

# FACTORS CONSTRAINING THE IMPLEMENTATION OF PUBLIC PRIVATE PARTNERSHIPS IN THE ELECTRICITY SECTOR IN UGANDA

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## ABSTRACT

**Purpose** – The paper presents the findings of research into the relative importance as perceived by sector stakeholders, of factors that hamstring private sector participation in the development of hydropower generation facilities through public private partnerships in Uganda. The stakeholders considered in this paper are those representing the government and private sector entities in the development of the partnerships.

**Methodology** – A literature review was used to identify the relevant factors, which were incorporated into a survey questionnaire for primary data collection. The self administered questionnaire was physically delivered to the respondents. To determine the relative importance of the factors, the data obtained is subjected to nonparametric and descriptive statistical tests as supported by the SPSS environment.

**Findings** – The respondents regarded the regulatory and legal frameworks as being attractive for private sector participation and this was further enhanced by their confidence in the government's commitment to honor its contractual obligations. However, difficulties in structuring and obtaining finance together with issues over the cumbersome approval process and resistance from environmental groups were identified as the most significant constraints to the development and implementation of public private partnerships in the Uganda electricity sector.

**Value** – Amidst increasingly constrained public budgets and insufficient service delivery, private sector participation through public private partnerships are increasingly being used as a vehicle for the delivery of physical infrastructure. The government of Uganda currently grappling with a crippling electricity power deficit has over the years driven strategies to encourage private sector participation through public private partnerships in the electricity sector, albeit with limited success. Recognizing the importance of an adequate and reliable supply of power, it is anticipated that the identification of the relative importance of the constraints as perceived by stakeholders, will inform the process of developing measures and strategies to mitigate the constraints thus facilitating the speedy implementation and deal closure of public private partnership initiatives with the ensuing benefits.

**Keywords:** Public Private Partnerships, Uganda, Electricity sector, Investment.

## INTRODUCTION

The provision of adequate and reliable physical infrastructure is important given the role it plays in supporting the growth of industry, delivery of social services, enabling the movement of people and goods, amongst others. Physical infrastructure has long been identified as catalysts for economic growth. Traditionally the provision, management and financing of physical infrastructure assets has

lain with governments, financed through taxation and, in developing countries, bilateral and multilateral support (Akintoye *et al.*, 2003). In the electricity sector, the responsibility for generating, transmitting and distributing electricity was typically undertaken by a vertically integrated state owned utility company.

Limitations on the amount of tax an economy can support together with inefficiencies in collection and for developing countries; a decline in bilateral and multilateral assistance, have constrained the ability of governments to perform this function effectively (ADB, 2000). In addition, the poor service delivery characteristics of many state owned utility companies and an increased demand for infrastructural services by growing urban populations motivated the search for alternative infrastructure delivery mechanisms such as public private partnerships (PPPs) (ADB, 2000; Ahadzi, 2001; Akintoye *et al.*, 2003).

PPPs are long-term contractual arrangements that harness the skills and resources of both private and public sectors in the delivery of public services or the development of public infrastructure (Akintoye *et al.*, 2003). Through these mutual partnerships, a number of advantages should accrue including access to capital (ADB, 2000; Bing Li *et al.*, 2005), increased value for money, timely completion of projects (Bing Li *et al.*, 2005) and improved service delivery through the use of better management practises and adoption of innovative solutions (Akintoye *et al.*, 2003).

In order to harness the advantages offered by PPPs in the electricity sector, many countries have undertaken sector reforms involving implementing new supportive regulatory and legal frameworks, unbundling state owned utilities companies into generation, transmission and distribution entities, establishing independent regulators to oversee the sector and ultimately allowing private sector participation in the provision/ delivery of electric power to the population (ADB, 2000).

