the project company, Pamir Energy. It consists primarily of completing the Pamir I hydroplant to its original design capacity of 28MW, from its current 14MW, by installing 7MW hydro units 3&4 along with an associated regulating structure at Lake Yashikul (Units 1&2 were completed in 1994 through USAID funding). It also incorporates the rehabilitation of other hydro plants, transmission and distribution lines in addition to providing private sector technical assistance in engineering, operations, environment and social impact monitoring. The total project cost was \$26.4Mn. Pamir financially closed at the end of 2001.

### **Country Summary: Tajikistan**

Tajikistan has the lowest per capita GDP among the 15 former Soviet republics. Only 8% to 10% of the land area is arable. Cotton is the most important crop. Mineral resources, varied but limited in amount, include silver, gold, uranium, and tungsten. Industry consists only of a large aluminum plant, hydropower facilities, and small obsolete factories mostly in light industry and food processing. The civil war (1992-97) severely damaged the already weak economic infrastructure and caused a sharp decline in industrial and agricultural production. Even though 60% of its people continue to live in abject poverty, Tajikistan has experienced steady economic growth since 1997. Continued privatization of medium and large state-owned enterprises will further increase productivity. Tajikistan's economic situation, however, remains fragile due to uneven implementation of structural reforms, weak governance, widespread unemployment, and the external debt burden. A debt restructuring agreement was reached with Russia in December 2002, including an interest rate of 4%, a 3-year grace period, and a US \$49.8 million credit to the Central Bank of Tajikistan. (Source: World Factbook 2003)

#### **Country Summary: Tajikistan**

- ❖ **Government:** Republic
- ❖ **Country Risk Rating:** 14.3/100 (2003)
- ❖ **Transparency Intl Rating:** 1.8/10 (2003)
- ❖ **Population:** 6.8Mn
- ❖ **Economic Growth:** 5% (2002)
- ❖ **Per Capita GDP (PPP):** \$1250 (2002)
- ❖ **Electricity Coverage:** 10% (Est. 2002)

### **Industry Power and Governance Structure**

Tajikistan's power sector is vertically integrated with entry-level private participation on the generation side. The state continues to dominate the sector through the Fuel and Energy Department of the President's Office. Barki Tajik is the monopoly utility with operational responsibilities in electricity and district heating. It is structured as a vertically integrated holding company with generation assets and 11 distribution companies. Tajikistan has abundant hydro potential thus the government is gradually shifting toward hydropower sources as demonstrated in the Pamir project. In October 2000, the Ministry of Energy was established and the first Energy Law

was enacted. Key objectives include the corporatization of the state utility, the leveling of tariffs to cost recovery levels and the eventual unbundling of selected distribution companies. Most importantly, the act opened the door for private sector participation and the development of greenfield projects.

**Industry Power and Governance Structure**

- ❖ **Power Market Model:** Vertically-integrated
- ❖ **Level of Competition:** Entry-level
- ❖ **Total Generation Capacity:** 4.4GW
- ❖ **Regulatory Framework:** Ministry-based
- ❖ **Trends:** In October 2000, the Ministry of Energy was established and the first Energy Law was enacted. Key objectives included the eventual corporatization of the state utility, Barki Tajik, as well as the eventual unbundling of selected distribution companies. The act opened the door for private sector participation.

**Finance and Risk Structure**

The total project cost was \$26.4Mn. AKFED contributed \$8.2Mn, which made up 70% of the equity or 31% of the total financing. IFC provided the rest of the equity at \$3.5Mn but also contributed 31% of the debt with \$4.5Mn. The major debt contributor was IDA with \$10Mn (68% of debt), which was on lent to the government of Tajikistan at 0.75% for a 40-year term including a 10-year grace. About \$0.2Mn of the project cost will be internally financed. Another \$5Mn was provided by the Swiss government to assist in lifeline subsidies to ease the tariff transition to cost recovery levels (\$0.021/kWh average).

**Finance and Risk Structure**

- ❖ **Total cost:** \$26.4Mn
- ❖ **Equity participants:** Aga Khan Fund for Economic Development (\$8.2Mn), IFC (\$3.5Mn)
- ❖ **Debt participants:** IFC (\$4.5Mn), IDA (\$10.0Mn)
- ❖ **Debt/equity ratio:** 55%/45%
- ❖ **Grant:** Swiss \$5Mn grant for “lifeline”
- ❖ **Other:** Internally generated cash (\$0.2Mn)
- ❖ **Government/Private ownership:** 100%/0%
- ❖ **Foreign/domestic Ratio:** 70%/30%
- ❖ **Government/MDB guarantee:** None
- ❖ **Financial Risk Structure:** Concession
- ❖ **Financial Closure Date:** 2003

**Key Structure and Success Factors**

Tajikistan is the poorest country of the former Soviet Union. Approximately 60-80% of the population are said to be living in poverty. The country ranks as 110th among 174 states on the human development index. Tajikistan is also burdened by heavy dollar-denominated external debts approximately 97% of GDP. Within the power sector, tariffs are \$0.007/kWh; far short of levels necessary to even cover the operating costs of the Barki Tajik state utility. Furthermore, the seasonal income cycle of most consumers has made collections difficult. Thus, despite rea-

sonable economic growth since 1997, Tajikistan has not attracted much interest from private investors. As a result, the project had to be structured in a way that balanced financial sustainability with social objectives to increase and improve electricity accessibility. Key elements to closing the project included the following:

- ❖ **Lower Equity Rate of Return Requirement:** The equity investors accepted a 10% rate of return for the project, a level substantially below expectation given Tajikistan's country risk. AKFED, which provided 70% of the equity, saw its participation as a long-term investment based on a history of involvement, which lasted even through the country's early 1990's civil war. As AKFED's Matthew Scanlon commented, "The Pamir project was part of a broader development commitment which built upon Aga Khan Development Network's earlier support of Tajikistan in areas including agriculture and humanitarian assistance."
- ❖ **Strong Political Support:** It was President Rakhmonov who declared that the project would go through. The unofficial story is that in a heated debate over whether or not to accept the project, the President asked, "Does anyone have any better proposals?" In the ensuing silence, the President declared that the project would be approved. True or not, it illustrates the difficult political nature of getting these projects off the ground.
- ❖ **Targeted Social Protection Assistance:** The Swiss government and IDA together provided funding of \$9.3Mn for a social protection net targeted at assisting the population in tariff payment adjustments over the first 10-year period (the actual duration of the support will depend on consumption patterns to some extent). The Swiss government's contribution came in the form of a \$5Mn grant to the Tajik government maintained in a Trust Fund managed by IDA. Under an Output-Based Aid arrangement, funds would be dispersed to Pamir Energy based on established measurements of electricity delivery. IDA's contribution came in the form of generous financing of its debt to the Tajik government. The government has agreed to pay Pamir Energy, for a ten-year period, starting 2002, the funds arising from the interest spread of 5.25 percent on the on-lent IDA credit proceeds. This measure would enable the Government to provide \$4Mn of social protection. In summary, these social protection arrangements allow residential consumers in GBAO a "lifeline" of affordable tariffs for at least the first 10 years of Pamir's operation, while keeping the project financially viable and minimizing the burden on the government.
- ❖ **Independent IFC/Swiss Government-funded Legal Advice to the GOT:** Prior to Pamir, the Tajikistan government had little negotiating experience in international transactions. On top of that, Parliament was very hesitant to liberalize the generation sector because of concerns that the inevitable tariff increases would hurt the population. To address these issues IFC and the Swiss Government provided the GOT a legal advisor. GOT was initially skeptical of the counsel, but over time the legal counsel proved itself an honest advocate for the GOT by helping the government navigate the international financial markets for capital raising. Just as important, it brought the Ministry of Energy and other GOT bodies up to speed on international transaction standards, a selling point to Parliament that recognized the importance for attracting FDI into future power projects.
- ❖ **Close Collaboration Among Sponsors and Debt and Grant Providers:** Pamir was not the first time the various parties had partnered. AKFED had a long history with the Swiss Government, which provided the \$5Mn lifeline grant. AKFED, the for-profit economic arm of

the Aga Khan Development Network, also had a close working history with the IFC that included cooperation in projects such as Azito Power in Cote d'Ivoire, Kipevu II in Kenya and 20 other projects totaling \$152.7Mn in IFC investments. IFC/World Bank collaboration was another critical partnership whereby the IFC provided transaction know-how coupled with the Bank's project analysis support and government leverage during the negotiations.

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## Jorf Lasfar Concession

### Project Description

In 1996, the Moroccan state electricity utility, Office of National de l'Electricite (ONE), awarded the Jorf Lasfar Energy Company (JLEC) a 30-year concession contract under a competitively bid tender. CMS Energy and ABB Energy Ventures were the sponsors. Jorf Lasfar was developed in acknowledgement of growing electricity demand and that current power shortages were costing the country \$100Mn per year. The project consisted of two stages. The first was to manage two operating 348MW coal-fired/steam-based generation units under a 30-year concession arrangement. The second consisted of a power plant expansion by building two similar specification generators under a build-transfer-operation (BTO) arrangement. ONE signed the PPA for a term of 30 years. The levelized tariff came to 6.14 cents/kWh, which compared very favorably to similar IPP projects launched in the Philippines and Indonesia. Jorf Lasfar is located 120km south of Casablanca. It came into full service in December 2000. The total capacity for all four units is 1356MW. The project cost was \$1.48Bn.

### Country Summary: Morocco

Morocco faces the problems typical of developing countries - restraining government spending, reducing constraints on private activity and foreign trade, and achieving sustainable economic growth. Following structural adjustment programs supported by the IMF, World Bank, and the Paris Club, the Dirham is now fully convertible for current account transactions, and reforms of the financial sector have been implemented. Droughts depressed activity in the key agricultural sector and contributed to a stagnant economy in 1999 and 2000. During that time, however, Morocco reported large foreign exchange inflows from the sale of a mobile telephone license and partial privatization of the state-owned telecommunications company. Favorable rainfall in 2001 led to a growth of 6.5%. Good harvest conditions continued to support GDP growth in 2002. Formidable long-term challenges include: servicing the external debt; modernizing the industrial sector; preparing the economy for freer trade with the EU and US; and improving education and attracting foreign investment to boost living standards and job prospects for Morocco's youth.

#### Country Summary: Morocco

- ❖ **Government:** Constitutional Monarchy
- ❖ **Country Risk Rating:** 40.9/100 (1997)
- ❖ **Transparency Intl Rating:** 3.3/10(2003)
- ❖ **Population:** 31.5 Mn (2003)
- ❖ **Economic Growth:** 3.2% (2002)
- ❖ **Per Capita GDP (PPP):** \$3900 (2002)
- ❖ **Electricity Coverage:** 50% (2002)

### Industry Power and Governance Structure

The Moroccan power sector operates under a single-buyer, entry-level market. The state entity, Office of National l'Electricite (ONE) regulates Morocco's generation and transmission operations. A 1994 Decree liberalized the generation sector allowing IPPs to sign contracts with ONE for electricity production greater than 10MW. The law opened the sector to private participation for the operation and building of an IPP, but not the ownership of one (IPPs are under a Build-Transfer-Operate arrangement). Transmission remains a state monopoly. ONE oversees distribution in several provinces particularly in rural areas. However, the municipal governments generally supervise distribution in the urban centers with the exception of the cities Casablanca, Rabat,

Tangier and Tetouan where private concessionaries, such as Lydec, serve. The retail tariff is fixed by decree by the Prime Minister, except in the event of private concessionaires where tariffs are defined contractually.

**Industry Power and Governance Structure**

- ❖ **Power Market Model:** Single
- ❖ **Level of Competition:** Entry-level– Law 2-94-503 of 23 September 1994, gave the state-owned utility, Office of National de l’Electricite (ONE), the authority to facilitate tenders from private investors and operators for generation projects larger than 10MW.
- ❖ **Total generation capacity:** 11,540 GW (2000)
- ❖ **Regulatory Framework:** Ministry-based – Consumer prices determined by Ministries of Finance and Energy/Mines
- ❖ **Trends:** Since 1994, the electricity market in Morocco has been gradually opened to private suppliers and investors. Most projects are built according to the BTO model. Ownership remains with the government.

**Finance and Risk Structure**

The concession’s financing structure had a debt/equity/ internal generated cash ratio of 60%/25%/15%. The equity sponsors were ABB Energy Ventures (now ABB Equity Ventures since ABB’s withdraw from the generation market) and CMS Energy, both of whom had a 50% stake in the Jorf Lasfar Energy Company (JLEC). Debt participants, who provided a total of \$904Mn, included the Overseas Private Investment Corp. (OPIC), the US Export-Import Bank, the Swiss and Italian Credit Export Agencies and an ABN-AMRO commercial syndicate under a World Bank partial risk guarantee.

**Finance and Risk Structure**

- ❖ **Total cost:** \$1483Mn
- ❖ **Equity participants:** ABB Energy Ventures (\$194Mn), CMS Energy (\$194Mn)
- ❖ **Debt participants:** Swiss Credit Export Agency (\$35Mn); Italian Credit Export Agency (\$256Mn), US Exim(\$237Mn), OPIC (\$200), IBRD (\$176Mn)
- ❖ **Debt/equity/ internal cash ratio:** 60%/25%/15%
- ❖ **Other:** Internal cash of \$192Mn generated from units 1&2 was used to finance units 3&4
- ❖ **Government/Private ownership:** 100%/0%
- ❖ **Foreign/domestic Ratio:** 87%/13%
- ❖ **Government/MDB guarantee:** Yes
- ❖ **Financial Risk Structure:** Concession/IPP
- ❖ **Financial Closure Date:** September 1997

**Key Structure and Success Factors**

The Jorf Lasfar project faced a number of obstacles in its financing. For example, Morocco was not rated by an international rating agency, which limited the availability of financing particularly the long-term financing required of most power projects. Furthermore, the sheer size and scope of Jorf Lasfar enlarged certain financial risk dimensions, such as PPA payment risk. However the project financially closed through a series of risk mitigation measures.

- ❖ **Availability of Multilateral/Bilateral/Export Credit Agency Support:** The Jorf Lasfar power project benefited from a virtual battalion of development support agencies who covered 100% of the substantial debt financing. The benefits of their participation to the project extended beyond mere access to loans. For example, the World Bank partial risk guarantee (PRG) helped bridge a \$176Mn gap in financing. However, through its coverage of multiple political risks, it also achieved additionality by helping the Sponsor (JLEC) borrow at more favorable rates and with longer tenors (up to 15 years) otherwise unavailable to Morocco. In fact, financing from all the commercial banks was contingent on the World Bank's participation through its partial risk guarantee. The combined impact of the development support agencies in Jorf Lasfar helped Morocco set a milestone in the country's power sector through the creation of benchmark contractual and security packages that can serve as models for future projects.
- ❖ **Strong Government Support:** To facilitate deal closure, the government of Morocco provided support through a security package for JLEC and implemented directives to strengthen ONE's financial health as Jorf Lasfar's power purchaser:
  - **Security Package:** Under the terms of the BTO contract, the sponsor would not own any of the generating assets. This could have made financing difficult for the borrower (sponsor) in the absence of collateral for the lenders in the event of default. To compensate, the government of Morocco provided a security package on top of the PRG sovereign guarantee that included the following:
    - Guarantee of termination amounts and support letter in the event of default
    - Foreign exchange account and convertibility letters
    - A comprehensive set of insurance policies covering building risk, general liability, business interruption, etc.
    - Letter of credit worth 2 months of ONE payments to the sponsor
    - Escrow account collected from electricity payments worth 1 month of ONE payments to JLEC
  - **Off taker Risk Reduction:** The government strengthened the off taker's (ONE) payment capacity through two measures. First of all, tariffs were increased in the early 1990's such that ONE's financial health significantly improved in 1995-1996 in time for the project. Second, through a customer collections recovery program, arrears to ONE dropped from 8.5 months worth to 4.2 months over the 1993-1996 period. This was much closer to the 3-month arrears target, determined by the World Bank as adequate for ONE to comply with its PPA obligations.
- ❖ **Efficient Financing:** Internal cash generated from units 1&2 (\$192Mn) helped finance 15% of the total project cost for construction of units 3&4.

Jorf Lasfar was a landmark project in many ways. It was not only Morocco's first major IPP but it also established the country's international credit history for future projects in the power sector. Morocco's inexperience with IPPs and capital markets initially slowed financial closure but through a combination government support, development institutions and efficient financing, the project came to fruition and today, produces 40% of the country's electricity output.

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## Haripur IPP

### Project Description

In 1997, the government of Bangladesh awarded AES the Haripur project through an international competitive bidding process. The landmark \$180Mn BOO project consisted of a 360MW gas-fired combined cycle plant, located in Haripur, about 20 miles from the capital city, Dhaka. The off taker was the Bangladesh Power Development Board (BPDB) under a 22 year PPA. The gas supplier was the Titas Gas Transmission and Distribution Company for the term of the PPA. The project was unique in a number of ways. First, it will reduce Bangladesh's power shortages and do so on the remarkably low tariff of under 3.0 cents per kWh. Second, it generates savings by displacing less efficient plants running on imported liquid fuels. Furthermore, the Haripur project set a benchmark for bringing in private participation into power projects and establishing a framework for eventual sector private participation in Bangladesh. This would then free the government to focus resources on poverty alleviation and social development. The project financially closed in April 2001. In Dec 2003, CDC Globaleq, the emerging markets power business of the British Commonwealth Development Corporation (CDC) purchased the Haripur and Meghnaghat power plant equity from AES for a total of \$127Mn.

### Country Summary: Bangladesh

Despite sustained domestic and international efforts to improve economic and demographic prospects, Bangladesh remains a poor and overpopulated nation. Although half of GDP is generated through the service sector, nearly two-thirds of Bangladeshis are employed in the agriculture sector, with rice as the single-most important product. Major impediments to growth include frequent cyclones and floods, inefficient state-owned enterprises, inadequate port facilities, a rapidly growing labor force that cannot be absorbed by agriculture, delays in exploiting energy resources (natural gas), insufficient power supplies, and slow implementation of economic reforms. Economic reform is stalled in many instances by political infighting and corruption at all levels of government. Progress also has been blocked by the bureaucracy, public sector unions, and other vested interest groups. The BNP government, led by Prime Minister Khaleda ZIA, has the parliamentary strength to push through needed reforms, but would benefit from greater party political will to do so in key areas. (Source: World Fact Book 2003)

#### Country Summary: Bangladesh

- ❖ **Government:** Republic
- ❖ **Country Risk Rating:** 26.4/100 (2001)
- ❖ **Transparency Intl Rating:** 1.3/10(2003)
- ❖ **Population:** 138Mn (2003)
- ❖ **Economic Growth:** 4.8% (2002)
- ❖ **Per Capita GDP (PPP):** \$1800 (2002)
- ❖ **Electricity Coverage:** 30% (2002)

### Industry Power and Governance Structure

The power sector is vertically integrated with entry-level competition in the generation side. The Power Division of the Ministry of Power, Energy and Mineral Resources acts as both owner and regulator. The main utilities are as follows: (1) Bangladesh Power Development Board (BPDB) – Oversees public power generation, transmission and distribution in all the main cities except for Dhaka; (2) Dhaka Electricity Supply Authority (DESA) – Covers distribution in Dhaka; (3) Dhaka Electricity Supply – ADB-funded new corporate entity which will take over distribution in Dhaka; (4) Power Grid Company of Bangladesh – A corporate entity soon to take over trans-

mission function; (5) Rural Electricity Board (REB)- Oversees electricity distribution to 54 rural cooperatives. Bangladesh is looking to segregate generation, transmission and distribution services and possibly corporatize or commercialize emerging power sector entities. The government plans to establish a regulatory commission, encourage greater private sector participation, introduce a cost-reflective tariff structure and develop demand-side management including energy efficiency measures to conserve energy.

