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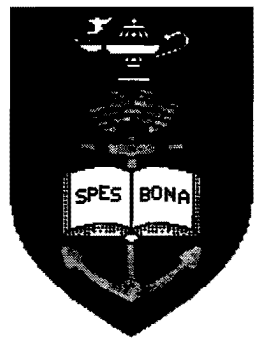


## FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT



# Constraints to the Implementation of Public Private Partnerships for Hydropower Generation – The Case of Uganda

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**Presented for the Award of the Degree Masters of Science in Construction Economics and Management**

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**Signed at ..... this ..... Day of..... 2007**

**Akampurira Emmanuel.....**

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# ABSTRACT

In an environment of constrained public budgets and poor service delivery, private sector participation through Public Private Partnerships is increasingly being utilised as a vehicle to deliver public infrastructure. However, implementation is often problematic with varying degrees of success in different countries and sectors.

To overcome a crippling power supply deficit, the government of Uganda is implementing strategies to encourage and incentivise private sector participation in the development of hydropower generation facilities. Notwithstanding the sector reforms and government commitment, private sector investment is still limited and many proposed projects have not materialised.

Through a literature review this research identifies likely constraints to the successful development and implementation of public private partnerships for hydropower projects in Uganda drawing on experiences around the world within the energy and other sectors. It then establishes the relative importance of these constraints as perceived by stakeholders in the Uganda electricity sector through a questionnaire distributed to these stakeholders. Based on the survey findings, conclusions are drawn to suggest possible strategies and measures that may mitigate these constraints.

The findings from the survey indicate that the most significant constraint to private sector participation was difficulty in obtaining financing, followed by resistance to projects by environmental groups. Numerous procedural requirements, bureaucracy involved and inexperience of participants were identified as other significant constraints. However, the findings showed that the stakeholders generally found the regulatory framework governing the sector satisfactory for attracting private sector participation. In addition, a restriction on foreign ownership of companies was ranked as the least important of the identified constraints. The analysis suggests that to mitigate the constraints, a number of measures could be implemented including; training personnel, stringently adhering to environmental and social impact assessment processes, the creation of a dedicated PPP unit within the government to provide oversight to the PPP project delivery process and finally the development of a process map for PPP implementation in the electricity sector.

The research contributes to an understanding of the constraints to public private partnerships in the electricity sector including identifying the most significant in the Ugandan context. In addition to this, the research provides valuable insights for developing countries intending to or undertaking public private partnerships in the electricity sector.

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# ABBREVIATION

| | |
|---|---|
| ADB | Asian Development Bank |
| BEL | Bujagali Energy Limited |
| BOO | Build Own Operate |
| BOOT | Build Own Operate Transfer |
| BOT | Build Operate Transfer |
| CIC | Construction Industry Council |
| CFEMU | Construction Forestry Mining Union |
| DBFO | Design Build Finance Operate |
| DFID | Department For International Development |
| EC | European Commission |
| ECE | Economic Commission for Europe |
| ERA | Electricity Regulatory Authority |
| ERT | Energy for Rural Transformation |
| GoU | Government of Uganda |
| IEA | International Energy Agency |
| MDG's | Millennium Development Goals |
| MoMED | Ministry of Minerals and Energy Development |
| IPP | Independent Power Producers |
| ITT | Invitation To Tender |
| GDP | Gross Development Product |
| PFI | Private Finance Initiative |
| PPI | Private Participation in Infrastructure |
| PPIAF | Public Private Infrastructure Advisory Facility |
| PPP | Public Private Partnership |
| PSC | Public Sector Comparator |
| RFP | Request for Proposal |
| SPV | Special Purpose Vehicle |
| UEB | Uganda Electricity Board |
| UEDCL | Uganda Electricity Distribution Company Limited |
| UEGCL | Uganda Electricity Generation Company Limited |
| UETCL | Uganda Electricity Transmission Company Limited |
| UNECA | United Nations Economic Commission for Africa |
| UNIDO | United Nation Industrial Development Organisation |

# CHAPTER ONE

# INTRODUCTION

## 1.0 Introduction

The role adequate and good quality physical infrastructure facilities play in enhancing and sustaining economic growth and development including improving the quality of life of a country's citizens is undisputed (World Bank, 1994; Sader, 2000; Spoehr *et al.*, 2002; Colin *et al.*, 2004; Van, 2005). Infrastructure is necessary for the movement of goods and persons in addition to enabling the delivery of other important social services, such as education and health, (World Bank, 1994; UNIDO, 2001). More specifically, adequate supply of power has long been identified as being critical to the ability to enhance and sustain economic growth (World Bank, 1994) and necessary to meet the demands of industry, commerce, domestic use and the movement of goods and people (PDD, 2005). In relation to the millennium development goals, in addition to playing a significant role in attaining the other goals, access to an environmentally sustainable and modern energy supply directly reduces poverty by improving the financial wellbeing of the population through increased earnings from an improved quality and range of products (IEA, 2002).

Traditionally, the responsibility providing and financing the development of infrastructure facilities e.g. roads, telecommunication, power and provision of water and sanitation has lain under the remit of government (Bennet *et al.*, 1999; Akintoye *et al.*, 2003; Van, 2005)

In developing countries, the management and provision of electricity has typically hitherto been through a vertically integrated state owned utility company responsible for the functions of generation, transmission and distribution including investment in the development of new facilities. Examples include the Uganda electricity board (UEB) (Electricity Act, 1999; Engorait, 2004) and Water and Power Development Authority in Pakistan (Fraser, 2005).

The state control of the electricity sector has been a function of governments' obligation to avail social services to the larger population, making the electricity sector highly politicised and thus a politically strategic infrastructural service (Henisz, 2002). Subsequently, operation of these state utility companies was often highly subsidised from the government budget and thus quite often the tariffs to the consumers were not reflective of the actual cost of delivery of the service (Blackman *et al.*, 1999; ADB, 2000). However,

budgetary constraints faced by governments in developing countries often meant inadequate financial support to the state owned utility companies; hampering their effective performance, with their operations characterised by poor service delivery (Benoit, 2005; William *et al.*, 2006) manifested amongst others by frequent power outages, low area coverage, high transmission losses and inefficiencies in revenue collection (ADB, 2000; William *et al.*, 2006).

In their traditional role, governments in developing countries catered for and financed investment in the development of infrastructure facilities including the electricity sector, through the government budget and through multilateral and bilateral assistance (Van, 2005). However the trend of decreasing multilateral and bilateral assistance being provided directly to governments (ADB, 2000; Harris, 2003; Chege, 2004; Colin *et al.*, 2004), constrained public budgets and the poor service delivery of some state owned utility companies, combined with the increasing demand for infrastructural facilities as a result of growing populations, has led to a growing role for the private sector in the delivery of public infrastructure facilities under collaborative arrangements such as public private partnership (PPP's) (Bennet *et al.*, 1999; ADB, 2000; SO, 2000; Ahadzi, 2001; Akintoye *et al.*, 2003).



### 1.1 Public Private Partnerships

Public private partnerships are defined as long-term contractual arrangements intended to harness the skills and resources of both the private and public sector in the mutual delivery of public services or development of public infrastructure (SO, 2000). In practice, there are various modes of PPP's including management contracts, service contracts, concessions, the Build Operate Transfer (BOT) and Design Build Finance Operate (DBFO) modes (Department of Finance 2000; CFMEU, 2006). These have been utilised in a wide range of sectors in various countries; e.g. power sector (Wang *et al.*, 1998; Blackman *et al.*, 1999; ADB, 2000; Ahadzi *et al.*, 2004; Kumar *et al.*, 2005), housing sector (Rintala, 2005), education (Gunning *et al.*, 2002), and water sectors (Abdul-Aziz, 2001)

The pooling together of the resources of the private and public sectors for the delivery of a public service or in the development of public infrastructure has a number of advantages including access to capital (ADB, 2000; Akintoye *et al.*, 2003; Bing Li *et al.*, 2005), increased value for money (SO, 2000), 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 (Chege, 2001; Akintoye *et al.*, 2003).

To facilitate private sector participation in the electricity sector, many developing countries have undertaken structural reforms that have typically involved measures such as; unbundling of the existing state owned utility companies into entities of generation, transmission and distribution, creation of independent regulatory agencies for the sector, and introduction of private sector participation in the provision/delivery of electricity to the public (Bennet *et al.*, 1999; ADB, 2000; Colin *et al.*, 2004; William *et al.*, 2006). Hence it is anticipated that with increased private sector participation, much needed capital will be invested to improve/ construct additional infrastructure facilities to meet the growing demand whilst improving service delivery by the adoption of better management practices prevalent in the private sector (Blackman *et al.*, 1999; ADB, 2000; IEA, 2003; Colin *et al.*, 2004; Benoit, 2005).

