Report on the Uganda Power Sector Reform and Regulation Strategy Workshop

August 2000

Energy Sector Management Assistance Programme

Papers in the ESMAP Technical Series are discussion documents, not final project reports. They are subject to the same copyrights as other ESMAP publications.
The Joint UNDP/World Bank Energy Sector Management Assistance Programme (ESMAP) is a special global technical assistance program run as part of the World Bank’s Energy, Mining and Telecommunications Department. ESMAP provides advice to governments on sustainable energy development. Established with the support of UNDP and bilateral official donors in 1983, it focuses on the role of energy in the development process with the objective of contributing to poverty alleviation, improving living conditions and preserving the environment in developing countries and transition economies. ESMAP centers its interventions on three priority areas: sector reform and restructuring; access to modern energy for the poorest; and promotion of sustainable energy practices.

GOVERNANCE AND OPERATIONS

ESMAP is governed by a Consultative Group (ESMAP CG) composed of representatives of the UNDP and World Bank, other donors, and development experts from regions benefiting from ESMAP’s assistance. The ESMAP CG is chaired by a World Bank Vice President, and advised by a Technical Advisory Group (TAG) of four independent energy experts that reviews the Programme’s strategic agenda, its work plan, and its achievements. ESMAP relies on a cadre of engineers, energy planners, and economists from the World Bank to conduct its activities under the guidance of the Manager of ESMAP, responsible for administering the Programme.

FUNDING

ESMAP is a cooperative effort supported over the years by the World Bank, the UNDP and other United Nations agencies, the European Union, the Organization of American States (OAS), the Latin American Energy Organization (OLADE), and public and private donors from countries including Australia, Belgium, Canada, Denmark, Germany, Finland, France, Iceland, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Sweden, Switzerland, the United Kingdom, and the United States of America.

FURTHER INFORMATION

An up-to-date listing of completed ESMAP projects is appended to this report. For further information, a copy of the ESMAP Annual Report, or copies of project reports, contact:

ESMAP

c/o Energy, Mining and Telecommunications Department

The World Bank

1818 H Street, NW

Washington, DC 20433

U.S.A.
REPORT ON THE WORKSHOP ON UGANDA POWER SECTOR REFORM AND REGULATION STRATEGY OCTOBER 20-21, 1999

Venue: Imperial Botanical Beach Hotel Entebbe

Joint UNDP/World Bank Energy Sector Management Assistance Programme (ESMAP)
ESMAP Reports are published to communicate the results of the ESMAP's work to the development community with the least possible delay. The typescript of the paper therefore has not been prepared in accordance with the procedures appropriate to formal documents. Some sources cited in this paper may be informal documents that are not readily available.

The findings, interpretations, and conclusions expressed in this paper are entirely those of the author(s) and should not be attributed in any manner to the World Bank, or its affiliated organizations, or to members of its Board of Executive Directors or the countries they represent. The World Bank does not guarantee the accuracy of the data included in this publication and accepts no responsibility whatsoever for any consequence of their use. The Boundaries, colors, denominations, other information shown on any map in this volume do not imply on the part of the World Bank Group any judgement on the legal status of any territory or the endorsement or acceptance of such boundaries.

The material in this publication is copyrighted. Requests for permission to reproduce portions of it should be sent to the ESMAP Manager at the address shown in the copyright notice above. ESMAP encourages dissemination of its work and will normally give permission promptly and, when the reproduction is for noncommercial purposes, without asking a fee.
CONTENTS
The Reform Programme

The Power Sector Strategic Plan

Internal Reforms Of UEB

Legislative And Regulatory Reforms

Promotion Of Private Sector Participation

Expanding Power Export Opportunities

Focus On Rural Electrification

Reform Implementation Programme

Conclusion

Powerpoint Presentations
Acknowledgement

This report has been compiled by a team comprising of Messrs. Mubiru Paul, Emmanuel Nyirikindi and Arthur Mugyenzi, Renewable Energy Development Center, on behalf of the World Bank.

Special thanks go to Mangesh Hoskote and Linda Walker-Adigwe for facilitating the workshop.
Summary and Agenda

Technical Workshop on Uganda’s Power Sector Reform and Regulation Strategy

Objectives

(a) Assist the Ugandan Power Sector Reform Committee (UPSRC) in assessing and evaluating commercial interfaces in a restructured power sector.

(b) Assist the UPSRC in disseminating an implementation strategy for power sector reform and regulation.

(c) To build an understanding of financial arrangements in independent power projects, project finance and contingent liability management.

Background

An energy assessment financed by ESMAP was completed in 1997, and subsequently a stakeholders workshop was conducted in 1998. Pursuant to the 1998 ESMAP workshop, the Government of Uganda (GOU) requested, and ESMAP agreed, follow-up technical assistance in disseminating Government’s power sector reform strategy. This follow-on ESMAP project launch was put on hold pending government’s completion of a report on power sector reform and implementation strategy that required Cabinet approval. In June 1999 the Cabinet approved the government’s power sector reform strategy. The GOU requests ESMAP to facilitate a stakeholders’ consultation/dissemination of the government’s power sector reform programme.

The Uganda power sector reform strategy envisions an industry structure in which generation, transmission, and distribution functions are separated and concessioned to the private sector. The strategy also includes establishment of an independent regulatory agency, development of new hydropower projects by the private sector, and letting out distribution concessions to the private sector.

The restructuring of Uganda’s power sector is expected to lead to international private capital flows which will require implicit or explicit state guarantees for the performance of contractual obligations. While fiscal risks stemming from government guarantees are impossible to avoid, there are qualitative and quantitative methods to recognize, control, and prudently manage those risks.
The proposed technical workshop aims to build an understanding of interlinkages of power sector reform and regulation with regard to market design and operations, vesting contracts between generators and distributors, international experience with reform implementation and consumer education programs, and contingent liability management of government guarantees.

Organizers: Ministry of Energy and Mineral Development, and Joint World Bank-UNDP Energy Sector Management Assistance Program (ESMAP)

Participants: Members of Power Sector Reform Committee; Members of Cabinet Committee on Economic Affairs and Government Assurance; other stakeholders parties

Venue: Entebbe, Uganda
### Day 1

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 - 8:30</td>
<td>Registration</td>
</tr>
<tr>
<td>8:30 - 8:45</td>
<td>Welcome and Opening Address</td>
</tr>
<tr>
<td></td>
<td>Honourable Mrs Syda Bbumba</td>
</tr>
<tr>
<td></td>
<td>Minister of Energy of Energy and Mineral Development</td>
</tr>
<tr>
<td></td>
<td>Government of the Republic of Uganda</td>
</tr>
<tr>
<td>8:45 - 9:00</td>
<td>Introduction to the Technical Workshop</td>
</tr>
<tr>
<td></td>
<td>Post-reform Issues: Review of International Experience</td>
</tr>
<tr>
<td></td>
<td>Mangesh Hoskote, The World Bank</td>
</tr>
<tr>
<td>9:00 - 10:30</td>
<td>Uganda’s Power Sector Reform Programme</td>
</tr>
<tr>
<td></td>
<td>Fred Kaliisa</td>
</tr>
<tr>
<td></td>
<td>Permanent Secretary, Ministry of Energy and Mineral Development</td>
</tr>
<tr>
<td>10:30 - 11:00</td>
<td>Break</td>
</tr>
<tr>
<td>11:00 - 12:30</td>
<td>Power Sector Reform Issues: The Experience of Ghana and Panama</td>
</tr>
<tr>
<td></td>
<td>- Privatization of generation and distribution</td>
</tr>
<tr>
<td></td>
<td>- Regulatory independence – what does it mean? Renegade regulation?</td>
</tr>
<tr>
<td></td>
<td>- Terms of reference for regulators – what they can and cannot do?</td>
</tr>
<tr>
<td></td>
<td>- Lessons learned</td>
</tr>
<tr>
<td></td>
<td>Director Michael Opam, Public Utility Regulatory Commission of Ghana</td>
</tr>
<tr>
<td></td>
<td>Commissioner Rafael Moscote, Public Utility Regulatory Commission of Panama</td>
</tr>
<tr>
<td>12:30 - 1:30</td>
<td>Lunch</td>
</tr>
<tr>
<td>2:00 - 3:30</td>
<td>Government Guarantees and Contingent Liability Management</td>
</tr>
<tr>
<td></td>
<td>- Mapping out risks – The Fiscal Risk Matrix</td>
</tr>
<tr>
<td></td>
<td>- Contingent claims and non-recourse financing</td>
</tr>
<tr>
<td></td>
<td>- Good Practices of Governments in Managing Contingent Liabilities</td>
</tr>
<tr>
<td></td>
<td>Chris Marrison, Oliver Wyman &amp; Company</td>
</tr>
<tr>
<td>3:30 - 4:00</td>
<td>Break</td>
</tr>
<tr>
<td>4:00 - 5:30</td>
<td>Roundtable Discussion</td>
</tr>
<tr>
<td></td>
<td>- What steps should Uganda take to mitigate and manage contingent</td>
</tr>
<tr>
<td></td>
<td>liabilities?</td>
</tr>
<tr>
<td></td>
<td>- What steps should Uganda take to get an investment grade credit rating?</td>
</tr>
<tr>
<td></td>
<td>Moderator                  Emmanuel Tumusime-Mutabile, PS, Ministry of Finance</td>
</tr>
<tr>
<td></td>
<td>Panelists                  Fred Kaliisa, PS, Ministry of Energy &amp; Mineral Development</td>
</tr>
<tr>
<td></td>
<td>Emmanuel Nyirinkindi, Director, Utility Reform Unit</td>
</tr>
<tr>
<td></td>
<td>Jock Paton, Standard &amp; Poors</td>
</tr>
<tr>
<td></td>
<td>Chris Marrison, Oliver Wyman &amp; Company</td>
</tr>
<tr>
<td>5:30</td>
<td>CLOSE OF DAY 1</td>
</tr>
</tbody>
</table>
Day 2

9:00 - 9:45 Privatization of Distribution: A Review of International Experience
*Mangesh Hoskote, The World Bank*

9:45 - 10:30 Vesting Contracts – What are they and why used?
- Vesting and IPP Contract Interplay
- Design of vesting contracts
- Case study of designing and structuring vesting contracts between generators and distributors

*Andrew Campbell, Intelligent Energy Systems, Sydney, Australia*

10:30 - 11:00 Coffee Break

Power Sector Reform: Process Management and Consumer Education

11:00 - 11:45 Case Study: Panama’s Electricity Reform Process
*Commissioner Rafael Moscote, Public Utility Regulatory Commission of Panama*

11:45 - 12:30 Case Study: Victoria’s Electricity Reform Process
*Andrew Campbell, Intelligent Energy Systems, Sydney, Australia*

12:30 - 2:00 Lunch

2:00 - 3:30 Roundtable Discussion
- Post-reform issues – challenge of managing the process and staying the course

*Moderator Isaac Musumba, Chairman, Uganda Economic Committee*

*Panelists Emmanuel Nyirinkindi, Director, Utility Reform Unit Paul Mare, Managing Director, UEB Rafael Moscote, Regulatory Commission of Panama Michael Opam, Regulatory Commission of Ghana Andrew Campbell, Intelligent Energy Systems*

3:30 - 4:00 Break

4:00 - 5:00 Summary of Workshop Thematic Topics
1. Power Sector Reform-Post Reform *Emmanuel Nyirinkindi*
2. Reform Process Management and Consumer Education *Fred Kaliisa*
3. Contingent Liability Management *Emmanuel Tumusime Mutubile*

5:00 - 5:30 Closing Remarks
- Overall workshop summary
- Discussion of next steps

*World Bank/IFC Ministry of Finance Ministry of Energy*
Background

1.1 The World Bank – UNDP Energy Sector Management Assistance Program (ESMAP) in conjunction with the Ministry of Energy and Mineral Development conducted a two-day Technical Workshop on Uganda’s Power Sector Reform and Regulation Strategy from 20-21 October 1999. The workshop was a follow-up of a stakeholders workshop which was conducted in 1998 after an energy assessment financed by ESMAP.

1.2 The Uganda power sector reform strategy envisions an industry structure in which the transmission and distribution functions are separated. Development of new hydropower projects will be done by the private sector and distribution concessions will be let out to the private sector. The strategy also includes establishment of an independent regulatory authority for the electricity industry.

Objectives of the Workshop

1.3 The workshop was aimed at building an understanding of inter linkages of power sector reform and regulation with regard to market design and vesting contracts between generators and distributors, international experience with reform implementation and consumer education programs and contingent liability management of government guarantees. In particular the workshop aimed at:

- assisting the Uganda Power Sector Reform Committee (UPSRC) in assessing and evaluating commercial interface in a restructured power sector;
- assisting the UPSRC in disseminating an implementation strategy for power sector reform and regulation; and
- building an understanding of financial arrangements in independent power projects, project finance and contingent liability management.

Workshop participation

1.2 The workshop attracted a total of 45 participants drawn from government ministries, donors, potential IPP/SPPs, Members of Parliament, UEB, Utility Reform Unit and resource persons drawn from the World Bank and other countries.

1.3 The Uganda Power Sector Reform and Regulation Strategy Workshop was held at the Imperial Botanical Beach Hotel, Entebbe, on the 20th – 21st October, 1999, and was attended
by some 45 participants. It was organized by the Ministry of Energy and Mineral Development under the supervision of the Commission for Energy, Mr. Godfrey Turyahikayo and logistical assistance was provided by a local consultant coordinator.

1.4 The stakeholder comprised of Government officials, donors, and officials from the utility reform unit. Potential IPP/IPD’s, Private Sector representatives, Parliamentarians, the Power Utility Board Members, and resource persons from the World Bank. This group represented the key players in Uganda's present and future power sector.

1.5 The workshop was a two-day event comprising six sessions and two round table discussions. There was a closing session in which a summary of the workshop was made and plans were suggested for the next steps. The list of participants is attached as Annex 1.
Workshop Presentations

2.1 The workshop comprised of six sessions.

Opening session

2.2 The opening session chaired by the Permanent Secretary Ministry of Energy & Mineral Development, Mr. F.A. Kabagambe - Kalisa, was addressed by Mr. Mangesh Hoskote who gave an introduction to the workshop. He pointed out that the main objectives of the workshop were to impart knowledge to the participants on how to manage the reform process. International experience would be shared in the workshop.

2.3 After the presentation by Mr. Hoskote, the Minister for Energy and Mineral Development, the Hon. Syda Bbumba gave her workshop opening address. The Minister gave a background to the Uganda Power Sector Reform process and the policy as stipulated in the strategic plan for the Uganda power sector. The Minister also pointed out that the utility, Uganda Electricity Board, (UEB) was undergoing reforms to bring about efficiency in its operation.

