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Paper: The Challenges of Regulating Independent Power Producers in Trinidad and Tobago

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Challenges of Regulating Independent Power Producers in Trinidad and Tobago

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POWERGEN

Trinity Power Limited

Structure of Presentation

- Short introduction.
- Unbundling and the Privatization of Generation in Trinidad and Tobago – The creation of IPPs and the single buyer model.
- Outline typical characteristics of ‘classic’ Power Purchase Agreements (PPAs) and review the PPAs of the Independent Power Producers (IPPs) in T&T.
- Examine the response of the Regulated Industries Commission (RIC) to some of the immediate regulatory challenges posed by PPAs (namely treatment of PPA costs) in its review of tariffs for T&TEC - the transmission and distribution company.
- Examine some of the other areas of concern as regards the IPPs and the PPAs and look at the regulatory challenges these concerns impose.
- Proposals for Action.
- Concluding Remarks

Introduction

- In Trinidad and Tobago there are two Independent Power Producers (IPPs).
  - Power Generation Company of Trinidad and Tobago (PowerGen); and
  - Trinity Power Management Limited (formerly InnCogen)
- The Regulated Industries Commission (RIC), though not a party to either PPA, has regulatory oversight for the entire electricity sector.
- PPA costs, which includes conversion and fuel costs, contribute to about 70% of the final retail price.

Introduction

- Some of the areas of concern in respect of IPPs and their associated PPAs include:
  - their long duration;
  - the fixed prices which create a stable and certain revenue stream for the IPP;
  - lack of requirement for the IPP to assume any market risk;
  - contract provisions that are less demanding than detailed market rules.
- However, the regulatory challenges imposed by IPPs do not simply revolve around the specific contract provisions included in the PPA. Equally if not more important is the specific market structure in which the IPP operates, as this often determines, in no small way, the treatment of PPA costs on the distribution utility and ultimately on final customers.

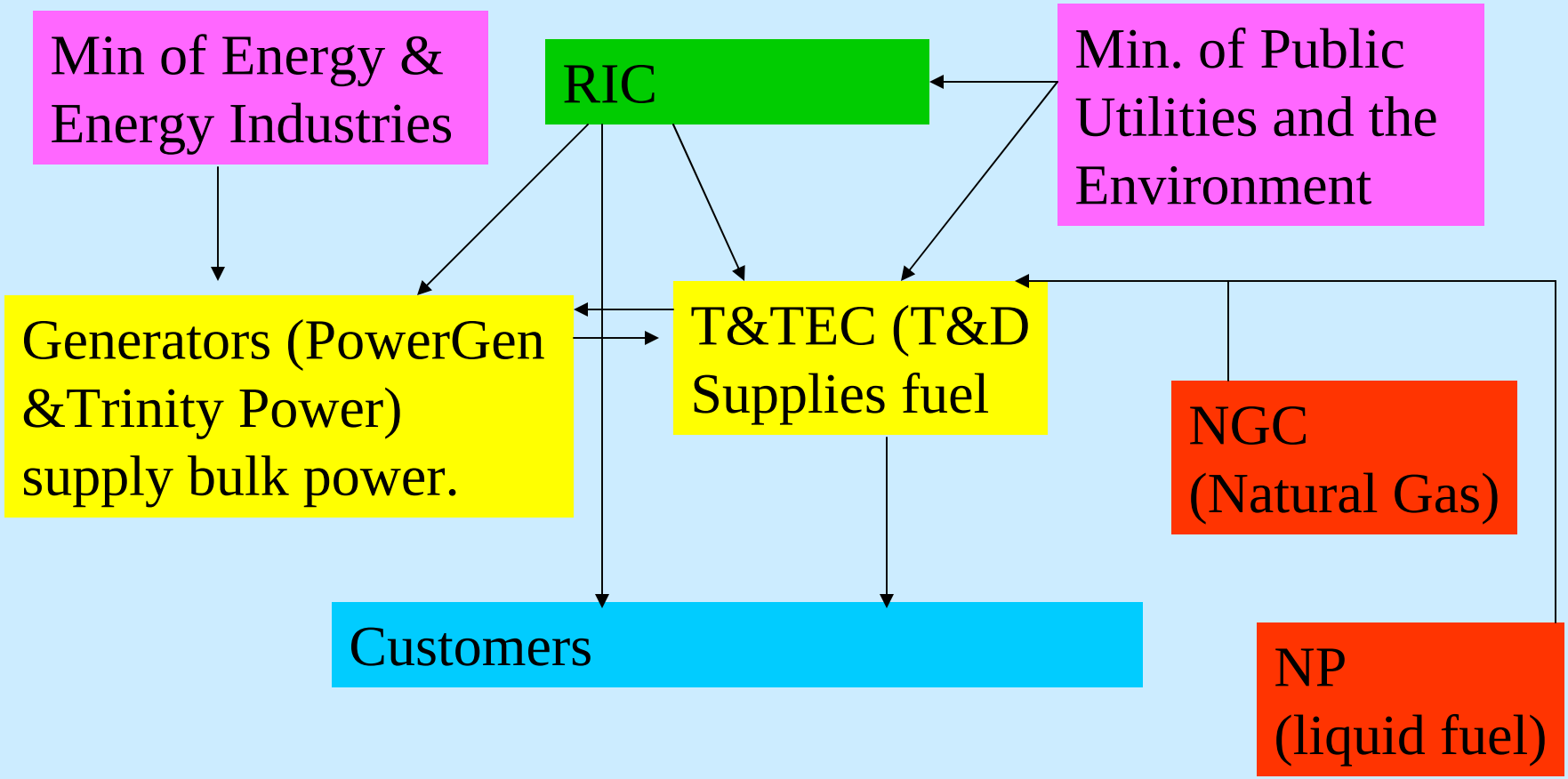
Unbundling and the Privatization of Generation in Trinidad and Tobago – The creation of IPPs and the single buyer model.