### 1.2 Constraints on the adoption of PPPs

Though used widely in a number of sectors and the theoretical advantages put forward for its adoption, the development and implementation of public private partnerships has often proved to be a challenge with varying levels of success in different sectors and different countries. The process has been characterised inter alia by protracted negotiations (Ahadzi *et al.*, 2004), difficulties in structuring project financing (Jyoti *et al.*, 1998; ADB, 2000; Benoit, 2005) lack of a supportive legal and regulatory framework (Blackman *et al.*, 1999), high bidding costs (Akintoye *et al.*, 2003; Bing Li *et al.*, 2005), resistance from environmentalists (ADB, 2000; Alison, 2002) and the public (Hall *et al.*, 2005), due to concerns for the environmental impact of proposed projects and increased service costs respectively. These constraints have inevitably led to a reduction in private sector interest and investment in the provision of infrastructure facilities particularly in developing countries where perceptions of risk tend to be more sensitive to these issues than in developing countries.

The challenges and varying levels of success experienced in the development of public private partnerships suggests that the institutional environment within which a public private partnerships arrangement is implemented plays a significant role in its success or failure.

Therefore, in order to understand these challenges and propose or devise measures to overcome them; it is imperative that the institutional environment within which public private partnerships are implemented is examined. The theory of institutions provides a useful perspective through which the constraints to the successful development and implementation of PPPs as a contractual arrangement can begin to be understood and what or how measures can be developed to overcome them (North, 1990; Ostrom *et al.*, 1993)

## 1.3 The Theory of Institutional Constraints

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 organisations; the "players in the game", to engage in economic activities (North, 1990; Ostrom *et al.*, 1993).

Individuals or organisations take advantage of the opportunities created through varying contractual arrangements e.g. public private partnerships 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 in the environment to encourage certain behaviours or, in the same manner, the disincentives to discourage certain behaviour embedded within the institution framework (North, 1990; Ostrom *et al.*, 1993).

The role these "institutions" play in determining the success of contractual arrangements is based on the ability to define and enforce the property rights upon which the contractual arrangements are based and the associated transaction costs (North, 1990; Ostrom *et al.*, 1993; Furubotn *et al.*, 1998). Firstly, it is imperative that the institutional environment clearly and consistently defines the rights and benefits for the use of an asset i.e. the property rights, and that these be recognised and enforceable by members of society. Secondly, the transaction costs involved in establishing and enforcing the contractual arrangement should not in their own right be so excessive as to discourage an individual or organisation from pursuing the transaction(North, 1990; Ostrom *et al.*, 1993).

Viewed though the lens of institutional environment, public private partnerships can be seen as contractual arrangements that come about in order to take advantage of the opportunities arising from the structuring of an institutional environment within a given

social and political context. If the desire is to encourage such partnerships, it is important that the institutional environment be tailored appropriately so as to meet the expectations of the potential participants and investors active in this environment.

The nature of infrastructure development in the electricity sector is such that it requires large initial capital investments; usually undertaken by foreign investors for the case of developing countries (Sader, 2000; Lamech *et al.*, 2003). Furthermore, the return on investment is projected over a long period of time ranging from 15 -30 years (Blackman *et al.*, 1999; Izzaguire, 2000; Sader, 2000; Lamech *et al.*, 2003; Colin *et al.*, 2004; Benoit, 2005). These factors serve to bring to the forefront the importance of an appropriate institutional environment, with a credible and stable regime of property rights in order to attract and sustain private sector participation and investment in the electricity sector. It is therefore important that the framers of the "rules of the game" are aware of the expectations of the participants in order to establish an appropriate institutional environment or improve upon an existing one. Izzaguire (2000), corroborated by Lamech *et al.*(2003), identify a mismatch between investment conditions and investors perceptions as a cause of the increasing difficulty in attracting private sector participation and investment in the provision of much needed critical services such as electric power in developing countries.

The above argument has established that though the use of public private partnership arrangements is wide spread, the success of a particular partnership in a given infrastructural sector is influenced by the institutional environment within which it is implemented. This study's focus is on the development and implementation of public private partnerships in the Uganda electricity sector which like a number of other developing countries has undertaken structural reforms to encourage private sector participation in the sector and is experiencing challenges in this endeavour.

### 1.4 Ugandan Context

Uganda is a developing country located in sub Saharan Africa with a population of 24.4 million people of which an estimated 88 % live in rural areas. Bilateral and multilateral budgetary support in terms of grants and loans accounts for 38% of the country budget for the financial year 2007/2008 with the GDP Growth rate at 6.5% (Suruma, 2007). In order to sustain the economic growth and improve the general standard and quality of living of

its people, the government of Uganda in its energy policy 2002 recognise the significant role played by an adequate and reliable supply of electricity (MoEMD, 2002).

To date hydropower generation facilities are the major sources of electricity in Uganda. Currently an installed hydropower generation capacity of 317MW supplies 5% of the estimated 24 million people and is unable to meet the estimated current peak demand of 380MW necessitating a rotational rationing of power (MoEMD, 2002). The low level of power supply and hence low population coverage flies in the face of the identified potential of 2500MW of hydropower capacity on untapped hydro sites located along the numerous rivers in the country (World Bank, 2005b).With the increase in energy demand 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 the need for additional power generation facilities has now become critical (Engorait, 2004).

To overcome the current power supply deficit and simultaneously cater for anticipated future demand, the government of Uganda has, in the recent past, promoted strategies to encourage and incentivise private sector participation in the development of hydropower generation facilities(Electricity Act, 1999; Engorait, 2004). Key to this was an electricity sector reform process that led to the unbundling of the previous vertically integrated state owned Uganda Electricity Board (UEB), creation of an independent regulatory body: the Electricity Regulatory Authority (ERA), and enacting of the Electricity Act 1999 that provided a legal framework and liberalised the electricity sector allowing private sector participation (Electricity Act, 1999; Mugyenzi, 2001; Nyirinkindi, 2003; Engorait, 2004; GoU, 2004; Mbendi, 2006).

Notwithstanding the reforms and government commitment, private sector investment is still limited and many proposed projects have not materialised. A number of proposed public private partnership projects e.g. the development of Bujagali hydropower station and Karuma power station have been hampered by accusations of, *inter alia*; corruption (Sasha, 2003; 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). Together this has deprived the population and economy from benefiting from an adequate and reliable supply of electricity.

## 1.5 Problem formulation

An adequate and reliable stock of physical infrastructure plays an important role in enabling and sustaining socio-economic development in any country (World Bank, 1994; Sader, 2000; Spoehr *et al.*, 2002; Colin *et al.*, 2004). In developing countries, this has been hampered by inefficiencies and inadequacies in government led service delivery and investment (Blackman *et al.*, 1999; ADB, 2000; Benoit, 2005). To overcome these handicaps, alternative means involving the private sector through public private partnerships have been sought and are being implemented with varying levels of success in the different countries and sectors (Bennet *et al.*, 1999; Ye *et al.*, 2000; Ahadzi, 2001; Akintoye *et al.*, 2003; Harris, 2003; Ahadzi *et al.*, 2004; Woodhouse, 2005; Zhang, 2005)

It has been argued that the successful development and implementation of long term contractual arrangements like public private partnerships in developing countries is dependant on the ability institutions to provide an *enabling environment* to attract investors whilst encapsulating the necessary incentives or disincentives to trigger desired behaviour (North, 1990; Ostrom *et al.*, 1993; Henisz, 2002). Key to this is the ability to demonstrate credibility of its property rights regime and reduce the transaction costs involved in establishing and enforcing the contracts (North, 1990; Ostrom *et al.*, 1993; Furubotn *et al.*, 1998).

With Uganda being among one of the least developed countries and with its budget being highly subsidised by donor support, partnerships with the private sector have been sought in order to enable the delivery of the required level of infrastructure development in the electricity sector (Electricity Act, 1999) .

Yet despite undertaking reforms aimed at facilitating private sector investment in the electricity sector, private sector participation is still limited with many of the proposed projects having failed to materialise to date (Electricity Act, 1999; Mugyenzi, 2001; Nyirinkindi, 2003; Government of Uganda, 2004; Bbumba, 2006; Mbendi, 2006). Efforts to develop public private partnership projects have been shrouded in accusations of corruption (Sasha, 2003; World Bank, 2007), long negotiation periods and investor withdrawals (ADB, 2000; GoU, 2004; Bbumba, 2006; Energy Information Administration, 2004). Issues that have similarly cropped up in similar initiatives in other developing countries (Blackman *et al.*, 1999; ADB, 2000; Fraser, 2005; Woodhouse, 2005).