2.4 She also highlighted the provisions in of the Electricity Bill (1999) which was before Parliament. She said that the enactment of the Bill into law would be a cornerstone for the reform process. The full Minister’s speech is shown in Annex 2.

Session Two

2.5 In the second session, the following presentations were made:

- A presentation on ‘Uganda’s Power Sector Reform Programme’ was made by Mr. G.R. Turyakikayo, Commissioner for Energy on behalf of the Permanent Secretary of the Ministry of Energy and Mineral Development.

- A presentation of post-reform issues: the experiences of Ghana and Panama. The presentations on post reform issues were made by Mr. Michael Opam, Director, Public Utility Regulatory Commission of Ghana and Commissioner Rafael Moscote, of the Public Utility Regulatory Commission of Panama. This included sub-topics on the following:
  - privatization of generation and distribution;
regulatory independence – what does it mean?
- Terms of Reference for regulators – what they can.
- lessons learned.

2.6 The presentations were followed by general discussions. Participants raised a wide range of issues focussing mainly on the experiences of both Ghana and Panama. These included among others.

- performance of generation regulation in Panama;
- how rural electrification is handled in those countries, whether this is regulated by the Regulator or not.

Session Three

2.7 Session three was chaired by Mr. Keith Muhakanizi on behalf of the Permanent Secretary Ministry of Finance. This session centered on government guarantees and contingent liability management.

Round Table Discussions

- Investment Grade Credit Rating:
  - Discussions on sovereign rating and grades were led by Mr. Jock Paton of Standard & Poors.
  - It was noted that the exercise of establishing the ratings is a complex one, which takes into consideration a wide number of issues. It was further noted that there is no single figure for a sovereign rating or an investment grade.

Enforcement of Contracts (Legal Sector)

- In the discussions the problem faced by private sector in settlement of disputes and contract enforcement in the court system, was pointed out and recognized as a big disincentive for development.

Session Four

2.8 Session four took place on the second day. Under this session, two presentations were made namely:


- Vesting contracts what are they and why they are used?
  - vesting and IPP contract interplay;
  - design of vesting contracts;
  - case study of designing and structuring vesting contracts between generators and distributors.
Mr. Andrew Campbell, of Intelligent Energy Systems, Sydney, Australia made this presentation.  

2.9 In his presentation Mr. Hoskote, pointed out that the World Bank is trading 74 distribution transactions. Two distribution models were identified namely:

- single buyer, normally a state entity; and
- market model, where several buyers exist.

For Uganda, given the size of the sector, a single buyer model has been recommended.

2.10 During the discussions, participants wanted to know what were the causes of failure for the distribution companies that had not performed well. The major reason for this was seen to be the untested nature of the regulatory arrangement.

2.11 Examples of distribution concessions for Panama, it was stated that there was one company with 400,000 customers. There was a legal mandate to have at least two companies. A study, which was conducted, showed that there should be a minimum of three companies. The market share of these companies was 50%, 43% and 7% respectively.

2.12 Participants also wished to know whether the Bank has statistics on reliability of supply after staff reductions in the various utilities. It was however, noted that this is an area where information is scanty.

2.13 On the criteria used to select a particular model, it was noted that the key factor is the predictability of the regulation regime.

2.18 Basic guidelines and criteria for selection of model include the following:

- the legal frame work;
- confidence in the judiciary;
- confidence that the investor can repatriate profits.

2.19 On vesting contracts, after the presentation, it was noted that the vesting contracts achieved their goal, i.e. prices became lower.

2.20 Participants wished to know the mix of generation in the Australian State of Victoria, which was stated to be predominantly coal, some gas and hydro contributing just about 10%. On the role of the regulator, it was pointed out that the regulator moves in to make sure that there is no collusion between the participants in the sector.

**Session Five**

2.21 In session five, the following presentations were made:

- A case study: Panama’s Electricity Reform Process. This was made by Commissioner Rafael Moscote of the Public Utility Regulatory Commission of Panama.
- A case study: Victoria’s Electricity Reform Process, made by Mr. Andrew Campbell of Intelligent Energy Systems, Sydney, Australia.
- Power Sector Reform: Process Management and Consumer Education.
2.22 In the case of Panama, it was noted that what is regulated is the transmission and
distribution tariffs, but not the generation. The distribution is such that there is one company per
area. Generators get special permission to deliver 25% of the energy to the distributors.

2.23 It was noted, that an important factor in the reform process, was to explain to the
people any changes so that their expectation were not so high. In Panama, there were two short
power purchase agreement PPAs, three distributors and seven generators. A single buyer model
was used.

2.24 On the tariff setting, this is composed of transmission and distribution. Consumers of 500 KW and above have direct access to transmission.

2.25 Regarding the issue of capital contribution when providing power supply, this was
refunded in Panama.

Session Six

2.26 During this session a summary of workshop thematic topics was given.

Power Sector Reform – Post Reform, Emmanuel Nyirinkindi Director Utility Reform Unity
Ministry of Finance.

2.27 Mr. Emmanuel Nyirinkindi, spoke on the subject of post-reform issues. In
particular he addressed the issues of:
- UEB Privatization;
- Regulatory Independence and Capacity;
- Government Guarantees and Contingent Liability Management.

UEB Privatization

2.28 Mr. Nyirinkindi explained that the Government had approved a Strategic and
Implementation Plan for the reform of the Uganda Power Sector. The plan establishes
Government’s goals and objectives for the sector in the foreseeable future and details its
implementation plan for power sector reform and the privatization of UEB.

2.29 It was pointed out that, as envisioned in the Strategic Plan, UEB’s privatization
would initially be by way of letting out concessions to the private sector for distribution and then
for the generation capacity at the Owen Falls facilities. The Government is committed to a
smooth and transparent divestiture that will conform to all requirements of the PERD Statute and
the Electricity Act to be passed soon.

Regulatory Independence and Capacity

2.30 It was pointed out that the question of building regulatory capacity would be
given the highest priority by Government. This is because under the approved Strategic Plan, the
Regulatory Agency that would be created to regulate the electricity sector would be charged with
great responsibilities that would render it crucial to the successful development of this sector.
Under the Strategic Plan, and the Electricity Bill presented to Parliament, the independence of
the regulator was considered of paramount importance to inspire confidence in sector stakeholders. A key concern was to ensure independence from both Government and the industry.

2.31 On the issue of regulatory capacity, the issue of constrained human and financial resources was raised. Mr. Nyirinkindi supported the call for increased training and informed participants that both the Ministries of Energy and Finance had undertaken a number of initiatives in this field. He also pointed out that the inclusion of related topics within the curriculum of the International Law Institute program in Kampala would be beneficial to the country. He called for more local training be made available, this being the most cost-effective method for training a large number of people.

2.32 Mr. Nyirinkindi pointed out that because of the limited financial and human resources the country had for pursuing regulation in the utility infrastructure sector, the creation of a multi-sector utility regulatory agency had been proposed for the electricity, water and telecommunications sectors. However, given the need to process reforms in the electricity sector the Government had authorized the creation of an Electricity Regulatory Agency. This was in addition to the Uganda Communications Commission, which regulates the communications sector.

Government Guarantees and Contingent Liability Management

2.33 Mr. Nyirinkindi stressed that while Government had identified the potential risks associated with the reform of the power sector, and in particular, with possible guarantees to be provided to potential developers of independent power projects, it was necessary to develop a formal mechanism for monitoring, quantifying and mitigating these risks.

2.34 Mr. Nyirinkindi pointed out that the cost of a guarantee might be thought of as a risk should the guarantee be called. In addition to the project specific measures, GoU therefore intends to take the following actions to mitigate risk:

- Sectoral actions.
  - Create an efficient and financially viable power sector through reform and privatization.
  - Allow electricity tariffs to cover LRMC.
  - Execute export sales agreements to mitigate demand and foreign exchange risks.
  - Support market based programs to promote increased access to electricity supply.
  - Macao level actions.
  - Promote the development of local capital markets (these will place a lower premium on country risks and offer some protection from forex risks).
  - Promote the development of secondary markets e.g. insurance markets and instruments to hedge against forex risks.
  - Promote an attractive business environment, e.g. efficient tax administration and fair judicial process, which will reduce perceived country and commercial risk.
  - Good governance: reduces perceived political risk.
2.35 The best way to manage contingent liabilities is to ensure that a guarantee is never
called, i.e. through thorough risk mitigation. It is also important to create information systems,
so that all parties have full information for risk management, e.g. a requirement for the power
off-taker to report its financial performance to Government in order that it may adequately assess
the risk of a payment guarantee being called. However, Government must also prepare for the
eventuality that a guarantee is called.

2.36 To date Government has explored the following options:

- Reflect contingent liabilities in the medium term budget framework.

- Partial Risk Guarantee: An IDA instrument that backstops Government guarantees of a
limited set of risks, especially political risks. Under such an arrangement, for a limited
set or risks, where a Government guarantee is called and the Government is unable to
pay, the Government may call on IDA to pay on its behalf. However, it is important to
note that a PRG will require GoU to enter into a counter-indemnity agreement with IDA
– the terms of this counter-indemnity agreement are critical to the value of a PRG to
Government.

2.37 Other measures:

- Budgeting explicitly for contingent liabilities, i.e. including a budget allocation for the
risk adjusted cost of a contingent liability.

- It is difficult to make a quantitative assessment of risks, especially given information
constraints:
  - when there are budgetary resources available for this purpose, it is likely to be
    preferable to use them for risk mitigation, e.g. to establish a fund to hedge against
    foreign exchange risks.
  - Integrated management of contingent liabilities, whereby Government examines
    its exposure to risks across all sectors, and develops strategies to mitigate and
    manage them. For example, it may be possible to off-set some risks against
    others, i.e. heavy rainfall may mean increased damage to roads, but this could be
    off-set by increased production of hydro-electricity.
  - This is difficult given imperfect information.
  - Although this approach is commonly employed by multi-national corporations,
    there are few examples of its use in Government.

Lessons for the Future

2.38 Develop a policy framework for private participation in infrastructure, including
guarantees and contingent liability management, before beginning negotiations with developers.

2.39 As far as possible mitigate risks up-front so that Government incurs fewer
contingent liabilities e.g. it would have been preferable to privatize the power sector before
developing IPP’s in order that (a) IPP’s would be entering a financially viable industry (b)
private operators in the power sector could lead negotiation for the development of IPP’s.
2.40 Drawing upon the lessons from Ghana, Panama and Victoria and the discussions held during the workshop it was observed that the process should take the following steps:

- Identify and clearly understand the objectives and build consensus among the different stakeholder.
- Agree on the section structure:
  - agree on the issue of ownership; and
  - reach consensus on the issue of regulation; the scope whether single or multi sector etc.
- There is a need to move fast on the reforms to avoid asset striping.
- Establish regulatory framework and appoint members of the Electricity Regulatory Authority:
  - develop tariff regulations for transmission and distributions;
  - establish market rules for generation (dispatch rules); and
  - develop geographical areas for distribution concessions.

Contingent Liability Management

2.41 Under contingent liability management, the key issues identified can be summarized as follows:

- Guarantees are essential but they should be transitional; and
- A need for public exposure was highlighted in:
  - quantifying the risks;
  - government to look at the cost of contingent liability;
  - measurement of the risks.
- Interests for both the investors and the country should be balanced.

2.42 In Ghana, efforts were made to establish a core team trained by the Bank in the US. By the time of putting in place the regulator, this core team was in place.

2.43 It was recognized that a similar approach is taking place in Uganda. Government has approached among others DFID, Norwegian Government, among many others to create capacity.
Next Steps and Concluding Remarks

World Bank Country Director

3.1 Mr. James W. Adams, the World Bank Country Director, in his concluding remarks observed that the power sector has received a lot of support given its importance.

3.2 He pointed out that government should continue to count on continued World Bank support and that the challenge was how to implement the established framework and maximizing consumer education.

Commissioner for Energy

3.3 The workshop was closed by the Commissioner for Energy on behalf of the Permanent Secretary, Ministry of Energy and Mineral Development. He thanked all the participants for the useful contributions made at the workshop. Special tribute was paid to the World Bank for facilitating the workshop.

3.4 He noted that there maybe more than one way of carrying out the reforms and that Uganda would take the most appropriate path to her situation. He stressed the need to internalize the issue of guarantee and called upon the Bank to explore possibilities of holding a future workshop to focus on such issues.
## Annex 1