Despite this, implementing PPPs in the electricity sector has been challenged by protracted negotiations (Ahadzi *et al.*, 2004), difficulties in structuring project financing (Jyoti *et al.*, 1998; ADB, 2000) lack of a supportive legal and regulatory framework (Blackman *et al.*, 1999), high bidding costs (Akintoye *et al.*, 2003; Bing Li *et al.*, 2005), and resistance from environmentalists (ADB, 2000). This has led to a reduction in private sector interest and investment in the development of infrastructural facilities in developing countries stemming from the nature of the institutional environment.

North (1999) defines ‘institutions’ as a framework of formal (e.g. laws, regulations) and informal constraints (e.g. customs, taboos); the “rules of the game”, that shape social, political and economic aspects of human interactions. These constraints give rise to a set of opportunities and provide incentives for individuals and organizations; the “players in the game”, to engage in economic activities (North, 1990; Ostrom *et al.*, 1993).

Individuals or organizations take advantage of the opportunities created through varying contractual arrangements e.g. PPPs as determined by the institutional environment (North, 1990). Therefore the success of the contractual arrangement is highly dependant on the nature of incentives that are put in place for a particular project, or that exist within the institutional environment to encourage certain behaviours or, in the same manner, the disincentives embedded within the institution framework, to discourage certain behaviour (North, 1990; Ostrom *et al.*, 1993).

North (1990) identifies that the importance of the institutional environment to the success of contractual arrangements as being derived from its influence on the property rights. Successful implementation of contractual arrangements, requires that property rights be clearly and consistently defined, and be recognisable and enforceable by society. Furthermore, Ostrom (1993)

argues that excessive transaction costs involved in establishing and enforcing the contractual arrangements, act as deterrents to individuals or organisations intending to pursue a transaction.

In the electricity sector, an appropriately tailored and conducive institutional environment is of great importance as, infrastructural development requires large initial capital investment which in the case of developing countries is usually provided by foreign investors with returns being projected over a long period of time (15-30 years) (Sader, 2000; Lamech *et al.*, 2003). Therefore an institutional environment that provides a stable regime of property rights and seeks to minimise the transaction costs involved is imperative in order to attract and sustain private sector participation and investment in the electricity sector. To achieve this, it is important that the framers of the “rules of the game” are aware of the expectations of the participants as a mismatch between the two has been known to deter or make more challenging the development and implementations of PPPs especially in developing countries (Izzaguire, 2000; Lamech *et al.*, 2003).

## **UGANDAN CONTEXT**

Uganda is a sub-Saharan developing country of 24 million people of whom 88 % live in rural areas. Bilateral and multilateral budgetary support accounted for 38% of the national budget in 2007/2008 with the GDP Growth rate at 6.5% (Suruma, 2007). The Ugandan government has recognised the importance of having an adequate and reliable supply of electricity in sustaining economic growth and improving the living standards of its people (MoEMD, 2002).

Hydropower is the major source of electricity in Uganda. The installed hydropower generation capacity of 317MW supplies only 5% of the population and is unable to meet a current peak demand of 380MW (MoEMD, 2002). However the country has an identified potential of 2500MW of hydropower capacity on untapped sites in the country (World Bank, 2005). With demand for energy estimated to grow at 4-5MW per month and an economy growing at an average rate of 6.3% per annum over the last 10 years additional power generation is critical (Engorait, 2004).

In response the government of Uganda has attempted to encourage and incentivise private sector participation in the development of hydropower generation facilities (Electricity Act, 1999; Engorait, 2004). Key to this was the unbundling of the state owned Uganda Electricity Board (UEB), creation of an independent regulator and providing a legal framework allowing private sector participation (Electricity Act, 1999; Mugenzi, 2001; Engorait, 2004).

Notwithstanding the reforms and government commitment, private sector investment is still limited and many proposed projects have not materialised. A number of proposed PPPs have been hampered by accusations of, *inter alia*; corruption (World Bank, 2007), protracted negotiations (Government of Uganda, 2004; Bbumba, 2006), withdrawal of project developers (Energy Information Administration, 2004) and difficulties in structuring project financing (Bbumba, 2006).