Therefore, having identified public private partnerships as significant interventions in the efforts to increase the hydropower generation capacity in the Uganda electricity sector in order to overcome the current power shortage whilst developing capacity to meet future demand, it is imperative that lessons are drawn from the experiences thus far to enable the identification of measures and strategies to smoothen the development and implementation of these corroborative ventures between the public and private sectors.

## 1.6 Research problem

Despite the increasing popularity of Public private partnerships for delivery of public physical infrastructure both in terms of countries undertaking them and the sectors involved, their successful implementation is still a challenge with various impediments causing a disparity in the level of success within the different countries and sectors. This disparity has been attributed to constraints arising from inadequacies of the institutional environment, the nature of incentives or disincentives embedded therein and the influence these have on the stakeholders.

Therefore in order to develop strategies to facilitate the successful development and implementation of public private partnership projects for hydropower generation facilities in the Uganda electricity sector, it is necessary to identify potential constraints and their relative importance as perceived by stakeholders involved in the development and implementation of public private partnership projects for hydropower generation facilities in the Uganda electricity sector. This would enable the exploration of measures or strategies to mitigate the constraints.



### *1.6.1 Research questions*

Thus the principle research question can be summarised as follows:

*How can the delivery of Hydropower generation facilities through Public Private Partnerships in the Uganda electricity sector be enhanced?*

The following subsidiary research questions flow from this principle research question

1. What are the constraints that inhibit the successful realisation of public private partnership arrangements for the development of Hydropower generation facilities?
2. How do the constraints affect the development of Public Private Partnerships?
3. How can the constraints be addressed?

### *1.6.2 Hypothesis*

*Institutional bottlenecks are constraining the uptake and slowing implementation of public private partnerships in the Uganda electricity sector.*

### *1.6.3 Research aim*

The aim of the research is to identify factors within the institutional environment that constrain the uptake of Public private partnerships in the development of hydropower generation facilities in Uganda and propose strategies to mitigate these constraints.

### *1.6.4 Objectives of the study*

1. Identify the drivers for public private partnerships including the process of implementation, characteristics, advantages and disadvantages of the partnerships.
2. To review literature on the Uganda electricity sector in order to identify the characteristics of demand, supply of power, understand the institutional framework, organisational setup and the experiences so far in the implementation of Public Private Partnerships.
3. To identify institutional constraints to the implementation of public private partnerships especially with regard to the development of hydro-electricity generation capacity.
4. Establish the relative importance of the identified constraints as perceived by the stakeholders involved in the development and implementation of public private partnership projects for hydropower generation facilities in the Uganda electricity sector
5. Identify or propose measures and strategies through which the constraints could be addressed.

## 1.7 Justification

With Uganda currently unable to meet the electricity demand of the population, the private sector through public private partnerships is being encouraged to invest in additional hydropower generation facilities (Electricity Act, 1999; MoEMD, 2002). Despite the structural reforms undertaken in the sector, private sector participation is still limited with many projects structured on the premise of public private partnerships not materialising. Therefore, given the importance of an adequate and reliable supply of electricity and continued government commitment to increase generation capacity through public private partnerships, it is necessary to identify from stakeholders involved in efforts geared at increasing hydropower generation as to what the constraints to implementation and deal

closure are. Once the constraints are identified, then strategies could be developed to facilitate speedy deal closure and successful implementation of projects thus enabling society to benefit from the spin offs of an increased supply of electricity.

## 1.8 Methodology

The research used a positivist approach and utilised quantitative research methods for data collection and analysis. A literature review was undertaken to identify constraints to the implementation of Public private partnerships in the development of hydroelectricity generation facilities. These constraints were incorporated into a Likert scale-style questionnaire that was administered to professionals involved in the development and implementation of public private partnerships in the Uganda electricity sector. The responses to the questionnaire were subjected to non-parametric statistical analysis using the computer package SPSS. This enabled the identification of the relative importance of each of the identified constraints as perceived by the stakeholders in the development of public private partnerships for hydropower generation in the Uganda electricity sector.

## 1.9 Delimitations

The investigation was limited to public private partnerships aimed at increasing the electricity generation capacity through the construction of hydropower facilities in Uganda.

## 1.10 Outcomes

From this research, the following outcomes are anticipated:

- An understanding of the constraints to the implementation of Public private partnerships enabled the identification of strategies and measure to alleviate which could enable the realisation of the benefits of timely and efficient procurement through public private partnerships of additional generation capacity.
- The study is valuable to developing countries that are or are considering the use of public private partnership procurement option for the development of infrastructure, especially for hydropower generation.

## 1.11 Thesis structure

This thesis consists of 5 chapters whose content is briefly described below.

***Chapter 1 – Introduction***

A brief background to the research topic is provided. In addition, the research problem, research questions, objectives and aims and scope of the study are highlighted. A brief

description of the research methodology to attain the objectives is discussed in this section of the thesis.

***Chapter 2 – Literature review***

In chapter two, the thesis focuses on the form, characteristics, anticipated benefits and criticisms of public private partnerships. The chapter further provides an overview of the use of public private partnerships in the electricity sector and constraints experienced and how this ties in with the new institution economics. In addition, issues in the Uganda electricity sector related to the research questions are highlighted.

***Chapter 3- Methodology***

In this section, a methodology is developed to achieve the aim of the research. A literature review is used to identify constraints to the development and implementation of public private partnerships in the electricity sector. A Likert questionnaire is used for data collection and quantitative methods applied to determine the importance of the identified constraints in the Uganda electricity sector

***Chapter 4 – Data analysis***

This chapter will present the barriers to implementation of Public private partnerships in the Uganda electricity sector in a hierarchal order. Detailed discussions in relation to the literature or research objectives will not be entered in this chapter.

***Chapter 5***

This chapter presents the discussion of the results obtained in relation to the literature review and research questions.

***Chapter 6 - Conclusions and recommendations***

Conclusions are drawn and recommendations made. This chapter will also provide a summation as to whether the research questions and objectives of the study have been achieved.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1 Introduction

The provision of efficient, reliable and affordable physical infrastructure services such as water and sanitation, power, transport and telecommunications, is an essential requirement to the attainment of economic growth and sustainable development especially in developing countries (World Bank, 1994; Colin *et al.*, 2004). Low (2004) posits that the construction of infrastructure provides the physical base upon which other development efforts are founded.

In developing countries, the contribution of infrastructure to the attainment of millennium development goals (MDG's) cannot be underestimated. The MDG's are targets for 2015 that were set and endorsed by 189 countries at the 2000 UN millennium general assembly (UN, 2000). The goals are aimed at reducing by half the proportion of people living in extreme poverty, provide education, improve health, promote gender equality and preserve the environment. Infrastructure also contributes to, or directly provides for, the betterment of human lives by enabling the provision of essential services e.g. access to safe drinking water and basic sanitation, or indirectly by providing the buildings in which health, education and medical services are offered and paved roads to access them (Cecilia *et al.*, 2004).



It is however evident that the delivery of physical infrastructure facilities frequently lags behind a society's requirements, especially in developing countries (Colin et al., 2004). Moreover, efforts to expand service coverage around the world have been slow (Van, 2005; World Bank, 2005) that :

- An estimated 1.2 billion people living without access to electricity;
- 1 billion without access to clean water; and
- Nearly 1.2 billion without access to adequate sanitation.

The delivery of services and infrastructure facilities has traditionally been undertaken by governments using finances sourced through various tax collection mechanisms and bilateral and multilateral development assistance from international organisations (Van, 2005). Limitations on tax levels and a decline in bilateral and multilateral development

assistance have reduced the capacity of developing countries to provide infrastructure (UNIDO, 2001; DFID, 2004). As a result, economic growth and social development in many developing countries has stagnated (Colin *et al.*, 2004) as these flows of investment have reduced.

Besides the financial constraints limiting investment in new infrastructure and delivery of services, existing service delivery by state owned utilities departments is often poor (Benoit, 2005). Inefficiencies were estimated by the World Bank ((World Bank, 2005)to have cost public utilities departments $55 billion per annum in losses in the early 1990s, representing 1% of GDP of developing countries and a quarter of their annual infrastructure investment within this period, a situation that is unlikely to have changed over the past decade.