### Workshop Participants

<table>
<thead>
<tr>
<th>NAME</th>
<th>DESIGNATION</th>
<th>ORGANISATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hon. Syda Bbumba</td>
<td>Minister</td>
<td>Ministry of Energy and Mineral Development</td>
</tr>
<tr>
<td>F.A. Kabagambe-Kaliisa</td>
<td>Permanent Secretary</td>
<td>Ministry of Energy &amp; Mineral Development</td>
</tr>
<tr>
<td>Eng. Paul Mubiru</td>
<td>Assistant Commissioner</td>
<td>Ministry of Energy &amp; Mineral Development</td>
</tr>
<tr>
<td>Ronald Mugambe</td>
<td>Engineer</td>
<td>Water Development Director</td>
</tr>
<tr>
<td>Emmanuel Nyirinkindi</td>
<td>Director</td>
<td>Utility Reform Unit, Ministry of Finance</td>
</tr>
<tr>
<td>Ms Grace Kabunga</td>
<td>Business Analyst</td>
<td>Utility Reform Unit</td>
</tr>
<tr>
<td>Keith Muhakanizi</td>
<td>Director</td>
<td>Ministry of Finance, planning &amp; Econ. Dev't</td>
</tr>
<tr>
<td>Joe Wright</td>
<td>Economist</td>
<td>Utility Reform Unit, Ministry of Finance</td>
</tr>
<tr>
<td>Ssemakula Godfrey</td>
<td>Investment Officer</td>
<td>Uganda Investment Authority</td>
</tr>
<tr>
<td>Arthur Bwire</td>
<td>Senior Investment Officer</td>
<td>Uganda Investment Authority</td>
</tr>
<tr>
<td>Masitula Manyaami Male</td>
<td>Director</td>
<td>Uganda Electricity Board</td>
</tr>
<tr>
<td>Dr. S.S. Tickodi-Togbo</td>
<td>Deputy Chairman, Board of Directors</td>
<td>Uganda Electricity Board</td>
</tr>
<tr>
<td>Ben Ojok</td>
<td>Ag. Manager District Services</td>
<td>Uganda Electricity Board</td>
</tr>
<tr>
<td>Kagule-Magambo</td>
<td>Chairman</td>
<td>Uganda Electricity Board</td>
</tr>
<tr>
<td>Dison B. Okumu</td>
<td>General Manager (Services)</td>
<td>Uganda Electricity Board</td>
</tr>
<tr>
<td>Dr. Terry Kaluma</td>
<td>Principal Safety &amp; Services Engineer</td>
<td>Uganda Electricity Board</td>
</tr>
<tr>
<td>Rafael A. Moscote</td>
<td>Commissioner</td>
<td>Panama’s Regulatory Entity</td>
</tr>
<tr>
<td>Haran Sivam</td>
<td>World Bank (IFC)</td>
<td>IFC</td>
</tr>
<tr>
<td></td>
<td>Name</td>
<td>Title</td>
</tr>
<tr>
<td>---</td>
<td>-------------------------------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>20</td>
<td>Mr. Michael Opan</td>
<td>Director</td>
</tr>
<tr>
<td>21</td>
<td>Chris Marrison</td>
<td>Consultant</td>
</tr>
<tr>
<td>22</td>
<td>Mangesh Hoskote</td>
<td>Power Sector Reform Specialist</td>
</tr>
<tr>
<td>23</td>
<td>Andrew Campbell</td>
<td>Consultant</td>
</tr>
<tr>
<td>24</td>
<td>Jock Paton</td>
<td>Director</td>
</tr>
<tr>
<td>25</td>
<td>Linda Walker Adigwe</td>
<td>Logistical Advisor/Consultant</td>
</tr>
<tr>
<td>26</td>
<td>Mugyenyi Arthur</td>
<td>Logistical Consultant</td>
</tr>
<tr>
<td>27</td>
<td>Simonis Philippe</td>
<td>Project Coordinator</td>
</tr>
<tr>
<td>28</td>
<td>Ms. Britte Hilde Kjoelaas</td>
<td>First Secretary</td>
</tr>
<tr>
<td>29</td>
<td>Espen Lier</td>
<td>Advisor</td>
</tr>
<tr>
<td>30</td>
<td>Deo N. Rubumba</td>
<td>Director</td>
</tr>
<tr>
<td>31</td>
<td>Richard Wood</td>
<td>Director</td>
</tr>
<tr>
<td>32</td>
<td>Fred C. Kasumba</td>
<td>Managing Partner</td>
</tr>
<tr>
<td>34</td>
<td>Julius Twesigye</td>
<td>Project Engineer</td>
</tr>
<tr>
<td>35</td>
<td>Bob Makoma</td>
<td>Company Secretary</td>
</tr>
<tr>
<td>36</td>
<td>Farhan Nkhoooda</td>
<td>Project Director</td>
</tr>
<tr>
<td>37</td>
<td>K. Peswar</td>
<td>Senior Manager Corporate Affairs</td>
</tr>
<tr>
<td>38</td>
<td>Benon Kakuru</td>
<td>Production Manager</td>
</tr>
<tr>
<td>39</td>
<td>Hon. Eng. Nkwawula K.</td>
<td>Member of Parliament</td>
</tr>
<tr>
<td>40</td>
<td>Hon. Ssembajja S.</td>
<td>Member of Parliament</td>
</tr>
<tr>
<td>41</td>
<td>Winfred Sanya</td>
<td>Journalist</td>
</tr>
<tr>
<td>42</td>
<td>Wossita Samuku</td>
<td>Journalist</td>
</tr>
<tr>
<td>43</td>
<td>Basenya Martin</td>
<td>Journalist</td>
</tr>
<tr>
<td>44</td>
<td>Olanyo Joseph</td>
<td></td>
</tr>
</tbody>
</table>
Annex 2

Welcome and Opening Address by the Hon. Syda N. Bbumba, Minister of Energy and Mineral Development

My colleague, Minister of State for Energy and Mineral Development
The World Bank Resident Representative
The World Bank, ESMAP Team
Representatives of our Development Partners
Workshop participants in your various capacities
Ladies and Gentlemen:

It gives me great pleasure to welcome you all to this important workshop on “Uganda Power Sector Reform and Regulation Strategy”. For our friends who have come from abroad, I welcome you to Uganda and wish you a pleasant and memorable stay.

Over the past three years, Government has been working on various reforms in the power sector aimed at bringing about efficiency, attracting private sector participation and increasing capital inflow in the sector. Key achievements in this process including the establishment of the New Strategic Plan for the Power Sector and the development of Electricity Bill, which is currently before parliament for enactment into law.

The strategic plan has been designed to meet the following objectives, which the government has set for the power sector:

- Making the power sector financially viable and able to perform without subsidies from the government budget;
- Increasing the sector’s efficiency;
- Improving the sector’s commercial performance;
- Meeting the growing demands for electricity and increasing area coverage;
- Improving the reliability and quality of electricity supply;
- Attracting private capital and entrepreneurs; and
- Taking advantage for export opportunities.
It is my Ministry's policy to increase access to electricity supply especially in the rural areas to bring about rural transformation through increased incomes as a result of improved agricultural production and small-scale enterprises. This will result into an improvement of the quality of life of the rural population.

The country is endowed with abundant hydropower resources and, therefore, it is the intention of my Ministry to make Uganda the hub for power exports in the region.

In order to attain the policy goals outlined above, we have put in place the following measures:

- As already stated, we are at an advanced stage in enacting the law which will remove UEB's monopoly status and permit private sector participation initially in the generation and distribution of electricity and then transmission at a later stage. In particular, the entry of Independent Power Producers (IPPs) will help to increase electric power generation to meet both local and regional electric energy needs.

- The reform process of the utility (UEB) is already underway. There has been restructuring of the organization into key business units of Generation, Transmission and Distribution and more competent management has been appointed.

After unbundling of UEB activities, control of existing assets will be let to the private sector through long-term concessions but ownership of these assets will remain in the public sector in the near term.

Right-sizing of the utility has also proceeded well, with over one thousand employees retrenched since July 1997. There are also efforts to divest the non-core activities like provision of security services, management of estates and vehicle maintenance.

A new billing system will also be implemented starting next month.

- Demand-side management programs and public awareness campaigns as well as measures for curbing of illegal power consumption to save energy and financial resources have been invigorated. These are some of the stop-gap measures to address the growing demand for electric power.

- Regarding electricity exports to our neighbors, Uganda currently exports 30 MW (off-peak) to Kenya, 5-8 MW to Tanzania and 2 MW to Rwanda.

    Bi-lateral discussions are being held between Uganda and those countries to increase the level of exports especially with the coming of new IPP projects. We are targeting to export at least 165 MW to Kenya, and 40 MW to Tanzania.

    It is envisaged that we will attain bankable export sales agreements soon.

- Promotion of independent power production projects has successfully attracted a number of investors for both big and small hydropower projects. Notable among them is AES Nile Power with whom negotiations for the development of a 200 MW power plant have been concluded at Bujagali on the Nile River.

    Another IPP, Norpak Power Ltd. has also concluded technical studies on another Nile River site, Karuma, for the development of a 150 MW power plant.
PROFIDEV of Egypt has shown interest in developing one of the other Nile sites. There are also small power producers like Kasese Cobalt Co. Ltd. Who have developed a 10 MW plant at Mobuku. The sugar factories, through co-generation, are also producing power for their consumption and are intending to expand their generation capacity and supply the excess power to the grid.

- In the areas of rural electrification the overall national policy objectives are:
  - to accelerate electricity access expansion to rural and peri-urban areas using a variety of approaches in a least-cost and sustainable manner, to facilitate rural development; and
  - to promote and support the generation of electricity from indigenous non-congenital renewable energy sources to supply remote areas and where feasible, connect to the grid. In that regard, government is developing a comprehensive rural electrification strategy and plan with the assistance of the world Bank’s Africa Rural and Renewable Energy Initiative (AFRREI).

The specific objectives of the program are:

- To improve the life of rural people and to facilitate significant off-farm income activities by accelerating rural electrification, including from solar PV systems, with a tentative target of increasing rural electricity access from 1% to over 10% by 2010.

- Develop Uganda’s indigenous, renewable energy resource on a cost-effective basis, with a tentative target of about 70 MW of power generation from small renewable energy resources by 2010.

Ladies and Gentlemen: at this juncture, let me outline the key provisions of the Electricity Bill that I have already alluded to, which is the pillar of our sector reform.

To achieve the above objectives, the Bill, among others:

- Proposes the establishment of the Electricity Regulatory Authority. The Authority will grant and revoke licenses, regulate electricity tariffs and enforce performance standards of licenses. The authority will act independently in the performance of its functions and will delegate certain specified functions to local governments, specifically for those developments that require light regulation, like the small decentralized power supply demand;

- Lays down the licensing procedure which is to be conducted in an open and transparent manner;

- Provides for the Minister to prepare a rural electrification strategy and plan to be submitted to cabinet for approval on a regular basis. It also provides for the establishment of the Rural Electrification Trust Fund and a Board of Trustees to administer the fund and advise on matters relating to rural electrification;

- Provides for the rights and duties of consumers;

- Provides for an appeal mechanism through an Electricity Disputes Appeal Tribunal to determine and resolve in an expeditious manner, all matters relating to the electricity sector; and
• Provides for transitional provisions such as issuing of initial licenses by the Minister, the incorporation of a successor company to the Uganda Electricity Board, the transfer and ownership of assets of UEB and for former employees of the Board.

As already indicated, the enactment of the electricity law will be an important milestone in the reform process of the power sector.

In the next two day, ladies and gentlemen, you will receive a number of presentations on power sector reform and regulation with examples from other countries. The resource persons are eminent individuals with vast international experience in these areas. It is my hope that we will borrow from the experiences gained elsewhere in our efforts to reform the Uganda Power Sector.

I am happy to learn that Uganda is among those countries in Africa, which are implementing Power Sector Reform. I look forward to Uganda becoming yet another success story in these reforms.

With these few remarks, it is my pleasure to declare this workshop open.

I thank you.
Annex 3

Presentations

Uganda's Power Sector Reform Programme
By: F.A. Kabagambe-Kaliisa Permanent Secretary, Ministry of Energy & Mineral Development

Introduction

Status of the Power

The power sector in Uganda is a publicly owned, vertically integrated utility, the Uganda Electricity Board (UEB). Generation is dominated by the Owen Falls Hydro Power Station of 180 MW capacity out of a total national installed capacity of approximately 196 MW.

Electricity coverage nation-wide is only about 5% of the population. Only 20% of the urban population are connected to the grid. Less than 1% of the population in the rural areas is supplied with grid electricity. However, recent studies have indicated that there could be as many people supplying themselves with electricity using diesel/petrol generators, car batteries, solar PV systems as those connected to the grid. These self-electrifying people also pay much more for their electricity than those paying the UEB tariff.

Electricity consumption by sector is as follows: residential – 55%, commercial and general – 25% and industrial – 20%.

The bulk of electricity (72%) is consumed by the 12% of the population that lives in urban areas of Kampala, Jinja and Entebbe.

Major Issues in the Power Sector

- Very poor supply reliability, characterized by extensive and increasing load-shedding and reduction in voltage.
- Inadequate investment capital
- Very poor commercial performance of UEB.
- High technical and non-technical losses.
• High accounts receivable.
• Low productivity
• Poor rate of connection of new customers.

The Reform Programme

The major elements in the reform program are:
• Formation and implementation of the Power Sector Strategic Plan.
• Internal reforms of UEB (restructuring and commercialization).
• Legislative and regulatory reforms.
• Promotion of private sector participation.
• Expanding of power export opportunities.
• Focus on rural electrification.

The Power Sector Strategic Plan

The power sector strategic plan

Key Objectives

In 1997, the Government of Uganda formulated a comprehensive and detailed Strategic Plan for transforming the Uganda power sector into a financially viable electricity industry, in order to enable it to supply reasonably prices and reliable power and to make its full contribution to the further economic and social development of Uganda.

This plan has been revised into the New Strategic Plan 1999, designed to meet as before the following key objectives for the power sector;
• Making the power sector financially viable and able to perform without subsidies from the government budget;
• Increasing the sector’s efficiency;
• Improving the sector’s commercial performance;
• Meeting the growing demands for electricity and increasing area coverage;
• Improving the reliability and quality of electricity supply;
• Attracting private capital and entrepreneurs; and
• Taking advantage of export opportunities.

Envisioned Power Sector Structure

The existing UEB, which is vertically integrated with generation, transmission and distribution as one entity, will be unbundled and each of the three components will operate as a separate self-accounting entity.
**Generation**

The strategy for generation is to increase the scope of competition in the provision of new generation capacity and in the running of existing generation assets.

New generation capacity will be provided competitively by the private sector through Independent Power Producers (IPPs). Both the existing Owen Falls Power Station (OFPS) and the Owen Falls Extension (OFE) will continue to be owned by the public sector but let to the private sector through concessions. GoU’s privatization transaction advisers will determine whether it is feasible to let separate concessions for the two plants or have them operated by the same company.

**Transmission**

A separate Transmission Company will be responsible for network maintenance, system operation and dispatch and bulk purchase and supply of electricity.

Initially, responsibility for transmission will remain with UEB and will be operated as an independent profit-making business. UEB’s existing transmission assets will be let under a concession contract to a private sector entity in the medium term, while ownership of the assets will remain in the public sector.

As far as feasible, new transmission capacity will be developed, financed, constructed operated and owned by the private sector.

**Distribution**

Reform of the distribution system, in order to make it financially viable and improve its commercial performance, will be the key to the success of the whole reform program. The maximum number of financially viable distribution companies will be created out of the existing UEB distribution business. Concessions will be granted to the private sector to operate these distribution companies. The transaction advisers will advise government with regard to the number and scope of the new distribution companies.

**Market Structure**

A ring-fenced business unit within the Transmission Company will be responsible for bulk purchase and supply of electric power. It will therefore hold PPAs for OFPS, OFE, and the IPP’s under development, and contracts to supply distribution companies. It will also be responsible for generation planning, contracting for new capacity, settlement, etc.

In the long-term, distribution and large consumers will contract for generation capacity directly with generators and the transmission network will be operated on an open access basis.

**Ownership**

While control of existing assets will be let to the private sector through long-term concessions, ownership of existing assets will remain in the public sector in the near term. However Government will continue to investigate mechanisms for transferring ownership to the private sector in the medium to long-term. To the extent feasible ownership of incremental and
new assets will remain in the private sector. To preserve open and transparent market operation, there will be restriction on cross ownership.

**Regulation**

A key component for the reforms being put in place by the government will be a new regulatory system for the power sector. This will give confidence to both private sector participants and consumers that the new power system will function under an agreed and transparent set of rules and procedures. Regulation will be through an autonomous regulatory authority, with powers defined under the new Electricity Act.

**Government Role**

Government’s key roles in the reformed power sector will be principally to:

- prepare and obtain necessary approvals for legislation and regulations;
- prepare the national energy strategy and indicative generation plans; and
- guide socially desirable investment programs like rural electrification.

**Internal Reforms of UEB**

Uganda Electricity Board has undertaken several internal re-organization measures geared towards improvement of operational efficiency and preparation for reforms.