### **Industry Power and Governance Structure**

- ❖ **Power Market Model:** Vertically Integrated
- ❖ **Level of Competition:** Entry-level
- ❖ **Total generation capacity:** 360.0 MW
- ❖ **Regulatory Framework:** Ministry-based – Power division of the Ministry of Power, Energy and Mineral Resources is both owner and regulator
- ❖ **Trends:** The government plans to establish a regulatory commission, encourage greater private sector participation, introduce a cost-reflective tariff structure and develop demand-side management including energy efficiency measures to conserve energy.

### **Finance and Risk Structure**

The \$180Mn Haripur project had a debt-equity ratio of 59%/41%. AES provided the equity and the upfront construction financing of \$73.3Mn, which significantly helped to push the deal to fruition. It also provided the senior sponsor facility, which made up 21% of the total financing, which has since been refinanced to FMO (Netherlands Development Finance Company) and to a syndicate of banks supported by political risk insurance. A major portion of the debt financing was provided by an IDA partial risk guaranteed commercial tranche of \$61Mn arranged by the ANZ Investment Bank syndicate for a term of 14 years. This tranche made up 34% of total financing. The balance was to be covered by internal financing from the revenues of the simple-cycle operation, which came online in June 2001.

### **Finance and Risk Structure**

- |  |  |
|--|--|
| ❖ <b>Total cost:</b> \$180Mn   | ❖ <b>Other:</b> Internal generated cash-(\$8.4Mn)    |
| ❖ <b>Equity participants:</b> AES (\$74Mn)                                       | ❖ <b>Government/Private ownership:</b> 0%/100%       |
| ❖ <b>Debt participants:</b> AES (\$37Mn),<br>IDA backed commercial loan (\$61Mn) | ❖ <b>Foreign/domestic Ratio:</b> 95.3%/4.7%          |
| ❖ <b>Total Debt/equity ratio:</b> 59%/41%  | ❖ <b>Government/MDB guarantee:</b> Yes- IDA (\$61Mn) |
|  | ❖ <b>Financial Risk Structure:</b> IPP               |
|  | ❖ <b>Financial Closure Date:</b> April 2001          |

### **Key Structure and Success Factors**

The Haripur project is a classic example of solid risk management in project finance. Despite the development challenges facing Bangladesh, Haripur and its later sister project, Meghnaghat financially closed at tariff levels supportive of the country's social objectives. This was possible thanks to the process of risk allocation to the appropriate parties, the political commitments to successful project closure as well as political risk mitigation instruments. In closer detail, key success factors of Haripur's financing include the following:

- ❖ **Critical IDA Partial Risk Guarantee:** The IDA partial risk guarantee was critical in mobilizing the ANZ bank-led syndicated debt financing of \$60.9Mn. The PRG helped to extend debt maturity to 15 years through its political risk mitigation, at a financing cost of 2% above LIBOR- a very favorable rate given Bangladesh's country risk. It covered multiple non-commercial, government performance risks, which included currency convertibility, breach of contract, changes in law as well as political force majeure. But more importantly, it provided the leverage by which the IDA could work closely with the government of Bangladesh to improve the sector's governance structure. It should also be noted that IDA provided frustration of arbitration coverage for the first time in support of this project.
- ❖ **Diligent Risk Management:** To reduce the likelihood of the PRG being called, IDA helped to mitigate sector risks that would impact Haripur's sustainability along three important dimensions.
  - **Fuel Supply Risk:** To mitigate fuel supply risk, the Bank persuaded the Government to equalize gas prices to public and private sector plants by the time IPP capacity reached 1780MW. As a result, the sector should be more efficient in plant dispatch because IPPs such as Haripur would not face discriminatory gas price differentials, which would lead to plant underutilization relative to public sector plants.
  - **Off-taker Risk:** In an unusual instance of off-taker risk mitigation, under an indemnity agreement, the Bangladesh Power Development Board is required to consult the Bank should it seek to develop further IPP capacity after the 1780MW benchmark is reached. The reason is that any further expansion might affect sector solvency through the BPBD's ability to maintain its payment obligations to IPP projects including Haripur.
  - **Foreign Exchange Risk:** Given the extent of Haripur's foreign denominated liabilities, the Management and Monitoring System is in the processing of being set up the country's central bank. Funded by the Asian Development Bank, in consultation with IDA, the MMS system is designed to track the country's IPP foreign exchange exposure, general state of external borrowing and foreign exchange exposure. It would provide early warning signals in the event of balance of payment problems arising from government liabilities and facilitate the regulation of foreign exchange commitments across all sectors by requiring full disclosure in financing agreements between the government and private sector.
- ❖ **Creative Compromises Between AES and the Government of Bangladesh:** Both AES and the GOB had strong political commitments to Haripur completion that opened the door to creative risk sharing. AES initially took on a riskier debt equity structure of 59%/41% when the industry average leaned towards 70%/30%. Second, AES provided \$73.3 upfront for construction roughly 15 months prior to project financing. Finally, AES accepted a tariff of under \$0.03/kWh hour, a competitive level unlikely to be duplicated in Bangladesh anytime in the foreseeable future. In return, the GOB softened its position on a number of issues. First of all, the government streamlined the licensing process significantly to enable project closure. To mitigate offtaker risk, Haripur was prioritized in the dispatch order among the top 4 IPPs. To minimize fuel supply risk to AES, under a Letter of Amendment to Implementation Agreement, Haripur was given first priority over all IPPs in the event of a fuel supply shortfall.

- ❖ ***Internal Project Financing:*** The ability of the Haripur plant to generate revenues at the simple cycle stage provided the additional domestic financing of \$8.4Mn required to complete the combined-cycle structure. This reduced the reliance of foreign capital on project financing.
- ❖ ***Government of Bangladesh Political Commitment:*** The GOB demonstrated its commitment to the Haripur financing and its power reforms through its willingness to provide a counter-guarantee to IDA for any payments made under the Guarantee Agreement.

In the Haripur case, the World Bank played an interesting role in strengthening Bangladesh's IPP governance sector while improving the project's sustainability. Political risk mitigation through the PRG, was critical to foreign investors as it allowed for effective risk sharing, with the private investor assuming the commercial risk. In the mean time, the PRG backstopped government contractual performance risks, which are not within the control of the private sector. Furthermore, the Bank as "honest broker" between the private sector and the government in power sector expansion, provided value-added in its role monitoring IPP/sector/country foreign exchange exposure. Given the dearth of private investment in power today, Haripur is an interesting case suggesting that the cooperative efforts of multilaterals, governments and the private sector can bridge the gap of financing through creative risk management.

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## **AES Lal Pir – IPP**

### **Project Description**

In 1995, AES was awarded the Lal Pir project by the government of Pakistan. The landmark \$344Mn BOO project consisted of a 362MW oil-fired plant, located in Punjab province. The off taker was the Pakistan Water and Power Development Authority (WAPDA) under a 30-year power purchase agreement. The gas supplier was the Pakistan State Oil Company (PSO) for the term of the PPA. The project was among the first IPP entrants since the March 1994 Power Policy Guideline. The reform, which opened the Pakistani power market to private participation, helped to alleviate power shortages, which were costing the economy up to \$1Bn per year, according to the World Bank. In addition to AES, the IFC, a commercial syndicate, the Japan Export-Import Bank and Nichimen Corp. participated.

### **Country Summary**

Pakistan, an impoverished and underdeveloped country, suffers from internal political disputes, low levels of foreign investment, and a costly, ongoing confrontation with neighboring India. Pakistan's economic prospects, although still marred by poor human development indicators, continued to improve in 2002 following unprecedented inflows of foreign assistance beginning in 2001. Foreign exchange reserves have grown to record levels, supported largely by fast growth in recorded worker remittances.

Trade levels rebounded after a sharp decline in late 2001. The government has made significant inroads in macroeconomic reform since 2000, but progress is beginning to slow. Although it is in the second year of its \$1.3 billion IMF Poverty Reduction and Growth Facility, Islamabad continues to require waivers for politically difficult reforms. Long-term prospects remain uncertain as development spending remains low, regional tensions remain high, and political tensions weaken Pakistan's commitment to lender-recommended economic reforms. GDP growth will continue to hinge on crop performance; dependence on foreign oil leaves the import bill vulnerable to fluctuating oil prices; and efforts to open and modernize the economy remain uneven.

#### **Country Summary: Pakistan**

- ❖ **Government:** Federal Republic
- ❖ **Country Risk Rating:** 30.7/100 (1995)
- ❖ **Transparency Intl Rating:** 2.5/10 (2003)
- ❖ **Population:** 151Mn (2003)
- ❖ **Economic Growth:** 4.5% (2001)
- ❖ **Per Capita GDP (PPP):** \$2100 (2001)
- ❖ **Electricity Coverage:** 83% (2003 Est.)

### **Industry Power and Governance Structure**

The Pakistan power sector resembles a single-buyer, entry-level market. Out of Pakistan's installed capacity of almost 18GW, approximately 10GW is owned by the Water and Power Development Authority (WAPDA). Another 1.8GW of capacity is owned by the Karachi Electric Supply Corporation (KESC). Both organizations are state-owned entities. IPPs, including the Uch, Hub and other existing projects, own 1.8GW. The rest is covered by the installed capacity of nuclear and other cogenerating industries. On the transmission and distribution side, WAPDA maintains a monopoly throughout Pakistan except in Karachi where KESC is the sole supplier. In March 1994, the government of Pakistan launched its "Policy Framework and Package of Incentive for Private Sector Power Generation Projects in Pakistan." This opened the door for the country to tap international and domestic financing for power and dovetailed with the govern-

ment's efforts to encourage development of a domestic corporate debt and securities market. In 1995, the National Electric Power Regulatory Authority (NEPRA) was established to oversee and regulate generation, transmission and distribution. Efforts have been made to insulate the regulator from politics as it supports the sector's evolution to a competitive and economically efficient privatized power market.

### **Industry Power and Governance Structure**

- ❖ **Power Market Model:** Single-buyer
- ❖ **Level of Competition:** Entry-level
- ❖ **Total generation capacity:** 17.7GW
- ❖ **Regulatory Framework:** Independent-Contracted
- ❖ **Trends:** Power Policy 2002 includes the following: greater International Competitive Bidding in power; Customs duty of 5% on import of non-local plant/equipment; A shift towards renewable energy resources (i.e. Full levy of income tax on oil-fired power projects but not on renewable energy-based ones); Ministry of Water & Power (WAPDA) will continue to be the focal point at the federal level; Sponsors of feasibility studies on raw sites will have the first right of refusal should the power project be pursued.

### **Finance and Risk Structure**

The \$344Mn Lal Pir project had a debt-equity ratio of 72%/28%. AES, as sponsor provided \$95Mn. Of the debt participants, IFC provided a \$40Mn "A" loan. A Bank of Tokyo/Deutsche Bank/Sanwa Bank consortium packaged a \$209Mn commercial tranche. This 12-year unsecured, yen-denominated loan was priced at 200bp above the LIBOR rate. The commercial tranche was backed by political risk insurance. The Japan Export-Import Bank provided \$198Mn in political risk insurance while the Nichimen Corporation supplemented another \$11Mn in risk coverage.

### **Finance and Risk Structure**

- |  |  |
|--|--|
| ❖ <b>Total cost:</b> \$344Mn   | ❖ <b>Government/Private ownership:</b> 0%/100% |
| ❖ <b>Equity participants:</b> AES (\$95Mn)   | ❖ <b>Foreign/domestic Ratio:</b> 100%/0%       |
| ❖ <b>Debt participants:</b> IFC A(\$40Mn), Deutsche Bank Syndicate Commercial Loan (\$209Mn) | ❖ <b>Government/MDB guarantee:</b> None        |
| ❖ <b>Debt/equity ratio:</b> 72%/28%  | ❖ <b>Financial Risk Structure:</b> IPP         |
| ❖ <b>Insurance:</b> Japan Exim (\$198Mn), Nichimen (\$11Mn)                                  | ❖ <b>Financial Closure Date:</b> May 1995      |

### **Key Structure and Success Factors**

The Lal Pir project, along with AES PakGen, was among the first IPP entrants into Pakistan since the introduction of the March 1994 Power Policy Guideline. This reform opened the Pakistani power market to private participation, thereby addressing power shortages, which were costing the economy up to \$1Bn per year, according to the World Bank. At the time, many investors were hesitant to invest in Pakistan given the country's wavering political stability and tensions with India. However a confluence of factors allowed the development of AES Lal Pir.

- ❖ **Investor-friendly Government Support:** Prior to Lal Pir and its sister project, Pak Gen, the government of Pakistan worked closely with investors, such as AES, in crafting a progressive regulatory tariff structure that incentivized private investment. Measures included inflation indexation on PPAs and various performance bonuses. Similar to other later power projects, the AES Lal Pir Ltd. Project Company was given guarantees on both currency availability and the payment obligations of the state-entity power purchase, WAPDA. Perhaps most important, the government of Pakistan tried to create a convenient one-stop shop to speed through project financing. The result was that Lal Pir’s transaction from project exploration to financial closing took only two years and AES benefited from incentive bonuses on early construction completion. The Lal Pir and sister Pak Gen projects were the beginnings of Pakistan’s later strong track record of IPP financings.
- ❖ **Supportive Japanese Participation:** The Japanese Export-Import Bank and Nichimen Corporation together provided a \$209Mn political risk guarantee that covered 100% of the commercial debt tranche at very favorable rates. This guarantee not only helped to extend financing tenor out to 12 years, but it also was the first untied guarantee ever granted in the world to a power project undertaken on a BOO or BOT basis
- ❖ **Confident IFC Investment:** The IFC’s A-loan commitment of \$40Mn added confidence to commercial banks involved in Lal Pir’s debt tranche syndicate.

Some believe that Pakistan may have temporarily over expanded power capacity in the late nineties at above-average tariff rates. Nevertheless, at the time of Lal Pir’s project development in 1994, Pakistan’s energy shortage severely constrained economic growth. Japanese and IFC financing smoothed Lal Pir’s financial closing, but it has been argued that Pakistan’s investor-friendly policies established the framework to accelerate the development of Lal Pir along with many other future power projects.

## Azito Power – IPP

### Project Description

In November 26, 1996, the Cote d'Ivoire government initiated an international competitive bid for the Azito power project. The bidders included AES, Enron, Tractabel and ABB. The lowest bid was offered by the ABB consortium, which included Cinergy, EDF at the latest stage, and Industrial Promotion Services (a unit of the Aga Khan Fund for Economic Development). The purchaser and fuel supplier was the government of Cote d'Ivoire. Procurement was divided into two lots. Lot 1 covered the power plant which consisted of three phases: Phase I, 150MW open-cycle, gas turbine unit; Phase II, a second turbine of identical specifications commissioned January 2000. Lot 2 covered a transmission capacity buildup, which was supposed to be financed by the government before it was included in the project financing at the last minute. Total plant capacity was 300MW at a total cost of \$223Mn. financial closure for the total project, excluding Phase III, occurred January 1999.

### Country Summary

As a member of the CFA franc zone, Cote d'Ivoire had enjoyed moderate growth until the late 1980's when the franc's real appreciation hurt exports such that the government decided to devalue the currency 50% in 1994. This led to robust economic growth throughout the mid-nineties of roughly 6-7% per annum. Concurrently, the government was facing external debt burdens. Debt relief was provided by IDA and the IMF as well as the Paris Club creditors. This brought external debt ratios to sustainable levels by 2001. Furthermore, the government was committed to deep structural reforms to promote private sector development and to reallocate resources to improve education, health and reduce poverty. In short, the macro conditions were favorable for expanding private participation throughout the economy including the power sector.

#### Country Summary: Ivory Coast

- ❖ **Government:** Republic
- ❖ **Country Risk Rating:** 25.5/100 (1999)
- ❖ **Transparency Intl Rating:** 2.1/10 (2003)
- ❖ **Population:** 16Mn (2003)
- ❖ **Economic Growth:** -1.7% (2002)
- ❖ **Per Capita GDP (PPP):** \$1500 (2002)
- ❖ **Electricity Coverage:** 40% (Est. 2003)

### Industry Power and Governance Structure

Cote d'Ivoire's power sector is vertically integrated with entry-level competition. The 1985 Electricity Law defined much of the regulatory and legal framework of the country's power sector. It established a state monopoly over transmission and distribution, but allowed a gradual liberalization of the generation market. Between 1996-1998, the government established three new agencies to oversee the power sector: (1) Societe de Gestion du Patrimoine de Secteur de l'Electricite (SOGPE)- In charge of state assets; (2) Societe d'Operation Ivoirienne d'Electricite (SOPIE)- Responsible for transmission lines and new public works; (3) Autorite Nationale de Regulation de l'Electricite (ANARE)- In charge of existing concessions and disputes. As early as 1971, the government experimented with affermage leases in water where the lessee took on operating risk but left capital investment decisions to the state. The affermage model was extended to the power sector in October 1990 when the private firm, Compagnie Ivoirienne d'Electricite (CIE) was established to generate, transport, distribute and trade electricity. CIE was considered a success and

was followed by another successful private power concession, CIPREL. As a result, the government developed confidence in expanding private sector involvement into power.

### **Industry Power and Governance Structure**

- ❖ **Power Market Model:** Vertically Integrated
- ❖ **Level of Competition:** Entry-level
- ❖ **Total generation capacity:** 890MW
- ❖ **Regulatory Framework:** Ministry-based
- ❖ **Trends:** Cote d'Ivoire is committed to involving private sector participants in the power sector. This is due to the perceived success of the Compagnie Ivoirienne d'Electricite (CIE), the first privately held electricity company, which had a 15-year concession to generate, transport, distribute, import and export electricity.