Benoit (2005) identifies the major challenges to delivery of infrastructure in developing countries as:

- Poor performance by public utilities departments that constrains economic activity;
- Fiscal drain created by deficits of these state owned companies, and;
- The inability to finance needed capital improvement from increasingly constrained public sources (*ibid.*).

In order to overcome a growing infrastructural backlog and infrastructure investment challenges as a result of constrained public utility departments' budgets, alternative means of raising both financial resources and ramping up of managerial capacity are being sought. Therefore many developing countries are encouraging private sector participation in the provision of finance and operational expertise in the delivery of public infrastructure services (Sader, 2000; Akintoye *et al.*, 2003; Colin *et al.*, 2004). These now widely used cooperative public and private responses are broadly referred to as Public Private Partnerships (PPPs).

## 2.2 Public Private Partnerships

Public Private Partnership (PPP) is an umbrella term used to define partnerships between the public and private sector for the purposes of designing, planning, financing, constructing projects and/or operating facilities which would be regarded traditionally falling within the ambit of the public sector. Infrastructure projects such as roads, bridges, power plants, and telecommunication systems are prime examples (Richard *et al.*, 2002).

Public private partnerships are long-term contractual arrangements intended to harness the skills and resources of both the private and public sector in the mutual delivery of public services or development of public infrastructure (SO, 2000).

### *2.2.1 Forms of PPP*

The various PPP models are differentiated mainly by the degree of private sector involvement in terms of ownership, financing, duration, operation and maintenance. Models range from management contracts, service contracts, leases (typically where state assets are passed on to the private sector for management and maintenance for a period a time), through to Concessions, Build Operate Transfer (including the variants BOO, BOOT, DBFO). PPP arrangements in practice are often a mix of the different models highlighted (Department of Finance 2000; CFMEU, 2006)

### *2.2.2 Characteristics of Public Private Partnerships*

- ***Traditional Procurement***

In the traditional procurement of built assets, the public sector firstly defines how a service should be provided and then engages different private companies to sequentially carry out the roles of design and construction of the infrastructure facility. The public sector retains ownership, management, operation and maintenance of the facility. Occasionally the public sector may award different contracts for operation and maintenance to different companies.

Under traditional procurement it is rare for the designer and constructor to be involved in the operational phase of the facility and thus they do not benefit from any cost savings obtained during this stage. On the flipside, neither constructor nor designer is penalised should the facility not be able to meet the end user requirements or standards. The distinctive separation in functions and roles also hinders the use of whole-life cycle costing techniques (Rintala, 2005).

In contrast, public private partnerships differ from this traditional procurement method by virtue of a number of unique features:

*Roles*

A defining feature of public private partnership is the change in the traditional role of the public sector from specifying how services should be provided (relying on defining inputs) to one where services are specified in terms of outputs; emphasising *'what'* rather than

*'how'* a service will be provided (Ahadzi, 2001). Therefore under a PPP the public sector is a purchaser, and the private sector a provider of a stream of services arising from the existence of asset, Similarly under a PPP, the public sector enters into a long term performance based contract to purchase infrastructural services from the private sector vendor who undertakes to provide and manage them to a predetermined standard with ownership of the infrastructure often reverting to the public sector after an agreed period of time (Ahadzi *et al.*, 2004).

*Special Purpose Vehicle (SPVs)*

Public private partnership arrangements involve a number of parties and a multitude of contracts as shown in *figure 1*. During the development process for a PPP and prior to financial close (the point at which the final agreement between the public and private sector is reached), the project promoters from the private sector, through joint venture agreements form a legal entity referred to as a Special Purpose Vehicle (SPV) for the purposes of entering into contract with the client (CIC, 1998 Leiringer, 2003) and arranging for financing for the project. It is this entity that the public sector enters into an agreement with, with ownership of the entity residing with the private sector stakeholders.

*Use of private capital*

At the core of a PPP arrangement is the use of private capital to deliver or improve public infrastructure services and facilities under a long term contract. The SPV structures financing from its private sector stakeholders through debt and equity contributions. The debt: equity ratio is usually in the range of 75:25 with the equity contribution being obtained from the SPV members. The debt financing is secured against the anticipated cash flows of the project with no avenue for the lenders to attach any other assets that belong to the project promoter's i.e. non recourse financing (Ahadzi, 2001; Akintoye *et al.*, 2003; Bing Li *et al.*, 2005). The ability to raise debt financing is greatly dependant on the limitation and distribution of risk amongst the project participants (Sader, 2000; Gerrard, 2001).

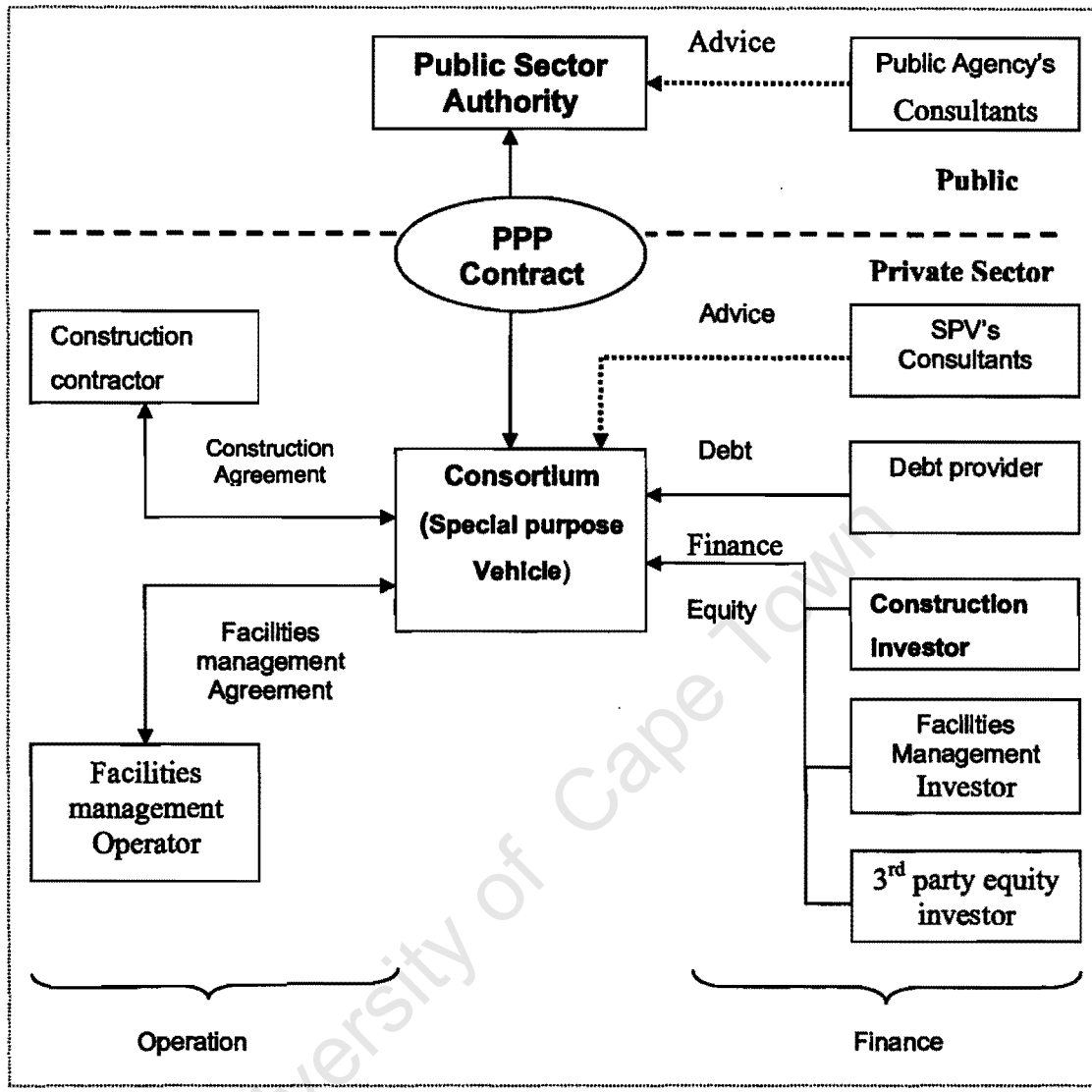



**Figure 1 PPP Arrangements and contracts**

Source PPP handbook, Ministry of Finance Singapore

*Risk Transfer*

Given the importance of risk to the financing of the project risk transfer between from the public to private sector and amongst the private sector stakeholders becomes critical. It is argued that the effective transfer of risk to the party that can best manage or mitigate it is important for the success of any public private partnerships (HM Treasury, 1995; SO, 2000; Akintoye *et al.*, 2003; Ahadzi *et al.*, 2004).Obtaining a favourable matrix for the risk allocation between the private and public sector partners has always proved to be a challenge. The risks involved can be broadly associated with the different stages involved in the process of delivering the service to the public i.e. obtaining financing,

implementation/construction phase risks, revenue risks, and operation and maintenance risks (Gallimore, 1997; Akintoye *et al.*, 2003).