These include the following:

- Restructuring of the organization to reflect the key business units of Generation, Transmission and Distribution. In addition, three other units of Projects, Finance and Services have been demarcated. A General Manager for each unit has been appointed.
- Sizing-down of the utility from some 3060 employees in July 1997 to a current level of 2000 employees;
- Divestiture of non-core activities namely:
  - provision of security services’;
  - management or estates; and
  - public relations function.

Arrangements are underway to divest both the motor vehicle maintenance/repairs and the procurement services. Attempts to divest the pole treatment activity did not yield good results, as the quality of services offered by the private sector was poor. This activity has been retained.

- Cost control measures including, monetisation of transport, utilities and security guards benefits for entitled officers;
- New billing system, to be done on line, to be started November 1999, with Kampala and spreading to other areas; and
- Improvement of customer services, opening up to the public.
Legislative and Regulatory Reforms

The work of reviewing the Electricity Act (1964) and formulating a Reform Bill started in August 1997 under assistance from NORAD. The Electricity Bill (1999) is now before Parliament for enacting into a law to regulate the Power Sector.

The object of this Bill is to liberalize and introduce competition and active involvement of the private sector into an efficient industry to enable it to supply reasonably priced and reliable power and to make its full contribution to the economic and social development of Uganda.

The major provisions of the Bill are:

- Establishment of an independent Electricity Regulatory Authority, which will license, monitor and control activities in the sector.
- Licensing procedures and the types of licenses to be provided by the Authority.
- Establishment of a Rural Electrification Trust Fund and a Trustee Board for its administration.
- Rights and duties of consumers.
- Offences and penalties.
- Appeals Tribunal for disputes.
- Acquisition and use of land for installation and electric supply lines.
- Appointment of inspectors by the authority.
- Tariff setting.
- Interim licenses to be issued by the Minister before the authority is constituted.
- Repeal of UEB and formation of a successor company.

Promotion of Private Sector Participation

In line with government's strategy to increase generation capacity through the involvement of the private sector, Independent Power Producers have been earmarked for the development of Bujagali and Karuma Projects.

The feasibility study for the development of the Bujagali Project (250 MW) was completed by AES Nile Power in March 1998. A public hearing on the Environmental Impact Study was held in August 1999. Negotiations of the Implementation Agreement and Power Purchase Agreement were finalized. The guarantee for the PPA awaits parliament's approval.

For the Karuma hydropower project, NORPAK Power Ltd., the developers have presented the feasibility study and Environmental Impact Study. Negotiations of the Implementation Agreement and Power Purchase Agreement have commenced.
Expanding Power Export Opportunities

The Uganda Power Sector has the capacity to dominate the region's electricity supply-side because of the comparative advantage in the production of relatively cheap hydropower. Uganda's existing potential is estimated to be over 2000 MW on the Nile River.

Bi-lateral discussions are going on between Kenya, Tanzania, Rwanda and Uganda. It is estimated that by 2006, Kenya will require up to 295 MW. Tanzania on the other hand requires about 100 MW by 2004 to supply mining areas.

Uganda is looking forward to firming up export contracts by end of this year.

Focus on Rural Electrification

To address issues of poverty alleviation, the Government has formulated an Energy for Rural Transformation Program to be implemented with the assistance of the World Bank and other donors.

The objectives of the program are:

- To improve the rural quality of life and facilitate significant rural non-farm income by accelerating rural electrification, including from solar PV systems, with a tentative target of increasing rural electricity access from about 1% at present to over 10% by 2010.

- To promote development and use of Uganda's indigenous, renewable energy resources on a cost-effective basis with a tentative target of about 70 MW of power generation from small renewable energy resources by 2010 and development of a tradition of commercial woody biomass.

To provide funding for rural electrification, government has proposed to establish a Rural Electrification Trust Fund and a Board of Trustees to administer the fund and advise on matters relating to rural electrification. The main purpose of the fund will be to provide “smart subsidies” by buying down the initial cost of investment for connection, but ensuring that the consumers pay the economic cost of supply through the tariff.

The program will be mainly private sector-driven and commercially oriented. The major elements of the program will be:

- Grid intensification to the load centers within the proximity of the grid network;

- Development of isolated generation system and associated mini-grids for those load centers (e.g. trading centers) that cannot be economically connected on the grid;

- Development of small renewable power supply systems [e.g. micro and mini hydro power biomass co-generation, wind power, etc.] that could be operated as stand-alone connected to the grid; and

- Dissemination of solar PV systems for isolated homes and institutions.

Reform Implementation Programme

The Strategic Plan contains an implementation plan detailing out the key milestones to be achieved in the reform process (See chart – Annex 1). These are:
• Government approval of the Strategic Plan - Mid June 1999
• Enacting of the Electricity Law - September 1999
• Establishment of the Regulatory authority - February 2000
• Award of distribution concessions - October 2000
• Award of generation concessions - December 2000.

Conclusion
In conclusion, the power sector reform process is on course. The re-organisation efforts in UEB are yet to yield the desired effects. However, the success of the entire reform programme hinges on the efficient operation of UEB’s distribution and commercial entities, and the level to which the private sector can be attracted to enter into the various aspects of the sector structure.
PowerPoint Presentations
Power Sector Reform: Pre- and Post-Reform Issues

Mangesh Hoskote
The World Bank
Entebbe, Uganda
October 20, 1999

Presentation Outline

✧ Key Issues in the African power sector
✧ Global changes, African initiatives
✧ Pre-reform Issues
✧ Post-reform Issues
✧ Workshop Objectives
The Key Issues in Africa:

- Access expansion is essential
- Sector reform is a key condition
- Private enterprise makes it happen

The Facts:

- 2 billion people need modern energy sources and communication options

- The poor spend 10-12% of income on energy, the rich 2%. The rich get the bulk of the subsidies
The Potential:

- Telephones and TV open a window to the world, electricity and gas help productivity.

- Energy input is essential for health clinics, schools, other community services.

- Huge time savings and health benefits for women and children after introduction of electricity and better cooking fuels.

Energy Access for the Poor:
We have a long way to go

Percentages of populations served by electricity
Access to Electricity

Compared to other developing countries, access to electricity in many African countries is very low...

Providing Access: The Challenge of Scale & Pace

- Overall, we are losing the race: population is growing faster than rural electricity access.
  - business-as-usual implies that by around 2020 excluded population would increase further.

- Two regions - Asia and Africa - pose the greatest challenge.
  - account for about 1.5 billion of excluded population.
**Focus on More Access Alone Is Insufficient:**

- Access should be part of a broader reform program
- Reform program that embraces:
  - Private sector participation
  - Legal and regulatory frameworks
  - Cost-reflective pricing

**Power Sector Reform:**

*Where do we stand?*

The power sector reform agenda: six key steps

Of 115 developing countries:
- only 12 have taken all 6 steps
- 61 have started on reforms, and
- 42 have taken no steps at all
Power Sector Reform:
Where do we stand?

IPP Policy

<table>
<thead>
<tr>
<th>Region</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAP</td>
<td>78%</td>
</tr>
<tr>
<td>ECA</td>
<td>33%</td>
</tr>
<tr>
<td>LAC</td>
<td>83%</td>
</tr>
<tr>
<td>MENA</td>
<td>13%</td>
</tr>
<tr>
<td>SA</td>
<td>100%</td>
</tr>
<tr>
<td>SSA</td>
<td>19%</td>
</tr>
</tbody>
</table>

EAP - East Asia and the Pacific
ECA - Europe and Central Asia
LAC - Latin America & Caribbean
MENA - Middle East and North Africa
SA - South Asia
SSA - Sub-Saharan Africa

Power Sector Reform
Emerging Models

Latin American Model
- Divestiture plus structural reform
- e.g. Argentina, Chile, Bolivia

- Increases sector investment
- Improves performance
- Resilient to shocks

Asian Model
- Private investment
- Virtual privatization
- e.g. Pakistan, Indonesia, China

- Increases sector investment
- No performance improvement
- Vulnerable to shocks
**Power Sector Reform: African Experience To-date**

- Management Contract / Affermage
- IPPs
- Restructuring
- Privatization

- Marginal performance improvement
- Increases sector investment
- Process is slow
- Vulnerable to shocks if reform limited to IPPs

**GOOD NEWS**

Near unanimous acceptance of reforming power sector to improve economic performance

---

**Graph: Profile of Sector Risk vs. Golden Belt of Reform**

- **Number of Independent Power Projects**
  - > 10
  - 6 - 10
  - 1 - 5

- **Level of Power Sector Reform**
  - No reform
  - Minimal
  - Moderate
  - Advanced

Countries:
- Indonesia
- Pakistan
- Philippines
- China
- India
- Thailand
- Bangladesh
- Egypt
- Jamaica
- Jordan
- Morocco
- Sri Lanka
- Vietnam
- Argentina
- Chile
- Norway
- UK
- US
- Alberta
- Australia
- Colombia
- New Zealand
- Cote d'Ivoire
- Ghana
Global Lessons, African Initiatives

<table>
<thead>
<tr>
<th>Restructuring and Regulatory Reform</th>
<th>Côte d'Ivoire</th>
<th>Gabon</th>
<th>Senegal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Sierra Leone</td>
<td>Kenya</td>
<td>Namibia</td>
</tr>
<tr>
<td></td>
<td>Guinea</td>
<td>Mauritius</td>
<td>Mozambique</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ghana</td>
<td>Tanzania</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Uganda</td>
</tr>
</tbody>
</table>

Private Participation

High

Pre-reform Issues

- Rationale
- Goals and objectives
- Design and blue print
- Implementation program
  - Construction specifications
- Implementation management
Independent Power Projects

- No Reform
- Minimal
- Moderate
- Advanced

Market Risk High

Post-reform Issues

- Implementation Process
- Pre-reform commitments
  - Dealing with IPPs
- Communication strategy
- Regulation
Implementation

- Reform is process driven
- Market rules must be right from the start
- Initial tariff order should be
  - (3-5 years duration)
  - issued before regulatory agency is established
  - implemented as soon as UEB is restructured
  - consistent with market rules
- Ensure passage of necessary legislation
  - Concession law
  - Company law

Implementation (continued)

- Prepare restructured ESI for commercialization
  - Asset ownership
  - Debt allocation
  - Asset valuation
  - Opening Balance Sheets
  - Proforma Income Statement
Reform and Timing of Privatization

![Graph showing marginal cost of delay, marginal increases in expected sales proceeds, and maximum social benefits over time.]

Why regulate the power sector?

- To promote competition
- To protect consumers
- To ensure financial viability of companies
- To collect and disseminate information
Balancing customer and company interests

Costs and benefits of regulatory regime
Regulating tariffs in Uganda
Workshop Objectives

- Managing the reform process
- Contingent liability management
- Learning from international experience
  - Been there, done that
Post Reform Issues: The Experience of Ghana

Presented by

Mr. Michael Opam

(Director, Public Utilities Regulatory Commission (PURC), Ghana)
INTRODUCTION

The Ghana Power Sector Reform Programme which is in its second year of implementation is based on the following four point agenda recommended by the Power Sector Reform Committee and accepted by the Cabinet in June 1997:

a. introduction of new legislation to establish a four tier regulatory framework that involves the creation of two regulatory institutions to regulate tariffs and also to license operators, the introduction of explicit regulations, rules of practice and standard of performance to cover all aspects of power sector operations;

b. introduction of competition in wholesale power supply transactions, with an open access transmission services;

c. re-organisation of the existing state-owned power utilities into "strategic business units" in order to improve management accountability and also to re-capitalise the power utilities through public-private partnerships;

d. introduction of specific guidelines and procedures to ensure transparency in the setting of tariff for the power sector.

These recommendations took into account the stated objectives at the inception of the reform process embarked upon in 1994. Indeed the reforms in Ghana have been driven by similar objectives to those driving the reform process in Uganda. These may be summarised as:

a. effecting structural changes to move the power sector from existing monopolistic and centralised towards a more decentralised structure in which markets for the services of power utilities would be contestable;

b. improving transparency in the regulation of power utilities, including the determination of tariffs, thereby establishing an enabling environment for ensuring the financial health of the power utilities while protecting the interest of consumers;
c. increasing management accountability in existing public utilities (state owned); and

d. encouraging private investment in the development of Ghana's production capacity.

Effectively, the implementation of the power sector reform programme under the four point agenda began in late 1997 with the passage of two Acts by Parliament (PURC Act 538 and EC Act 541) and establishment of the Public Utilities Regulatory Commission (PURC) and the Energy Commission (EC).

This paper discusses the progress to date in the reform process and the experiences gained in regulation.
NEW INDUSTRY STRUCTURE

Figure 1 shows the generic structure of the Power Sector of Ghana as envisaged under the reform programme.

Figure 1. New Electricity Market Structure and Participants

The reforms in Ghana are geared towards complete unbundling of the electricity supply industry in generation, transmission and distribution activities.
Generation

Prior to the reforms the electricity generation was the exclusive responsibility of the Volta River Authority (VRA) a state-owned power company. Under the new dispensation the business of electricity generation and wholesale supply is open to competition either by the participation of private sector investment through Independent Power Producers (IPPs) or through partnership with the existing state-owned Power Company.

So far two privately owned power companies have been established with a total of 70MW. These companies are selling power to the Distribution Company through a Power Purchase Agreement with the Government of Ghana.

CMS Generation, Michigan, United States of America has also successfully completed a contract to expand the existing Takoradi Power Plant that is owned by the VRA from 330MW to 660MW under private financing.

Another IPP, Western Power Company Ltd., has recently been granted a license to generate and supply power from a 125MW barge-mounted power plant.

Transmission

A provisional license has been given to a new Transmission utility company. Hitherto, the transmission system was owned by VRA. The final separation of the Transmission Company from the "mother" company, VRA is expected to be completed by early 2000 after the on-going asset evaluation of the transmission system has been completed.

Distribution

The distribution of electricity is to be undertaken by distribution utilities with jurisdiction over distribution zones. It is proposed to divide the country into five distribution zones. The separation into five distribution zones was based primarily on the economic viability of the zones. The distribution of electricity is currently being undertaken by two state-owned companies (Electricity Company of Ghana (ECG) and Northern Electricity Department (NED)). The ECG has recently been transformed into a public limited liability company.
under a new Act enacted by Parliament recently while NED still remains a subsidiary of VRA.

An evaluation of the assets of the distribution zones is to be carried out by the end of this year, prior to the actual separation and divestiture of the existing distribution utility companies.

**Independent System Operator**

It is envisaged that the operation of the wholesale market in terms of dispatch and indicative pricing will be coordinated and managed by an Independent System Operator (ISO). The ISO would also operate a Spot Market for the supply of power to customers who are not on contract.

**Implementation of Regulatory Framework**

The PURC and EC Acts have changed dramatically the regulatory framework of the electricity supply industry in Ghana. The Electricity Industry, prior to the enactment of the new laws, has been practically a monopolistic regime dominated by self-regulating state-owned enterprises. There are now basically 3 institutions responsible for regulating the power sector. Figure 2 shows the new regulatory structure, institutions and their responsibilities.