### **Financing and Risk Summary**

The total project cost was \$223Mn. The financing structure was 70% senior debt, 10% subordinated debt and 20% sponsor equity and covers both the generation and transmission components. The sponsors also put up \$17 million as contingency financing. Another \$18Mn of internal funds will be generated from the first turbine (Phase I) to finance the second turbine (Phase II). The debt participants included the IFC, CDC and a syndicated commercial loan tranche. IFC and Societe Generale shared a Joint Arranger mandate for the commercial debt, which allowed both participants to pool together their skills in financial closure. SG played critical roles in clarifying the requirements to make the financially feasible and selling the deal in the financial markets. IDA provided a partial risk guarantee to cover \$30Mn of commercial debt.

### **Finance and Risk Structure**

- |   |  |
|---|--|
| ❖ <b>Total cost:</b> \$223Mn  | ❖ <b>Other:</b> Internally generated cash - \$18Mn |
| ❖ <b>Equity participants:</b> ABB/EDF/IPS (\$45Mn)  | ❖ <b>Government/Private ownership:</b> 100%/0%     |
| ❖ <b>Debt participants:</b> CDC Syndicate (\$48Mn), Commercial (\$30Mn), IFC-A(\$32Mn), IFC-B (\$30Mn) CDC/IFC Subordinated Debt (\$48Mn) | ❖ <b>Foreign/domestic capital ratio:</b> 92%/8%    |
|   | ❖ <b>Government/MDB guarantee:</b> Yes- IDA        |
|   | ❖ <b>Financial Risk Structure:</b> IPP             |
|   | ❖ <b>Financial Closure Date:</b> Jan. 1999         |

### **Key Structure and Success Factors**

Electricity coverage in Cote d'Ivoire is roughly 40%. Most rural communities are not linked to the national grid. To expand rural electrification, a levy of CFAF 1/kWh was instituted (In 1998, the weighted average tariff was about CFAF 52.5/kWh or 8.75 cents/kWh). However, given the general 12% growth in electricity demand since 1994 and the government's interest in becoming a net electricity exporter within the West African Power Pool, Cote d'Ivoire needed to expand generation capacity significantly. The government required a new type of vehicle, the IPP structure, to mobilize private financing. Azito was to be the flagship but it faced challenges. First, there was no BOT legal structure for private investment in the, hitherto, state-owned power sector. Second, the last minute government requirement of transmission capacity buildup required both

additional financing and population relocations for up to 15,000 people. Third, there was a financing shortage for international power projects after 1997. Despite these challenges, the Azito project financially closed due to the following key success factors:

- ❖ **IDA partial risk guarantee**: Without the PRG, financing may not have come through. The PRG provided debtors the confidence to extend tenor to a regional precedent of 12 years. Furthermore, its back-to-back sovereign guarantee requirement encourages Cote d'Ivoire to abide by its agreements. This perceived project security catalyzed private investment in the difficult post-1997 environment.
- ❖ **Purchaser Risk Mitigation**: The purchaser was the government of Cote d'Ivoire. To mitigate payment risk, the Azito Company signed an agreement that CIE rather than the government would pay for the electricity. CIE, was perceived as a better credit risk since it was a private concession. According to EDF, bills sent out on the 10th of each month have been collected on with consistency.
- ❖ **Right macro economic and political conditions**: Cote d'Ivoire had a history of economic and political stability. As a member of the CFA franc zone, Cote d'Ivoire enjoyed moderate growth until the late 1980's. Then the franc's real appreciation hurt exports such that the government devalued the currency 50% in 1994. But this led to robust economic growth. Combined with general political stability until 2002, the country could privatize under calm macro conditions.
- ❖ **Positive private participation experience**: As early as 1971, the government experimented with affermage leases in water where the lessee took on operating risk but left capital investment decisions to the state. The affermage model was extended to the power sector in October 1990 when the private firm, Compagnie Ivoirienne d'Electricite (CIE), a consortium of Bouygues, EDF, the government, Ivorians and employees, was established to generate, transport, distribute and trade electricity. CIE was considered a success and was followed by another successful private power concession, CIPREL. In short, Cote d'Ivoire had positive private sector experience.
- ❖ **Strong cost-recovery tariff incentives**: A turning point in the deal was the concession clause, Avenant 4, which dealt with seniority of cash flow payments and its dilution in the event of future, approved projects. Avenant 4 essentially prioritized private sector participants for payment and rated gas suppliers and IPPs as equal in the hierarchy of payment seniority from electricity revenues. Second, the government pledged to limit new entrants into the power sector, effectively reducing competition for the incumbents. Specifically, new entrants are not allowed unless "sectoral financial conditions are met." What this means is that the government has to maintain a sectoral ratio of 1.3 (total sector revenues less CIE fees divided by payments to fuel suppliers and IPPs), which is like a minimum coverage ratio. This financial ratio is projected three years forward and incorporates the impact of any new entrant. If this ratio is not met, any payments to new entrants are subordinate to the current power incumbents. Essentially, this incentivizes the government to maintain cost recovery tariffs and expand supply based on real expected demand growth rather than allow political interests to influence the process.

- ❖ **Successful construction risk mitigation through “Ring-fencing”**: The potential forced resettlement of 15,000 people to build transmission capacity presented a negative social externality unacceptable to the World Bank and IFC and thus a serious construction risk. To address the issue, the transmission component of Azito was “ring-fenced” in a legal standpoint from the rest of the deal. This allowed project financing to proceed on schedule. Simultaneously, the government, IFC and ABB collaborated closely to reroute transmission lines so that resettlement affected only 700 families, many of them, only temporarily.
- ❖ **Committed government support**: The government put together a strong representative team to support transaction closure. The public sector participants had good technical, financial and managerial skills, but most importantly real political decision-making authority.
- ❖ **Innovative regulation by contract**: At the time, Cote d’Ivoire’s legal system was based on French administrative law instead of contract law. A BOT legal structure had to be defined to handle issues such as international arbitration, the usage of assets as collateral for debt and other financing topics. In the absence of such regulations, the obligations and responsibilities of all stakeholders were specified clearly in the project contracts. This sped up financial closure and set defining benchmarks for Cote d’Ivoire’s future power regulation design.

Azito embodies the successes of Cote d’Ivoire’s power sector reforms but it also opened a number of questions. First, how likely will current electricity tariffs be maintained? Despite the attempted September 2002 coup, Laurent Gbago remains president but electricity prices (roughly 8.75 cents/kWh) may become an election issue. Second, will the need to introduce additional competition override Cote d’Ivoire’s regulatory structure? Given Azito’s current contract terms, the possibility to increase the number of IPPs in the future is limited. One could argue that the PRG is a test of both the World Bank’s and Cote d’Ivoire’s credibility with respect to IDA’s influence on contractual compliance. The private sector sees the PRG as a World Bank promise to monitor and protect its assets. If this expectation continues to prove true, Cote d’Ivoire will have established a track record for future financing and serve as a model for other Sub-Saharan countries looking to expand its power sector with private investment.

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## Maritza East III IPP

### Project Description

The Maritza East III project will rehabilitate and retrofit the 840MW lignite-fired Maritza East III power plant. The plant was already in operation for 20 years but required rehabilitation to extend its operating life at least another 15 years. This mine-mouth coal-fired plant of four generation units, is located in the southeast of Bulgaria and maintains 7% of the country's installed capacity. The owner and operator will be the Maritza East III Power Company, a joint-venture between Entergy (and ENEL, which came on near the end) and the state-owned National Electric Company (NEK). A few attributes highlight Maritza East III 's project attractiveness. It is Bulgaria's first private sector financing and first major foreign investment in the power sector therefore a confidence-building demonstration for future financing in the country and region. Second, the project provides an alternative to nuclear energy and addresses environmental EU compliance by utilizing new and replicable emissions-reducing technology. Third, Maritza East III will allow the plant to utilize cheaper, indigenous fuels which will have positive economic and fuel efficiency impacts. The total project cost is \$787Mn.

### Country Summary

Communist domination ended in 1990, when Bulgaria held its first multiparty election since World War II and began the contentious process of moving toward political democracy and a market economy while combating inflation, unemployment, corruption, and crime. Today, reforms and democratization keep Bulgaria on a path toward eventual integration into NATO and the EU - with which it began accession negotiations in 2000. Bulgaria, has experienced macroeconomic stability and strong growth since a major economic downturn in 1996 led to the fall of the then socialist government. As a result, the government became committed to economic reform and responsible fiscal planning. A \$300 million stand-by agreement negotiated with the IMF at the end of 2001 will support government efforts to overcome high rates of poverty, unemployment, and inflation. (Source: World Factbook 2003)

#### Country Summary: Bulgaria

- ❖ **Government:** Parliamentary Democracy
- ❖ **Country Risk Rating:** 47/100(2003)
- ❖ **Transparency Intl Rating:** 3.9/10 (2003)
- ❖ **Population:** 7.5Mn(2003)
- ❖ **Economic Growth:** 4.8%(2002)
- ❖ **Per Capita GDP (PPP):** \$6600 (2002)
- ❖ **Electricity Coverage:** 100%

### Industry Power and Governance Structure

Bulgaria's power sector follows a single-buyer model with entry-level competition. The Energy Efficiency Act (1999) established a new legal framework specifically to correct pricing and tariff policies to attract local and foreign investment into the sector. In 2000, the State Commission on Energy Regulation was set up as an independent regulatory body. In 2000, the vertically integrated power monopoly, National Electricity Co.(NEK), was unbundled into 7 gencos, 7 discos and one transmission company. In March 2002, the Bulgarian government adopted an energy strategy with the following objectives in mind: (1) The establishment of a competitive energy market; (2) Developing a more reliable and environmentally friendly energy supply. As a result, distribution privatization will start by 2003-end while generation privatization (except for the nuclear assets) will start 2004. Upon completion of reforms, NEK will continue to be a govern-

ment-owned transmission monopoly. It will also act as the single buyer and oversee electricity imports and exports.

### **Industry Power and Governance Structure**

- ❖ **Power Market Model:** Single-buyer
- ❖ **Level of Competition:** Entry level
- ❖ **Regulatory Framework:** Independent-contracted
- ❖ **Trends:** The country's commitments to both the Kyoto protocols as well as to the high environmental standards necessary for EU accession, mean that environmental concerns will play a large role in framing the future debates of the electricity reform agenda.

### **Finance and Risk Structure**

The total project cost is \$787Mn (650Mn Euros). The financing structure is 53% debt, 23% equity and 24% internal finance. The equity sponsors today include the following: ENEL (60%) Entergy (13%) and NEK (27%). Of the debt participants EBRD played a lead role contributing a total of \$159Mn (112Mn Euros) of which \$24Mn (20Mn Euros) went through the Black Sea Trade and Development Bank. The EBRD tenor was for 15 years. The commercial tranche, arranged by Societe Generale, Bank Austria Creditanstalt, Credit Agricole Indosuez and Banca MedioCredito, made up roughly \$169Mn (141Mn Euros) and was 100% insured by MIGA. Maritza East III also had an impressive proportion of domestic financing. Four Bulgarian banks – Bulbank, UBB, Biochim, and SG Expressbank, jointly contributed \$90Mn (75Mn Euros) in debt for a tenor of 12 years. In addition, \$189Mn (157Mn Euros) will be generated through internal financing. In total, almost 42% of total project financing was locally sourced, a percentage commensurate with Bulgaria's trajectory of development.

### **Finance and Risk Structure**

- |   |   |
|---|---|
| ❖ <b>Total cost:</b> \$787Mn  | ❖ <b>Other:</b> MIGA covered the syndicate's \$169Mn        |
| ❖ <b>Equity participants:</b> Entergy (\$24Mn), ENEL (\$109Mn) National Electric Co.(\$49Mn)  | ❖ <b>Government/Private ownership:</b> 27%/73%              |
| ❖ <b>Debt participants:</b> EBRD (\$135Mn), Societe Generale Syndicate (\$169Mn), Black Sea Trade and Development Bank (\$24Mn), Bulgarian Bank Consortium (\$90Mn) | ❖ <b>Foreign/domestic Ratio:</b> 58%/42%                    |
| ❖ <b>Debt/equity/ internal cash ratio:</b> 53%/23%/24%  | ❖ <b>Government/MDB guarantee:</b> None                     |
|   | ❖ <b>Financial Risk Structure:</b> IPP(Joint-venture)       |
|   | ❖ <b>Financial Closure Date:</b> Mar. 2003                  |
|   | ❖ <b>Note:</b> Dollars converted from Euros at 1.2Euros/\$1 |

### **Key Structure and Success Factors**

The Maritza East III project is notable in many regards. It was Bulgaria's first private power project and one of the largest FDIs in the country. It set standards on emissions reductions and serves as a benchmark transaction in a difficult power-financing period. Furthermore, it was unique in tapping domestic financing on a sizeable scale. Key success factors include the following:

- ❖ **Strong Political support:** The project is a key element of Bulgaria's long-term strategy of attracting foreign investment in the country and in the development of the government's energy strategy. The Bulgarian government demonstrated its support by agreeing to take all measures to ensure the operation of the state-owned enterprises under the project agreements. Furthermore, the local Bulgarian banks played a significant role in mobilizing domestic financing.
- ❖ **Compelling Cash Flow Security for Lenders:** In addition to the MIGA risk coverage, lenders receive a secured interest of all assets of the joint venture company and an assignment of the Project Agreements as well as any insurance proceeds. The lenders will also receive a pledge of the shares owned by the JVC's shareholders. NEK was also provide to the JVC an assignment of receivables from three distribution companies, backed by a promissory note to secure its short-term payment obligations under the PPA. The lenders also benefit from a nine month Debt Service Reserve Account.
- ❖ **Competitive Tariff Structures:** According to a market study undertaken on behalf of the lenders, Maritza East III is the least expensive option for the sector and is also favorably placed in the country's dispatch merit order. The study also found that the project compares favorably on a total cost basis to alternative potential projects including rehabilitation of existing lignite fired plants and other new thermal plants that rely on imported fuels. Finally, despite a 15 year PPA during which Bulgaria could well have a competitive power market, Maritza's low tariff of roughly \$0.033/kWh diminishes the likelihood of a stranded asset .
- ❖ **Solid Mitigation of Key Project Risks:**
  - **Operating Risks:** NEK has operated the plant successfully since 1978. Entergy, which will be responsible for initial operations, is one of the most experienced utilities in the USA. ENEL, has extensive experience in operating thermal plants.
  - **Construction Risks:** Both DSD Dillinger Stahlbau GMBH and RWE have proven track records in constructing and refurbishing power plants. They most recently completed two units at the Maritza East II plant.
  - **Off-taker Risks:** NEK's payment obligations to the JVC will be secured by a pledge of receivables agreement and by a promissory note securing the revenue from the three distribution companies. Under this agreement, NEK's receivables equivalent to at least 1.25 months of maximum total payment will be pledged to the JVC and related revenues will flow through a designated bank account, which the JVC will entitle to control in the event of late payment by the NEK. The promissory note will be for a similar amount and may be enforced against NEK in the event the amount outstanding from NEK is not recovered as established under the pledge of receivables agreement.
  - **Supply Risks:** The state-owned mining company, Mini Maritza Istok EAD (MMI) has supplied lignite to the Maritza complex since 1952 with a fully satisfactory record of delivery and has sufficient reserves to supply the project.
- ❖ **Promising Economic Prospects:** Bulgaria has experienced macroeconomic stability and strong growth since a major economic downturn in 1996 led to the fall of the then socialist government. As a result, the government became committed to economic reform and responsible fiscal planning. A \$300 million stand-by agreement negotiated with the IMF at the end

of 2001 will support government efforts to overcome high rates of poverty, unemployment, and inflation.

- ❖ ***Favorable Project Economics***: The project benefits from strong economics with conservative financial and conservative assumptions. The Base Case scenario shows average and minimum debt service coverage ratios of 1.85x and 1.67x respectively.

While the Maritza East III project took a very long time to develop and finance, by the time the finance agreements were finally signed, the macroeconomic and political situation in Bulgaria had improved considerably and the profile of the sponsors strengthened with the entry of ENEL. In its final shape, it is a competitively priced power project with well-structured contracts and appropriate allocation of risks. The direct involvement of the EBRD, the political risk coverage from MIGA and the appetite of local banks has all contributed to the successful financing.

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## Phu My 2.2 IPP

### Project Description

The Phu My 2 Phase 2 Project is Vietnam's first internationally bid private infrastructure project. The sponsor consortium includes EDF International (EDFI), Sumitomo Corporation and Tokyo Electric Power Company (TEPCO) all as shareholders in the Mekong Energy Company Ltd. (MECO). The landmark \$480Mn BOT project consists of a 715MW gas-fired combined cycle plant, located in the Ba Ria Vung Tau province, about 70 kilometers southeast of Ho Chi Minh city. The off taker is the state-owned Electricity of Vietnam (EVN) under a 20-year PPA. The gas supplier is the state-owned Petro Vietnam (PV) for the term of the PPA. The project is unique in a number of ways. First, it will reduce Vietnam's power shortages at a low levelized tariff of 4.1 cents per kWh. Second, it will generate savings by displacing less efficient plants running on imported liquid fuels and utilizing domestic gas sources from the Nam Con Son Basin. Furthermore, the Phu My 2.2 project set a benchmark for bringing in private participation into power projects and solidifying the BOT framework for use in future projects. The project financially closed in December 2002.

### Country Summary: Vietnam

Vietnam is a poor, densely populated country that has had to recover from the ravages of war, the loss of financial support from the old Soviet Bloc, and the rigidities of a centrally planned economy. Substantial progress was achieved from 1986 to 1996 in moving forward from an extremely low starting point - growth averaged around 9% per year from 1993 to 1997. The 1997 Asian financial crisis highlighted the problems in the Vietnamese economy but, rather than prompting reform, reaffirmed the government's belief that shifting to a market-oriented economy would lead to disaster. GDP growth of 8.5% in 1997 fell to 6% in 1998 and 5% in 1999. Growth then rose from 6% to 7% in 2000-02 even against the background of a global recession. These numbers mask some major difficulties in economic performance. Many domestic industries, including coal, cement, steel, and paper, have reported large stockpiles of inventory and tough competition from more efficient foreign producers. Meanwhile, Vietnamese authorities have moved to implement the structural reforms needed to modernize the economy and to produce more competitive, export-driven industries. The US-Vietnam Bilateral Trade Agreement entered into force near the end of 2001 and is expected to significantly increase Vietnam's exports to the US. The US is assisting Vietnam with implementing the legal and structural reforms called for in the agreement. (Source: World Fact Book 2003)

#### Country Summary: Vietnam

- ❖ **Government:** Communist State
- ❖ **Country Risk Rating:** 32.3/100 (2002)
- ❖ **Transparency Intl Rating:** 2.6/10 (2002)
- ❖ **Population:** 81Mn (2002)
- ❖ **Economic Growth:** 4.7% (2001)
- ❖ **Per Capita GDP (PPP):** \$2100
- ❖ **Electricity Coverage:** 48.6% (1993)\*

## **Industry Power and Governance Structure**

Vietnam's power sector allows single buyer, entry-level competition on the generation side. Its power sector reforms started in 1995 with the establishment of the Electricity of Vietnam (EVN) state-holding company outside of the Ministry of Energy. This was done to separate government policy from the sector's operations. Although EVN oversees generation, transmission and distribution, the regional power companies in charge of distribution were formed as independent accounting entities allowing for decentralization of authority for investment decisions. BOT schemes for generation are anticipated to make up 20% of the long-term target for private generation. In 1998, various decrees were issued to firm up BOT guidelines. The government recently issued Investment License for the Phu My 2-2 and Phu My 3 projects that solidified the BOT framework for financial closure of these projects. To date, regulatory oversight is not entirely separated from sector ownership and there is no effective body of sector specific legislation. Power related authorization must often come from several disparate government agencies. With World Bank and ADB assistance, Vietnam intends to increase competition within generation and distribution while keeping transmission as a government monopoly.

