Day 4
Session 18.2

Sector Issues:
PPPs in the Energy Sector

Charles Feinstein, World Bank
Day 4
Implementation & Way Forward

Session 16
IFC view of PPPs

Session 17
Transport Sector

Session 18
Sector Issues:
Energy

Session 19
Overview by Participants

Session 20
Way Forward (World Bank)
Energy Sector
Risk Characteristics

• Large capital investments in immobile capital

• Long payback times

• High politicalization: "commanding heights" mentality of governments and lack of independence of sector entities

• High payment default risk, as governments are reluctant to enforce collections and populations view energy as a "right"

• High counterparty risk as collections defaults ripple through the sector and governments are often the counterparty
Why PPPs?

• The real reason why PPPs are the way to go is that the earlier (1990s) way of doing things - such as a private generator delivering to a bankrupt public owned utility is no longer an option (spectacular failures, e.g. Enron India)

• Then attempts were made to privatize distribution with better success; but there are spectacular failures as well (AES in Georgia)

• Therefore there is a paradigm shift in private investors' view of investment in infrastructure in emerging markets
Why PPPs? (cont'd)

• Old paradigm - high returns to compensate of high risks; reality - nobody is able to assess the risk properly (Asian crisis, Enron crisis, California crisis, and now the fuel crisis)

• New paradigm - investors look for 'normal' returns but with lower risks

• PPP are a significant way to mitigate risks - Public side participates with money; and if the project suffers, then public side suffers as well
Within Energy Sector sub-sectors need different approaches

Hydroelectric - wholly Public Or Public-Private

Thermal - Private Or Public-Private

Transmission - public (or private for specific links)

Distribution - private or public-private
Hydropower PPPs
Trends in Financing Hydros

- Traditionally public financed projects
- In the 1990s attempt was made to have IPPs
  - In fact the first IPP in Turkey was a hydro
- The response and results are small

<table>
<thead>
<tr>
<th>Location</th>
<th>Fossil</th>
<th>Hydro</th>
<th>Nuclear</th>
<th>Others</th>
<th>Renew - able</th>
<th>Total MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Americas</td>
<td>31,591</td>
<td>1,648</td>
<td>0</td>
<td>9,866</td>
<td>600</td>
<td>43,705</td>
</tr>
<tr>
<td>Asia</td>
<td>35,726</td>
<td>1,860</td>
<td>0</td>
<td>11,654</td>
<td>2,466</td>
<td>51,706</td>
</tr>
<tr>
<td>Europe/Cen Asia</td>
<td>16,339</td>
<td>1,999</td>
<td>0</td>
<td>8,386</td>
<td>1,179</td>
<td>27,903</td>
</tr>
<tr>
<td>Mid.East/N Africa</td>
<td>5,791</td>
<td>0</td>
<td>0</td>
<td>3,112</td>
<td>0</td>
<td>8,903</td>
</tr>
<tr>
<td>Sub/S Africa</td>
<td>808</td>
<td>0</td>
<td>0</td>
<td>42</td>
<td>0</td>
<td>850</td>
</tr>
<tr>
<td>Totals (MW)</td>
<td>90,255</td>
<td>5,507</td>
<td>0</td>
<td>33,060</td>
<td>4,254</td>
<td>133,067</td>
</tr>
<tr>
<td>Totals (as %)</td>
<td>68%</td>
<td>4%</td>
<td>0%</td>
<td>25%</td>
<td>3%</td>
<td>100%</td>
</tr>
</tbody>
</table>
Reasons for low success

- **Hydro projects, relative to thermal:**
  - Long gestation (long wait for returns)
  - High capital cost
    - When combined with long wait, the returns are small
  - Multipurpose use of water
  - Hydrology risks
  - Construction risks
    - Cost overruns are a fact of life - how to fund it?
  - Difficulty in signing take-or-pay PPAs
  - Environmental and resettlement issues
    - Private sector is not equipped to deal with them