*Payments*

In PPP's, the private sector normally recoups its investment by levying end user charges for the period during which it is responsible for operating the facility or managing the provision of the infrastructure services (Bennet *et al.*, 1999). Alternatively the SPV may receive a unitary payment from the client during the period for which it is providing the service (Rintala, 2005). It is normally expected that there should be a relationship between the payments and quality of service provided (Ahadzi *et al.*, 2004) to ensure that the private sector is appropriately incentivised. The terms of payment and quality of service delivery is specified in the contract between the public sector representative e.g. a utility body and the private sector operator represented by the SPV. In addition to this, to cater for the long term nature of PPP's, the contract usually has provisions on how and when the terms of payment can be changed (Sader, 2000; Ye *et al.*, 2000; Ahadzi, 2001; Zhang, 2005).

*Whole Life Cycle Costing*

The use of whole life cycle costing techniques is an important characteristic in the development of PPP'S projects. These techniques enable the determination of the cost of delivering the service or infrastructure facility over its life span. The performance of the responsibilities of design, construction on one hand and operation & maintenance on the other within one entity in a PPP'S arrangement provided the opportunity to align the incentives of both parties, justifying and enabling the use of the whole life cycle techniques (EC, 2003; Rintala, 2005).

### *2.2.3 Benefits of Public private partnerships*

The growing use of public private partnerships for the delivery of public infrastructure is motivated by a number of perceived benefits that include:

*Improved service delivery*

Under a public private partnership, the role of the state has shifted from defining how a service is delivered to merely defining that service. It is argued that public private partnerships are able to improve public sector service delivery by availing to the state private sector resources, such as management skills, innovation, experience, finances and marketing skills (Chege, 2001; Akintoye *et al.*, 2003) that the state may not possess. Bing

(2003) also suggests that PPP's can provide infrastructural facilities at greater speed than the traditional methods of public sector procurement because the incentives and procurement priorities are different. For example, the importance of cash flow (loss of potential rents or charges) on completion of a facility is more critical to the private sector unlike the government which may be paying for a facility out of government revenues.

*Access to capital*

As previously mentioned, the increase in demand for public services as a result of population increase and economic growth has given impetus to the use of PPP'S. In situations where the municipal and national budgets are not sufficient to finance the required infrastructure, the private sector through public private partnerships has been incentivised to finance public infrastructure (Ahadzi, 2001; Akintoye *et al.*, 2003).

*Off sheet balancing*

The PPP route also provides an additional advantage to the public sector of using private capital for infrastructural investment in that money borrowed by the private sector is not reflected on the public accounts even if the government is committing itself to pay in the future, the liability for the debt is not recognised as a government debt (Sader, 2000; Spoehr *et al.*, 2002; Gerrard, 2001). It is worth noting that the cost of borrowing in private finance deals could be higher than what is experienced in public borrowing since governments can borrow at lower rates due to the fact that they can guarantee payments to an extent that the private sector can't. However the real benefit of PPP lies in the operational efficiencies gained (Department of Finance 2000).

*Value for money*

The potential to obtain 'value-for-money' defined as the achievement of the best from a project in terms of quality, quantity, cost and risk transfer within available resources has encouraged the use of public private partnerships. In a PPP, use is made of private sector finances thus the private sector bears a higher financial risk in the contractual arrangement. This provides an incentive to utilise financial and other resources more efficiently. Moreover, PPP vendors, by providing excellent managerial expertise and innovation should be capable of achieving lower project costs, shorter construction times and better quality services (SO, 2000; Leiringer, 2001; Richard *et al.*, 2002). The use of output based specifications and increased competition amongst the private firms further enables the attainment of value for money in PPP projects.

### *2.2.4 Criticisms of Public private partnerships*

The use of public private partnerships as a vehicle for the delivery of public infrastructure is without its critics. Some of the issues raised are:

*Lengthy negotiation period*

Whilst the private sector is recognised at being able to deliver infrastructure faster than the public sector, the development of a PPP is frequently subject to long pre-contract negotiations periods between the intended private and public sector partners. The negotiations involve amongst others the identification and allocation of risk between each party, sourcing of and structuring of the debt and equity financing for the project. The negotiation process is further made complex when it involves multiple parties as exhibited in fig 1 who may have different interests in the project (Ahadzi, 2001; Ahadzi *et al.*, 2004; Kumar *et al.*, 2005)

*High bidding costs*

High transaction costs have been a major complaint with the use of PPP'S. Both private companies and the public sector spend considerable amounts of money in tendering, and negotiating the PPP contract. In addition the private company spends more on developing a competitive proposal (CFMEU, 2006). This in conjunction with the lengthy negotiation period invariably leads to higher bidding cost as both teams appoint top notch advisors and experts to guide them through the different requirements of design and bid documentation required for a PPP contract (Ahadzi, 2001). Reports indicate that on some projects, payments to advisors to the project participants have been 600% over and above the initial budget (Ahadzi, 2001). This had the negative impact of leading to a reduction in competition as some firms withdraw at the bidding stage (Ahadzi, 2001; Ahadzi *et al.*, 2004; Bing Li *et al.*, 2005).

*Project accountability*

Bing Li (2005) referring to Pollock and Vickers (2001) identifies the reduced accountability in PPP'S as a result of limited information disclosure. This is sanctioned by clauses in the contracts that classify some information as being commercially sensitive and thus out of the public domain. In contrast, the traditional procurement method allows for public audits of its processes as laid out by legislation of many countries. Additional concerns with the inability to structure contracts that are flexible and able to take care of unforeseen conditions in the future, Supernormal profits that are sometimes earned by the private companies and governments inability to transfer some kind of risk to the private

sector have also been raised as shortcomings of public private partnerships (CFMEU, 2006).

### *2.2.5 PPP procurement Process*

Many countries have produced guidelines to the use of PPP'S depending on their experiences, legislation and financial situation. The process described below serves to highlight the different roles played by the different actors in the development of a public private partnership. Guidelines as developed by the government of: UK (HM Treasury, 1995); South Africa (Department of Finance 2000); by institutions including the European Commission (EC, 2003) and United Nations (UN/ECE forum, 2000), that together inform this discussion, however, the similarity of experiences around the world means that many of these guidelines share the same basic principles differing in minor ways to suit the differing institutional environments with respect to legal, cultural and political contexts, for which they are formulated.

*Public Sector Comparator (PSC)*

A common starting point is the feasibility stage during which a Public Sector Comparator is developed. The PSC is an estimate of what it would cost the public department to perform the function or offer the service at the predetermined desirable level through traditional procurement methods. This cost is then compared with the private sector offer at the time of bid evaluation in order to determine whether the value for money would be obtained through the PPP approach.

*Advertising*

To the public, procurement process usually begins with the issuing of an advert in the international and national press requesting interested firms to express interest. The advert usually contains the scope of the project providing a brief background to the project, and nature of services required. The private sector participants interested then provide responses detailing their relevant company and personnel experience, financial and technical capabilities and legal instruments of the firm.

*Prequalification*

Based on the responses provided by the firms regarding their capabilities and an evaluation criteria developed by the team managing the procurement process, a short list of competent private partners is then complied that proceed to the next stage. All guidelines agree on the need to limit the participants in this next stage but without losing the element of

competition. This is because of the substantially high costs involved in developing a PPP tender submission.

*Request for Proposal (RFQ) / Invitation To Tender (ITT)*

This is a detailed document issued to the short listed firms. The RFP/ITT contains a detailed description of the project goals clearly defining the output specification, criteria for evaluation, timeframe, minimum technical requirements. It is important that the RFP/ITT is clearly and carefully developed because it forms part of the contract document. The private sector then responds by providing a technical and financial proposal as per the requirements of the RFP/ITT

*Selection of preferred bidder*

The client then evaluates the proposals in comparison to each other and with the PSC. The firm whose proposal offers best value for money is then selected as preferred bidder with the second best firm being retained as a reserve bidder. The role of the reserve bidder is to exert competitive pressure on the preferred bidder during the negotiations phase that follows.