### **Industry Power and Governance Structure**

- ❖ **Power Market Model:** Single-buyer
- ❖ **Level of Competition:** Entry-level
- ❖ **Total generation capacity:** 6195MW
- ❖ **Regulatory Framework:** Ministry-based, however the Electricity of Vietnam (EVN) the main state agency for power projects was established 1995 outside of the Ministry of Energy to oversee business activities.
- ❖ **Trends:** Starting in 2006, EVN will move to competition in both the production and distribution side. After 2010, it plans to focus on establishing internal power pools.

## **Finance and Risk Structure**

The total project cost is \$480Mn. Sponsor equity consists of \$140Mn (\$40Mn is standby financing). The breakdown is as follows: EDF (56%), Sumitomo (28%), TEPCO (16%). Total debt is \$340Mn (\$40Mn is standby financing). The breakdown is as follows: IDA partial risk guarantee (PRG) covered loan (22%), ADB direct loan (15%), ADB guarantor of record (GOR) loan backed by private political risk insurance (7%), Japan Bank of International Cooperation direct loan (44%), Proparco direct loan (12%). The base financing debt-equity ratio is 75%/25%. The standby financing debt-equity ratio is 50%/50%.

### **Finance and Risk Structure**

- ❖ **Total cost:** \$480Mn (\$80Mn is standby finance)
- ❖ **Equity participants:** EDF (\$79Mn), Sumitomo (\$39Mn), Tokyo Electric (\$22Mn)
- ❖ **Debt participants:** IDA PRG (\$75Mn), ADB loan (\$50Mn), GOR loan (\$25Mn), Japan Bank of Intl Cooperation (\$150Mn), Proparco (\$40Mn)
- ❖ **Debt/equity ratio:** 70%/30%
- ❖ **Government/Private ownership:** 0%/100%
- ❖ **Foreign/domestic Ratio:** 100%/0%
- ❖ **Government/MDB guarantee:** Yes
- ❖ **Financial Risk Structure:** IPP
- ❖ **Financial Closure Date:** December 2002

### **Key Structure and Success Factors**

Closing Phu My 2.2 was not an easy endeavor. The government of Vietnam was hesitant to provide guarantees covering political/breach of contract risks, particularly since Hanoi had only \$2Bn in reserves around the financing period. Upon bidder consultation, the government offered undertakings covering these key risks which private financiers were not ready to take, based on which IDA was able to offer a PRG at the time of bidding. The authorized state body for negotiating BOT itself did not have sufficient authority to resolve issues in BOT contracts. Authorization was spread out among multiple bureaucratic agencies thereby dragging out negotiations mercilessly. Finally, the international financial markets for power projects continued to lag. But in the end, Phu My 2-2 saw closure due to the following factors:

- ❖ **Transparent Sponsor Selection and Competitive Power Price:** This is the first competitively bid private infrastructure project in the country. IDA helped finance the Phu My 2.1 as a public project and financed technical assistance for the development by the government of the Phu My 2.2 as a BOT project. This assistance included the hiring of international consultants to assist the government in preparing bidding documents/draft project agreements and to support negotiations. The RFP was issued in late 1997 and an IDA PRG of up to US\$75 million in support of commercial debt financing was offered as an option for bidders. The EDFI-led consortium was awarded the project in 1999. Key documents including a BOT Contract were signed and the Investment License was issued in 2001. Financial closure was achieved in 2002. The international bidding process led to competitive tariffs of 4.1 cents/kWh (on a levelized basis), which set a precedent for future low-cost expansion.
- ❖ **Strong Sponsor Commitment:** The consortium, from 1997-2001, struggled to turn Phu My 2.2 into a viable project. Nonetheless, strong sponsor commitment and persistence led to the deal finally being concluded. The consortium negotiated direct agreements with several Vietnamese counterparties above the Ministry of Industry in the following issues: foreign currency availability and repatriation, restrictions on the sponsors' transfer of share capital, English law security over offshore assets, pre-approval of financing documents by the state bank of Vietnam, etc. Despite the time delays, the consortium pursued a wise course of action by paying close attention to all aspects of the project transaction prior to financing. In 1997 Wartsila of Finland rapidly negotiated a 120MW thermal project with the GOV that ultimately failed because Wartsila sought guarantees on EVN non-performance and foreign exchange convertibility after the project was started. In contrast, while the Phu My 2.2 negotia-

tions resulted in a long and complex deal structure, it was eventually successful because it solidified appropriate risk sharing and clear performance guarantees and obligations by the government.

- ❖ **Disciplined Multilateral/Bilateral Participation:** The combined efforts of IDA, ADB, French Agency for Development and the Japan Bank of International Cooperation proved critical in closing the deal on a number of fronts, playing significant roles in financing through either direct loans or political risk guaranteed-loans. They were also able to play the role of “honest broker” between the government and sponsors. At the same time, their assistance, particularly the World Bank’s, help to implement key sectoral reforms such as the adoption of an internationally accepted BOT framework.
- ❖ **Balanced IPP Sector Expansion:** The EVN will continue to be the key buyer of power generation in the short to medium future. Given the country’s limited foreign reserves, the GOV has recognized the need to moderate private BOT generation expansion to roughly 20% of the long-term power capacity, which would avoid the risk of over-dependence on foreign currency funded projects and provide confidence to investors for future private participation in Vietnam.
- ❖ **Favorable Country Economics:** From 1992-1997, Vietnam grew a rapid 8% per year. To date, growth remains robust with exports expected to grow in the short to medium term. The government is stable with improving relations with its neighbors. Debt service remains at roughly 6-7% of GDP and continues to fall. Electricity demand in Vietnam has increased at about 14% p.a. during 1995-2002 and the country is expected to require capacity growth at the rate of 10-14% p.a. especially in the south. Consequently, Phu My 2.2 expects little demand risk for its power.

Phu My 2.2 set benchmarks for managing political and economic risks. More importantly, it paved the way for Vietnam’s adoption of international legal requirements for attracting private investment. Indeed, with Phu My 2.2 under its belt, Vietnam rapidly closed the Phu My 3 project in June 2003. Phu My 2.2 was not without its challenges but it demonstrated that committed multilateral/bilateral support, strong partner dedication, balanced sector development, and project transparency could attract investors to the emerging markets during a period of foreign investor retrenchment from emerging markets.

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## Shandong Zhonghua Power Project – Joint-venture/IPP

### Project Description

The coal-fired Shandong Zhonghua Power Project was China's largest limited recourse financing of its time and one of the largest IPPs ever financed. Furthermore, it was 80% domestically-financed and the first project under China's new project finance regulations requiring local and foreign lenders to receive equal treatment. Shandong Power is a joint-venture initiated May 1997 between Shandong Electric Power Group Corporation (SEPCO) and Shandong International Trust and Investment Corporation (SITIC), and foreign investors EDF with Hong Kong-based China Light and Power. The Chinese state entities SEPCO and SITIC together have 51% voting control of the joint-venture company. The project consists of the following: (1) Shiheng I power station (2x300MW) operational since 1987; (2) Shiheng II power station (2x300MW) operational since 1997-8; (3) Heze II station (2x300MW) to be completed post-financial closure in 2002; (4) Liaocheng power station (2x600) to be completed in 2004. Total project capacity is 3000MW at a cost of \$2.2Bn. The deal closed September 1998.

### Country Summary

In late 1978 the Chinese leadership began moving the economy from a sluggish, Soviet-style centrally planned economy to a more market-oriented system. GDP quadrupled since then. In 2003, with its 1.3 billion people but a GDP of just \$5,000 per capita, China stood as the second-largest economy in the world after the US (measured on a purchasing power parity basis). Agriculture and industry have posted major gains, especially in coastal areas near Hong Kong and opposite Taiwan, where foreign investment has helped spur output of both domestic and export goods. The leadership, however, often has experienced - as a result of its hybrid system - the worst results of socialism (bureaucracy and lassitude) and of capitalism (windfall gains and growing income disparities). China thus has periodically backtracked, retightening central controls at intervals. Accession to the World Trade Organization helps strengthen China's ability to maintain strong growth rates but at the same time puts additional pressure on the hybrid system of strong political controls and growing market influences. China has benefited from a huge expansion in computer Internet use. Foreign investment remains a strong element in China's remarkable economic growth. (Source: World Fact Book 2003)

#### Country Summary: China

- ❖ **Government:** Communist state
- ❖ **Country Risk Rating:** 57.7 (1998)
- ❖ **Transparency Intl Rating:** 3.4/10 (2003)
- ❖ **Population:** 1,300Mn
- ❖ **Economic Growth:** 8% (2002)
- ❖ **Per Capita GDP (PPP):** \$4700 (2003)
- ❖ **Electricity Coverage:** 93% (2003)

### Industry Power and Governance Structure

Since the gradual decentralization and eventual abolition of the Ministry of Energy by 1997, the industry structure has become highly fragmented. Vertically integrated utilities dominate the provinces with no explicit regulatory framework in place. The State Development and Planning Commission (SDPC), the State Economy and Trade Commission (SETC) and the State Power Corporation (SPC) handle national regulatory and policy decisions. However, there are mirror versions of the state entities at the provincial level that also have input in regulatory functions such as network expansion, investment approvals, tariff settings, etc. In short, both central and local governments oversee power company decisions. The resulting inefficiencies and failures to meet power demand encouraged the Chinese govern-

ment to launch the “Plan for Reform of the Electric Power System” in April 2002. The central objective is to increase power capacity and minimize state intervention by (1) Creating unbundled power companies with competition between generation companies; and (2) Develop a regulatory framework under the guidance of an independent regulatory agency. Specifically, the State Power Corporation is to be split into two regional power companies and five generation companies. In addition, both state-level and regional/provincial regulatory entities are to be created.

**Industry Power and Governance Structure**

- ❖ **Power Market Model:** Vertically Integrated
- ❖ **Level of Competition:** Entry-level
- ❖ **Total generation capacity:** 340GW
- ❖ **Regulatory Framework:** Ministry-based
- ❖ **Trends:** The 2002 Plan for Reform of the Electric Power System's central objective is to increase power capacity and minimize state intervention by (1) Creating unbundled power companies with competition within generation; and (2) Develop a regulatory framework under the guidance of an independent regulatory agency.

**Financing and Risk Summary**

The project cost is \$2.2Bn. SEPCO and SITIC, together, own 51% voting control of the joint venture company. Shandong Power was 80% domestically financed. The financing structure was 68% debt, 26% sponsor equity. Another 6% (\$133Mn) in internally-financed capital is included in the total cost. The equity participants with their respective total capital percentage contributions are as follows: Shandong Electric Power Co.(10.2%), Shandong International Trust and Investment Co. (4%), China Light and Power (8.2%) and EDF (5.4%). The debt participants with their respective total capital percentage contributions are as follows: China Construction Bank/SITIC (39.9%, 15 year term), British Exim Bank-backed loan facility (15.2%, 18 year term), Unsecured SG-Asia syndicated commercial loan (17%, 12 year term).

**Finance and Risk Structure**

- ❖ Total cost: \$2191Mn
- ❖ Equity participants: Shandong Electric Power Co.(\$210Mn), Shandong Intl Trust & Investment Co.(\$83Mn), EDF (\$112Mn), China Light & Power (\$169Mn)
- ❖ Debt participants: China Construction Bank/SITIC (\$822Mn), SG-Asia, IBJ Asia, Greenwich Natwest Syndicated Unsecured Commercial Loan (\$350Mn), British Export Credit Guarantee Dept-backed loan facility (\$312Mn)
- ❖ Debt/equity/internal cash ratio : 66%/28%/6%
- ❖ **Other:** Internal financing - \$133Mn
- ❖ **Project Shareholders:** Gov’t-51%/Private 49%
- ❖ **Government/Private ownership:** 100%/0%
- ❖ **Foreign/domestic capital ratio:** 20%/80%
- ❖ **Government/MDB guarantee:** No
- ❖ **Financial Risk Structure:** Joint-venture/IPP
- ❖ **Financial Closure Date:** Sept. 1998

## **Key Structure and Success Factors**

China's energy shortfall is estimated to be 10% or almost of 38 Gigawatts, enough energy to run (among our case studies) Morocco, Philippines and Bulgaria combined. The required financing is \$108 billion over the next five years. The Chinese government believes that 80% of this may have to be domestically financed through both the state and private sector with the private sector taking a larger share of investment over time. Today, about one-third of installed capacity is provided by privately financed IPPs. Currently, there are 39 joint ventures in power representing about 8.5% of total capacity. With annual demand growing at 6%, the proportion of private domestic financing will likely grow and commentators have suggested the Shandong Power Project could serve as a role model. The project was financed in a difficult period during the 1998 Asian crisis yet remains one of the most robust IPPs to date at a highly competitive tariff rate of 5.69 cents/kWh. Key success factors include the following:

- ❖ **High domestic capital mobilization**: Shandong power was 80% domestically financed (including Hong Kong based capital from the SG-Asia syndicate, British Exim backed commercial loan and China Light and Power of Hong Kong). The project included a substantial amount of local equipment. The fuel supply, working capital, and technical expertise were also sourced in local currency. As a result, the exchange rate liabilities that come with high levels of foreign financing were significantly reduced.
- ❖ **Creative risk management among equity participants**: The maxim, "Risks should be allocated to the party best able to manage it," took an unusual twist in Shandong Power because the equity participants often wore multiple hats. For example, EDF is both a sponsor and EPC contractor. According to EDF's Vicent de Rivaz, this was "the best way to protect our equity investments through the monitoring of the construction contract. EDF is fundamentally an engineering company and an operator which is well positioned to ensure that the quality of the works will mitigate the operating risk of the project." Even more interesting, the Shandong Electric Power Group Corp.(SEPCO) not only sponsors the JVC, but is also the off taker, operator and construction participant. EDF and CLP were generally comfortable with this arrangement because SEPCO's multiple roles helped minimize the project's exchange rate exposure.

Initially there was concern that EDF and CLP would have little leverage if the Chinese counterparts, at least partially state-owned, positioned themselves counter to the foreign investors. Despite the perception of the Chinese government as a unified entity, in reality, each Chinese agency involved in the Shandong Project was strongly protective of its individual interests. For example, China Construction Bank financed the Shiheng I (600MW) plant in 1987 before the station got integrated into the Shandong Power Project. Since CCB also had to issue the \$822Mn in debt to the Shandong Project, CCB had a double incentive to see the project succeed and would not take kindly if SEPCO failed in its obligations. As a result, project contracts state that in the event of serious operator breach, the JV and off taker agreement will be terminated. The operator (SEPCO) will then have to repay outstanding debt and expected equity returns. Furthermore, voting rights were structured such that conflicted parties can be barred from exercising their voting rights under the JVC agreement. In summary, EDF and CLP stakes are protected to the extent that their Chinese partners want to see their own stakes protected.

- ❖ **Efficient leveraging of completed plants for the financing of new plants:** At financial closing, the Shihengs I (300MW) & II (300W) were already operating and generating revenues. Hence the Shandong Project was able to draw upon \$133Mn in internal financing to build the Heze II (1200MW) and Liaocheng (1600MW) stations.
- ❖ **Flexible British Export Credit Guarantee (ECGD) support:** The Export Credit Guarantee Department provided 100% political and commercial risk coverage for \$312Mn in debt at a generous term of 18 years. The Shandong Project was a negotiated deal with strong emphasis for locally made turbines. It, therefore, did not conform to the World Bank preference for competitive bidding. The US Exim Bank, which was initially involved, was also said to have been a little rigid in its expectations of a strong government letter of support and equipment sourcing requirement for US made turbines. In contrast, the British Export Credit Guarantee Department was flexible about the absence of competitive bidding and the use of British content. It felt comfortable with the risks and proposed deal structure thereby instilling confidence in the other commercial debt providers during the turbulent 1998 period.
- ❖ **Pro-active arbitration safeguard setup:** Given the complexity of handling both RMB and dollar loans, it was decided that onshore contracts would be governed by Chinese arbitration while off-shore contracts would be handled by international arbitration in Singapore or London. This compromise led to a spaghetti mix of rules and forums but allowed sufficient agreement among all parties to push through financial closing.

The Shandong Power Project's vulnerability to currency fluctuations is significantly less than a 100% foreign financed IPP. As Ashley Wilkins of SG Asia commented, "Our ultimate protection is that the power price is as low as possible. You can't rely on indexing as it makes the power price too expensive in any LDC and then you get power tariff issues. You need to build a structure that will keep you at the lowest end of the cost base." With China's plan to experiment with power pools and competitive markets, there has been speculation whether projects with long-term PPAs such as Shandong will be affected. It is still too early to say but what is clear is that the Shandong model presents an interesting story of domestic financing in a middle-level developing country with deep capital pools. Furthermore, through the joint venture arrangement, Shandong Power provides an example of how foreign investors can limit their participation yet reap the benefits of a solid and robust project.

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## Songo Songo IPP

### Project Description

Songo Songo was Tanzania's first IPP, and the second in East Africa. It had a history of difficulties yet managed financial closure in October 2001, a difficult period for any region. At the time of project financing, AES was the lead and only private sponsor. Others included the UK Commonwealth Development Corporation (CDC) and a partnership between the European Investment Bank (EIB) and Tanzania Development Finance Company Ltd.(TDFL). In December 2002, AES sold its equity stakes in the Songo Songo and Kelvin projects to CDC Capital Partners for \$116Mn. Songo Songo followed a two-stage development process: (1) The development of a gas field at Songo Songo island; (2) The conversion of the 112MW Ubungo thermal plant into a gas-firing facility prior to its privatization. The Ubungo plant is to be connected to the gas field via a 217Km land pipeline running through Dar-Es Salaam and Wazo Hill. Tanesco is the off taker with a 20-year PPA. The project cost was \$295Mn.