- In December 1994, the Government of Trinidad and Tobago partially divested (through competitive tender) the generation assets of the state-owned vertically integrated monopoly, the Trinidad and Tobago Electricity Commission (T&TEC) and created Power Generation Company (PowerGen); a single joint venture generating company.
- The reform model also created the possibility that new entrants would be IPPs. In September 1999 to meet growing capacity demands T&TEC entered into a 30 year PPA with Trinity Power Management Ltd. (formally InnCogen Ltd).

Unbundling and the Privatization of Generation in Trinidad and Tobago – The creation of IPPs and the single buyer model.

- The RIC, as mentioned previously, is not a party to either of the PPAs, but by virtue of the RIC Act No 26 of 1998, it has regulatory oversight for the entire electricity sector. In addition to formulating the methodology for establishing prices the RIC has powers to, inter alia:
  - Carry out studies of efficiency and economy of operation and of performance by service providers and publish the results;
  - Prescribe and publish standards of service; and
  - Promote Competition where possible.

Electricity Sector in Trinidad and Tobago



Market Structure, Unbundling and the Privatization of Generation

- Electricity markets can be structured in four ways:
  - Monopoly;
  - Single buyer;
  - Wholesale competition; and
  - Retail competition.

Market Structure, Unbundling and the Privatization of Generation (cont'd)

- The structure of the market in which an IPP operates has a very direct impact on regulatory challenges faced by the regulator and indeed the policy maker.
- Thus a regulator overseeing an IPP operating in a wholesale market will have different concerns and face different challenges from a regulator overseeing IPPs operating in the single buyer market.

Market Structure, Unbundling and the Privatization of Generation (cont'd)

- In Trinidad and Tobago, the unbundling of generation from transmission and distribution effectively made T&TEC a single buyer.
- This model also poses challenges and issues for the regulator:
  - If the single buyer also owns generation, it may select bids from its generation subsidiary or bias competition in favour of it.
  - The model concentrates all financial risk in the hands of the single agent. If this (often state-owned) agent is unable to meet its obligations to generators, the government is expected to step in. Effectively, taxpayers or customers, not investors, bear all the risk.

Market Structure, Unbundling and the Privatization of Generation (cont'd)

- investment in generating capacity is not driven by market incentives, but rather by bureaucratic preference.
- the standard single buyer, which is often a state-owned entity with weak incentives to minimize energy procurement costs, might be susceptible to political interference.

Market Structure, Unbundling and the Privatization of Generation (cont'd)

  - the model tends to be self-perpetuating and under pressure from vested interests governments tend to delay further electricity sector reforms.

- In Trinidad and Tobago, T&TEC's role as a single buyer coupled with the fact that both PPAs contain take or pay quotas as well as its ownership of 51% of PowerGen make it susceptible to some of these weaknesses.
- This particular structure means that for the single buyer the PPA costs largely constitute 'uncontrollable costs' which must be borne by retail customers. The RIC has to be concerned with the pass through of PPA costs because the IPPs are selling to a captive customer.