*Figure 2. New Regulatory Structure, Institutions and Responsibilities*
In Ghana, the question as to whether to set up a regulatory body to deal exclusively with energy, or to set up one body for all public utilities, including telecommunications and water supply was under review. In 1996, Parliament enacted legislation to create a National Communications Authority, the regulatory body for telecommunications. In view of that development the Power Sector Reform Committee recommended the creation of a single body to regulate distribution of electricity and natural gas.

Upon recommendation by the Cabinet, the reforms in Ghana eventually culminated in the creation of 2 bodies by Acts of Parliament to regulate, inter alia, energy, viz. Public Utilities Regulatory Commission, established by Act 538 of 1997 and Energy Commission, established by Act 541 of the same year. Key among the Energy Commission's functions are licensing of energy sector service providers, indicative planning to meet the nation's energy requirements and establishing performance standards and rules of practice of operators licensed. The Energy Commission is subject to the direction of the Minister responsible for Energy.

Electricity Regulations

An Electricity Regulation, currently in a draft form, is to be finalised by December 1999. The Electricity Regulations will define, under a legislative instrument, the detailed technical operation of the electricity wholesale market. The Regulations also provide a broad perspective regarding the responsibilities of the two Regulatory bodies in respect of the operations and management of the wholesale market.
THE PUBLIC UTILITIES REGULATORY COMMISSION (PURC) – TERMS OF REFERENCE

The nine member PURC includes a Chairman, an Executive Secretary, and an institutional representative each for labour (Trade Unions Congress) and Industry (Association of Ghana Industries), a representative of domestic consumers as well as four experts in various aspects of the Commission's work.

The members of the PURC were appointed by the President in consultation with the Council of State1. Appointment of members of the PURC with the exception of the Executive Secretary is for five years and is renewable.

The Commission is supported in its work by a Secretariat headed by the Executive Secretary.

What the PURC can do

As mentioned earlier, the PURC was set up by Government under Act 538 to regulate the provision of utility services in the electricity and water sectors. By virtue of the Energy Commission Act, 1997 (Act 541) however, the PURC’s mandate also includes the regulation of tariffs with respect to the supply, transportation and distribution of natural gas as well as bulk storage and transportation of petroleum products.

The specific functions of the PURC as stated in the PURC Act 538 are as follows:

(a) to provide guidelines on rates chargeable for provision of utility services;
(b) to examine and approve rates chargeable for provision of utility services;
(c) to protect the interest of consumers and providers of utility services;
(d) to monitor standards of performance for provision of services;
(e) to initiate and conduct investigations into standards of quality of service given to consumers;
(f) to promote fair competition among public utilities;
(g) to conduct studies relating to economy and efficiency of public utilities;

1 Constitutional body set up to counsel the President in the performance of his functions
(h) to make such valuation of property of public utilities as it considers necessary for the performance of its functions;

(i) to collect and compile such data on public utilities as it considers necessary for the performance of its functions;

(j) to advise any person or authority in respect of any public utility;

(k) to maintain a register of public utilities;

(l) to issue regulations necessary for the effective implementation of the Act;

(m) to receive, investigate complaints and settle disputes between consumers and public utilities; and

(n) to perform such other functions as are incidental to the foregoing.

The PURC’s regulatory mandate is limited to the regulated market. The regulated market includes the market that is served by distribution utility companies. These are defined as those customers whose demand is less than a threshold demand established by the Energy Commission. The Energy Commission has recently defined the regulated market as those customers whose consumption is less than 50 GWH per year.

What the PURC Cannot Do

Under section 49 of the Act 538, the PURC has no jurisdiction over the following categories of customers:

1. VALCO

2. Exports of power to any other country

3. Free Zones Area.

VALCO is an aluminium smelting company that consumes about 40% of total energy consumed in Ghana. VALCO is supplied power from the VRA Akosombo hydro power station under a 50-year power supply contract which is based on a number of variables such as the amount of electricity generated from the hydro power station at Akosombo.
VRA currently supplies power to the utility companies in neighbouring countries of Togo and Benin. The PURC has no jurisdiction over the contractual arrangements between VRA and the utility companies of these countries.

The Free Zone Area comprises enterprises that are classified as belonging to the free trade zone industries. The free zone concept is geared towards the provision of incentives to specific export oriented industries to encourage them to invest in Ghana. The PURC has no regulatory oversight of the industries classified as free zone industries. They are free to negotiate their own electricity supply.

**REGULATORY INDEPENDENCE**

Under Section 4 of PURC Act 538, the PURC is an independent body and is not subject to the direction or control of any authority in the performance of its functions. For administrative purposes, however, the PURC is under the umbrella of the Office of the President.

It is to be emphasised that for the period of its albeit short existence, the PURC has not had any interference or external influence in respect of its work. Indeed the PURC has since coming into existence reviewed electricity tariffs on two occasions. These reviews have resulted in the increase of electricity tariffs by about 300%. Some customers complained about the new tariffs being excessive and actually made representations to the President for redress. Prior to the establishment of the PURC, similar representations were made to the President when the Ministry of Mines and Energy raised electricity tariffs. The President subsequently ordered the suspension of the tariffs and directed that the establishment of the PURC should be accelerated.

In the case of the PURC tariff hikes, the President did not overturn the decision of the PURC but rather requested the establishment of a committee to find other ways of mitigating the impact of the tariffs on the distressed consumers.

That is not to suggest that the PURC has had free reign or acted arbitrarily in the performance of its functions. Rather, the PURC's work has been guided by principles that are summarily expressed in its mission statement. The PURC has set as its goal ensuring development and delivery of the highest quality of public utility services to all consumers,
building a credible regulatory and also to ensure fairness, transparency, reliability and equity in the provision of utility services in the country.

REGULATORY CHECKS AND BALANCES

A number mechanisms have been put in place to ensure checks and balances in all aspects of regulation of the power sector.

a. Tariff Setting Guidelines

The PURC is, inter alia, statutorily required to prepare guidelines for setting tariffs. This will serve as a transparent mechanism for setting and adjusting tariffs. The PURC has accordingly prepared them. Although the two electricity tariff reviews did not strictly adhere to these guidelines, come the year 2000, all tariff reviews will be based on the guidelines.

b. Public hearings

Act 538 also stipulates that the PURC shall before approving rates provide as far as practicable the public utility and consumers affected by the rates a reasonable opportunity of being heard and shall take into account any representation made before it. Apart from being a strict statutory requirement, these proceedings have proved to be a useful mechanism for engaging stakeholders and the general public in a meaningful dialogue on the critical issue of tariffs.

The hearing process is preceded by a publication, in the mass media, of a summary of utility companies’ proposal for tariff adjustment. Representations are invited from consumers. These proposals are presented again at public fora where submissions whether written or oral are received from persons who wish to make representations.

c. Protecting the interests of Consumers and service providers

In the process of determining applicable rates, the PURC is enjoined to take into account the interests of consumers, the utility companies and investors. The PURC has had to maintain a delicate balance between the two divergent interests.
d. Funding the PURC

The funds of the PURC, under Act 538 include Government subvention, loans, grants and monies accruing to the PURC in the course of the performance of its functions.

The bulk of the PURC’s budget has been financed through Central Government subvention. Assistance from donors such as the World Bank and DFID have been useful but inadequate. This has resulted in an over dependence on Government for funding, an uncomfortable financial arrangement which may undermine the PURC’s independence.

The PURC plans to approval from the Parliament to allow it to establish its own source of funding through levies on electricity and other utility services under its jurisdiction.

e. Subsidiary legislation

Act 538 expressly mandated the PURC to issue certain specific regulations to: establish complaint procedures to determine consumer/utility complaints; and establish Consumer Services Committees. The Act also grants the PURC general powers to issue regulations considered necessary for implementing its functions.

Certain instruments have been prepared under the PURC’s legislating powers. The procedures adopted by the PURC in issuing these regulations are elaborate and culminate in the laying of the regulations before Parliament. Stakeholder views and comments are also taken into account in the legislating process.

f. Reporting to Parliament

The PURC is statutorily required to submit an annual report of its work to Parliament each year. This report is accompanied by the Audited Accounts of the PURC for the year reviewed as well as the Auditor General’s comments on the accounts. This reporting requirement means that the PURC is accountable for its operation to somebody, in this case, the Legislative Branch of Government.

g. Others
Apart from the above factors that guide and/or direct the PURC in the performance of its functions, the operation of certain other factors help ensure that the PURC does not detract from its set objectives. These factors include:

i. Regulatory Policy

As mentioned earlier, the PURC is committed to ensuring:

a. the development and delivery of the highest quality of utility services to consumers;

b. building a credible regulatory regime that will respond adequately to all stakeholders’ concern and interests and also ensure fairness, transparency, reliability and equity in the provision of utility services in the country.

Since these cannot be attained in a vacuum, the PURC continues to operate within broad principles and sector policies enunciated by Government in terms of development plans to meet Ghana’s energy requirements as well as developments in the power market.

ii. Institutional representation

The institutional representation of industry, labour and the representative of domestic consumer on the PURC is only symbolic but of significance in representing the interests of those groups. It is to be noted however that institutional interests, persuasive as they may be, have on no occasion been made to supersede the national economic interest.

iii. Credibility

Above all, if the PURC is to achieve the objects for which it was established, it is imperative that it performs its duties and responsibilities with professionalism and ensure that as an institution it enjoys acceptance by all stakeholders.
iv. Tariff reviews

Since its establishment, the PURC has undertaken two electricity tariff reviews. The first review was carried out in January 1998. Prior to the establishment of the PURC, the utilities had not received a tariff increase in three years, thereby maintaining tariffs at low level.

In approving the first tariff, the PURC's strategy was ultimately to achieve economic tariffs within a three-year period for industrial consumers and a four-year period for residential consumers. The PURC again adjusted the electricity tariffs upward in September 1998. The consequential increases that took effect from February 1998 represented an average rise of 300% in rates.

With those increases, the PURC issued directives to the utilities to increase efficiency, reduce system losses and improve quality of service to customers.

Throughout its work, the PURC has been as objective as it possibly can.
LESSONS LEARNED

As a newly established regulatory body, the PURC’s experience cannot compare with those of certain sister organisations that have been in existence much longer. Nevertheless, some useful lessons have been learnt during the PURC’s brief existence. Some of the experiences are shared below.

a. Consultation / Cooperation

The importance of consultations and cooperation between the PURC and sector agencies and stakeholders cannot be over emphasised. Government Ministries such as Ministry of Mines and Energy, the Ministry of Finance and the Attorney General’s Department have proven very helpful. The Energy Commission which has the licensing responsibility of licensing utilities, among others, has been recently inaugurated and both Commissions have initiated a collaborative plan. The PURC’s work has also been enhanced through frequent consultation with other stakeholders as well as public utilities themselves.

b. Information flow

It may be said that apart from a clear and comprehensive understanding of its mandates and the issues, all things being equal, a regulatory body can only perform creditably if it has access to information.

Fortunately, the PURC Act grants the PURC power to require the utilities to furnish at such intervals as the PURC may require, detailed reports of the finances and operations of the public utility. The PURC in the same vein has power to request all information required to provide answers to all questions raised by it. Further, the PURC has power to investigate costs of production of services by utilities in order to ascertain their reasonableness.

These powers have proven valuable in obtaining information from the utilities. In certain cases, full briefings have been requested and the utilities have obliged.
c. Regulatory Environment

i. The Role of the PURC

In the course of the PURC’s work, there has been some debate in the public arena as to the proper role of the PURC in regulating tariffs. Some contend that, as a regulatory body, the Commission should focus narrowly on the technical aspects of its mandate in setting tariffs without reference to the surrounding macro-economic or socio-economic factors although these have grave implications for the efficacy of the PURC’s tariff-setting functions.

More precisely, this school of thought insists that in reviewing tariffs, the PURC should concern itself exclusively and purely with the methodology and technical modalities for setting rates. In that case, the tariff review should be to ensure the viability of the utility companies, without taking cognisance of such “extraneous” factors as the principle of affordability, the income levels of consumers, cross-subsidisation of certain classes of consumers, the impact of the promulgated tariff regimes on certain categories of consumers, and the determination of consumers that merit preferential or special treatment. These factors, it is argued, are the responsibility of the Government and should not be taken into account by the PURC in its decision-making process.

Others have countered with equal force that the PURC’s tariff setting can neither be meaningful nor effective unless its decisions are explicitly informed by these factors and that the PURC’s work cannot realistically be insulated from the macro-economic, as well as the socio-economic environment of the country.

The PURC has endeavoured to steer a middle course between these schools of thought. The PURC recognises that it has neither the executive power nor the political responsibility to take any decisions or measures affecting the income levels of consumers, or the conditions that ensure affordability of utility services. Nor is the PURC alone competent to determine which categories of consumers are deserving of special treatment on grounds of economic incentives or social policy.
The PURC lacks the power to provide over-all strategic national solutions that would ensure that industries adversely affected by tariffs will be compensated in some way. Again, whether consumers, such as educational institutions, hospitals and health care facilities and government departments should all be subject to "economic" rates or be given preferential treatment cannot be determined by the PURC alone.

Finally, historical factors such as the chronic under-funding of the utility companies that are state-owned cannot all be addressed through the mechanism of the tariff adjustment by the PURC without imaginative measures initiated by the Government to redress the under-funding. The current situation, however, has resulted from the very low tariff regimes that have been supervised over the years by Government.

Nevertheless, it is to be observed that the efficacy of the PURC's tariff setting would be clearly flawed if it operated without reference to some of the above mentioned factors. The tariff setting exercise acknowledges some socio-economic underpinnings in its provision for lifeline, limited cross-subsidisation and some categorisation of consumers. But the PURC clearly is not competent to deal with all the major macro-economic and socio-economic matters that impinge on its work without appropriate dialogue with the relevant Government machinery.

ii. Low income levels

In Ghana, incomes are not only generally low but have been eroded over time by inflation and other factors. This means consumers, particularly those in the lower income bracket are spending an increasing and significant percentage of their incomes on utilities such as water and electricity. Until this trend is reversed, the marginalised consumers will find it increasingly difficult to pay utility bills a situation that will lead to indebtedness of the utility companies.

This state of affair poses a formidable challenge to the PURC in carrying out its responsibility for rate setting.
iii. Institutional Indebtedness

As regards the viability of the utilities themselves, it should be observed that their financial positions have been immensely weakened by the effect of huge debts owed them through their operations by Government Ministries, Departments and Agencies. The PURC has urged that the matter be urgently addressed in order to correct the impression that the PURC tariffs are designed partly to bail the utilities out of their financial predicament.

The other and equally important aspect of the debt issue is that the utilities owe substantial amounts to Government, Banks and Donors. The PURC has urged the authorities in respect of these debts that some solution be fashioned to deal with the problem.