### Country Summary: Tanzania

Tanzania is one of the poorest countries in the world. The economy depends heavily on agriculture, which accounts for half of GDP, provides 85% of exports, and employs 80% of the work force. Topography and climatic conditions, however, limit cultivated crops to only 4% of the land area. Industry traditionally featured the processing of agricultural products and light consumer goods. The World Bank, the International Monetary Fund, and bilateral donors have provided funds to rehabilitate Tanzania's out-of-date economic infrastructure and to alleviate poverty. Growth in 1991-2002 featured a pickup in industrial production and a substantial increase in output of minerals, led by gold. Oil and gas exploration and development played an important role in this growth. Recent banking reforms have helped increase private sector growth and investment. Continued donor support and solid macroeconomic policies should support continued real GDP growth of 5% in 2003. (Source: World Fact Book 2003)

#### Country Summary: Tanzania

- ❖ **Government:** Republic
- ❖ **Country Risk Rating:**20.6/100 (2001)
- ❖ **Transparency Intl Rating:**1.9/10 (2001)
- ❖ **Population:** 35Mn
- ❖ **Economic Growth:** 4%/yr (2001)
- ❖ **Per Capita GDP (PPP):** \$500 (2001)
- ❖ **Electricity Coverage:** 7%

### Industry Power and Governance Structure

Tanzania's power sector is dominated by the Tanzania Electric Supply Company Ltd.(Tanesco), the vertically- integrated public utility overseeing generation, transmission and distribution. Under the 1931 Electricity Ordinance Act, the government has control over utility activities and policies. Despite charging a retail tariff over \$0.10/kWh (including VAT), Tanesco continued to suffer operating losses due to inefficiencies and theft. Thus in 2002 the Tanzania government signed a two-year management contract for \$2.6Mn with the South African company, Netgroup Solutions in order to make Tanesco more efficient. Since the August 2003 African Power Industry Convention held in Uganda, the Tanzania government has studied the possibility to interconnect with Zambia's and Kenya's grids, and to partner more with the rest of East Africa in developing a power pool.

### **Industry Power and Governance Structure**

- ❖ **Power Market Model:** Vertically integrated - The Tanzania Electric Supply Company Ltd (Tanesco) is a 100% publicly owned monopoly.
- ❖ **Level of Competition:** Entry level- Tanzania's electricity market is small. Maximum system demand: 464MW
- ❖ **Total generation capacity:** 763MW.
- ❖ **Regulatory Framework:** Ministry-based. Under the 1931 Electricity Ordinance Act, the government has strong control over utility activities and policies.
- ❖ **Trends:** Exploring Sector Liberalization - In addition to the internal development of the electricity market, the Tanzania government has studied the possibilities to interconnect with Zambia's and Kenya's grids, and to partner more with the rest of East Africa.

### **Finance and Risk Structure**

In general, Songo Songo relied heavily on MDB financing. AES, through its subsidiary, AES Tanzania, provided 69% of the total equity. CDC provided 25% while the EIB/TDFL consortium took up the remaining equity. The World Bank's International Development Agency (IDA) provided 82% of the debt. The EIB contributed the rest of the 18% of debt. The IDA credit was lent to the government of Tanzania virtually interest free. These funds were then on lent to the Songo Songo project company.

### **Finance and Risk Structure**

- |   |  |
|---|--|
| ❖ <b>Total cost:</b> \$295Mn  | ❖ <b>Government/Private ownership:</b> 0%/100% |
| ❖ <b>Equity participants:</b> AES (\$50Mn), CDC (\$18Mn), EIB (\$4Mn) | ❖ <b>Foreign/domestic Ratio:</b> 100%/0%       |
| ❖ <b>Debt participants:</b> IDA-\$183Mn, EIB-\$40Mn                   | ❖ <b>Government/MDB guarantee:</b> None        |
| ❖ <b>Debt/equity ratio:</b> 70%/30%                                   | ❖ <b>Financial Risk Structure:</b> IPP         |
|   | ❖ <b>Financial Closure Date:</b> October 2001  |

### **Key Structure and Success Factors**

The delayed closing of Tanzania's Songo Songo project was driven by the Tanesco's financial difficulties. For years, its operational inefficiencies, uneven tariff structure and collections difficulty led to under investment and skepticism by investors of the utility's ability to meet its financial obligations. Tanesco's problems were detrimental to the Songo Songo project given the utility's position as off taker. As a result, financing became contingent upon reforms. Key success factors include the following:

- ❖ **Multilateral development bank participation:** The World Bank and the European Investment Bank were critical in closing the deal in the following ways:
  - **Regional risk mitigation:** IDA's presence mitigated the risk profile for private investment in the region and helped to extend the tenor of financing.

- **EPC risk mitigation**: IDA credits allow Songo Songo access to a World Bank Letter of Credit to cover procurement services so that contractors are paid even in project default.
- **Leverage to promote Tanesco reforms**: The World Bank crafted fairly stringent standards on Tanesco's eventual privatization. A requirement was to improve the utility's performance, which involved inviting Netgroup Solutions to take over operations under a two-year management contract. Furthermore, tariffs were leveled at roughly \$0.08 per kWh, which according to CDC's Paul Kubert, was "very competitive for the region."
- ❖ **Cash flow assurance to private investors**: As part of the project deal, the government shifted both the Ubungu plant ownership and the outstanding debt obligations to the Songo Songo Company. To help compensate, the Songo equity holders (AES, CDC, EIB) are protected in default situations thanks to a loan financed escrow account.
- ❖ **Attractive Investment Framework** - Despite turmoil in the region, the government of Tanzania has tried to provide a fairly attractive investment framework through political stability and economic growth. Songo Songo's gas reserves also allow the potential to export gas and thus earn the country hard currency.

A continued issue within the Sub-Saharan region is the dearth of private participation in financing. Tanzania is not without its potential but the country can still do much to improve its investment attractiveness. The Songo Songo case demonstrates how MDB's can play a major role in incentivizing reform by providing both technical assistance and financing. It can help establish an IPP precedent and definitively contribute to society through increased electricity production.

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## Termobahia IPP

### Project Description

Initiated by state oil refinery, Petroleo Brasileiro, S.A.(Petrobras) in 1996, the Termobahia 190MW BOT co-generation project was the first natural gas-fired combined cycle thermal project closed in Brazil. It was financed in a difficult period after the economic and electricity crises of 2001 and serves as a blueprint for future electricity sector projects in the region. The Termobahia Ltd project company is a partnership between Petroleo Brasileiro, S.A, (Petrobras), and ABB Equity Ventures (formerly ABB Alstom at time of financing, though Alstom continues to hold the fixed price, turnkey EPC and turbine installation contracts). Each equity sponsor holds 49%. The remainder is owned by A&A Electricity Investment, an affiliate of the Swiss financial group A&A Actienbank. The plant, located in Bahia state, fulfills three Petrobras objectives: (1) It would help Petrobras hedge its own energy costs; (2) It allowed Petrobras a means to monetize its gas reserves; (3) It contributed to the government's plan to diversify energy sources beyond hydro, which still meets 95% of Brazil's electricity demands. In addition to 190MW of generation capacity, the plant will also produce 350 metric tonnes of steam per hour to be used by the refinery. Any surplus electricity unused by Petrobras can be sold on the spot market. This first phase project closed in December 2001. There is a 295MW second phase in progress.

### Country Summary: Brazil

Possessing large and well-developed agricultural, mining, manufacturing, and service sectors, Brazil's economy outweighs that of all other South American countries and is expanding its presence in world markets. The maintenance of large current account deficits via capital account surpluses became problematic as investors became more risk averse to emerging markets as a consequence of the Asian financial crisis in 1997 and the Russian bond default in August 1998. After crafting a fiscal adjustment program and pledging progress

on structural reform, Brazil received a \$41.5 billion IMF-led international support program in November 1998. In January 1999, the Brazilian Central Bank announced that the real would no longer be pegged to the US dollar. The consequent devaluation helped moderate the downturn in economic growth in 1999, and the country posted moderate GDP growth in 2000. Economic growth slowed considerably in 2001-03 - to less than 2% - because of a slowdown in major markets and the hiking of interest rates by the Central Bank to combat inflationary pressures. In July 2002, Standard & Poor rating agency downgraded Brazil's long-term foreign currency rating from B+ to BB. New president DA SILVA, who took office 1 January 2003, has given priority to reforming the complex tax code, trimming the overblown civil service pension system, and continuing the fight against inflation. (Source: World Fact Book 2003)

#### Country Summary: Brazil

- ❖ **Government:** Federative Republic
- ❖ **Country Risk Rating:** 42.1/100 (2003)
- ❖ **Transparency Intl Rating:** 3.9/10 (2003)
- ❖ **Population:** 182Mn
- ❖ **Economic Growth:** 1% (2002)
- ❖ **Per Capita GDP (PPP):** \$7600 (2002)
- ❖ **Electricity Coverage:** 92% (2002)

### Industry Power and Governance Structure

The National Electricity Agency (ANEEL) is nominally in charge of regulating generation, transmission and distribution. Established in 1996, the agency set up governance and ownership

rules within the three sectors, which prevent any single company from owning more than 25% of the generation and distribution markets at one time. In addition, ownership in a single sector is limited to 20%. The regulator also issues permits and concessions and mediates disputes between market participations.

Brazil's wholesale electricity market (MAE) was established in 2000. It manages surplus capacity within Brazil's electricity grid. However, given the youth of the market, unclear regulations still existed which resulted in companies selling excess energy for which they were not paid. This led to the market's loss of credibility. Under a sector revitalization plan announced in January 2002, the MAE was restructured and put under the control of ANEEL. Market participants hope that the new system will provide better transparency, clearer market rules and more reliable information, which should spur investment. (Source: Platts Datafile on Brazil Electricity Sector 2003)

### **Industry Power and Governance Structure**

- ❖ **Power Market Model:** Wholesale
- ❖ **Level of Competition:** Wholesale- Competition is allowed in both the generation and distribution markets
- ❖ **Total generation capacity:** 75GW
- ❖ **Regulatory Framework:** Independent-Contracted – The Agencia Nacional de Energia Electrica (ANEEL) has served as regulator since 1996. It oversees price regulation, competitor behavior, concessions as well as technical standards but not operations.
- ❖ **Trends:** The government's original 1990's power privatization plan slowed down due to various economic obstacles including the electricity crisis of 2001. It was also assumed that Lula's presidential victory would lead to a suspension of electricity sector liberalization. This has not been the case, nevertheless, Brazil's July 2002 S&P downgrading from B+ from BB-, has made it more difficult to attract foreign capital.

### **Finance and Risk Structure**

The \$244 Mn Termobahia project has a debt-equity ratio of 71%/29%. The equity participants with their respective total capital percentage contributions are as follows: ABB Equity Ventures (49%), Petrobras (49%), and A&A Electricity (2%). Debt participation consisted of an IDB A-loan of \$58Mn and an IDB B-Loan of \$116Mn, which was arranged by Bank of America. The financing tenor for the A-loan is almost 14 years. The IDB decided to participate for numerous reasons. A major reason was financial additionality in which IDB's presence allowed an extended tenor of financing while mobilizing private long-term funding. Just as important, its participation served as form of leverage for environmental, social, health and safety risk mitigation measures that were built into the project. Finally, it had the demonstration effect of a successful financial closing in a difficult period of power financing.

### **Finance and Risk Structure**

- ❖ **Total cost:** \$244Mn
- ❖ **Equity participants:** ABB Equity Ventures (\$35Mn), Petrobras (\$35Mn), A&A Electricity (\$1Mn)
- ❖ **Debt participants:** IDB A (\$58Mn), IDB B (\$116Mn)
- ❖ **Debt/equity ratio:** 71%/29%
- ❖ **Government/Private ownership:** 49%/51%
- ❖ **Foreign/domestic Ratio:** 86%/14%
- ❖ **Government/MDB guarantee:** No
- ❖ **Financial Risk Structure:** IPP
- ❖ **Financial Closure Date:** Dec.2001

### **Key Structure and Success Factors**

According to the Eletrobras Ten-Year Expansion Plan (1998-2007), generation capacity needs to increase by 3640MW per year. Given the growing demand and recognition of the country's over reliance on hydro energy, the government of Brazil drafted an energy strategy that emphasized new energy source development and diversification as well as the increased participation of the private sector in such projects. However, 2001 proved to be a difficult financing period for power on account of Brazil's economic difficulties as reflected in the Real's volatility. Consequently, dollar-denominated costs such as construction and financing made projects look cost-prohibitive. Equally important was Brazil's rigid tariff structure, which made it difficult to pass on higher fuel costs to distributors and ultimately customers. Finally, ever present is the challenge of securing a solid off taker for long-term purchase power agreements. Yet Termobahia financially closed in this difficult period and served as a precedent, which captured the interest of credit agencies (such as OPIC and the US Exim Bank) for other similar future projects in Brazil. Key success factors include the following:

- ❖ **Petrobras Partnership:** Petrobras' participation cannot be overstated. As the 100% off-taker of Termobahia's generation output, the state-owned Petrobras brought a credibility that cast away any market doubts of the PPA and project durability. Furthermore, as both a purchaser and supplier to the project, it is believed to be quite capable of managing project currency exposure.
- ❖ **General Sponsor Strength:** Construction was financed off the sponsors' equity before project financing was secured, as a result, Termobahia could not tap into export credit agency. The project might not have proceeded as smoothly if not for the balance sheet strength of ABB and Petrobras in the bearing of early construction risks.
- ❖ **IDB Involvement:** IDB participation extended the financing tenor to 14 years. The project made a compelling argument for the viability of private provisioning in thermal power to both policy makers and investors. Furthermore, IDB's loan conditionalities helped to assure solid environmental protection.
- ❖ **Government Reform:** In 2001, the spiraling economy and electricity crisis encouraged the government to reevaluate a number of conditions, most important of which, was to allow utilities to more easily pass on their costs through increases over the next three years. They will receive this money upfront through a Brazil National Bank of Economic and Social Development (BNDES) loan secured on the receivables of the utilities.

Termobahia was a confidence builder in a humble period of Brazil's power financing. The economic shocks of 2001 encouraged the government to explore further reforms, particularly in the tariff structure and energy spot market, where Petrobras will sell any of Termobahia's excess capacity. Petrobras' involvement demonstrated the importance of local participation in strengthening project robustness. Its success also attracted the interest of US EX-IM, OPIC and other government/multilateral backed institutions thereby setting the stage for future private power finance mobilizations in Brazil.

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# Grameen Shakti Electrification Initiative

## Project Description

In 1996, Grameen Bank funded Grameen Shakti (“rural energy”)(GS), a non-profit member of the Grameen Bank family. GS is a grass-roots energy developer supporting renewable energy solutions that can be leveraged into income generation activities for the off-grid, low-income communities of Bangladesh (at least 1km away from the grid). The organization’s offerings encompass biomass, wind power and education courses but the flagship product is the photovoltaic Solar Home System (SHS) unit. An estimated 12,000 have been sold to date for a total generation capacity of 0.6MW. Each SHS uses solar modules ranging from 17 peak watts (Wp) to 120 peak watts and can be customized according to customer preferences. Uses include operating sewing machines, TVs, computers or cell phones and selling usage time to customers. Given the high cost (roughly \$438 per 50Wp SHS) of each SHS “micro-utility”relative to the average customer income, Grameen Shakti offers various forms of financing modeled from the Grameen Bank private sector-based lending methodology. In the words of the Dr. Muhammad Yunus, founder of the Grameen Bank, “We are a bank, not a development project.” We give loans, not charity.” Financing options are combinations of down payments and monthly installments at set interest rates. No collateral is required. The three options are as follows:

- ❖ **Option 1:** 15% down payment, the other 85% is paid over 3 years at 12% through 36 monthly installments;
- ❖ **Option 2:** 25% down payment, the rest is paid within 2 years at 8% through 24 monthly installments
- ❖ **Option 3:** 100% cash purchase with 4% discount on total price.

Customers are provided with one year of free after sales maintenance where GS engineers visit the customers each month to check systems, take corrective actions and collect installments. GS also provides customer training on installation and maintenance and as well as specialized technician training. This contributes to local employment. Finally, GS organizes public demonstrations to reinforce awareness and understanding of SHS along with its potential uses for income generation.

## Country Summary

Despite sustained domestic and international efforts to improve economic and demographic prospects, Bangladesh remains a poor, overpopulated, and ill-governed nation. Although half of GDP is generated through the service sector, nearly two-thirds of Bangladeshis are employed in the agriculture sector, with rice as the single-most-important product. Major impediments to growth include frequent cyclones and floods, inefficient state-owned enterprises, inadequate port facilities, a rapidly growing labor force that cannot be absorbed by agriculture, delays in exploiting energy resources (natural gas), insufficient power sup-

<p><b><u>Country Summary: Bangladesh</u></b></p> <ul style="list-style-type: none"><li>❖ <b><i>Government:</i></b> Republic</li><li>❖ <b><i>Country Risk Rating:</i></b> 26.9/100 (1996)</li><li>❖ <b><i>Transparency Intl Rating:</i></b> 0.4/10(2001)</li><li>❖ <b><i>Population:</i></b> 127 Mn (2002)</li><li>❖ <b><i>Economic Growth:</i></b> 5.6% (2001)</li><li>❖ <b><i>Per Capita GDP (PPP):</i></b> \$1750 (2001)</li><li>❖ <b><i>Electricity Coverage:</i></b> 30% (2002)</li></ul>
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plies, and slow implementation of economic reforms. Economic reform is stalled in many instances by political infighting and corruption at all levels of government. Opposition from the bureaucracy, public sector unions, and other vested interest groups also has blocked progress. The BNP government, led by Prime Minister Khaleda ZIA, has the parliamentary strength to push through needed reforms, but the party's political will to do so has been lacking in key areas. (Source: World Fact Book 2003).