The aim of this study was to identify constraints on the development and implementation of PPPs for hydropower generation facilities in the Uganda electricity sector and their relative importance as perceived by stakeholders. This would inform the process of developing measures and strategies to mitigate the constraints thus facilitating faster implementation and deal closure of public private partnership initiatives with the ensuing benefits.

## **CONSTRAINTS TO PRIVATE SECTOR PARTICIPATION**

A comprehensive literature review identified twenty three constraints to the development and implementation of PPPs in the energy sector of developing countries. Examples include the predictability of the investment environment as a significant consideration for investors (Lamech

2003), the clarity surrounding regulatory and legislative processes (ADB, 2000; Sader, 2000) and the willingness of all participants to adhere to and respect the outcomes of these processes. Ambiguity in these frameworks, can lead to investor apathy seen in China (Blackman *et al.*, 1999) or reliance upon special situations and/or political patronage to obtain contracts often on a non-competitive basis (ADB, 2000) such as happened in Zimbabwe (Sader, 2000)

Restrictive regulatory conditions on project rates of return have also acted as disincentives to PPPs in Pakistan (Sader, 2000) and in China (Blackman *et al.*, 1999) as have attempts limit foreign ownership (Jyoti *et al.*, 1998; Blackman *et al.*, 1999; Fraser, 2005). Protracted implementation of sector reforms in both China (Blackman *et al.*, 1999) and Pakistan (Fraser, 2005) have impeded private sector involvement since the formation of an independent regulator is an important incentive and consideration for investors (Lamech, 2003).

Institutional related challenges e.g. lengthy bureaucratic processes coupled with poor coordination between government departments (Lamech, 2003), non-transparent project approval processes (Blackman *et al.*, 1999) and low levels of skill in the public sector (Moreldge *et al.*, 1998; Bing Li *et al.*, 2005), have variously been identified as significant constraints on establishing PPPs as they increase the time between project conception and implementation. Other identified constraints include stakeholder pressure from environmental organisations particularly on hydropower projects (WCD, 2000). Similarly, private sector participation has met public resistance as a result of an increase in the traditionally heavily subsidised service charge (Hall *et al.*, 2005).

In finance, non-recourse financing mechanisms dependant on the revenue streams generated by the completed project are the norm for many private sector schemes. The underdeveloped nature of capital markets in many developing countries, makes obtaining long term finance from local financial institutions difficult (Jyoti *et al.*, 1998; ADB, 2000) hence a heavy reliance on foreign capital which introduces issues of foreign exchange risk (Sader, 2000; ADB, 2000). Lastly, the poor creditworthiness of the power off taker companies especially in the single buyer model is a major constraint as have been shown in India (Jyoti *et al.*, 1998; ADB, 2000).

## **SURVEY PROCESS**

The constraints identified from the literature review were incorporated into a questionnaire. The questionnaire consisted of two sections. The first section collected information about the respondents with the second section soliciting their perceptions on the relative importance of the constraints identified in the literature review to the development and uptake of public private partnerships for hydropower generation. The questions in the second section used a five point Likert scale. The Likert approach was chosen because of its advantage in eliciting the extent of peoples' agreement or disagreement with a statement; facilitating the production of hierarchies of preferences of the respondents; and generating a hierarchy of preferences for different categories of respondents in the sampling space that can be compared (Fellows, 1997). The target population consisted of managerial level staff in government ministries, departments and private companies that either had expressed interest or were actively involved in the development of PPP projects for hydropower generation. The lack of an existing database of participants in the development of hydropower projects through PPPs necessitated the use of non random sampling techniques with respondents identified through purposive and "snowballing" sampling techniques.

The identified population were contacted in advance to ensure their willingness to participate in the survey. Self administered questionnaires were delivered and collected by hand to 51 individuals; 16 to respondents from private companies involved in the development of PPPs for hydropower generation, and 35 to government bodies / ministries. 28 valid responses were returned; a response rate of 54.9%; 19 (67.9%) from the government sector and 9 (32.1%) from the private sector.