*Negotiation phase*

At this stage detailed negotiations are held and agreements arrived at as regards Payment terms, project implementation technicalities, dispute resolution methods, transfer of project assets licences, government subsides. This is usually the longest stage of the procurement process-giving rise to a number of costs incurred in terms of payments to the large number of experienced advisors on the teams (Ahadzi, 2004).

*Financial Close*

Successful negotiation leads to the tender being awarded to the bidder thus reaching financial close. Should negotiation fail with the preferred bidder then the reserve bidder is called upon for negotiations. A contract clearly defining the roles and responsibility of the public sector client and the private sector partner is then signed and is the main operational document of the partnership.

Public private partnerships are finding increasing popularity in developing countries as an alternative to the traditional procurement method and have been used in a wide number of infrastructure development projects in a number of sector in various countries; e.g. power

sector (Wang *et al.*, 1998; Blackman *et al.*, 1999; ADB, 2000; Ahadzi *et al.*, 2004; Kumar *et al.*, 2005), housing sector (Rintala, 2005), education (Gunning *et al.*, 2002), and water sectors (Abdul-Aziz, 2001). Private participation in the power sector has taken several basic forms, which include concessions, leases and management contracts, as well as Independent Power Producers (IPP's).

## 2.3 PPPs in the power sector in developing countries

The adequate supply of power has long been identified as being critical to the ability to enhance and sustain economic growth (World Bank, 1994) and necessary to meet the demands of industry, commerce, for domestic use and the movement of goods and people (PDD, 2005). The International Energy Agency, in the Energy Outlook Report (IEA, 2002) identifies the provision of an adequate and sustainable electricity supply in developing countries as fundamental to the attainment of the Millennium Development Goals (MDG). Access to an environmentally sustainable and modern energy supply directly reduces poverty by improving the financial wellbeing of the population through increased earnings from an improved quality and range of products.

Statistics from the international energy agency indicate that more than 1.6 billion people have no access to electricity and of these 99% live in developing countries. It is projected that in excess of 1.4 billion people that will still have no access to electricity in 2030 will be in developing countries. Of the 1.4 billion people 650 million and 680 million people in Sub Saharan Africa and South Asia respectively (IEA, 2002).

In Africa, the major energy sources are biomass (48%), coal (17.2%), natural gas (11.3%) with renewable sources like Wind, Solar and geothermal combined contributing 0.1% of the energy production. Despite many countries in Africa describing their hydropower potential as one of the most valuable resources with it's exploitation considered to be the backbone of future social and economic development (Alison, 2002; Head, 2003), only 1.3% of 13% of the estimated world hydropower potential in Africa has been exploited (IEA, 2003).

As a source of electricity, Alison (2002) enumerates a number of advantages of use of hydropower; such as cheaper operation and maintenance cost, multi purpose ability to be incorporated in schemes like irrigation, water supply, recreational activities, environmentally friendly and a sustainable option. Moreover there is wide geographical spread of hydropower potential around the world that can be developed in addition to the fact that advanced technology has been developed over the years.

The energy investment needed in developing countries (estimated at $5 trillion) for expanding the supply capacity and to replace existing and future supply facilities that will have been exhausted or become obsolete in the period of 2001-2030 are enormous and cannot be fully funded by governments who in their traditional role as owners of the energy companies have been the financers of investment in the electricity sector, the source of financing being the government budget and government sponsored borrowing (IEA, 2003). This has necessitated the search for alternative delivery mechanisms.

Izzaguire (2000) suggests that the need to expand capacity and increase reliability in an environment of tight budget constraints as being the driving force for the increased private sector participation in the energy sector. Increased power shortages aggravated by the increase in electricity demand as a result of rapid economic growth and social development and limited expansion of electricity supply facilities has prompted many countries in Latin America, Africa and Asia to seek new energy investment through private sector participation (Kumar *et al.*, 2005; PDD, 2005).

### *2.3.1 Private sector participation*

Project specific information gathered by the world bank (PPIAF, 2007) indicates that though the private sector is engaged under a number of different forms of contract including management contracts, leases, concessions and divesture the seemingly preferred mode of participation is that of Independent Power Producers (IPP's). Izzaguire (2000) further recognises the increasing role Independent power producers are playing in the power generation projects in developing countries. As a result, there is a desire by many governments to create an enabling government for IPP's rather than privatising already existing generation plants. IPP's are the only form of private sector participation that involves actual private sector ownership of key power sector assets (Benoit, 2005). For this study, the following is adopted as a definition of independent power producers;

> "The classic IPP is a privately sponsored power plant that sells electricity under a long term contract. Typically, the off taker is a state-owned electric utility, although occasionally off takers have included private distributors or large private users. The plant is generally financed on a project basis, with a project-specific company established for the purpose. The company draws equity from a number of foreign and domestic investors and secures debt from a syndicate of banks on the basis of expected revenues" (Woodhouse, 2005 ,pg 8 )

According to the World Bank's Private Participation in Infrastructure (PPI) Project Database, 100 developing countries awarded 1307 private sector motivated infrastructure projects in the energy sector (See Fig 2 for distribution amongst regions) worth $298,287 million worth in investment between 1990 and 2005. The major source of investment funds in these countries has been foreign capital. The investment has been unevenly distributed with Latin America getting the largest share and Sub Saharan Africa the least (see Fig 3).

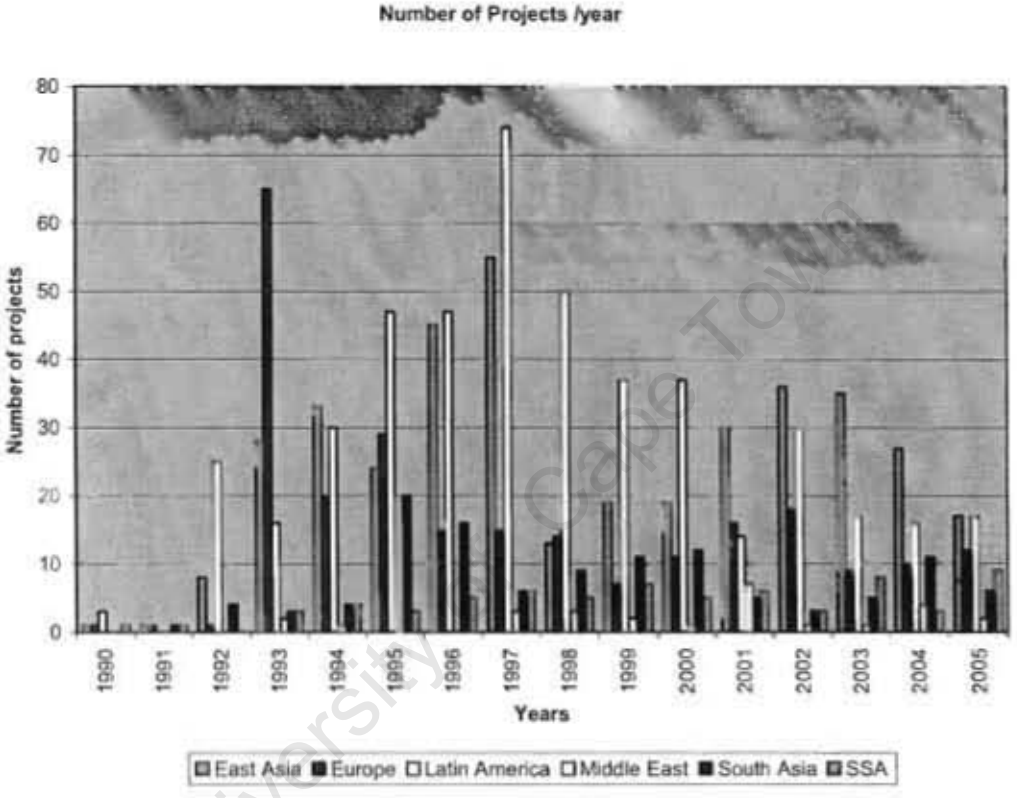



**Figure 2 Private sector energy projects in developing countries**

Source: PPIAF Data base

A surge in private sector investment in developing countries was experienced through out the early 1990's peaking in 1997 at US$ 46 billion (Fig 3) and thereafter declined partly as a result of the Asian Financial crisis with Latin America and East Asia experiencing the greatest decline. This financial crisis had the effect of reducing the growth of the energy demand as a result of slowed economic activity and secondly, led to reduced interest in investing in developing economies by international financial institutions (Izzaguire, 2000; Woodhouse, 2005).