### **Off-Grid Renewable Power and Governance Structure**

The government of Bangladesh set a target of 100% electrification by 2020. Given that almost 80% of the population lives in rural areas and that energy demand is growing at 10% per annum, grid expansion has had difficulty keeping up pace. As a result, renewable energy sources have come to the forefront of government policy. In 1996, the government declared the National Energy Policy (NEP) objectives to cover renewable energy and encourage private sector participation through its “Private Sector Power Generation Policy of Bangladesh.” With major assistance from USAID (\$200Mn), the government established the Rural Electrification Board (REB) under the Power Division, Ministry of Power, Energy and Mineral Resources. REB has a mandate to serve as a one-stop shop not only to harness the potential of renewable energy by creating incentives for community-based organizations, NGOs and the private sector, but also to “take concrete steps to remove policy, institutional, financing, market, information, technical and human resource barriers existing in the renewable energy sector of the country.” However, REB has a hands-off policy on actual project implementation. For example, the “GOB will not regulate the price of electricity generated from renewable energy sources. This and power off taker issues, will be negotiated between the sponsors and consumers.” REB has also designed a number of incentives to encourage private participation in the renewable energy sector such as the following:

- ❖ Renewable energy project sponsors, whether semi-government, private (local or foreign), or NGOS shall be exempt from corporate income tax for 15 years.
- ❖ Repatriation of equity along with dividends will be allowed freely.
- ❖ Sponsors will be allowed to import plant and equipment without payment of customs duties, VAT or other surcharges as well as the import fee provided the equipment is not already produced locally.
- ❖ Foreign owned companies duly registered in Bangladesh will be on the same footing as locally owned companies with regard to borrowing facilities.
- ❖ Convertibility guarantees for international payments.

#### **Off-Grid Renewable Power and Governance Structure**

- ❖ **Power Market Model:** Wholesale
- ❖ **Level of Competition:** Competitive retail market for off-grid power alternatives
- ❖ **Total off-grid generation capacity:** 0.6MW (Est. 2002)
- ❖ **Regulatory Framework:** Ministry-based in theory, but Grameen Shakti's off-grid renewable nature means little direct oversight
- ❖ **Trends:** With major assistance from USAID (\$200Mn), the Bangladeshi government established the Rural Electrification Board, a semi-autonomous agency using rural electricity cooperatives for service delivery. However, penetration into the poorest rural locations has been proceeding at a slower pace, hence renewable energy programs such as Grameen Shakti, have made significant inroads for coverage in the poorest areas.

## **Finance and Risk Structure**

Grameen Shakti was financed with \$0.8Mn in seed capital from Grameen Bank in 1996. USAID later provided a \$4Mn commitment for outreach programs. Other major donors include the IFC (Solar Project), E & Co. (Solar Project), Strichting Gilles (Solar Project), Grameen Trust (Solar Project & Wind Project), Grameen Fund (Solar Project & Wind Project), SIDA/AIT (Research Project), USAID (Solar Project & Wind Project). GS' primary risk is credit risk on PV systems sold. Similar to the Grameen Bank from which it was modeled, GS mitigates this through the pooling of responsibility at a community level. In addition, service technicians who provide the free post-sale support, often collect on the monthly payments of purchasers. Most importantly, GS reduces defaults by helping the purchasers increase income generation through PV system utilized small business development.

### **Finance and Risk Structure**

- ❖ **Total program cost:** \$0.8Mn
- ❖ **Equity participants:** GS is a non-profit
- ❖ **Debt participants:** Grameen Bank (\$0.8Mn)
- ❖ **Other:** USAID (\$4Mn) commitment for outreach programs (2000); World Bank concessional loan.
- ❖ **Government/Private ownership:** 0%/100%
- ❖ **Foreign/Domestic Ratio per Solar Home System:** 0%/100%
- ❖ **Government/MDB guarantee:** None
- ❖ **Financial Risk Structure:** Utility Electrification
- ❖ **Financial Closure Date:** April 2001

## **Key Structure and Success Factors**

Grameen Shakti's dedication to grassroots empowerment through energy access has positively impacted the local communities in small but significant ways. For example, through extended lighting hours and electricity availability, children have greater access to education including computer use. Shop owners can work longer and women feel safer at night. Furthermore, the income generation opportunities of working as a "micro-utility" have fostered entrepreneurship in the forms of reselling electricity to other users. Finally, the training Grameen Shakti provides to SHS service technicians has increased local employment. Nancy Wimmer, at the June 2002 World Renewable Energy Policy & Strategy Forum, identified a number of success factors that have kept the program growing:

- ❖ **Strong government support for private sector participation:** Acknowledging the budget constraints to extend electricity access to the rural communities, the GOB has established renewable electricity support agencies and structured a series of incentives to encourage private participation in the "micro-utility" industry. Most of all, it has remained fairly hands-off and opened the market for energy providers to the off-grid communities.
- ❖ **Dedicated customer understanding:** "Grameen Shakti focuses on Solar Home Systems in un-electrified areas, where the demand for energy is high. Building on the village marketing expertise of the Grameen Bank, it concentrates on fully understanding local customer attitudes and motivation, as well as attitudes toward debt, ownership, and property. Customer needs drive product solutions and Shakti adapts and packages SHS according to customer demand, e.g. light for their school children to study at night, power for heating a soldering iron in a radio repair shop, power for extended business hours in local bazaars. Shakti also seeks the involvement of local officials and village leaders in the community at an early stage, because when teachers, government officials and landlords invest in solar, it creates trust in Shakti and acceptance of a new technology."

- ❖ **Continual process improvement:** Critical to Shakti's success are two processes: (1) The recruitment and training of local staff to maintain and service the SHS and; (2) Creating customer awareness and education. The key is not just to supply systems, but also to build a commercial enterprise that will service the solar systems over decades – as well as educate the customers in their maintenance. In the beginning Shakti had to rely on technicians who came from the cities to the villages. But city experts were not only expensive, they lacked 'the feeling' for people in rural areas. It made much more sense for Shakti to create jobs and local markets for people who will serve and listen to the customer. Since Shakti began in 1996, it has already trained 3000 customers and 700 local technicians. The process of creating acceptance for a new and expensive technology is a major challenge, and it took time and energy to develop an effective marketing strategy. Shakti engineers held village demonstration meetings, distributed flyers and brochures to explain SHS benefits, advertised in newspapers and went from door to door to inform potential customers. Unit Offices were established in the villages with staff to help market, install, and maintain the solar systems. Even now after having sold 11,000 SHS, Shakti remains close to the market. What have been the main consumer complaints of grid electricity? "The grid is unreliable, the generators often need repair, and there is no service." All the more reason for Shakti to ensure service on the SHS. What are the main obstacles to market development? High up-front costs, e.g. \$438 to buy a 50 Wp SHS. This created an ongoing process 'outside' of the villages: Shakti looked for ways to reduce the cost of the SHS and received funding from the Asian Institute of Technology to produce all SHS components except the battery and solar panel. Shakti now has a Production Unit to locally produce these components. The batteries are now supplied by a local manufacturer, Rahimafrooz.
- ❖ **Flexible financing:** The SHS remains expensive for villagers in rural Bangladesh. Shakti's marketing success is based on customer ownership but the high upfront costs of a SHS remained the major barrier to market expansion. Building again on Grameen Bank experience, Shakti began experimenting with credit models for SHS owners. In the beginning it demanded 50% of the SHS price for a down payment, the remaining 50% to be paid over 6 months in 6 equal monthly installments. This was still too much money to repay in such a short time. But Shakti did not have the financial reserves to finance both solar market development and long-term customer repayment. In 1998 Shakti received a concessional loan from the World Bank (International Finance Corporation/GEF) to offer improved credit terms to its customers. Shakti reduced down payments to 25% of SHS cost and extended the repayment period to two and later three years. As a result Shakti sales soared to 2000 SHS by February 2000, and 9000 by October 2002. Shakti also began experimenting with PV hybrid systems and fee for service models in Microenterprise Zones – and again saw evidence that micro entrepreneurs were willing to pay for reliable energy.
- ❖ **Vision of a better life:** Easy customer financing is one way to boost sales, but this did not increase customer incomes. How can people earn more money with a solar system? Shakti encourages income-generating applications, e.g. a multi-utility shop at the local bazaar, where a shop owner rents a few of his solar powered lamps to neighboring shops. But the most promising application are communication technologies: Shakti now sells a solar system complete with mobile phones, and its buyer provides telephone service for a fee to the surrounding villages. Shakti has also begun experimenting with computer learning centers and has plans to establish Internet Kiosks in larger villages."

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## **PRONAI-Light Utility Electrification Initiative**

### **Project Description**

In 1997 Rio LIGHT, the electric utility serving most of the population of Rio de Janeiro State, including the metropolitan area of Rio de Janeiro City (RJ), in Brazil, launched a major campaign, called PRONAI or Program for Normalization of Informal Areas, which lasted until 2002, over which time 250,000 households were either regularized or connected for the first time. PRONAI's goal was to provide safe, legal power connections in the city's favelas (slums) and other low-income communities in a way that would also permit customer billing. The approach to accomplish this goal was three-pronged: 1) improving the quality of service and reducing associated safety hazards through upgrading networks and connections, 2) making formal grid connection and legal purchase of electricity affordable and desirable through subsidies and financing, and 3) improving the company's image and ability to operate in slum communities.

### **Country Summary: Brazil**

Possessing large and well-developed agricultural, mining, manufacturing, and service sectors, Brazil's economy outweighs that of all other South American countries and is expanding its presence in world markets. The maintenance of large current account deficits via capital account surpluses became problematic as investors became more risk averse to emerging markets as a consequence of the Asian financial crisis in 1997 and the Russian bond default in August 1998. After crafting a fiscal adjustment program and pledging progress on structural reform, Brazil received a \$41.5 billion IMF-led international support program in November 1998. In January 1999, the Brazilian Central Bank announced that the real would no longer be pegged to the US dollar. The consequent devaluation helped moderate the downturn in economic growth in 1999, and the country posted moderate GDP growth in 2000. Economic growth slowed considerably in 2001-03 - to less than 2% - because of a slowdown in major markets and the hiking of interest rates by the Central Bank to combat inflationary pressures. New president DA SILVA, who took office 1 January 2003, has given priority to reforming the complex tax code, trimming the overblown civil service pension system, and continuing the fight against inflation.

#### **Country Summary: Brazil**

- ❖ **Government:** Federative Republic
- ❖ **Country Risk Rating:** 42.1/100 (2003)
- ❖ **Transparency Intl Rating:** 3.9/10 (2003)
- ❖ **Population:** 182Mn
- ❖ **Economic Growth:** 1% (2002)
- ❖ **Per Capita GDP (PPP):** \$7600
- ❖ **Electricity Coverage:** 92% (2002)

### **Industry Power and Governance Structure**

Privatization of many electric companies began in Brazil in the mid-1990s. LIGHT was the second electric utility (after ESCELSA in Espirito Santo) to be formally reorganized (unbundled G-T-D assets) and privatized, in advance of the structural and regulatory changes that created the present sector structure. Although virtually all of the privatized distribution concessionaires had contractual obligations to serve all customers in the new industry rules, there was no enforcement and little oversight of this area, pending the enactment of a new sector law (no. 10.438) approved in 2002, formally mandating 100% electricity coverage in all service areas by dates to be established individually for each utility. Thus, immediately following privatization initiatives,

utilities' motivation for undertaking slum upgrading/electrification/regularization programs mainly came from a desire to reduce non-technical losses and expand the number of (paying) customers. More recently, a cap on losses (actually a limit on recovery of losses through ratepayers of 90.7 % of actual losses) was instituted, providing further motivation to reduce losses.

In 1996, the electricity regulatory agency, Agencia Nacional de Energia Eletrica or ANEEL, was created by law (only implemented at the end of 1998), inter alia, to oversee electricity prices, the implementation of concession contracts and the quality of customer service, as well as to promote competitive markets and establish technical standards. During the late 1990s, the government continued to permit use of the RGR – a general fund financed by a fee on all electricity customers for subsidizing electrification in urban as well as rural areas and rates for very low-income consumers. In addition, the concessionaire contracts also contained a clause to establish an efficiency investment fund for the utility to improve the demand-side efficiency of their operations area. The investment resources for this program were raised through a 1% levy on the utility's gross receipts. The privatized electricity distribution companies initially were permitted to use some of these funds to undertake slum electrification initiatives – e.g., in COELBA's utility program launched in Bahia and the Eletropaulo initiative in Sao Paulo, as well as the initial LIGHT PRONAI model in RJ – with ex post facto review by ANEEL of the utility expenditures on such projects. Since 2002, however, it appears that only utilities in the Northeast and North, which are the poorest regions of Brazil, are still allowed to use financial resources from the efficiency fund for urban electrification, and this is limited to 50% of the fund's total resources, with the other half of the 1% going to R&D sector initiatives.

A number of changes are being made in the policy for and regulation of the electricity sector in Brazil since the election of President Lula in 2002, with far greater emphasis on quality electricity service for all and inclusion of marginalized economic groups, through direct and indirect subsidy programs and stronger enforcement of contractual and legal obligations to provide service and emphasis on acts of social responsibility by corporations and citizens. In addition, the enactment of Law No. 10.438 is likely to significantly affect slum (and other) electrification efforts, as it will oblige electricity distribution companies to achieve 100% electrification in their respective service area by a certain date (established for each utility), including for slum areas. The future form and scope of ongoing slum electrification programs in Brazil, however, are

#### **Industry Power and Governance Structure**

- ❖ **Power Market Model:** Wholesale
- ❖ **Level of Competition:** Wholesale - Competition is allowed in both the generation and distribution markets (for very large consumers)
- ❖ **Total generation capacity:** 54GW
- ❖ **Regulatory Framework:** Independent-Contracted – The Agencia Nacional de Energia Eletrica (ANEEL) has served as regulator since 1996. It oversees price regulation, competitor behavior, concessions as well as technical standards but not operations.
- ❖ **Trends:** The government's original 1990's power privatization plan slowed down due to various economic obstacles including the electricity crisis of 2001. With the change in president great uncertainty overshadows the sector as major changes are being discussed regarding electricity sector liberalization. As a result Brazil's July 2002 S&P downgrading from B+ from BB- has made it more difficult to attract foreign capital due to this uncertainty.

a matter of concern to utilities that have made considerable investments in this area, pending the definition of the new rules for implementing this law. For example, the amount and source of financing, the ability to earn a return on or at least recover the capital investment, the extent and enforceability of the utility's obligations to provide a certain quality level of service and customer options, among other factors, will affect the timeframe, number, manner and geographical/socio-economic basis for extending electricity services to all households and other consumers, and the overall sustainability of these efforts. Furthermore, the resources of a new fund, known as the CDE fund, established in 2002 to replace the existing RGR fund, are being funneled specifically for urban and rural electrification purposes, as well as for low-income consumer subsidies. With these changes in perspectives and approaches, utilities in the richer South and Southeast regions will probably have to finance future slum connection programs through internal investment funds. Utilities in the North and Northeast regions of the country will likely be able to continue using the internal energy efficiency fund as well as the cited national funds for electrification programs.

After a prolonged drought, rationing was introduced in 2001 resulting in a very significant and sustained reduction in electricity consumption (on the order of 20%, the goal of the rationing). During this period, emergency regulatory actions imposed on the electricity distributors' prices considerably reduced or eliminated profits in the sector – though some regulatory decisions and other governmental actions were taken to restore the financial health of the most critically affected utilities. The crisis not only achieved an overall reduction in consumer demand but also a shift of major or sensitive commercial and industrial consumers to self-generating modes. The financial impacts from the crisis, post-crisis sustained conservation, regulatory price caps, and the low investment attraction (return on investment) in low-income areas contributed to the scaling back or elimination of many slum electrification programs such as PRONAI during the 2002-2003 period.

### **Financing and Risk Summary**

The total cost reported for the LIGHT program is R\$ 52.8 Mn (or around \$20 Mn at an exchange rate of 2.5 R to \$US 1). LIGHT maintains that it used its own company resources including resources from its 1% efficiency fund, to finance the PRONAI program. The utility had simultaneously administered funds proceeding from a previous, large World Bank loan (\$200 Mn) generally destined for system upgrades throughout LIGHT's service territory. The funds used for PRONAI were for distribution system upgrades, connections and meters as well as "soft" investments, such as program marketing and "roll out." For example, LIGHT invested R\$10 Mn to lay 28 km of low tension wires, raise 600 utility poles, erect enclosures for transformers, install 24,000 meters, build an underground distribution system and provide 28 km of public lighting over a two-year (2000-2002) period. LIGHT also provided non-recourse financing (over 2 years in 24 payments to be paid along with the monthly utility bill) from these funds to the program participants to improve affordability of the "low-income" (low amperage) meters installed, taking a considerable risk that these consumers would indeed pay their utility bills. To improve participation, LIGHT offered an exemption from prior fraud or theft if the client became normalized. LIGHT also offered tariff "discounts" for customers registered as low income, residential, with mono-phase service and average consumption of 140 kWh/month or less.

PRONAI was an important pilot with an innovative approach for Brazil. It was estimated to take about five years to generate a profit once the program began operating in a neighborhood. However, from 2001 on, factors beyond the control of the program (the energy crisis and ensuing changes in government rules with respect to rationing, recovery of economic losses, lower demand and vacillating availability of energy and energy purchase prices as a result of the drought and economic downturn and investments in new generating units) resulted in increasingly negative results in slum electrification programs. The utility’s ability to prioritize investments for maintaining or expanding them was greatly diminished as other issues more critical to the utility’s financial condition and obligations to its shareholders took precedence. As an outcome, where the program was not maintained with an active LIGHT presence and continuing investments, the participating communities fell back on practices leading to either non-payment of their energy bill and ultimate service disconnection, or to theft of power from the system. Nevertheless, before these “force majeure” events, five out of six communities in the program that were studied in depth for the financial implications of the program showed a positive return on investment for the electric company.

<b><u>Finance and Risk Structure</u></b>	
❖ <b>Total cost:</b> \$200Mn of which \$20 Mn specifically for PRONAI	❖ Government/Private ownership: 0%/100%
❖ <b>Equity participants:</b> Balance sheet financing	❖ Foreign/domestic Ratio: 100%/0%
❖ <b>Debt participants:</b> Citibank N.A. loan (\$200Mn)	❖ Government/MDB guarantee: None
❖ <b>Debt/equity ratio:</b> NA	❖ Financial Risk Structure: Utility Electrification
❖ <b>Other:</b> MIGA and IDB together provided \$200Mn in political risk insurance on the commercial loan	❖ Financial Closure Date: 2000/2001

**Key Success Factors**

LIGHT’s PRONAI received the “Prize for Social Responsibility” in 2001 and 2003. In the four to five years of its activity, the PRONAI program regularized 265,000 homes and implemented metered service in 251 different informal areas (communities) in RJ. In the two years that the program operated in RJ’s largest favela, Rocinha, losses were reduced from 76% to 40%. Major upgrades in the distribution systems serving the favelas were accomplished, and public lighting was provided in many areas. Some key indicators of the areas where the program was clearly successful are as follows:

- ❖ **Making Electricity and Electrification More Affordable and Easier to Pay:** The average income of families living in the favelas may vary somewhat, but a standard range for a typical family of 3 to 4 members would be R\$200 or around US\$65-80 per month.<sup>1</sup> So, the residential slum customer’s ability to pay for connection fees and ultimately for actual energy consumption was – and remains – a major concern. Lower tariffs for low usage customers,

<sup>1</sup> Note: this would not include typical non-monetary adders such as food baskets, or account for transportation allowance and non-documented sources of income, which could easily add a value of another R\$150 per person working outside the home.

financing for customer connection costs as well as a subsidy for connection (meter) contributed to the attractiveness of the program for the target population. For low-income residents, the connection cost was lowered to about R\$30, providing a 42 percent discount over the regular charge. LIGHT had a microfinance program that allowed residents to make 24 payments of R\$3 to cover the expense. PRONAI wiped the slate clean – i.e., did not press charges or try to collect fines or compensation - for participating customers' prior illegal connections. Additionally, the donation of 328,560 CFLs (via an ANEEL-sponsored energy efficiency program) in 2000 and 2001 lowered the level of electricity consumption for participants. Ease of payment was also improved with customer service offices added in many areas more convenient to community circulation patterns. However, higher tariffs responding to increased generation and service costs, as well as 50+ % inflation over the last 5 years, have offset the gains achieved by PRONAI by eroding the customer's ability to pay and the company's ability to absorb the high degree of non-technical losses. PRONAI included training for program participants in the efficient use of energy and reading the meter to understand their consumption patterns, as well as the utility bill, and provided other information and general support to respond to service complaints.