- **However, private investment is still needed**
San Roque hydro Philippines

Dam – Public

Powerhouse - private
Sangtuda 1 hydro in Tajikistan

- 75% private; 25% Government
- First Unit Commissioned on Jan 20
- On track to complete plant by April 2009
- Winter production (1000 GWh) supply to domestic market
- Summer production (1700 GWh) targeted for exports
Tajikistan Pamir Private Power Project

- **World Bank (IDA)**
  - $10mil., 40 years, at 0.75%
  - IDA funds On-lent $10mil., 20 years, at 6.00%

- **Swiss Govt.**
  - $5mil. grant

- **IFC**
  - $4.5mil., 10 years, at 10.00%

- **AKFED Agha Khan Fund for Economic Development**
  - $8.2mil. equity at 10.00% expected rate of return

- **Pamir Energy Co.**
  - Provide 200 kWh/month electricity at lifeline tariff of 0.25 cents/kWh; 6mil. required for 10 years
  - $8.2mil. equity at 10.00% expected rate of return

- **IDA Spread Account**
  - IDA funds On-lent $10mil., 20 years, at 6.00%
  - $4mil.

- **Swiss Grant Account**
  - $5mil.

- **Social Protection Costs Funding**
  - $4mil.

- **Residential Consumers**
  - Provide electricity at early years (=national) tariff
  - $3mil. required for 6 years

- **Consumers**
  - Provide 200 kWh/month electricity at lifeline tariff of 0.25 cents/kWh; 6mil. required for 10 years
  - $8.2mil. equity at 10.00% expected rate of return
Financial Intermediation Models
Financing of Power Sector in India

Government of India

Wholly State Owned Development Finance Institution

Power Finance Corporation (PFC)  Rural Electrification Corporation (REC)

- Subsidized Financing
- Focus on Rural Electrification

State Electricity Boards
Central Government Electricity Companies
Private Sector Companies

Power Companies
India Power Finance Corporation
Sources of Funds

- World Bank
- Asia Development Bank, etc.
  With Government Guarantee

- Government of India
  Initial Equity plus Retained Earnings

- Domestic Sources
  - Domestic Bonds
  - Insurance Companies
  - Pension Funds
  - Certificates of Deposits

- Foreign Commercial Borrowings
Turkey - Renewable Energy Project

IBRD Loan US$203 million → Treasury

MENR DSI & EIE

TSKB & TKB SPDF

Export Credit Agencies

Private Sponsors

Indicative Financing Plan
- Equity 30%-plus
- SPDF 30-50%
- ECAs 30-40%

Project

- Project Potential
- Feasibility Evaluation
- Resource Use Rights

Eligible Consumers

Retailers/TEDAS

EMRA

Licensing

Purchase obligation @ below allowable wholesale energy price pass-through

Legend: MENR – Ministry of Energy and Natural Resources
EMRA – Independent Energy Regulator
TSKB and TKB – Turkish development and investment banks
SPDF – Special Power Development Fund
Bulgarian Energy Efficiency Fund

What is BEEF?

- Revolving special purpose finance facility for development and financing of commercially viable EE projects and capacity building (de facto EE bank). Market failure rationale for dedicated facility
- Established as a Public Private Partnership
- Independently managed, autonomous legal entity
- Initial capitalization - $15 million
- Seed capital from World Bank (GEF: $10 m), GOB, Govt. of Austria, DZI Bank, Lukoil AD, Brunata Bulgaria, Enemona
- Opened for business in Jan. 2006
Bulgarian Energy Efficiency Fund

Rationale behind BEEF

- Idea
  - Technical assistance
- Project
- Grants
- Banks
- ESCOs

Bulgarian Energy Efficiency Fund

BEEF loan financing
- Cheaper
- High risk tolerance
- Smaller projects
- TA
- Fast processing

Credit guarantees (PCG)
- Up to 80% coverage
- High risk tolerance
- 0.5% to 2% p.a.
- TA
- Fast processing

Portfolio guarantees
- Target: ESCOs, residential sector
- Up to 5% coverage on portfolio basis
- High risk tolerance
- Low guarantee fees
- TA

- Insufficient bureaucratic
- More expensive institutional barriers
- High financial risk
- Issues with collateral
- Issues with multi-owner blocks of flats

- Operational risks – real vs. “normalized” savings
- Financial risk – receivables of poor quality
- More expensive
Bulgarian Energy Efficiency Fund

Selected completed projects

✔ Building of Medical University in Plovdiv
Bulgarian Energy Efficiency Fund

Completed projects (cont.)