The PURC has also underscored the need to create a conducive environment for its operation so that the nation can appreciate the benefits of an effective regulatory institution such as the PURC.

iv. Quality of Service/Consumer Protection Issues

A key responsibility of the PURC is monitoring and ensuring compliance of quality of service in the provision of utility services. One major problem in Ghana with utility service provision has been poor quality of service. This has been the result of the fact that, under the old dispensation, the utility providers were effectively their own regulators.

In order to streamline the regulation of quality of service, the PURC has prepared a number of legislative instruments, one of which has already been passed by the Parliament. The legislative instrument on “Termination of Service” has been enacted by Parliament. This legislative instrument, among other things, requires the utility company to give 14 days written notice to a defaulting customer before his service is terminated. In addition disconnection cannot be done at the weekends unless the utility company has made provision for re-connection during the weekend. Hitherto, disconnection of service was done in most cases without appropriate notification.

The legislative instrument on “termination of service” has been well received by consumers. On the other hand, the utility companies have argued that it will encourage consumers to default in payment of bills even though they accept the need for such regulations.
Other legislative instruments designed to protect consumers that are being finalised are (i) complaint procedures and (ii) standards of service and billing practices.

It is hoped that these legislative instruments will bring about civility and improved performance in the provision utility services to customers.
Ideas About Utility Regulation

Rafael A. Moscote,
Director Public Service Regulatory Agency
Republic of Panama
Technical Workshop on Uganda's Power Sector Reform
Entebbe, Uganda - October 20, 1999

Regulatory Challenges

- To protect consumers from possible abuse from firms with monopoly power
- To support investment by protecting investors from possible arbitrary action by government
- To promote economic efficiency
Scope of functions of a Regulatory Entity

To meet these challenges, typically a Regulator has jurisdiction over

- quality of service
- rates in non competitive segments of the sectors
- abuse of monopoly power

Necessary Requirements

To accomplish its objectives, a Regulator should have:

- Financial Autonomy
- Administrative Autonomy
- Regulatory Autonomy
Accountability

- On budget matters to legislative body
- Review of regulatory decisions: by judiciary

Possible Organizations

- Industry-Specific: A separate agency is established for each industry
- Sector Wide: An agency is established for more broadly defined sector, such as energy or transport
- Multi-Sector: A single agency is established for all or most utility industries
Advantages of multi-industry agencies

- Sharing of resources
- Facilitating learning between industries
- Reducing risk of “industry capture”
- Reducing risk of “political capture”
- Reducing risk of economic distortions due to inconsistent approaches to common issues
- Dealing with blurred industry boundaries

Arguments against multi sectorial regulators

- Multi-industry agency will lack sufficient industry-specific knowledge
- Failure of the agency will result in costs to all industries
- Having a number of agencies permits a degree of institutional competition
- Multi-industry agencies are only appropriate for “small” economies
Policy and Regulation

Ministries should be responsible for sector policy, including:

- public investment
- privatization
- sector restructuring
- taxation
- subsidies

Regulators should not participate in above matters.

Regulation of Service Quality

- Standard setting (and Monitoring)
- Effect on Tariffs
AGENDA

I. INTRODUCTION TO OLIVER, WYMAN & COMPANY

II. OVERVIEW OF NON-RE COURSE FINANCE

III. ADVANTAGES AND DIFFICULTIES OF USING GUARANTEES

IV. RISK MANAGEMENT STRATEGIES

V. RISK MEASUREMENT TECHNIQUES
I. INTRODUCTION TO OLIVER, WYMAN & COMPANY

OLIVER, WYMAN & COMPANY IS THE LEADING STRATEGY CONSULTING FIRM SPECIALIZING IN FINANCIAL SERVICES

• Quantitatively-driven strategy consulting
  - 34 Directors and 250 Consultants
  - Offices in New York, London, Frankfurt, Toronto, Madrid and Singapore

• Pre-eminent consulting firm in risk measurement and management

• Focused on top 50 financial institutions globally
  - Citi, Morgan Stanley, Deutsche, ING, UBS
  - Bancomer, Thai Farmers, DBS
  - World Bank, IFC, EDC
II. OVERVIEW OF NON-RECOUSE FINANCE

WE WILL START BY DESCRIBING FOUR TYPES OF FINANCING STRUCTURES

- Traditional Corporate Finance without Government involvement
- Non-Recourse Finance without Government involvement
- Traditional Direct Government Finance
- Non-Recourse Finance with a Government Guarantee
TRADITIONAL CORPORATE FINANCE WITHOUT GOVERNMENT INVOLVEMENT

- Repayment of debt is from the company’s amalgamated revenues

- Revenues are diversified

- The business plan is flexible

- The business is subject to many different changes and risks
NON-RECURSE FINANCE WITHOUT GOVERNMENT INVOLVEMENT

- Many parties can be involved
- Repayment of debt is from only the one project
- Revenues are strongly undiversified
- The revenue stream is highly structured
- The risks are well defined
TRADITIONAL DIRECT GOVERNMENT FINANCE (CONT'D)

- Repayment of debt is from the customers and taxpayers

- The revenue stream and financial structure vary with Government policies

- The Government takes almost all risks
NON-RECOUERE FINANCE WITH GOVERNMENT GUARANTEE

* Repayment of debt is initially only from the standalone project
* Highly structured
* Risks are shared amongst the participants
  - Sponsoring Company
  - Private Banks
  - Government
  - Multilaterals
* Ideally, specific risks are given to the participants who are best able to manage those risks
LET US LOOK IN MORE DEPTH AT DIRECT GOVERNMENT FINANCE AND NON-RECORESE FINANCE WITH GUARANTEE

- Direct Government Finance
  - Government raises debt and is liable
  - Debt and reserves are repayed from taxes and/or tariff revenues
  - If a problem occurs, Government can use reserves or raise tariffs and taxes

- Non-Recourse Finance with a Government Guarantee
  - Government gives guarantee and is contingently liable
  - Utility raises tariff income
  - Government may initially increase taxes if a reserve is set aside for contingent liabilities
  - If a problem occurs, Government must “suddenly” make “unexpected” payments either from reserves or from general revenues

III. ADVANTAGES AND DIFFICULTIES OF USING GUARANTEES
IN MANY WAYS, GUARANTEE RISKS ARE SIMILAR TO THE RISKS GOVERNMENTS ALWAYS FACE IN LARGE PROJECTS

• If there is a shortfall in tariff income, in both cases the Government must make up the difference
  - With direct loans, the Government has less tariff income than expected and must use taxes to payback lenders
  - With a guarantee, the Government must use taxes to payout on the contingent liability if the primary obligor defaults

• If the Government takes possession of the facility, in both cases it is responsible for paying back the outstanding debt

• The main difference is that guarantees are explicit and can be targeted at a specific subset of risks

THE GOVERNMENT CAN OBTAIN SIGNIFICANT ADVANTAGES FROM USING A GUARANTEE STRUCTURE

• Bringing in the private sector creates incentives for operations to be run more efficiently

• Foreign private sector firms become more familiar with investing in Uganda

• Risks covered are more explicitly defined in a guarantee vs. a loan
  - For example, risk of tariff shortfall can either be included or excluded by a guarantee

• Some risks, e.g., construction, can be shifted to the private sector so that losses resulting from delays in construction are borne by private equity holders rather than the Government
THE MAIN DIFFICULTY WITH GUARANTEES IS THAT THERE IS RELATIVELY LITTLE EXPERIENCE WITH MANAGING THEM

- Guarantees are more complex than direct liabilities
  - More difficult to quantify the risks and "know what you are getting"
  - More potential for misunderstandings

- The procedure for committing to guarantees is less well established than for direct liabilities
  - Potential for reduced scrutiny, accounting, measurement and planning
  - The liabilities, if they occur, will be "unexpected" if they are not appropriately assessed and anticipated

- Any contingent liabilities that are correlated with periods of country stress are particularly difficult

IV. RISK MANAGEMENT STRATEGIES
THE GOVERNMENT SHOULD HAVE A MECHANISM TO MANAGE CONTINGENT LIABILITIES

- Management of contingent liabilities requires explicit contingency planning
  - It is tempting but not useful to "hope it doesn't happen"

- Measure the risks
  - You can't manage what you can't measure

- Establish an internal risk management team which has the necessary expertise and can advise on explicit and implicit contingent liabilities
  - Quantification of risks and effective subsidies
  - Structuring of new deals to ensure Government holds suitable risks
  - Provisioning and reserving
  - Policies and regulations for committing to contingent liabilities

THE BEST WAY TO MANAGE CONTINGENT LIABILITIES IS TO ALLOCATE THE RISKS CORRECTLY

- Understand the different types of risk associated with project financing and allocate each to the party best able to deal with it

- Take on risks that the Government can best control, e.g., changes in environmental law

- Allow there to be private equity in the Utility to absorb potential initial losses

- Strive to provide only partial risk coverage via the guarantee

- Seek insurance against specific high severity events, e.g., project risks that are highly correlated with country condition like weather

- Allow higher returns to sponsors if they take on more risk
TO AVOID "SURPRISES" THE GOVERNMENT SHOULD
AGREE ON A CONTINGENCY PLAN TO PREPARE FOR
THE EVENTS

- Avoid an immediate crises when the event occurs
  - Establish (contingent?) standby lines of credit
  - Establish an Escrow account to get through short crises
  - Establish a Reserve (self insurance)

- Have a plan to minimize longer term disruption
  - Have an understanding as to how tax and tariffs would change in
    case of a call on the guarantee

- Quantify the expected impact of each strategy

FOR THE GOVERNMENT, THE POTENTIAL RESULTS CAN
BE EXPRESSED IN TERMS OF PROBABLE "WORST
RESERVE LEVEL" OR "WORST TAX INCREASE"

ILLUSTRATION OF INITIAL GUARANTEE RISK PROFILE

<table>
<thead>
<tr>
<th></th>
<th>$0 MM</th>
<th>$0 MM</th>
<th>0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2%</td>
<td>$5 MM</td>
<td>$14 MM</td>
<td>2%</td>
</tr>
<tr>
<td>3%</td>
<td>$6 MM</td>
<td>$18 MM</td>
<td>3%</td>
</tr>
</tbody>
</table>
THE EXPECTED EFFECT OF ALTERNATIVE APPROACHES TO MITIGATING THE RISK CAN BE EXPLORED

ILLUSTRATION OF FINAL PROJECT RISK PROFILE

<table>
<thead>
<tr>
<th>Event</th>
<th>Insurance</th>
<th>Loss</th>
<th>Amount</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Fail</td>
<td>$0 MM</td>
<td>$0 MM</td>
<td>$0 MM</td>
<td>0%</td>
</tr>
<tr>
<td>$4 MM</td>
<td>$2 MM</td>
<td>$2 MM</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>$0 MM</td>
<td>$0 MM</td>
<td>$6 MM</td>
<td>2%</td>
<td></td>
</tr>
</tbody>
</table>

V. RISK MEASUREMENT TECHNIQUES
EFFECTIVE RISK MANAGEMENT STARTS WITH RISK MEASUREMENT: YOU CAN'T MANAGE WHAT YOU CAN'T MEASURE

• Understand the risks

• Understand the effective price/subsidy for each risk

• Parameterize the relative probability of the occurrence of each event, the Expected Cost, and the Cost at Risk

THE UNCERTAINTY IN OUTCOMES HAS TWO SETS OF DRIVERS

• Macro economic trends and crises
  – FX, interest rates, inflation, GDP, oil price, weather

• Events
  – Failure by Generator to complete construction
  – Generator breaks the law
  – PPA Terminated because Government defaults
  – PPA Terminated because of Expropriation
  – Political Force Majeure: General Strike, War
  – Force Majeure: Natural Disaster, Fire
  – Change in Law increasing costs or invalidating PPA
  – Utility unable to collect enough tariff income or receive production
FOR EACH POSSIBLE LEVEL OF COST THERE IS AN ASSOCIATED PROBABILITY

*RISK MEASUREMENT FRAMEWORK: PROBABILITY DISTRIBUTION OF COSTS*

WE HAVE BUILT MODELS TO SHOW THE PROBABILITY DISTRIBUTION OF COSTS AND CORRELATIONS WITH NATIONAL CONDITIONS

**STRUCTURE OF ANALYSIS**

- Scenarios
  - Interest Rates
  - FX
  - Inflation
  - GDP
  - Weather
  - Events

- Project Structure

- Possible Project Liabilities

- Contingency Plan

- National Conditions

- National Outcome
SUCH MODELS CAN BE USED TO IDENTIFY, BOUND AND MEASURE THE MAJOR SOURCES OF RISK

EXAMPLE RESULTS:
POSSIBLE LOSSES DUE TO DIFFERENT TYPES OF RISK

<table>
<thead>
<tr>
<th></th>
<th>Expected Cost ($MM)</th>
<th>Cost at Risk ($MM)</th>
<th>Subsidy/Insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations</td>
<td>$1</td>
<td>$19</td>
<td>0.1%</td>
</tr>
<tr>
<td>Force Majeure</td>
<td>$2</td>
<td>$92</td>
<td>0.6%</td>
</tr>
<tr>
<td>Micro Economic</td>
<td>$6</td>
<td>$49</td>
<td>0.4%</td>
</tr>
<tr>
<td>Macro Economic</td>
<td>$3</td>
<td>$47</td>
<td>0.4%</td>
</tr>
<tr>
<td>Social</td>
<td>$4</td>
<td>$53</td>
<td>0.4%</td>
</tr>
<tr>
<td>Political</td>
<td>$4</td>
<td>$65</td>
<td>0.5%</td>
</tr>
<tr>
<td>Total</td>
<td>$20</td>
<td>$325</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

SUCH ANALYSIS CAN DETERMINE THE "WORST CASE" LEVEL OF RESERVES RESULTING FROM DIFFERENT POLICY ACTIONS

EXAMPLE RESULTS:
WORST CASE RESERVES FOR DIFFERENT POLICY ACTIONS
IT IS ALSO POSSIBLE TO SHOW THE CORRELATION OF THE PROJECT RISKS WITH COUNTRY CONDITIONS

EXAMPLE RESULTS: IMPACT OF ONE RISK FACTOR, E.G., RELATIVE RAINFALL OR FUEL PRICE

CONCLUSIONS

- Guarantees explicitly define the nature of contingent liabilities
- Guarantees can be used in project financing to reduce the total risk to the Government
- Management of contingent liabilities requires explicit contingency planning
- Effective risk management requires risk measurement
  - Identification of the sources of significant risk
  - Quantification of the magnitude of risks
  - Assessment of the potential impact of alternative management strategies
SOVEREIGN CREDIT RATINGS

JOCK PATON

SOVEREIGN RATINGS

- A SOVEREIGN CREDIT RATING IS AN ASSESSMENT OF A GOVERNMENT'S CAPACITY AND WILLINGNESS TO SERVICE ITS DEBT OBLIGATIONS ACCORDING TO THE TERMS OF THE DEBT ISSUES.