- ❖ **Easing the transition to legal electrification and improving local participation:** After the company installed or upgraded the distribution network in an area, each resident was to be connected to the service and a meter installed. A major problem for LIGHT initially was that its workers could not safely enter the favelas because of gang activity and general resistance to the inevitable disconnection of illegal tapping of nearby electricity lines. As an antidote, LIGHT worked with local community organizations, some public agencies active in the area, and non-government organizations to explain and promote the program, and train local community members to serve as program representatives. Over 200 local students drawn from the communities and usually in their teens were trained to be LIGHT Agents (always in a casual but recognizable uniform of T-shirts and baseball caps with logos), to provide a community interface between the company and the slum residents. The agents reinforced the message by going door-to-door and talking with each family. The agents also made presentations and held community meetings, in addition to taking stock of the current situation, which was important in determining what steps the company needed to take. LIGHT worked closely with other activities aligned with its goals, including those sponsored by the City of Rio Janeiro, local community organizations and slumlords, and the industry association of Rio, FIRJAN. While tenure was not a particular issue in terms of program implementation, the program documented proof of residence for favela residents, Another major benefit to participants was that the installation of meters and customer billing established a legal address and proof of residence, which in turn enabled them to get telephone lines installed. The program also worked hand-in-hand with local non-governmental organizations (NGOs) to make sure people understood what the effort entailed and to get their buy-in and to help them access special lines of credit and to participate in diverse social programs, to fill out forms or obtain information through the internet at its local service branches, and to participate in other training or organizational support activities sponsored by the utility.
- ❖ **Making electricity harder to steal and usage easier to monitor:** Almost half of LIGHT's non-technical losses are incurred in favelas and low-income neighborhoods, amounting to over R\$ 100 Mn in 12 months. The primary action taken by PRONAI regarding theft was to provide more theft proof meter boxes located in visible places. Adding NGOs to the scheme and having a community face was a substantial damper on recidivism experienced after the

program was implemented in an area. For example for a community with 75% non-technical losses and/or non-payment prior to the program, losses/non-payment dropped to 42% immediately after implementation but then climbed back to 62% without a continuing presence in the community. By adding back community presence, LIGHT found it could bring losses/non-payment back down to around 50% despite harsh economic conditions during this period (and of this only 5% was reported to be from theft). Maintenance and surveillance of the system within the community is considered key to keeping theft down.

- ❖ ***Adding Value to the Community:*** LIGHT (and its NGO partners) made substantial investments in each community in addition to the electrification, regularization, upgrading of power quality/availability. The agents have been used along with utility personnel to bring about social benefits to community residents: i.e., to document important data about the areas and to profile the customers. Financial support was provided to community projects and events, information courses, professional training and donations of computers, furniture, school materials, and toys to appropriate social organizations. Furthermore, PRONAI definitely improved safety conditions and reduced electrical hazards in the slum communities by replacing the illegal wiring and applying modern and correct practices according to standard electrical codes. The quality of the energy provided to customers was also considered far superior and satisfactory to that supplied under haphazard and illegal connections, and enabled more appliances to be utilized by managing the household's energy loads according to the training on energy conservation and usage provided by LIGHT.

PRONAI started with a market that was characterized by rampant theft of power and non-payment for the small percentage legally connected to LIGHT. Because of the “free” electricity, residents had high levels of appliances and a corresponding relatively high usage that would be unsustainable if full cost would be paid. The PRONAI program was considered to be a success in terms of its “breaking into” the slums where utilities generally feared to tread, in the number of homes electrified (connected or regularized), and for its ability to at least break even in many areas. However, the economic duress caused by drought-induced energy crises, economic downturn, etc. caused its cancellation and replacement by an evolving new approach. No matter what approach is next tried, it is clear to LIGHT that it alone cannot resolve enough of the slum areas' social and economic problems to bring the optimal benefits and development impacts that electrification would normally stimulate. Therefore, LIGHT plans to work more closely in the immediate future with other key programmatic and local development partners and activities aligned with its goals. LIGHT's 2004 electrification plan, involving an integrated approach with the state, local governments, the RF Federation of Industries (FIRJAN), NGOs, universities and other partners, shows a continued commitment to finding an effective way of electrifying slums in the context of overall economic and social development promotion and would mirror the “lessons learned” in its earlier PRONAI approach.

The primary concern is recidivism as reflected in the still high default/theft rates (around 60% and reportedly even higher in some areas). The LIGHT agents have been maintained in a limited number of areas where LIGHT has determined to maintain its investment and interests, through a pro-active approach and in combination with various other company programs, particularly in the area of energy efficiency and conservation. Introducing greater flexibility in payment terms for utility bills is also being considered to make payment reflect the realities of low-income wage earners' situations (e.g., sporadic income). Nevertheless, a final challenge is the continuing growth within slum areas. Every year another 2000 to 2500 households move into LIGHT's ser-

vice territory and require connections, and the growth rate in slums is four times greater than for the rest of the population of the city of RJ, constantly eroding the proportion of paying vs. non-paying customers. LIGHT's resources to make these connections are being stretched and indeed the company is not keeping up with them. Prepayment meters are being considered as an option to help poor consumers stay within their means.

**Sources**

- (1) Discussions with and power point presentations of LIGHT during visit by US AID slum electrification team on 12/15/03.
- (2) Maia, Suzanne, "Innovative Approaches to Slum Electrification, A Case Study Brazil: COELBA Project Community Agent" (prepared for US AID, primarily highlighting the COELBA program in Bahia largely copying the LIGHT PRONAI approach with added notes regarding PRONAI visited in December 2003) AEAI, Washington, DC, as yet unpublished draft, January, 2004.
- (3) Overviews of the project on MIGA website.

## **Meralco-DAEP (Urban) Electrification Initiative**

### **Project Description**

In 1990-1992, with the assistance of a loan from Japan Overseas Development Authority, the Philippine government (President's Commission on Urban Poor or PCUP and the National Electrification Agency or NEA) and the Manila Electric Company (MERALCO) jointly began implementation of the "Depressed Areas Electrification Program" (DAEP), which significantly expanded legal electricity connections and lowered costs, both for the connections and for electricity usage, in many low income urban settlements over a period of 10 years. By encouraging legalized electrification and bypassing illegal operators, effective tariffs often dropped from roughly \$0.09/Kwh to \$0.045/Kwh. Over 300,000 households were "regularized" or connected to electricity for the first time in. The project involved an innovative design for providing individual meters to households without having to secure legal right-of-way (a meter wall placed at the edge of the slum), identification by PCUP of 229 separate areas to be served in Metro Manila, waiving the largest cost of connection (extending distribution lines to the DAEP meter walls), a very low connection deposit, and loans to households for internal wiring repayable in 60 months. Individual households were responsible for extending the electric line from the meter to the household at their own expense. The program design adopted improved upon an earlier, failed approach (called mother meter) where a housing association collected fees from sub-metered households who were members of the association and paid for consumption through a single meter on a pole in the middle of the households in the slum area. A parallel program with loan funds from the same source and at the same time was launched for rural electrification but was administered and implemented separately.

### **Country Summary: Philippines**

In 1998, the Philippine economy - a mixture of agriculture, light industry, and supporting services - deteriorated as a result of spillover from the Asian financial crisis and poor weather conditions. Growth fell to 0.6% in 1998 from 5% in 1997, but recovered to about 3.3% in 1999, 4.5% in 2000, and 4.5% in 2001. In 2002, the Philippines recorded GDP growth of 4.4% but also incurred a record budget deficit. As a result, the Philippines is burdened with a public sector debt equal to more than 100% of GDP. Growth eased to 3.8% in 2003. The government has promised economic reforms including going forward with privatization, reforming the tax system, and promoting additional trade integration within its region. Considerable drive is required to update the educational system and the road network.

#### **Country Summary: Philippines**

- ❖ **Government:** Republic
- ❖ **Country Risk Rating:** 25.9/100 (1990)
- ❖ **Transparency Intl Rating:** 2.5/10 (2003)
- ❖ **Population:** 85.0Mn (2002)
- ❖ **Economic Growth:** 4.6% (2002)
- ❖ **Per Capita GDP (PPP):** \$4200 (2002)
- ❖ **Electricity Coverage:** 90% (Est. 2003)

### **Industry Power and Governance Structure**

Since founding in 1919, MERALCO went through various stages and types of ownership – private, internationally owned then private, locally owned, then national government owned and finally back in private, Philippine hands – at the apparent whim of the government in power. The last ownership change occurred on the day after the 1986 "EDSA" People's Power revolution

ousting Marcos. Under Gloria Aquino, the government launched a number of political and institutional changes including in the electric power sector. Private ownership<sup>2</sup> and different government priorities (and public support) provided the motivation to “take back” and provide quality service to very low-income slum inhabitants. In 2001, the Philippines power reform act was enacted and an energy plan for 1994-2010 was created. An independent regulatory body was established in 2000 following other changes in the basic architecture of the sector.

There are 27 private and municipal distribution companies and 119 rural electric cooperatives. MERALCO is the largest of the private companies (serving 59% of the country’s electric load) and serves an area with a population of over 10.7Mn at the beginning of the program (representing 1.43Mn households or HH whereas in 2003 there were 2.21Mn HH). Electricity rates in Philippines have been supported by subsidy schemes since 1965. At that time the first 60 kWh of monthly consumption was covered for all residential customers. Subsidized consumption was later increased to 120 kWh in 1972 and 200 kWh in 1974. However, in 1985, a subsidy reduction program was commenced for a six-year period, during which time the DAEP program was initiated. The most recent subsidy scheme is a lifeline rate (50% reduction) available to consumers using up to but not more than 50 kWh per month with declining subsidy up to 100 kWh, after which there is no subsidy. The cost of this lifeline rate is borne by industrial, commercial and other residential payments.

Additional (mid-program) motivation for MERALCO was added through Philippine Republic Act # 7832 of 1994 penalizing pilferage of electricity. This Act not only made it explicitly illegal to steal electricity but also allowed for criminal penalties and fines, revised fees for reconnection, and established a declining cap (from 14 ½ % to 9 ½ % over four years) on the recoverable rate for system losses for private utilities. The Act also required the electric companies to undertake a vigorous public information campaign and incorporate anti-pilferage language into contracts for electrical service.

**Industry Power and Governance Structure**

- ❖ **Power Market Model:** Wholesale Competition
- ❖ **Level of Competition:** Wholesale
- ❖ **Total generation capacity:** 13.4GW
- ❖ **Regulatory Framework:** Independent
- ❖ **Trends:** The 2001 Electric Power Industry Reform Act established guidelines for the creation of electricity governing bodies such as the Power Sector Asset and Liabilities Management Corp. (PSALM), the new Energy Regulatory Commission (ERC), Wholesale Electricity Spot Market (WESM), etc. The sector goals include the creation of several gencos and a private transmission company, the unbundling of electricity rates, the opening of high voltage transmission lines for discos and large consumers, and finally, the open access of disco lines for competitive consumers. Presently the government is concentrating on obtaining private investors for the transmission company.

<sup>2</sup> State shares now held in MERALCO are approximately 20%.

## **Financing and Risk Summary**

The total project cost was Y 6, 333Mn or approximately \$50Mn in 1988. The ODA loan, for Y 5066 Mn or roughly \$40Mn, was arranged through Japanese Bank for International Cooperation (JBIC). The term of the loan was 30 years at a concessional rate of 2.7% with a pass on rate to MERALCO of approximately 6%. MERALCO's counterpart was 20% of total project cost or almost \$10 Mn<sup>3</sup>. The 30-year loan (with 10 year grace period on principal) is still being repaid. The government recipient for the JBIC lending was the NEA and funds were channeled through the Philippines National Bank (PNB) with MERALCO effectively acting as the Executing Agency. The funds for DAEP financed the purchase of cables, wires, transformers and related labor costs for installation as well as the house wiring loans<sup>4</sup>. The cost breakdown was as follows: around 49% for meters, 18-19% for transformer materials and poles. Regarding the origin of the materials acquired with the loan funds, almost 50% was considered "local content." This became a key financial "sticking point" as the lender was not keen to have such a large portion of the loan locally acquired. As a result the counterpart funding was increased to the 25% finally agreed.

The greatest risk to the project was financial viability given the low consumption rates of the target households, the average cost per household for legally providing electric service, and theft of power. The program could never be justified on the basis of its return from kWh sales, nor even when considering system monetary benefits such as greater voltage stability and reliability. Sales to customers in the depressed areas represented around 1.4% of total system sales, and therefore implementing the program was judged NOT to be a threat to overall MERALCO financial viability (at that time). The apparent risk of non-payment apparently did not occur, however. The company still considers its DAEP approach to serving the target low-income, low-consumption population unprofitable and is considering ways to reduce costs and continue providing service as needed to the small number of remaining non-electrified/regularized HH (around 70,000) and the continued, albeit slower in-migration of rural peoples.

Various analysts made a range of estimates on the economic benefits of the program to the recipients. These ranged from 300/400 P to 960 P per month freed up as a result of the avoided cost of using colorum operators. In addition each household received a benefit somewhere between 4700 P and 15790 P in the electrification connection costs written off by MERALCO instead of being charged to them<sup>5</sup>.

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<sup>3</sup> The team heard a number of different figures for the cost of the program, largely since different currencies were being quoted. The source (Kikuchi) provided a table of conversion between \$, Y, and PhP over the course of the program; so we used them to derive the figures used here.

<sup>4</sup> House wiring was estimated at project inception to be 52% of total cost of the project.

<sup>5</sup> To put these numbers in perspective, note that "Rentals" to landlords for use of space averages from 750 to 2000 P per month.

**Finance and Risk Structure**

- ❖ **Total cost:** \$50Mn
- ❖ **Equity participants:** Balance sheet financing
- ❖ **Debt participants:** Balance sheet financing
- ❖ **Debt/equity ratio:** NA
- ❖ **Other:** Japan Overseas Economic Cooperation Fund ODA loan: (\$40Mn)
- ❖ **Government/Private ownership:** 80%/20%
- ❖ **Foreign/domestic Ratio:** 75%/25%
- ❖ **Government/MDB guarantee:** None
- ❖ **Financial Risk Structure:** Utility Electrification
- ❖ **Financial Closure Date:** July 1991
- ❖ **“Onlending” to new customers for house wiring:** \$20Mn

**Key Structure and Success Factors**

Through DAEP, MERALCO sought to regularize, electrify and rewire large slum areas to stem the losses coming from non-payment and theft of power. The Philippine government was “in the mood” for doing more for the poor, especially important during the design and start-up phases. However, MERALCO analysis showed that the program would not breakeven and sought to reduce costs through “concessionary” (low interest) bilateral lending (Japan/Philippines). MERALCO’s practical approach working through community representatives and other initiatives reduced program transaction costs and simple technical solutions also brought down the costs. From MERALCO’s own account, the number of HH electrified during the program was over 300,000 with the remaining slum HH maybe as low as 70,000, all the while keeping up with a 6% overall growth in new HH connections outside of the slums. The program far exceeded its goal of installation of house wiring facilities (by around 30% or 82,000 HH) in part because of lower cost of loans when householders chose to use alternative installers.

- ❖ **Aggressive Strategy on Non-technical Loss and Cost Reduction:** Non-technical losses (“theft”) from all sectors in the years prior to the DAEP program ranged over 20% and as high as 40%. Theft of power in the target areas amounted to around 3.1% of the total 20.8% total losses in 1986. Illegal service providers (called “colorum” operators) were operating freely within the depressed areas, and some households were tapping directly into MERALCO’s lines. MERALCO estimated that around PhP3B (or \$146 Mn in 1988) was being paid to colorum operators (about twice what the same service would have cost if taken from MERALCO). While the entire MERALCO service territory was 92% electrified in 1985, the average in the depressed areas was more like 70% with some as low as 25% (even with colorum operators). System losses had dropped from 20% to 12% by end of the program. Transformer overloads were virtually eliminated in these areas.
- ❖ **Lowering Cost and Making Payment Easier:** The substantial subsidy provided to make connection to the MERALCO system more affordable and the availability of loans payable over 5 years were key in making the DAEP scheme work.
- ❖ **Dealing Effectively with Right of Way/Land Tenure Barriers:** The areas to be covered by the program comprised 229 previously designated Areas for Priority Development (APD)<sup>6</sup>

<sup>6</sup> 244 APDs were designated in 1979 by the Marcos Regime, of which 15 were set aside for purposes other than residential housing, leaving the 229 areas selected by PCUP to be electrified legally by DAEP.

covering around 5% of the Metro Manila area. Of these, almost 74% were privately owned, almost 13% were government-owned and another 13% were of undetermined ownership. MERALCO encouraged communities to work with the NHA's Community Mortgage Program that allows communities to purchase land en masse from private landowners with government assistance. Locating the service drop on the perimeter of the depressed areas circumvented obtaining ROW needed to electrify the areas. Linking efforts with local and national government agencies working on land tenure solutions in slum upgrade projects. Obtaining approval from landowners who might not want to give in to the inevitable forfeiture of their land – if they could even be found – is, however, a continuing problem.