64.3% of the respondents indicated that they had no experience with the development of PPPs prior to their current job position.

## DATA ANALYSIS

The data collected was analysed using SPSS. The reliability of the five point Likert scale used in the survey questionnaire was tested for internal consistency using the Cronbach's coefficient alpha  $\alpha$ . Values of  $\alpha \geq 0.7$  are an acceptable indication of the reliability of the scale. A value of Cronbach's alpha  $\alpha = 0.8231$  was obtained indicating good reliability of the scale. The overall ranking of the constraints by the respondents was obtained by the mean score method as used by Shaokai Lu *et al.*, (2007). The mean score (MS) for each constraint was calculated using the formulae:

$$MS = \frac{\sum (f X s)}{N}$$

Where

f = frequency of response to each rating (1-5) for each constraint;

s = Score given to each constraint by the respondents, ranging from 1 (strongly disagree) to 5 (strongly agree);

N = Number of responses to that constraint.

In cases of the occurrence of a tie, a criterion for ranking was obtained based on the percentage of respondents strongly agreeing to the identified constraint.

Kendall's coefficient of concordance  $w$  analysis measures the degree of agreement of the respondents within a category on their ranking. Consensus on rankings exists  $w$  is significant at the 5% level (Siegel *et al.*, 1988). The Mann Whitney U test was used to determine whether the mean ranks for each constraint are equal between the government and private sector respondents. A  $p$  value lower than 0.05 on the Mann-Whitney U test shows that the null hypothesis of no difference between the mean ranks can be rejected indicating that there is a difference in perception between the respondents as regards the identified constraint (Siegel *et al.*, 1988).

To compliment this, Spearman rank correlation coefficient ( $r_s$ ) test was performed to measure the agreement between the two respondent groups on their ranking of constraints to the uptake of PPP in the electricity sector. Association by the respondents in the rankings is indicated by  $r_s$  being significant at level of 0.05 i.e. if  $r_s > 0.05$ , there is no significant disagreement between the respondents on the ranking of the constraints to PPP (Siegel *et al.*, 1988).

## SURVEY RESULTS AND ANALYSIS

Table 1 presents the results of tests for Kendall's coefficient of concordance ( $w$ ) and the ranking of the constraints as perceived by the respondents. Kendall's coefficient of concordance ( $w$ ) for the ranking of constraints among all the respondents is 0.298, ( $w$ ) = 0.328 among the government sector respondents and 0.365 among the private sector respondents. These Kendall's coefficients of concordance are all significant at the 0.000 level and therefore it can be concluded that there is a reasonable degree of agreement among the respondents in each of these group and all respondents regarding the ranking of the constraints to PPPs in the electricity sector in Uganda.

To tests whether there is agreement between the private and government sector respondent as to the ranking of constraints, Spearman's correlation coefficient ( $r_s$ ) was determined. A correlation coefficient ( $r_s$ ) of 0.717 was obtained (Table 3). Therefore the null hypothesis of no significant disagreement between the private and government sector respondents on the ranking of the constraints to private sector investment in the Uganda electricity sector is accepted. This implies

with 99% confidence that there is significant agreement on the ranking of constraints between the private and government sector respondents.

The Mann Whitney test was conducted to compare the perceptions of the two respondent categories (Table 2) the results indicating a general consensus of perception ( $0.01 \leq p \leq 0.93$  at 5% significance level). However differences in perception existed between the two groups ( $p < 0.05$ ) with regard to “Lack of an enabling environment”, “Weak regulatory environment lacking in clarity and ambiguous”, for both  $p = 0.02$ , “Slow implementation of power sector reforms” and “investor concerns of foreign exchange risk” both with  $p = 0.01$ ; “restrictions to level of foreign ownership of companies” and “reluctance of local institutions to provide equity financing” having  $p=0.04$  and  $0.03$  respectively.