- IF NO DEBT IS RATED, A SOVEREIGN RATING IS AN ASSESSMENT OF THE COUNTRY'S RELATIVE ABILITY AND WILLINGNESS TO SERVICE ITS DEBTS GENERALLY.
SOVEREIGN RATINGS
Key Considerations

- POLITICAL RISK
- INCOME & ECONOMIC STRUCTURE
- ECONOMIC GROWTH PROSPECTS
- FISCAL FLEXIBILITY
- PUBLIC DEBT BURDEN
- PRICE STABILITY
- BALANCE OF PAYMENTS FLEXIBILITY
- EXTERNAL DEBT & LIQUIDITY

SOVEREIGN RATINGS
Key Figures and Ratios

- Per Capita Income
- Deficit % GDP
- Debt % GDP
- Current Account Balance
- External Liquidity (FX Reserves % Current Account Deficit + Repayments of Medium and Long-Term Debt + Short-Term Debt)
### SOVEREIGN RATINGS

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>LOCAL CURRENCY RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOUTH AFRICA</td>
<td>BBB+</td>
</tr>
<tr>
<td>MOROCCO</td>
<td>BBB</td>
</tr>
<tr>
<td>ARGENTINA</td>
<td>BBB-</td>
</tr>
<tr>
<td>BOLIVIA</td>
<td>BB+</td>
</tr>
<tr>
<td>LEBANON</td>
<td>BB</td>
</tr>
<tr>
<td>PARAGUAY</td>
<td>BB-</td>
</tr>
<tr>
<td>PAKISTAN</td>
<td>B</td>
</tr>
<tr>
<td>INDONESIA</td>
<td>B-</td>
</tr>
<tr>
<td>RUSSIA</td>
<td>CCC</td>
</tr>
</tbody>
</table>

### CONTINGENT LIABILITIES

- FINANCIAL SYSTEM
- SPECIFIC GUARANTEES
- GOVERNMENT SUPPORT
- PUBLIC/PRIVATE RELATIONSHIPS
PREFERRED CREDITOR
STATUS

- Role of Multilateral Agency Guarantees
- Implications for UGANDA
- Treatment by Rating Agencies
- Implications for UGANDAN entities
International Trends and Experience in Electricity Sector Restructuring and Privatization

Two approaches in the 1990s to private sector participation in the power sector:

- **Single Buyer model**: private investors build new plants and sell to **state-owned utility** (single buyer)
- **Electricity Market model**: design electricity market; establish market rules/regulations; vertical and horizontal separation; and privatize distribution and generation
Comparison of Market Models

Single Buyer Model
- Easy to implement; status quo not threatened
- Adds capacity quickly without need for major sector reform
- Contingent liabilities incurred by Government
- Can reduce generation costs if bid competitively
- Under economic stress, may require re-negotiation of contract terms

Electricity Market Model
- Challenging but manageable to implement;
- Competition in market reduces generation costs
- No contingent liabilities for Government
- New pricing issues emerge concerning: transmission and use-of-system charges

Results of Distribution Privatization
- WBG has tracked more than 70 electricity distribution privatizations since 1990
- Roughly half (in sale proceeds) have been in Latin America
- Sales proceeds from Latin American transactions have averaged $1,166/customer or $226,215/GWh
Since 1992, 74 electricity distribution companies have been privatized worldwide...

<table>
<thead>
<tr>
<th>Country</th>
<th>Time Frame</th>
<th>Number of deals</th>
<th>Sales Proceeds ($m)</th>
<th>Sales in GWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>1992-1998</td>
<td>16</td>
<td>3,621</td>
<td>26,322</td>
</tr>
<tr>
<td>Brazil</td>
<td>1995-1998</td>
<td>14</td>
<td>15,619</td>
<td>151,177</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1995-1998</td>
<td>12</td>
<td>33,540</td>
<td>245,177</td>
</tr>
<tr>
<td>Hungary</td>
<td>1995</td>
<td>6</td>
<td>1,100</td>
<td>28,039</td>
</tr>
<tr>
<td>Australia</td>
<td>1995</td>
<td>5</td>
<td>6,257</td>
<td>17,893</td>
</tr>
<tr>
<td>Peru</td>
<td>1994-1997</td>
<td>5</td>
<td>454</td>
<td>5,456</td>
</tr>
<tr>
<td>Chile</td>
<td>1995-1998</td>
<td>4</td>
<td>na</td>
<td>13,257</td>
</tr>
<tr>
<td>Colombia</td>
<td>1997-1998</td>
<td>3</td>
<td>779</td>
<td>7,846</td>
</tr>
<tr>
<td>El Salvador</td>
<td>1998</td>
<td>3</td>
<td>2,072</td>
<td>15,481</td>
</tr>
<tr>
<td>Bolivia</td>
<td>1995</td>
<td>2</td>
<td>1,335</td>
<td>10,694</td>
</tr>
<tr>
<td>Panama</td>
<td>1998</td>
<td>2</td>
<td>301</td>
<td>3,270</td>
</tr>
<tr>
<td>Guatemala</td>
<td>1998</td>
<td>2</td>
<td>640</td>
<td>3479</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>74</td>
<td>65,718</td>
<td>528,091</td>
</tr>
</tbody>
</table>

Source: Energy Markets and Reform database

...with most companies selling 50% or more of their shareholding...

[Bar chart showing distribution of shares in transactions]

Source: Energy Markets and Reform database
...raising nearly $27 billion in sales proceeds

Source: Energy Markets and Reform database

...but sale value per GWh varied over countries

Source: Energy Markets and Reform database
What is Driving the Increase in Company Valuation?

- Purchase Price
- Strategic Premium
- Discounted Value of Cash Flow from Core Business, including operating improvements, system expansion, and optimistic scenarios
Strategic Premium

Possible Explanations

- Market Structure and Regulatory Rules
- Gas-electricity Convergence
- Asset Integration
- Value Chain
- Brand Identity
- Economies of Scope

Strategic Premium

RECENT EVIDENCE

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>COMPANY SOLD</th>
<th>PURCHASER</th>
<th>STRATEGIC INTEREST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colombia</td>
<td>Electrocaribe &amp;</td>
<td>Houston Industries/Caracas</td>
<td>Owns EPSU, integrated utility in Colombia</td>
</tr>
<tr>
<td></td>
<td>Electricosta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Argentina</td>
<td>Edesap</td>
<td>AES/CEA</td>
<td>Third distribution company in Buenos Aires province</td>
</tr>
<tr>
<td>Guatemala</td>
<td>EEGSA</td>
<td>Tampa Energy (Enron close second)</td>
<td>Owns two generating plants (Enron owns one plant)</td>
</tr>
<tr>
<td>Brazil</td>
<td>Electro</td>
<td>Enron</td>
<td>Several gas distribution utilities and a stake in the Brazil-Bolivia pipeline</td>
</tr>
<tr>
<td></td>
<td>Electricidad</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panama/El Salvador</td>
<td></td>
<td>AES</td>
<td>Regional electricity market</td>
</tr>
</tbody>
</table>
Edesur S.A

Privatized in August 1992
Customers: 2,100,000
Sales: 10398 GWh, 14.3% of total
South of Buenos Aires
Owner: Perez Compac, Chilectra, PSI Energy, Endesa, Employees Fund
Operator: Chilectra

Edelnor S.A

Privatized in 1994
Customers: 750,000
Sales: 2,993 GWh, 32% of total northern part of Lima
Owner: Chilectra, Endesa, Local Investors
Operator: Chilectra

Source: Chilectra Annual Report
Average Spot Market Price vs Retail Price

Source: Cammesa
Vesting Contracts

Andrew Campbell
Intelligent Energy Systems
22 October 1999

Topics

+ What are vesting contracts?
+ What is their purpose?
+ Overview of financial contracts
+Issues impacting the design and development of vesting contracts
+ Case Study - Victorian Vesting Contracts
Market Development

✦ Wholesale and retail competition
✦ Customers have choice of supplier
✦ Significant issues in the introduction of retail competition and customer choice:
  – customer education
  – billing and settlement systems
  – metering
✦ Phased introduction of retail competition
  – franchise (i.e. non-contestable) customers
  – contestable customers

Wholesale Electricity Market

✦ Commodities type market
✦ Pool or spot price based on supply offers and demand bids
✦ Pool price can be highly volatile
✦ Risk management
✦ Requirement for hedging type contracts to "lock in" prices for defined quantities
Wholesale Electricity Market (Vic)

- Generators
- The Pool
- System Control
- Retailers
- High Voltage Consumers
- PowerNet Victoria

Risks Associated with Franchise Customers

- Wholesale Electricity Purchase Costs
- Retailer
- Franchise Customer Fixed Tariff

Financial Risk from highly volatile purchase costs and fixed customer payments
Policy Issue

- Non-contestable customers have regulated tariffs
- "Host" retailer must purchase wholesale energy to supply non-contestable customers
- Dilemma for host retailer
  - regulated non-contestable income
  - market driven purchase costs
  - uncontrollable and unacceptable risks
- Policy solution
  - "vesting contracts" phased in with non-contestable volumes

Electricity Market Structure
Objectives of Vesting Contracts I

- Hedge Retailer purchase costs of electricity supplied to franchise customers
- Stabilise market cash flows
- Phased increase in the direct exposure to commercially negotiated contracts and the spot market

Objectives of Vesting Contracts II

- Restrict the market power of generators
- Lock in asset value prior to sale
- Provide incentives for generators to be available at times of high price
- Facilitate an orderly transition to a competitive market
- Maintain some initial spot exposure
- Tradable contracts
Financial Hedge Contracts

* Usual interpretation
  - gross pool $\implies$ financial hedges
  - net pool $\implies$ physical contracts
  - net financial effect of each type is similar

* Financial hedge advantages
  - Standard instrument, potentially tradeable
  - encourages “firm” contracting as hedges are usually written without reference to physical performance
  - firm contracting encourages high performance
    - e.g. plant availability in Aus has moved from 70% ~ 90%
Financial Hedge Contracts

- **Main Types**
  - 2-way hedge (or swap) contract
  - 1-way hedge (or option) contract

- **Contract attributes**
  - capped price
  - firm / non-firm
  - flexible

Hedge Contracts
Contract for Differences

Difference Payment =

\[ \text{Contract Quantity} \times (\text{Contract Strike Price} - \text{Pool Price}) \]

Firm: Does not change
Non-Firm: Can change
Flexible if quantity changes with customer load

Capped if:

(Contract Strike Price - Pool Price)

term is limited to some maximum or capped value

“Pool Exposure”

Spot Payment = Demand \times \text{Pool Price}

Contract payment =

\[ \text{Contract Quantity} \times (\text{Strike Price} - \text{Pool Price}) \]

Total Payment =

\[ \text{Contract Quantity} \times \text{Strike Price} + (\text{Demand} - \text{Contract Quantity}) \times \text{Pool Price} \]
Physical v Financial Contracts

- Physical contract - generate 110MW (one hour)
  - Contract 100 MW @$40/MWh = $4000
  - Spot/balancing 10MW @$20/MWh = $200
  - Total Income = $4,200
- Hedging contract, generate as above
  - Spot 110MW @ $20/MWh = $2,200
  - Hedge 100MW at $40/MWh = 100 x (40 - 20) = $2,000
  - Total Income = $4,200

Contract Terms

- Counter-party (e.g. power station, retailer)
- Type (e.g. swap, cap)
- Reference price (e.g. spot price at some location)
- Duration (1 month, 1 year, 5 years)
- Time divisions (peak, off-peak)
- Contract volume
- Strike price
- Settlement terms (e.g. weekly, monthly)
- Force Majeure
Contract Risks

✦ Counter-party credit risk
  - counter-party does not/cannot pay
  - creditworthiness checks are essential
✦ Settlement risk
  - lags between spot and contracts settlement
✦ Force Majeure
✦ Delivery (Transmission and distribution)
✦ Regulators are taking greater interest in risk management capabilities of players

Force Majeure

✦ Possible suspension of contract terms from
  - spot market suspension
  - labour strikes/lockouts?
  - plant outages?
  - transmission outages?
  - acts of God?
✦ Strong market pressures to:
  - minimise force majeure
  - require risk to be managed by party best able to do it
## Victorian Contestable Customers

<table>
<thead>
<tr>
<th>SITE</th>
<th>DATE OF ELIGIBILITY</th>
<th>NO. OF SITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic 2-5 MW</td>
<td>21 Dec 1994</td>
<td>47</td>
</tr>
<tr>
<td>Domestic 5-10 MW</td>
<td>1 July 1995</td>
<td>330</td>
</tr>
<tr>
<td>Energy 750 MW+</td>
<td>1 July 1996</td>
<td>1,500</td>
</tr>
<tr>
<td>Energy 2,500 MW+</td>
<td>1 July 1998</td>
<td>5,000</td>
</tr>
<tr>
<td>All customers</td>
<td>1 Jan 2001</td>
<td>1,957,340</td>
</tr>
</tbody>
</table>
Structure of Vesting Contracts

- Same as commercially negotiated contracts
- Major Issues influencing the structure of vesting contracts:
  - industry structure
  - market arrangements
  - contract tradability requirements
  - level of generator and retailer risks
  - load and pool price volatility
  - performance incentives

Approach

- Vesting Contracting Working Group established
  - Representatives from generators, retailers, government, VPX
  - Considered all issues associated with vesting contracts
  - Modelling of participant risks
- Pool Price Working Group established
  - Representatives from generators, retailers, government, VPX
  - Simulation modelling of future spot price outcomes
**Major Issues that Arose**

- "VoLL" or high pool price risk
  - uncontracted retailer load
  - contracted generation
  - inability for disaggregated generators to "insure" against very high prices
- Demand risk or pool exposure - uncertainty of future franchise demand
  - load growth
  - day to day variations due to weather etc
- Force Majeure

---

**Co-Insurance Contracts**

- **GEN 1**
  - Capacity 100 MW
  - Contract 75 MW
- **GEN 2**
  - Capacity 100 MW
  - Contract 75 MW
- **GEN 3**
  - Capacity 100 MW
  - Contract 75 MW
- **GEN 4**
  - Capacity 100 MW
  - Contract 75 MW

GEN 1 contracts with GEN2,3,4 for "insurance" cover should it be unavailable

No Insurance cover left for GEN 2,3,4
Volume Flexing Contracts

Victoria: 2-Way Vesting Contracts

- 144 time sectors (2 x 3 x 24)
  - working day / non working day
  - seasons: mold, cold, hot
  - 24 hours each day
- Each time sector 2-way hedge volume
  - assigned to each generator based on variable cost based merit order
  - Pro-rated to each retailer based on 95% of retailer demand
- Each time sector contract strike price
  - based on projected pool price level and profile
  - no option fee
2-Way Vesting Contracts Con’t