- ❖ **Dealing with the Illegal Service Provider:** Any program designed to legally electrify these areas would have to deal with an already entrenched colorum- and self-service approach. DAEP basically undercut Colorum operators on price; although there was some initial (violent) resistance.
- ❖ **Adding Value for the Community:** Making the Slums Safer through Community Participation - Slums are physically dangerous, even for providers of public services that people feel they deserve “for free.” The DAEP design took this into account and found a reasonable solution: using PCUP, NGOs and local organizations as trusted intermediaries and “socializers” (helping to explain the program and gain support for it within the community and organize the initial HH associations). PCUP and MERALCO worked with the 12 cities and 99 municipalities and hundreds of Barangays in carrying out the program. The slums were also significantly safer with the “public” lighting provided by municipalities or associations and/or merchants. Finally, safe indoor wiring was supplied in 95% of the participating households although most of these, 95%, chose to have wiring done by non- MERALCO suppliers, making the loan funds go further as mentioned above.
- ❖ **Improving sustainability by community involvement and investment in infrastructure:** It was necessary to organize the work as a way of ensuring that sufficient numbers within an area would join to make the investment in infrastructure worthwhile. Community investment also included taking care of the construction of the metering wall, (i.e., installation of meter bases, safety switch and load-side wires from the metering wall to their houses<sup>7</sup>.) Fires are a greater threat in areas where candles/kerosene lamps are still being used or there is a lot of faulty wiring<sup>8</sup>.
- ❖ **Maintaining Flexibility and Willingness to Overcome Barriers:** Staff at MERALCO was judged to have a deep understanding of the reasoning and sensibilities of the poor groups to be served. MERALCO demonstrated willingness to work with or overcome whatever activity was going on, e.g., working in parallel with NHA slum upgrading efforts. Also, reselling of electricity (often via sub-metering) was condoned as a way around problems post DAEP with disconnection due to non-payment of super high bills due to theft (neighbor to neighbor). Another example is how MERALCO encouraged communities to work with the Community

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<sup>7</sup> This lowered the cost of the program, and sometimes mayors/barangays would provide some funds for this part (but the cost was not considered to be counterpart for the loan).

<sup>8</sup> As I write, the news of a fire in Manila in the famous slum contiguous to the landfill/dump is airing on CNN and is being attributed to a knocked over kerosene lamp leaving 25000 people homeless!

Mortgage Program that allows communities to purchase land en masse from private land-owners with government assistance. Before and during the program there was an ever changing background of policy on squatters and their rights: from ordering all squatters evicted (at one point in Marcos' regime) to the passage of the Urban Development and Housing Act requiring adequate relocation sites to be made available in the event of demolition. Several other (non-energy) institutional barriers affected the program design, including a split in institutional responsibility for squatters on private vs. public-held property.

While the subsidized program was terminated in 1999 when the loan funds were used up, each year a few households in slums are actually coming up with sufficient down payment to become individually electrified and the program is highly popular where it was implemented. The company expresses a desire to rework the DAEP approach to increase efficiency based on lessons learned in its first 10 years calls for concentrating on better technological solutions (under grounding, prepayment meters, and cable less susceptible to "flying" connections), working with government and NGO initiatives in slum upgrading on an as needed basis, and keeping up an aggressive attack on pilferage. Perhaps now is the time to act on some of these suggestions since MERALCO just won a rate increase and turned a profit after several years of net losses.

There are some remaining problems to address: increasing distance from service drop resulted in higher installation costs (longer wires) for the further away HH and under voltage. There is also the potential "black eye" from very unsightly and dangerous post meter wiring (spaghetti) too close to the ground and easy to tap over the long distances involved.

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## **Phambali Nombane Energy Electrification Initiative**

### **Project Description**

Phambili Nombane Energy (meaning Forward with Electricity, or PN Energy as it is now known, and hereafter PNE) was started in 1994 as a pilot project by the joint venture between Eskom, Electricite de France (EDF) and East Midlands Electricity of the UK<sup>9</sup>. The project's goals were to electrify the slums (hereafter, townships – the term used for marginalized urban populations in South Africa) in particular in Khayelitsha on the outskirts of Cape Town and formerly served by the municipality of Tygerberg (now a part of Unicity). It was considered a pilot because it aimed to test a new scheme for providing electricity to a population with a track record of non-payment for and/or theft of power consumed by a electricity provider that was not well received within the townships in part because its service to the area was formerly very poor. The scheme involved the following essential components: high quality and more convenient service in place of former low quality, unreliable service; effective technical means for reducing theft via “removing the ease of temptation” with service drops high on utility poles easily seen in driving through the area and for non-payment via prepayment meters; use of a separate community-based distribution company (i.e., PNE) as the interface between Eskom and the community; lower cost of connection (both through standardization of connection and house wiring with “ready boards” and subsidies) and easier payment terms; and high standards for business operation within PNE to improve profitability, including constant surveillance of consumption and physical structures to catch problems early and often. PNE's staff of 28 is mostly based in the Khayelitsha office and many employees come from or live in the township. The existing distribution system was fully upgraded, vendors of prepayment cards – and later codes to input to electronic keyboards on the ready boards – were set up within the community, and customer service hotlines and offices were provided. PNE is at least breaking even at the time of this writing. PNE's activities have migrated from an intensive electrification campaign to one more resembling a distribution company, largely because of the “saturation” of the market and slowdown in electrifying the remaining caused primarily by not getting the necessary “go-ahead” from municipalities where the settlements are located (in turn largely because the remainder is located in areas unlikely to be allowed to remain, e.g., road right of ways.)

### **Country Summary**

South Africa is a middle-income, emerging market with an abundant supply of natural resources; well-developed financial, legal, communications, energy, and transport sectors; a stock exchange that ranks among the 10 largest in the world; and a modern infrastructure supporting an efficient distribution of goods to major urban centers throughout the region. However, growth has not been strong enough to lower South Africa's high unemployment rate; and daunting economic problems

#### **Country Summary: South Africa**

- ❖ **Government:** Republic
- ❖ **Country Risk Rating:** 40.0/100 (1994)
- ❖ **Transparency Intl Rating:** 4.4/10 (2003)
- ❖ **Population:** 42.7Mn
- ❖ **Economic Growth:** 3% (2002)
- ❖ **Per Capita GDP (PPP):** \$10,000 (2002)
- ❖ **Electricity Coverage:** 80% (2002)

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<sup>9</sup> East Midlands was bought out around the Year 20000

remain from the apartheid era, especially poverty and lack of economic empowerment among the disadvantaged groups. High crime and HIV/AIDS infection rates also deter investment. South African economic policy is fiscally conservative, but pragmatic, focusing on targeting inflation and liberalizing trade as means to increase job growth and household income.

### **Industry Power and Governance Structure**

Eskom was originally set up as, and remains to this date, a publicly owned but fully corporatized company, primarily in the generation business, supplying not only South Africa but also neighboring countries. It is among the seven largest utilities in the world with a turnover in excess of R27 Bn in 2003<sup>10</sup>. It has a monopoly in the generation and transmission of electricity and in some distribution areas (as detailed below). Its sales account for 60% of total national energy sales. Eskom serves some very large customers (e.g., mining operations) directly. Only in 1994 did it venture into retail sales to respond to government goals to electrify 2 Mn households representing the vast majority of rural and poor urban consumers who did not yet have access to legal sources of electricity. As the municipalities have a constitutional authority and responsibility to provide electricity and other essential services within their jurisdictions, Eskom at first only took on retail service to the rural areas of South Africa that no municipalities serve. The municipalities purchase electricity from Eskom at wholesale rates. The move to serving an area located within a municipality was an aberration, but given its relative success, Eskom is helping to apply the same approach to other townships throughout South Africa. The National Electricity Regulator has jurisdiction over Eskom and decides questions such as tariff changes<sup>11</sup>. The government has recently launched a new requirement for municipalities to provide the first 50kWh free to qualifying very low-income households. Furthermore, a National Electrification Fund has been established recently with funds from the national budget under the Department of Energy Affairs. It is providing substantial funds to subsidize the cost of connection of formerly unconnected poor customers throughout South Africa and as a result is dictating to some degree the ways and means used by utilities to accomplish the subsidized electrification. Eskom is obliged to supply 'free' electricity, and on the same day as the election date was announced, agreed to supply this free basic service from 1 February 2004, to as yet undetermined areas until all areas have suitable infrastructure. Major changes in the entire organization of the electricity sector are ongoing. The structure being decided at this time involves setting up 8 regional electricity distribution companies to serve the entire country. Another initiative underway is to rationalize tariffs as they vary considerably from one service territory to another.

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<sup>10</sup> Exchange rates were highly volatile during this time, but taking an average rate of R7 per US\$, the turnover of Eskom in 2003 was on the order of \$US 4 Bn.

<sup>11</sup> Price increases for municipalities are also approved by NER but on a different timetable from Eskom.

### **Industry Power and Governance Structure**

- ❖ **Power Market Model:** Vertically-integrated
- ❖ **Level of Competition:** Entry level
- ❖ **Total generation capacity:** 43.1GW
- ❖ **Regulatory Framework:** Independent
- ❖ **Trends:** Eskom, the monopoly state utility, will be part of a power sector “managed liberalization” which include the following: (1) Eskom’s 24 power stations will be grouped into competing clusters; (2) Transmission will become independent; (3) Private sector involvement will be reconsidered after 2010; (4) Black economic empowerment companies will have a greater share in generation when up to 10% of the sector is set aside for empowerment programs; (4) IPPs will be licensed to encourage competition in generation.

### **Financing and Risk Summary**

In 1994 initial startup capital of 3M Rand (or less than \$500,000 at the time) was invested to set up and begin the electrification campaign.<sup>12</sup> These funds came equally from the three partners. The management structure of PN Energy now comprises a South African Managing Director and a Board of Directors consisting of 50% shareholders from Eskom Enterprises and 50% shareholders from EDF (after Midlands pulled out). PN Energy has 4 directorates - Operations, Finance, Training and Community Relations and Software and IT. Not only did EDF and Midlands provide start-up capital to the venture, but they also brought expertise in low-cost electrification and lent personnel to run the operation.

At present PNE says that it is breaking even or making some return after sharpening up its business model and dealing with problems associated with some program design components (see below, e.g., vendors), some recidivism (increase) in the amount of theft (non-technical losses). The greatest risks to the venture were the untried service model, the lack of trust within the community, the severely degraded state of the physical system at takeover, non-existent revenue management, the very high level of theft (80%) with very few consumers connected legally, and no data on consumption.<sup>13</sup> The greatest risk reduction was achieved by getting the community to accept 100% prepayment meters. While all of these risk factors were all dealt with during program design and startup, an additional risk has been recently added in the form of a national government requirement to provide the first 50 kWh free to qualifying households. There has been no formal resolution of how this will be handled in the PNE scheme, but it should be noted that surrounding areas served by the Unicity municipal utility are already receiving 30 kWh of free electricity, engendering questions by PNE’s customers as to why they do not get similar benefits. The experience of Unicity is important because they found that many households managed to keep their consumption under 30 kWh, thus unwittingly undermining the scheme as prepayment vendors’ motivation to participate comes from a commission on kWh sales. Alternatively, the recent (year 2000) creation

<sup>12</sup> The total project cost to date was not available and indeed should not be considered in terms of a project cost because PNE is a continuing business operation. Neither PNE nor Eskom provided information on the cost of subsequent years of operation. However, it is highly likely that there were additional infusions of capital during years when PNE was getting on its feet based on statements of PNE about when it had started breaking even (since 1998).

<sup>13</sup> Other than these problems, the venture was considered a “snap”!

of the National Electricity Fund to subsidize electricity connections has reduced risk exposure as NEF pays R 1500 per household connected, reducing the subsidy required from cross-subsidy from other consumers to around R 900 or a 63% reduction.

**Finance and Risk Structure**

- ❖ **Total cost:** 25Mn
- ❖ **Equity participants:** Balance sheet financing
- ❖ **Debt participants:** Balance sheet financing
- ❖ **Debt/equity ratio:** NA
- ❖ **Other:** Partners – EDF, Eskom, East Midlands Electricity
- ❖ **Government/Private ownership:** 50/50
- ❖ **Foreign/domestic Ratio:** 26%/74%
- ❖ **Government/MDB guarantee:** None
- ❖ **Financial Risk Structure:** None
- ❖ **Financial Closure Date:** 1994

**Key Structure and Success Factors**

PNE operates in Khayelitsha, a township on the outskirts of Cape Town. There are between 625,000 (last official count) and 1 million (PN Energy 2003) people living in Khayelitsha in some 85,000 dwellings in a range of housing types: unserviced informal shacks, site and service shacks, municipal houses, bonded houses and houses built by the People’s Housing Project. PNE is convinced that theirs is a highly successful program. Between 1994-1998 PNE reached their target of electrifying 33,000 shacks. A further 27,000 were done between 1998-2003 with a current customer base of 60,000. PNE started with a customer base of 10,000; so it has done 50,000 connections over 9 years (1994-2003). PNE are still connecting new customers (12,000 in 2001, 2,500 in 2002 and 2003). The remainder of connections (growing as new migrants enter the area) is now contingent upon the City of Cape Town’s instructions. PNE believe they could electrify more, but are not licensed to do so. Non-technical losses (non-payment), at 70% in 1994, were turned around so that by 1998 they were only 5%. They now float between 11-15% but are on a downward trend again.<sup>14</sup>

- ❖ **Making Electricity and Electrification More Affordable and Easier to Pay:** Pre-payment meters help consumers to avoid exceeding the budget available for electricity and eliminate reconnection fees because non-payment is eliminated. There is no authority vested in utilities to allow them to require prepayment meters in areas with large default rates. This limits the scale-up of the program to other areas in South Africa without the sort of large investment in money and restructuring of operations and community interface such as Eskom et al tried in the creation of PNE. The tariff charged is a straight kWh charge at the same rate as other customers in the same class.<sup>15</sup> Subsidies on the connection cost (and financing the payment over time) lower a distinct barrier to participation for these very low-income households. The normal connection fee is on the order of R 2200 to 2600 while PNE charges only R 45 as a de-

<sup>14</sup> We heard a variety of numbers on the present losses in the area and are not sure whether it is because of actual changes in the losses, with different periods being referred to or whether the different interviewees were referring to different territories, e.g., Eskom wide vs. only Khayelitsha.

<sup>15</sup> Note that in non-prepayment type utility situations, kWh charges are separated from fixed costs associated with distribution services (wires, transformers, etc.). This fundamental difference in tariff design would require regulatory approval in any expansion of the program to the entire country.

posit and R 150 for a limited 20A service (60A would require R 1000.)<sup>16</sup> Even with the subsidy, many could not afford to pay this fee at one time.<sup>17</sup> PN Energy also concentrated on reducing its own supply costs (as its motivation is to breakeven or make a profit). The company considers the prepayment meters to be less expensive than conventional meters given the elevated cost of surveillance, disconnection and reconnection, and billing associated with this type of community. Nevertheless, both PNE and Eskom were quite willing to admit that there is no return on investment and that this program will remain in the category of a social program for Eskom. The fact remains that this community is very low income – which translates directly into low consumption of electricity that has to be paid for.<sup>18</sup>

- ❖ **Easing the transition to legal electrification and improving local participation:** Acknowledging Eskom’s negative public perception in the early 1990s, the utility sponsored PN Energy to act as an intermediary between the community and Eskom. The insertion of this “community”-distribution company with most employees drawn from the community made it possible to explain and build the confidence of the community in the new prepayment approach while later allowing the surveillance needed to stop recidivism before it got out of hand. Customer service centers were built within the community and staffed by locals who were trained in basic business and customer management skills. PN Energy’s commitment to quality service and its strong customer focus, such as maintaining supplies of pre-wired ready boards in stock so customers would not have to wait and preventive maintenance to reduce outages, built confidence within the community that it could trust the service provider and the new prepayment approach, thus improving participation.
- ❖ **Making electricity harder to steal and usage easier to monitor:** PN Energy set up a comprehensive revenue management system to ensure that its mode of operation was indeed producing the desired results and made changes as necessary when “glitches” were discovered. The system includes placing the meters in tamper proof boxes elevated on highly visible pole with only non load bearing wire into prepayment “switch”/meter in home with highly visible connection box between shielded live wire and entrance into house. Prepayment technology was changed from card to punched-in code because theft was too easy with the card technology. The use of contractors to install the meters was discontinued and only PNE can now install meters because it was discovered that the contractors offered two packages: legal connection or illegal bypass at time of installation (with extra payment to the contractor)! A real-time monitoring system was implemented to allow PNE to monitor all transactions, detect potential problems such as reversion to theft, and follow up with inspections more targeted to likely problem areas, thus reducing costs. Problems remain nevertheless with affordability, leaving some households literally “in the dark” whenever they cannot afford to purchase the next tranche of prepaid electricity. Disconnections due to continuing theft problems are handled through a

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<sup>16</sup> We heard a variety of numbers regarding the average cost of connection and it is not clear whether it was a difference between costs in the target area vs. the entire service territory or whether the costs quoted have changed over time.

<sup>17</sup> But a common practice, called “clubbing,” circumvents this problem by pooling resources so that one household at a time from the pool can pay the connection fee until all are connected. Clubbing is used for all sorts of purchases in the poor community.

<sup>18</sup> The initial Eskom estimate was that average consumption would be on the order of 150 kWh per month and that breakeven could be possible at that level of consumption. However, the community has consistently averaged around 100 to 115 kWh per month per household. Even taking into account continuing theft and subsequent disconnection, this number is far lower than anticipated in the original business plan.

community-based organization. The company allows several incidents (with increasing fines) before resorting to disconnection, however. It was revealed that the company enlists ex-gang leaders to help reduce theft and that, if there is substantial progress, some of the additional receipts are donated to local schools.

- ❖ **Improving Value-added in the Community:** The company has substantially improved the quality of electricity service within the area and is a visible presence in the community via: the setting up of operations and customer service office in Khayelitsha, the setting up of accessible vending points throughout the area and establishment of toll-free telecommunications lines to the customer service office. The entire high and low voltage supply system to the area has been revamped and upgraded with the result of a drastic reduction in outages in the area. Response times to problems reported are less than 2 hours (except at dangerous times). While land tenure was not specifically connected with the program, it nevertheless hastened obtaining land tenure in many cases. The process involves surveying the area and proclaiming it to belong to the home occupants on the land. Economic benefits were not specifically quantified but it was reported that every Rand invested leads to R 14 in “economic wealth” and that there had been a “20% minimum uplifting” of the area and transformation of life.

The program overall found a highly effective means for entirely revamping the service approach to low-income customers and vastly improving collections as well as the company image. While problems remain, particularly in the lack of return from the investment made by the utility in the area and slow progress on the remaining (and growing) number of households (as high as one quarter of those in the area), management at Eskom and PNE seem quite satisfied with the pilot’s progress and achievements. Community preparation and understanding were necessary components of the program design. The company stated that it took a full 2 years of preparation before the rollout began in 1994. Replication will depend on several key issues outside of Eskom’s control, namely the fate of electrification efforts after the REDs are formed, the ability to require prepaid meters in other service territories, the effect of the 50 kWh free on the viability of the approach and the extent that decentralization of authority to local governments requires different approaches based on local preferences.

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