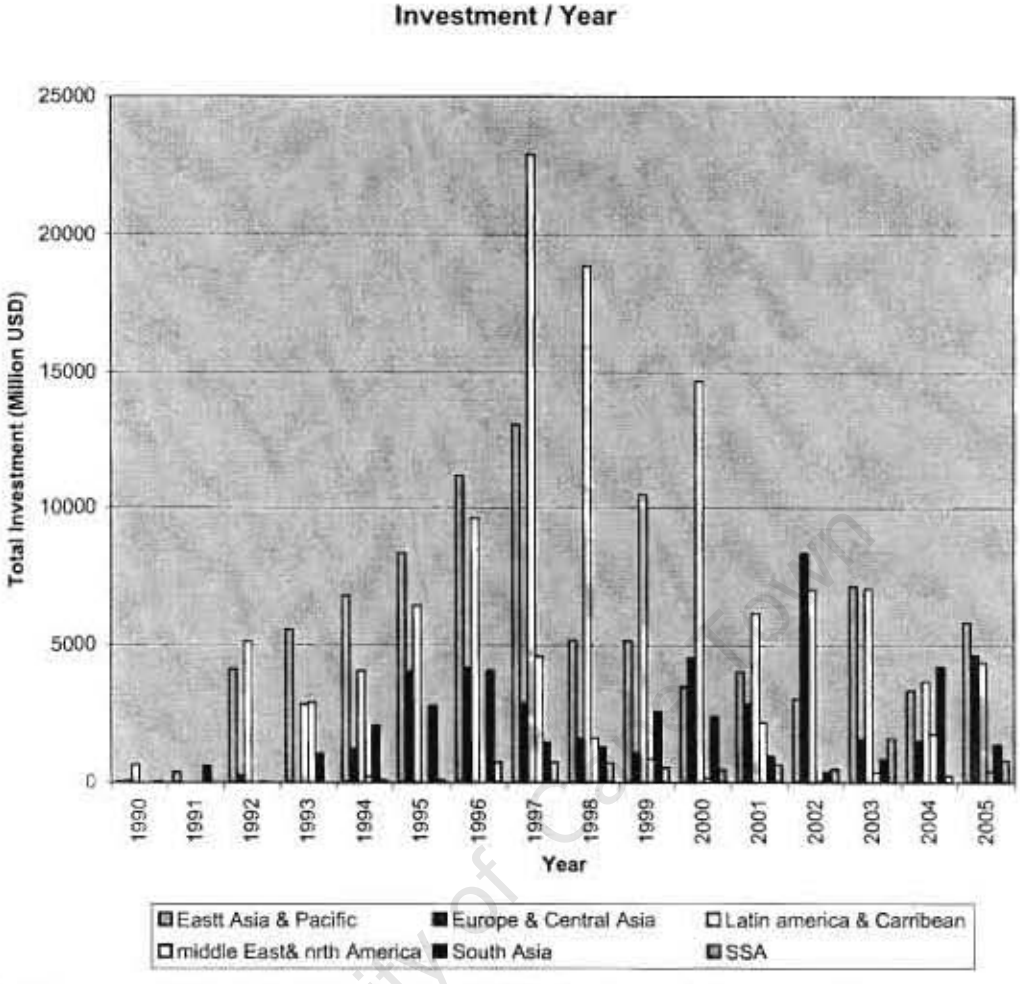



**Figure 3 Private sector energy projects in developing countries**

Source PPIAF Data base

With the growth in private sector participation since the 1980's, it was hoped that by taking advantage of the growing international financial markets and new financing mechanisms, the increasing fiscal deficits and pressure on constrained domestic budgets experienced by developing countries would reduce while the resulting economic efficiency gains would mitigate against the risks brought about by deregulation (IEA, 2003).

As a prerequisite, many developing countries have undertaken sector reforms in order to provide the *enabling environment* for private sector participation (ADB, 2000; William *et al.*, 2006). These reforms were deemed necessary as the prior operational characteristics of the electricity sector were considered not conducive for private sector participation.

### *2.3.2 Power sector reforms*

The management and provision of electricity has hitherto been the sole responsibility of the state, a role it carried out through vertically integrated state owned utilities such as the Uganda electricity board in Uganda (UEB) (Electricity Act, 1999; Engorait, 2004) and Water and Power Development Authority in Pakistan (Fraser, 2005). These utilities combined the functions of generation, transmission and distribution together with investing in the development of new facilities.

State control of the electricity sector was motivated amongst others by the obligation to avail social services equally to all its citizens which made electricity a potentially massively consumed product thus a highly politicised and politically strategic infrastructural service (Henisz, 2002). Subsequently, operation of these state utility companies was often highly subsidised from the government budget and thus quite often the tariffs to the consumers were not reflective of the actual cost of delivery of the service (Blackman *et al.*, 1999; ADB, 2000). However, budgetary constraints faced by governments in developing countries often meant inadequate financial support to the state owned utility companies; hampering their effective performance, with their operations characterised by poor service delivery (Benoit, 2005; William *et al.*, 2006) manifested amongst others by frequent power outages, low area coverage, high transmission losses and inefficiencies in revenue collection (ADB, 2000; William *et al.*, 2006).

In summary, the lack of efficiency and poor financial performance of the state owned utilities largely attributed to the poor management practises, unrealistic regulation , unrealistic pricing decisions and government control of utility operations have been highlighted as some of the drivers for reform in the electricity sector especially in Sub Saharan Africa (Mugyenzi, 2001).

Colin (2004) summarises the main characteristics of the reforms as being:

i. Development of a regulatory framework to govern the activities in the sector. Usually an independent regulatory organisation is created and charged with the responsibility of overseeing private sector involvement in the energy sector.
ii. Restructuring of the sector by unbundling the previously vertically integrated public utility companies into separate Generation Transmission and distribution entities.

iii. Introduction of competition (through the effect of ii above) to improve efficiency, customer responsiveness and innovation.

The purpose of the reforms is to attract the private sector and introduce competition in the energy sector. The desire is that competition would be fostered by the private sector injection of both financial and managerial expertise. However, even after the reforms, the introduction of independent power producers' has been slow, fraught with controversies, delays, and debates (Gratwick *et al.*,2005) characteristics that are evident in similar efforts currently being undertaken by the Ugandan government.

## 2.4 Uganda electricity sector

*Introduction*

Uganda is a country located in Sub Saharan Africa with a population of 24.4 million people of which an estimated 88% live in rural areas (Census, 2002). The country is currently experiencing a GDP growth rate of 6.5% projected. Multilateral and bilateral budgetary support in form of grants and loans will amount to 38% of the budget for the financial year 2007/2008 (Suruma, 2007). In order to sustain the economic growth and improve the general standard and quality of living of its people, the government of Uganda in its energy policy 2002 recognise the significant role played by an adequate and reliable supply of electricity (MoEMD, 2002).

A consistent and reliable supply of electricity is important in sustaining economic growth because of the influence it has on amongst others;

i. Cost of production
ii. Competitiveness of the countries products on the international market
iii. Creation of new industries that provide jobs and
iv. Provision of other social services e.g. health, education and financial services

### *2.4.1 Electricity sector profile*

The electricity sector consists of the areas of generation, transmission and distribution.

*Generation*

The Uganda electricity generation is predominantly hydro-based with the largest sources being the Nalubaale and Kiira hydro power stations on the river Nile with a combined installed capacity of 300MW. An estimated 17MW is generated at a number of small

hydropower stations around the country bringing the total installed hydropower capacity to 317MW. However, this represents only 13% of the total hydropower potential estimated at 2500MW available within the country (World Bank, 2005b). In addition to an enormous potential of the undeveloped sites located along the River Nile there is abundant untapped potential to generate electric power from mini and micro hydro sites (0.1 -10 MW) located along numerous smaller rivers in the country (MoEMD, 2002).

An additional and significant 1.5MW of electricity is being generated by the West Nile Rural Electrification company (WENRECo) using heavy fuel and supplied to the districts of Arua and Nebbi in northern Uganda. The amount generated is able to provide 18 hours of electricity to 1500 customers in the two districts (Mugyenzi, 2001; MoMED, 2002; Nyirinkindi, 2003).

*Transmission*

Electric power is transmitted from the main generation point Nalubbale and Kiira power stations to the different areas in the country through a transmission infrastructure network consisting of 1115Km of 132kv line and 54km of 66Kv.These lines terminate at power substations that step it down to 33Kv and 11Kv for distribution purposes. In addition during off-peak hours, power is exported to neighbouring countries of Kenya 30MW, Rwanda 5MW and Tanzania 9MW. The function of transmission is controlled by the Uganda electricity transmission company limited (UETCL) that is the single buyer for grid connected generation (Mugyenzi, 2001; MoMED, 2002; Nyirinkindi, 2003).