Standard Conditions found in most PPAs

- Woodhouse (2005) identifies some of the characteristics that are typical of ‘classic IPPs’, which are private plants which sell electricity under a long-term contract.
  - the key off-taker (buyer) for power is a state-owned (or state regulated) electric utility.
  - financed on a project basis, with a special purpose vehicle established to own and manage the IPP.
  - projects are highly leveraged, debt accounts for a large share of project finance.

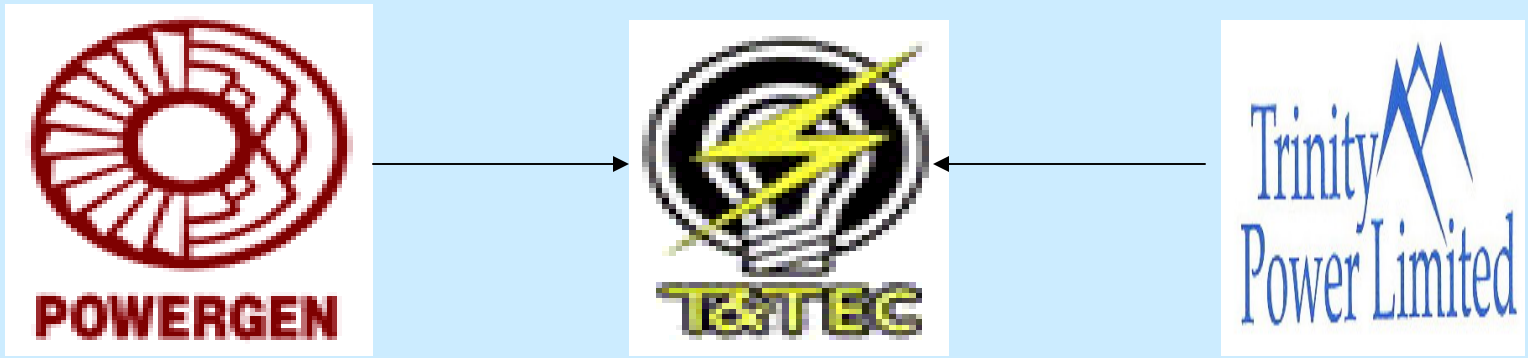
Standard Conditions found in most PPAs

- financial risk is shifted to the government by relying on long-term PPAs (typically 25 years or more).
- include minimum offtake and tariff setting provisions. Where the offtaker was a state owned utility, a sovereign guarantee often required.
- legal and regulatory risk is shifted to the government, typically through ‘change in law’ provisions which indemnify investors for losses stemming from adverse legal or regulatory changes.

Standard Conditions found in most PPAs

- PPA payments are denominated in (or indexed to) a hard currency.
- the standard PPA invokes international arbitration to settle disputes in order to avoid domestic courts.

Characteristics of the Power Purchase Agreements between T&TEC and PowerGen and T&TEC and Trinity Power



PARAMETER	POWERGEN	TRINITY POWER
Parties	T&TEC – Buyer/ Purchaser/offtaker PowerGen - Seller	T&TEC - Buyer/purchaser/offtaker InnCogen - Seller
Contract or Effective Date	23 December, 1994	12th February, 1998
Term of Contract	15 yrs	30 yrs
Contracted Capacity	Not greater than 819 MW (719-peak, 100-spinning reserve)	Minimum of 195 MW
System Heat Rate	The Guaranteed System Heat Rate is set at 14,000 kJ/kWh, as amended from time to time by mutual agreement of the parties.	The Guaranteed System Heat Rate is not defined in the contract
Monthly Capacity Payment	Based on a Base Rate of US$7.48 per kW per month plus 95% of US consumer price index.	Based on a base rate of US$0.012 per kWh plus 27.5% of US consumer price index
Energy Payment	Base Energy Rate is US$0.00055 per kWh, which escalates by the US CPI.	Base Energy Rate is US$0.00045 per kWh, which escalates by the US CPI.

Excess Capacity Payment	Calculated in the same manner and using the same rates as the Monthly Capacity Payment in respect of the Contracted Capacity. However, according to the contract, once Excess Capacity is requested a complex mechanism is activated, which requires a large recurring monthly payment to the end of the current year, whether the capacity is used or not.	Excess Demand is charged on an as-used basis at the base rate. This method is quite economical and there is little scope for reduction.
Heat Rate Bonuses and Compensation Amounts	If the annual average heat rate is brought below 13,300 (14000x0.95) T&TEC pays PowerGen a bonus for saving fuel. Conversely, if the annual heat rate exceeds 14,737 (14000/0.95) T&TEC charges PowerGen a penalty towards the excess fuel used.	
Fuel Supply	T&TEC to supply fuel	T&TEC to supply fuel
Change of Law	Seller's 'economic return' not to be affected by any changes in law	Seller's 'economic return' not to be affected by any changes in law
Arbitration	Arbitration under the Rules of the London Court of International Arbitration	Arbitration under the rules of the International Chamber of Commerce, by a panel of three arbitrators.