Street lighting of Krichim Municipality
Credit Enhancement Instruments
Romania Power Distribution: Privatization Structure

- Majority asset sale of two distribution companies - Banat & Dobrogea Discoms
- Enel Spa of Italy 51% shareholding (Electrica (SOE) to retain 49% shareholding)
- Equity injection by Enel for purchase price & recapitalization of the two Discoms
- Transaction closing Date: April 15, 2005
Romania Power Distribution Privatization: PPP Risk Allocation

**GOR Guaranteed Risks:**
- Non compliance by the Regulator and Change or Repeal by the GOR of the Pre-Agreed framework relating to:
  - (i) The distribution tariff formula; and
  - (ii) The full pass through of electricity costs; and
  - (iii) Pass through of PRG-related costs.

**Private Sector Risks:**
- Management, Operation, Investments & Collection
Romania: The Letter of Credit Structure for Cash Flow Support

Government of Romania

Regulator

Counter Guarantee

Letter of Credit Commercial Bank

L/C Reimbursement Agreement

Government Support Agreement

DISCOMS

Operating License

Bulk Power Supplier

Clients and Customers

Service

Retail Tariff

Letter of Credit

Covered by the Partial Risk Guarantee from IBRD
Partial Credit Guarantees

China: Ertan Hydro Power Project

Guarantee of late maturity loan amortization helped improve loan terms

PV=$20 m (14%)

Interest Rate: LIBOR+0.3%

Average financing term for China without World Bank Guarantee

Additional uncovered risk taken by commercial banks

World Bank Guaranteed

Total risk assumed by commercial banks

$150 million

$50 million
Partial Credit Guarantees can help access to the bond market

Guarantee bullet maturity principal repayment

The Philippines: National Power Corporation

US $100m Bond

WB exposure on PV basis

Longest term available to Philippines at the time

Additional term provided by WB support

World Bank support for principal repayment at maturity on a non-accelerable basis

0 7 15

US Treasury + 2.50%
The Finnish Model
The Mankala Principle

• Fortum and several others sell their generation at market prices - through the Nord Pool Spot

• Pohjolan Voima, Teollisuuden Voima and many other PPPs sell their electricity (and heat) to their shareholders at cost - shareholders are responsible for all costs and get the full benefit of below-market price electricity - “the Mankala principle”

• Insulation from the market, subject to performance -- shareholders are directly at risk

• Articles of associations spell out the (very strict) application of the Mankala principle
Key Features in the Articles of Association

• Shareholders bear all the costs and get all the benefits of the PPP company

• Each shareholder responsible only for his own obligations - composition of the PPP is key to success

• Strict payment terms to secure PPP’s cash flow

• Large majority or unanimous shareholder support required for changes in the articles of associations (to secure the PPP’s stability)

→ Applications to nuclear power
Public Private Partnerships for Infrastructure – A Recognition

- There is a public role in every infrastructure project – the question is one of degree
- More recently, PPPs are understood as those where there is a public share of financing
  - By sharing the financing responsibility, the public sector buys down the capital costs
    - It can borrow or raise funds at cheaper rates than private sector
    - By its financial participation, it would bring down the risk profile of the entire scheme (equity and non-public debt) and therefore the cost of these funds are lowered
  - The benefits are lower cost of service enjoyed by the citizens of the country, which is the primary objective of the state
Contacts

For comments or further details contact:

Penny Williams  pwilliams4@worldbank.org
Charles Feinstein  cfeinstein@worldbank.org
Cledan Mandri Perrott  cmandriperrott@worldbank.org
Sabino Escobedo  sescobedo@tagfinancialadvisors.com
David Stiggers  davidstiggers@comcast.net
PPPs in Infrastructure

THANK YOU!

Charles Feinstein, World Bank