- Generator Availability Risk
  - Risk to generators of firm contracts resulted in difference payments being capped at $300/MWh

- Retailer Volume Risk
  - Contract volume flexible 7.5% up or down based on annually determined demand profile

- Retailer Price Risk
  - Exposed for pool prices above $300/MWh
  - Use of 1-way “cap” contracts

Victoria: 1-Way Vesting Contracts

- Hedge risk above $300/MWh
- Generators contract volume equal to actual generation output
  - no risk to generators
  - co-insurance scheme
- As total generation output equates to total retail load, retail price risk is removed
- Option fee
  - based on distribution of contract difference payments (mean + one standard deviation)
  - incentive component also added based on generator ACF
Contract Pricing

- Issue of Approach
  - attempt to contract at projected price level, or
  - assign prices based on defined criteria
- Victorian contract prices based on simulated market behaviour capped by new entry
  - competitive / low off-peak prices
  - average pool price about $37/MWh

Victorian Experience

- Generator market power limited
- Non-firm (vesting) contracts reduced incentives on some generators to be available
- Lower pool prices than projected
- Revenue support provided though vesting contracts has allowed for generator viability at very low pool prices
- Increase in pool prices expected when vesting contracts expire
Queensland Experience

- Policy to keep vesting low - 50% at start
- Queensland system needs new capacity
- Generators had excessive market power
- Prices went high, although now "managed"
- High vesting for 3 years would have smoothed transition

Conclusions

- The presence of contracts will influence generator behaviour and pool prices
- Substantial risk to retailers supplying franchise customers under fixed tariffs
- Vesting contract exist to manage these risks and provide a smooth transition to a competitive market
- High level of vesting the most appropriate solution
FINIS
Panama's Regulatory Environment

Rafael A. Moscote,
Director Public Service Regulatory Agency
Republic of Panama
Technical Workshop on Uganda's Power Sector Reform
Entebbe, Uganda - October 21, 1999

General Aspects

- Resolutions by the Regulatory Entity.
The Public Service Regulatory Entity

- Established in January 1996.
- Managed by three Directors, appointed for staggered five years terms.
- Original objective was the regulation of the water supply, sewerage, telecommunications and electricity sectors.
- In 1999, Radio, Television and Natural Gas were added.

Public Service Regulatory Entity Funding

The entity is funded from a fee paid by all public service providers in the sectors under its jurisdiction.
Concessions and Licenses

CONCESSIONS are required for:

- Hydroelectric and Geothermal based generation (50 years).
- Transmission (25 years).
- Distribution (15 years).

LICENSES are required for all other types of generating facilities (40 years).

Both are given by the regulatory entity.

Distribution Concession Renewal

As the end of the concession term approaches, the Regulatory Entity will organize a competitive tendering process.

- If the incumbent offers the highest bid, it will have a new concession for another 15 years term.
- If the incumbent does not offer the highest bid, the highest bidder will pay the incumbent and become the new majority shareholder of the concessionaire.
Restrictions on Generators

- Cannot request a new concession if that would take them to supply over 25% of the national market, except by authorization by the Executive Branch of Government.
- Cannot control distribution companies.

Restrictions on Distributors

- Cannot generate more than 15% of their requirements, except by authorization by the Regulatory Entity.
- Cannot control generators.
- Cannot request new concessions if that would make them supply more than 50% of the customers of the national market.
**Wholesale Market**

- **Contract Market**
  - Capacity contract - physical commitment
  - Energy contract - financial commitment
  - Supply contract
  - Reserve contract
  - Long term
  - Short term

- **Spot Market**

**Tariff Regulation**

- Transmission: connection and use of system charges.
- Distribution: value added, commercialization, connection and use of system charges.
Distribution and Comercialization
Allowed Revenues

• O & M, losses, overhead and depreciation corresponding to efficient companies plus a rate of return on net fixed assets in operation.
• Established for each distribution company for the 4 year period 1 July 1998 - 30 June 2002.

Distribution - Tariff Regime -
Basic Premises (1)

• Rate of Return: 30 year US treasuries plus 800 ± 200 basis points
• Rate Base: Regulatory Entity estimate for the assets in operation for the following 4 years taking into account the original cost as per book value
Distribution - Tariff Regime - Basic Premises (2)

Allowed costs: As per actual comparators; the following were selected for the 1998 - 2002 period:

- Very high density area: Cambridge Electric Light Company, USA
- High density area: Kaukauna Electric & Water Department, USA
- Medium density area: Savannah Electric and Power Company, USA
- Low density area: Fitchburg Gas and Electric Light Company, USA
- Very low density area: People's Electric Power Cooperative, USA

Tariff Adjustments

Every six months to account for:
- Changes in the cost of purchased energy.
- Inflation adjustment according to the CPI for T & D charges.
- Expansion of the street lighting system.
Tariff Reviews

- Normally every four years.
- Extraordinarily, as requested by distributor or transmission company or by Regulatory Entity, based on exceptional circumstances.
- Starting point is always actual service quality and efficiency indicators.

Non Regulated Customers

- Initially customers with $\geq 500$ Kw
- ERSP has discretion to lower threshold
- Have the option of using regulated tariff regime or to freely negotiate with any supplier
- Entitled to open access to Transmission & Distribution facilities
Reform of the Victorian Electricity Supply Industry

Andrew Campbell
Intelligent Energy Systems
22 October 1999

Topics

- Background to reforms
- Objectives of reforms
- Reformed industry structure
- Reform management and privatisation
- Market implementation and evolution of market rules
- Market Results
- Consumer education
Background

+ Prior to Reforms, Victorian Electricity Supply Industry (ESI) was owned by the Victorian State Government

+ State Electricity Commission of Victoria (SECV):
  - Power Stations / coal mines (brown coal open cut mines)
  - Transmission and distribution
  - Retail activities

+ Victoria traded energy with connected states (South Australia and New South Wales) at marginal energy costs under the “Interconnection Operating Agreement”

+ Performance of the SECV was moderate by best practice standards
The first step in the reform process consisted of establishing a single buyer model. Initiated by poor accounting systems, fiscal imperative and the national reform agenda. Weaknesses in the model meant that it was soon replaced by a model where generators contract directly with retailers.
**Victorian Government Objectives**

- Victorian Liberal Government elected 1994
- Victorian Government objectives were clear
  - Internationally efficient industry
  - Lowest possible cost to consumers
  - Empower consumers through choice
  - Privatisation and reduce public debt burden
  - Improved investment efficiency
  - Light handed regulation
- Trade-offs were inherent in the objectives

**Spot Market**

- Match supply with demand during operations
  - produces dispatch levels (centralised dispatch)
  - produces market-clearing prices
- “All energy traded through the pool”
  - contracts are generally for “hedging” (risk management) rather than for physical delivery
  - financial “netting” gives similar outcome to a net pool
- Advantages
  - market operator doesn’t need to know about contracts
  - encourages “firm” contracting (but not compulsory)
Restructuring

- Vertical disaggregation into competitive sectors (generation and supply) and monopoly sectors (transmission and distribution)
- Horizontal disaggregation of generation sector for maximally competitive market
- Victorian Power Exchange
  - System control
  - Market function
  - Network service provider (including transmission planning)
- PowerNet Victoria - owner and operator of transmission
- Independent Regulator

Reformed Industry Structure
Distribution Businesses

- Distribution assets revalued (Optimised Depreciated Replacement Cost)
- Regulated Open Access to distribution wires
- Rate shock for rural customers avoided by balance sheet adjustments

Generators

- Break-up to individual base load station companies

<table>
<thead>
<tr>
<th></th>
<th>MW</th>
<th>Fuel</th>
<th>Privatised</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loy Yang B</td>
<td>1000</td>
<td>Brown Coal</td>
<td>1997</td>
</tr>
<tr>
<td>Yallourn W</td>
<td>1450</td>
<td>Brown Coal</td>
<td>1996</td>
</tr>
<tr>
<td>Hazelwood</td>
<td>1600</td>
<td>Brown Coal</td>
<td>1996</td>
</tr>
<tr>
<td>Loy Yang</td>
<td>2000</td>
<td>Brown Coal</td>
<td>1997</td>
</tr>
<tr>
<td>EcogenNewport</td>
<td>500</td>
<td>Gas Thermal</td>
<td>1999</td>
</tr>
<tr>
<td>Jeeralang</td>
<td>465</td>
<td>Gas Turbine</td>
<td>1999</td>
</tr>
<tr>
<td>Southern Hydro</td>
<td>469</td>
<td>Hydro</td>
<td>1998</td>
</tr>
</tbody>
</table>
Regulation of ESI in Victoria

Retail Tariff Reform

- Phased introduction of retail deregulation completed by end of 2000
- Safety Net Tariff for high voltage customers
- Significant tariff reductions for small business & domestic customers
- Guaranteed price reductions to franchise customers
## Victorian Contestable Customers

<table>
<thead>
<tr>
<th>SITE THRESHOLD</th>
<th>DATE OF ELIGIBILITY</th>
<th>NO. OF SITES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>21 Dec 1994</td>
<td>47</td>
</tr>
<tr>
<td></td>
<td>1 July 1995</td>
<td>330</td>
</tr>
<tr>
<td></td>
<td>1 July 1996</td>
<td>1,500</td>
</tr>
<tr>
<td></td>
<td>1 July 1998</td>
<td>5,000</td>
</tr>
<tr>
<td></td>
<td>1 Jan 2001</td>
<td>1,957,000</td>
</tr>
</tbody>
</table>

---

## Reform Management

Privatisation and Market Development
Reform Management: October 1993

- SECV initially divided into three corporatised entities - generation / transmission / distribution
- Electricity Supply Industry Reform Unit (ESIRU) established to continue reform process
- All operational & intellectual viewpoints considered
- High level of industry involvement
- Status reports and critiques
- Decisive decision making
- Result was a low resistance to reforms

Corporatisation

10 commercial companies created under Corporations Law

Appointment of boards and management:
- based on NZ corporatisation model
- appointment of non-executive board and CEOs strictly on merit - no political bias
Privatisation

- Objectives -
  - lock in benefits of reform
  - reduce state debt
  - ensure industry cannot revert to integrated monopoly

- Privatisation of distribution businesses initially -
  - predictable revenue flow from franchise market
  - predictable revenue from competitive market (most operating cash flow from regulated distribution charges)
  - clear regulatory environment

Privatisation Parameters

- Flexible and Prudent - Government not locked into fixed timetable
- Principal Objective was to maximise value
- Secondary Objective - blend of foreign and domestic ownership
- Conventional two stage process used for first DB - United Energy
- ESIRU and advisers managed production of Information Memorandum
Privatisation Process

State-Operated Assets → Establishment Board
Corporatisation → Turnaround & Deregulate
CEO recruited → Decision to Sell
Structure created → Sale Agents appointed
Scoping Study → Memorandum issued
Shortlisted Selected → Due Diligence
Sale Completed

Initial Scoping Study
- to help establish objectives

Set up Monitoring Regime

Topics Initial Scoping Study Can Address

- Sale price pre and post turnaround
- Likely cost and time required for turnaround
- How to achieve competition or adequate regulation
- Political hazards
- Necessary attributes of board of directors
- Recommended monitoring regime
Privatisation - Results to Date

- All 5 Distribution Businesses sold in 2nd half of 1995
  - total receipts of $A8.8 Billion
- All generators privatised 1996 - 1999
- PowerNet Victoria privatised 1997
- Total electricity industry receipts - $A23 Billion

Market Implementation - Overview

- Industry surprised at market effectiveness
- Evolutionary process - developments acted to transfer risks from market operator to participants
- Control of participant financial risks a key feature of market development and implementation
- "Conservative" VPX security policies dampened market signals
- Surplus supply acted to reduce supply reliability risks associated with market implementation
Implementation Issues
Market Rules

- Generation reserve criteria
- VoLL
- Bidding frequency and self commitment
- Hydro dispatch
- Central dispatch and pricing logic
- Information requirements and release
- Regional pricing model

IES 25

Generation Reserves

- Conservative generation reserve policy
  - 1000 MW of generation reserve
- Initially VPX acted to prevent very high pool prices
- VPX intervention resulted in reduced spot prices
  - tripping smelter load
- Impacted incentive at the “top end“ of the market
- Remains an issue in the National Electricity Market

IES 26
Value Ascribed to VoLL

- Probably more discussion and views on this matter as any other
- High values increase the risk to market participants
  - uncontracted retailers
  - contracted generators
- Initially set at $1000/MWh and increased to $5000/MWh
- Low value has been seen as reducing the incentives on new peaking capacity

Treatment of Hydro Generation

- Initial view was that hydro dispatch needed to be centrally optimised to achieve economic efficiency
- Hydro offered energy use for the day - energy block bidding and energy displacement pricing
- Not considered necessary - hydro now treated the same as all other (thermal) generators
- Pond levels / hydro use controlled through “re-bidding”
Information Needs and Provision

- Initial market design had weekly generator offers and centralised unit commitment
- Vicpool III Enhanced (1996) transferred commitment and others risks to the market, requiring increased market information needs
- "Infoserver" introduced to transfer large quantities of information
  - client/server architecture
  - updated as changes occur

Implementation Issues - VPX

- Market intervention - allowing the market to perform
- Operating according to market rules - new mindset
- Metering - reliability problems
- Settlements - pool price determination
- Prudentials - VoLL risk a major issue
- Ancillary services - assessment of value and price
Market Results and Consumer Education

Results: Generation

- Focus on plant reliability in competitive market
- Immediate significant efficiency gains
- Coordination can occur efficiently through the market
  - maintenance planning and response to reserve shortage
- Vesting contracts
  - significantly limited generator market power
  - acted to reduce incentives to respond to high prices
- Pool prices volatile
  - weather/demand and plant outages
  - retailers desire high level of contract cover
Results: Retail and Distribution

+ Initial reduction in distribution performance
  - reduction in maintenance costs
+ Improved distribution asset management practices
+ Very low retail margins (2% or less)
+ High competition for market share and significant reduction in consumer electricity costs
+ Use of load control to manage financial risks

Results: Transmission

+ Transmission reliability risks borne by market participants (generators and retailers)
+ Transmission risks increase difficulty of firm contracts
+ PowerNet Victoria not totally responsive to market needs
  - scheduled line outages at times of high prices
+ “Firm Access” still a major issue in the NEM
Pool Price Outcomes
2 Week Moving Average

“Typical” Price/Load Trace in Vic
Consumer Education

- Consumers very slow to understand reforms
- Information release by government during the reform process
- Education and training mainly directed to industry
- Reforms still not widely understood by the majority of electricity users
- Customers incentive to understand reformed electricity market aligned with contestability
FINIS