**Table 1: Ranking of constraints and Kendall’s coefficient of concordance ( $w$ )**

Constraint	All respondents		Government		Private sector	
	Mean	Rank	Mean	Rank	Mean	Rank
Inability of local Institutions to provide equity financing	4.17	1	3.74	4	4.78	1
Many requirements to obtain project approval	3.55	2	3.84	1	4.22	3
Lengthy project approval process	3.45	3	3.79	3	4.11	5
Delays as a result of lengthy bureaucratic procedures	3.67	4	3.74	5	4.11	4
Resistance from Environmental groups	3.83	5	3.79	2	3.78	6
Poor coordination between Government departments	3.69	6	3.37	6	4.33	2
Low level of skills of personnel Involved with PPP	3.21	7	3.11	7	3.33	10
Resistance from Civil society organisations	3.02	8	3	9	3.11	16
Poor creditworthiness of power off taker	3.07	9	3.05	8	2.89	17
Investors concerns for need of intensive management	2.90	10	2.89	10	3.11	13
Political Interference in procurement process	3.29	11	2.63	11	3.56	9
Weak regulatory framework lacking in clarity	2.71	12	2.42	14	3.67	8
Slow implementation of power sector reforms	2.57	13	2.26	16	3.67	7
Restrictions on the return on investment	2.64	14	2.47	13	3.11	16
Accusations of corruption and corrupt tendencies	2.71	15	2.47	12	2.78	19
Public resentment as a result of tariff increases	2.60	16	2.32	15	3.11	14
Lack of an enabling regulatory framework	2.40	17	2.11	21	3.22	11
Lack of political will and support	2.86	18	2.21	18	2.89	18
Investors concerns of foreign exchange risk	2.64	19	2.11	20	3.11	12
Lack of independence of regulatory body	2.57	20	2.16	19	2.78	20
Lack of enabling legal framework	2.45	21	2.21	17	2.44	23
Failure of government to honour its contract obligations	2.14	22	1.95	22	2.56	22
Restrictions on foreign ownership of companies	2.05	23	1.79	23	2.67	21
<b>Kendall’s coefficient of concordance <math>w</math></b>	0.298		0.328		0.365	
<b>Level of Significance</b>	0.000		0.000		0.000	

**Table 2: Mann Whitney U test**

Constraints	Mean Rank		
	Government	Private sector	Mann - Whitney U test
Lack of an enabling regulatory framework	12.21	19.33	0.02
Weak regulatory framework lacking in clarity	12.00	19.78	0.02
Slow implementation of power sector reforms.	11.91	19.83	0.01
Lack of independence of regulatory body.	12.95	17.78	0.11
Many requirements to obtain project approval.	13.63	16.33	0.39
Lengthy project approval process.	13.71	16.71	0.43
Restrictions on the return on investment.	12.79	18.11	0.93
Restrictions on foreign ownership of companies.	12.47	18.78	0.04
Poor coordination between Government departments.	12.63	18.44	0.07
Delays as a result of lengthy bureaucratic procedures.	13.39	16.83	0.27
Low level of skills of personnel Involved with PPP.	14.03	15.5	0.64
Accusations of corruption and corrupt tendencies.	13.84	15.89	0.51
Resistance from Environmental groups.	14.87	13.72	0.70
Resistance from Civil society organisations.	14.37	14.78	0.90
Public resentment as a result of tariff increases.	12.76	18.17	0.08
Investors concerns for need of intensive management	14.13	15.28	0.72
Political Interference in procurement process.	12.50	18.72	0.05
Lack of political will and support.	13.00	17.67	0.14
Lack of enabling legal framework.	13.63	16.33	0.37
Failure of government to honour its contract obligations.	12.89	17.89	0.11
Investors concerns of foreign exchange risk.	11.97	19.83	0.01
Inability of local Institutions to provide equity financing.	12.29	19.17	0.03
Poor creditworthiness of power off taker.	14.68	14.11	0.86