The Regulatory Scenario thus far - The Proposed treatment of PPA costs and other associated regulatory action undertaken by the RIC in it review of tariffs for T&TEC.

- In its review of distribution tariffs for T&TEC, the RIC closely examined of the impact of PPA costs (conversion and fuel costs) on the costs of T&TEC and ultimately on quantum of pass-through costs to be borne by consumers.

Continued…….

- The RIC noted that despite constraints ‘a regulator’s responsibility is to provide the regulated firm with incentives to explore options for reducing uncontrollable costs’. With this in mind the RIC examined, inter alia, the following:
  - The role of the heat rate and its impact on fuel costs.
  - The calculation of conversion costs which includes capacity charges, energy charges and excess capacity charges; and
  - Performance monitoring.

Treatment of PPA Costs Continued…….

- The heat rate measures the efficiency of the conversion process.
- Lowering the heat rate means improving the efficiency of the conversion process, which translates into a reduction in the volume of fuel used and lower costs.
- PowerGen's PPA defines a guaranteed system heat rate of 14,000 kJ/kWh. But there is a ±5% tolerance limit. Thus the acceptable heat rate range is between 13,300 to 14,737 kJ/kWh.
- There is no specific guaranteed system heat rate defined in the Trinity Power PPA.

Continued……

- While PowerGen has been able to operate within the limits defined in its PPA, other systems are already operating at heat rates lower than those specified in the PPAs.
- Despite the constraints imposed by the characteristics of the local system there were certain actions which could be undertaken which would enable PowerGen to operate at the lower end of its contracted heat rate.
- Trinity Power has a heat rate of about 12700 kJ/kWh, which is below the heat rate obtained by PowerGen.
- The RIC proposed less than 100% pass-through of the fuel costs estimated by T&TEC in its business plan.

Treatment of PPA Costs Continued….

- In Trinidad and Tobago payment for conversion costs is based on a tiered tariff structure which consists of:
  - Monthly Capacity Payment
  - Energy Payment
  - Excess Capacity Payment
- The payment clauses are defined in both PPAs. However, while the capacity and energy payments are broadly similar the calculation of the excess capacity payment differs.

Continued…..

- In the case of PowerGen the Excess Capacity Payment is calculated in the same manner as the Monthly Capacity Payment. However, once Excess Capacity is requested a complex mechanism is activated, which requires a large recurring monthly payment to the end of the current year, whether the capacity is used or not.
- In the case of Trinity Power excess demand/capacity is charged on an as-used basis at the base rate. This method is quite economical.

Continued……

- The RIC in its review acknowledged that the scope for reducing the cost of conversion is limited given the existing terms of the both PPAs.
- However, the RIC proposed not to pass-through 100% of T&TEC's proposed costs to signal to T&TEC and Government that these clauses need immediate review.

Continued….

- Performance Monitoring
  - The RIC also sought to bring generating under its proposed performance monitoring system.
  - The main objective of Performance Monitoring and Reporting (PMR) system is to provide comprehensive information to stakeholders about the services they receive while at the same time provide incentives for service providers to improve their performance relative to other utilities by highlighting the variation of performance.

Sample of some of the Performance Indicators …

Output Factor (per unit) Measures the extent to which each unit capability is used	$\frac{[\text{MWh generated in period}]}{[\text{Site rating on unit (MW) x hours in period connected to system}]} \times 100$	%	Quarterly and Yearly
Realization of monthly system loads	$\frac{[\text{Available capacity (MW)}]}{[\text{System peak load at each monthly peak}]} \times 100$	%	Quarterly and Yearly
Inadequate generation capacity due to a forced or planned outages	$\frac{[\text{Unavailable capacity (MW)}]}{[\text{System peak load at each monthly peak}]} \times 100$	%	Quarterly and Yearly

Areas of concern in respect of IPPs and PPAs in Developing Countries

- The actions by the RIC are steps in the right direction.
- There are a number of issues which need to be further explored when reviewing the impact of PPAs and assessing IPP performance.

Continued…..