**Table 3: Spearman's rank correlation coefficient**

		Government	Private
<b>Government</b>	$r_s$	1.000	0.717
	Significance	NS	0.000
<b>Private</b>	$r_s$	0.717	1.000
	Significance	0.000	NS

**SURVEY RESULTS DISCUSSION**

An analysis of the ranking highlights the challenge to private sector participation posed by poor access to long term finance locally. Difficulties in raising finance has been identified elsewhere as a

significant hindrance to private sector participation in power infrastructure development in developing countries (Jyoti *et al.*, 1998; ADB, 2000; Sader, 2000), and public private partnerships generally (Akerele *et al.*, 2003).

The need to obtain various approvals (ranked 2) at different steps of the process was perceived to be a significant constraint exacerbated by the bureaucratic nature of the system (ranked 3) causing delays, and by poor coordination between government departments (ranked 4 in importance). Also, in a clear reflection of the situation in Uganda where environmentalists have been instrumental in the delayed take off of a number of proposed hydropower projects (World Bank, 2007) “pressure from environmental groups” was ranked among the top five constraints. . On the other hand, the legal and regulatory framework is considered conducive to private sector participation; a finding illustrated by its low ranking of the items “lack of enabling regulatory framework” (ranked 17), “lack of independence of the regulatory body” (ranked 20) and “lack of enabling legal framework” (ranked 21). Confidence in the government’s policy encouraging private sector participation is further illustrated with the low ranking (22) of “failure of government to honour its contract obligation”.

While corruption has been suggested as a significant constraint to the development and implementation of Public private partnerships in the electricity sector in Uganda sector (Engorait, 2004; Bbumba, 2006), the respondents did not rank it highly.

The Mann Whitney test shows that some of the perceptions differed between the private and government sector respondents. The results suggest that the private sector respondents are more sensitive to shortcomings in the regulatory environment. This reflects previous observations (Sader, 2000; Fraser, 2005). Similarly, perception of the private sector and government sector respondents differed on the item “slow implementation of power sector reforms,” with the private sector respondents more conscious of this factor as a constraint to the implementation of PPPs.

A difference in perception reflecting the different roles on PPPs is shown in the rankings for “investors concern for foreign exchange risk” where Z ratio is -2.54 and the mean ranks are private sector (19.83) and government (11.97); and “inability of local financial institutions to provide financing” Z ratio is -2.24 and mean ranks are private sector (19.17) and government (12.29). The private sector’s heightened awareness of these two factors as constraints to the development and implementation of PPPs is likely to reflect their responsibility in structuring project finance and ensuring the viability of the venture. It may also reflect the issue of foreign exchange risk.

## **CONCLUSIONS**

The literature review identified constraints to implementing PPPs in the electricity sector and these were incorporated into a survey questionnaire which measured the relative importance of these constraints as perceived by the public and private sector stakeholders in the Ugandan electricity sector. The results show in order of importance, the most significant constraints as being:

1. The inability of local institutions to provide equity financing;
2. Multiple requirements to obtain project approvals;
3. Lengthy project approval process;
4. Delays as a result of lengthy bureaucratic procedures;
5. Resistance from environmental interests; and,
6. Poor coordination between Government departments

On the other hand (starting with the least important) the following were considered to be of least importance although this does not mean that the constraints are totally absent in the Ugandan electricity sector.

1. Restrictions to the level of foreign ownership of companies
2. Failure of government to honour its contract obligations
3. Lack of enabling legal framework
4. Lack of independence of regulatory body
5. Investors concerns of foreign exchange risk

These findings from the study are valuable in the process of identifying any interventions to facilitate faster implementation and deal closure of PPPs. In doing so, they confirm much of the literature on the institutional constraints affecting PPPs that will assist other developing countries planning to or undertake similar reforms in their electricity sectors.

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