- As noted by Albouy and Bousha (1998) one needs to examine whether or not:
  - **risk has been transferred to the private sector;**
  - **IPPs increased the sector's exposure to foreign exchange risks;**
  - **the IPPs relieved capacity shortages;**
  - **IPPs hiked the price of electricity; and**
  - **IPPs have improved sector institutions.**

Areas of concern and regulatory challenges posed by these concerns in respect of IPPs and PPAs in Trinidad and Tobago

- **The transfer of risk to the private sector-** the risk transferred to the private investors has been minimal.
  - Neither PowerGen nor Trinity Power is responsible for the procurement of fuel, this responsibility resides with T&TEC.
  - PowerGen did not need to construct any new plant and in the case of Trinity Power, construction risks were minimal because investors were guaranteed a revenue stream for 30 years.
  - Additionally, T&TEC's payments are guaranteed by Government.

Continued…

- **Exposure to foreign exchange risks –** neither company has to import fuel for its plants as both Natural Gas and Diesel are procured locally by T&TEC. Conversion payments are denominated in US dollars and linked to the US Consumer Price Index. Thus all currency risks have been transferred to T&TEC.

Continued…

- **Relieved Capacity Shortages** – PowerGen was able to increase the plant availability factor which increased from an average of about 64% before reform to about 83%, thereby leading to the postponement of new capacity of about 200MW between 1995-1997 at an estimated cost of TT$564 million (US$95).
- At the same time Trinity Power has also supplied much needed power, without recourse to financing from central government.

Continued…

- **Cost of electricity–** this is a complex issue and the data needed to ascertain whether the cost of electricity production has increased is not readily available.

Continued…

- **Performance of Sector Institutions-** It is not clear whether the existence of the current PPAs have hampered the efficiency in systems operations.
  - However, what is clear is that reforms have not progressed further than the unbundling of generation from the other segments off the sector. Moreover, T&TEC's shareholding in PowerGen is cause for concern. As majority shareholder in PowerGen it is unlikely that T&TEC would press for increased efficiency at PowerGen unless it is forced to do so.

Proposals for Action - Word of Caution

- The areas of concern noted in the previous sections are complex ones and there exists no ready made formula for easily tackling such issues. Indeed many countries have sought to terminate or renegotiate PPAs, yet others have declared certain clauses in them inherently illegal.
- However, such decisions need careful consideration.

Proposals

- *Efficiency review of operations* - to ensure that inefficient costs are not being passed to final customers the RIC should conduct an efficiency review of the operations of both IPPs to ascertain the costs and quality of service.
- *Performance Monitoring* -The findings of the efficiency study can be coupled with RIC's efforts at performance monitoring and be used to formulate quality of service standards for the generation sector

Proposals

- *Review of Contracts* – "Strict" or thorough level review where the regulatory body evaluates the appropriateness or reasonableness of every contract provision in detail. These reviews can be done ex-ante (before contract signature) or ex-post (after contract signature) in order to protect the public interest.
- "Benchmarking review" where the regulator can examine the industry wide values e.g. heat rates and recommend alteration of terms only as required to protect final customers from paying for inefficient costs.
- Strict review not recommended at this time. Benchmarking review may yield better results.
- it is clear that given the review undertaken by the RIC as part of its review of prices for T&TEC that there are at least two areas that need to be reviewed/renegotiated in the case of the PPAs.
    - Benchmark heat rates need to be reviewed/established in the PPAs.
    - Pricing of Capacity payments needs to be examined.

Proposals

- Moreover, in order to avoid some of these problems in the future some countries e.g. Guatemala, Panama and Nicaragua have implemented laws that mandate competitive procurement and the PPA has to be approved by the regulator before prices can be passed through in retail tariffs. Similar action can be undertaken in T&T.

Proposals

- *Cross-ownership issues* - T&TEC's shareholding in PowerGen should either be divested or placed in a holding company like the National Enterprises Limited (NEL).This will remove any perception that T&TEC can favour PowerGen if it has to seek new generation.
- *Formulation of Policy Framework* -A comprehensive policy framework needs to be developed for the entire electricity sector. It is generally believed that wholesale competition is possible in systems of 1000MW and over. Thus the possibility of wholesale competition needs to be explored.

Concluding Remarks

- As noted throughout this paper many jurisdictions have or are facing the problem of IPP contract prices which seemed reasonable when the contracts were executed but today seem too high.
- We have explored possible actions that have been undertaken in Trinidad and Tobago and have proposed further action which can be undertaken.
- As a final note it is important to remember that while renegotiation of these contracts is possible, the key to successful renegotiation is for both parties to have a clear understanding of each other's goals and constraints. With goals and constraints clearly expressed creative solutions can generally be found.

THE END