Distribution of power within the districts in the country is done at and consists of 3258Km of 33Kv lines and 6496Kv of 11Kv lines. The Voltage is stepped down to 415V and finally 220Vfor distribution to respective households (Mugyenzi, 2001; MoMED, 2002; Nyirinkindi, 2003).

*Coverage*

Currently only 5% of the estimated population of 24 million is supplied with electricity i.e. connected to the national grid. The majority of grid connections are in the urban area with rural electrification standing at 4%. This low coverage and deficit in supply is further compounded by the growth in energy demand at 4 to 5MW per month partly as a result of a growing economy since 1986 averaging 6.3% in the last ten years without any corresponding increase in generation capacity (MoMED, 2002; Engorait, 2004).

Little or no investment, the civil wars experienced by Uganda prior to 1986, operational inefficiencies and a poor maintenance culture have all led to the deterioration of energy infrastructure. When combined with the growth in electricity demand projected to require an estimated 2000MW of new capacity by 2025 at a cost of US$ 3.5 billion and the competing demands for investment in the provision of other social services such as healthcare and education for the meagre financial resources available to the Ugandan government has motivated Uganda to find alternative ways of improving and increasing the generation capacity (MoEMD, 2002; Engorait, 2004).

### *2.4.2 Power sector reforms and regulatory set up*

The government of Uganda has undertaken a series of reform steps in the electricity sector similar to those of other developing countries and in common with the international trend, these reforms are aimed at:

i. Improving efficiency in the electricity sector by introducing competition; and,
ii. Encouraging private sector investment and participation in the provision of electricity services.

The power sector reforms in Uganda culminated in the enactment of the Electricity Act 1999 that liberalised the sector and provided a legal framework for the operation of the electricity sector. The Act allowed for the formation of an independent regulatory authority for the sector referred to as the Electricity Regulatory Authority (ERA). This independent regulator which was established in 2000 has a statutory responsibility for overseeing the activities of the electricity sector under the policy guidance of the Ministry of Energy and Mineral development (MoEMD, 2002).

The ERA is mandated by the Electricity Act 1999 to

i. Attract private capital into the electricity sector by creating an enabling environment for participation of the private sector.
ii. Issue licences for generation, transmission, distribution and sale of electricity.
iii. Set electricity tariffs.
iv. Ensure that companies involved in the delivery of electricity service comply to set standards and conditions.

To increase access to electricity in the rural areas, the government formulated the rural electrification strategy and plan. The overriding objective of the rural electrification drive

is to provide electricity to at least 10% of the rural population by 2010. The implementation of the plan is being done by the Rural Electrification Agency (MoEMD, 2001; MoEMD, 2002; Engorait, 2004).

To enhance rural electrification, a 10 year multi sectoral programme Energy for Rural Transformation (ERT) is being implemented with support from the World Bank. This programme has two major components. Under the first component, subsidies will be provided to the private sector for investment and expansion of the rural network including the expansion of the rural network and development of mini and micro hydropower stations (MoEMD, 2001; MoEMD, 2002).

The second component of the programme is aimed at providing 2000 customers with off-grid solar power. This aspect of the project is targeted at low consumption areas that are far from the national grid (MoEMD, 2001; MoEMD, 2002) and where it would be too costly to connect to the existing grid, or supply using traditional means.

In the meantime, shortage in the electricity generation and supply has led to rationing of power supply, commonly referred to as *"load shedding,"* in which on a rotational basis some areas go without power for 24-hour periods. This has led to the slowing in economic growth due to reduction in productivity. To overcome this, the government has developed short and medium term measures to increase the supply of electricity.

Consequently, in 2005, the government of Uganda as a short term measure to meet the electricity demand, entered a contract to procure 50MW of thermal generated power from Aggreko International Projects which had been granted a licence by ERA to generate and sell power to the national grid under the Build Own Operate contractual arrangement. Currently It was expected that by the end of 2006, a further 50MW would be commissioned by the same company. The procurement process for this tender is currently embroiled in controversy and as a result the additional 50MW had not been added to the grid at the time of writing (Migereko, 2006). The use of thermal generated electricity has lead to increases in the power tariffs because the plants that were c use diesel oil that is currently experiencing a rise in prices on the international market (*ibid*).

Among the medium term strategies to increase electricity supply(MoEMD, 2002; Migereko, 2006), the Ugandan government is proposing to develop large hydropower

plants on the Nile at Bujagali (250MW) and Karuma (200MW) whilst also developing micro (≤ 100kW) , mini (≤ 1Mw) and small (≤ 25MW) hydropower stations capable of generating an additional 50MW of electricity.

Given the capital intensive nature of power investments particularly in the case of hydropower where, low operation costs are off set by high initial capital costs, and inadequacies of public financing to match growing demand, government is encouraging private sector investment in the form of IPP's to meet the energy demand (Migereko, 2006). It is the intention of the government as captured in the sector policy report to finance, construct and operate the above mentioned hydropower stations through public private partnerships (MoEMD, 2002).

### *2.4.3 Private sector involvement in the hydro power generation sector*

*Existing Public private partnerships*

As a result of the electricity reforms of 1999, the initially vertically integrated utility body Uganda Electricity Board (UEB), which had hitherto been responsible for all regulatory, generation, transmission and distribution activities in the electricity sector was unbundled into the

i. Uganda Electricity Generation Company Limited (UEGCL) responsible for Generation,
ii. Uganda Electricity Transmission Company Limited (UETCL) responsible for transmission and
iii. Uganda Electricity Distribution Company Limited (UEDCL) responsible for distribution entities respectively

Government retained control, owns and operates the transmission infrastructure. UETCL is the sole buyer of grid connected electricity from UEGCL and in turns sells the electricity to UEDCL the sole distributor of electricity in the country (MoEMD, 2002).

Through competitive tendering, concessions for the generation and distribution companies were awarded to the private sector.

*Uganda Electricity Generation Company Limited (UEGCL)*

In the generation sector, a 20 year concession to operate and maintain the Nalubaale and Kiira hydropower stations located in Jinja was awarded to Eskom Uganda limited a subsidiary of Eskom Enterprises (Pty) Ltd of South Africa in 2002. UEGCL retains ownership and is responsible for the monitoring of the assets leased to ESKOM (MoEMD, 2002; Engorait, 2004).

*Uganda Electricity Distribution Company Limited (UEDCL)*

UMEME Ltd a Joint venture between Eskom (SA) and Globeleq, a UK power firm, were awarded a 20 year concession in 2004 to manage the distribution system initially managed by the state owned utility Uganda Electricity Distribution Limited (Engorait, 2004). Under the concession agreement, UMEME was given a soft investment period of 18 months to improve collection rate, improve the distribution system and reduce the bad debt. After this period UMEME is to renew it commitment to the concession agreement. The concession terms also require UMEME to invest USD 65 million in the first five years and facilitate 15000 new connections per year during the same period increasing this to 25000 new connections in the subsequent years (MoEMD, 2002)

*Proposed Public private partnerships*

In line with efforts to increase generation capacity by involving the private sector, government has packaged a number of hydropower projects as Public private partnerships. Of greater significance in the projects are the Bujagali and Karuma hydropower stations.

*Bujagali Power project*

The proposed Bujagali hydropower project is to be built along the River Nile north of the Nalubaale and Kiira power stations. The dam with a generation capacity of 250MW is to be constructed under a Build Own Operate Transfer arrangement and when successfully implemented will be the first hydro Independent power project in Uganda. Construction of the dam is hoped to offer a long term solution to the current energy crisis and power generation deficit in the country (World Bank, 2007).

The project, which is being developed by Bujagali Energy Limited (BEL) will encompass the construction and operation of a run of the river power scheme and 100km of 132Kv transmission lines to evacuate the generated power to the main grid (World Bank, 2007). It is estimated that the project will cost USD 750 million and financing is being provided

partly by the Government of Uganda with the other equity and debt financers to the project developers being the World Bank, European Investment Bank (EiB), KFW Bankgrauupe amongst others (World Bank, 2007).

BEL is an SPV formed by Industrial Promotion Services (Kenya) Limited and SG Bujagali Holdings Ltd; an affiliate of Sithe Global Power, LLC (USA). At the time of writing had finalised negotiations with the Government of Uganda and prospective financers and construction works had been commissioned at the project site (Kaujja *et al.*, 2007).

*Karuma Power project*

This is a proposed run off the river hydropower scheme that will add 200MW to the national grid. It will consist of 4 units each capable of generating 50MW. The estimated costs for construction of both the hydropower dam and transmission lines are USD 450 million. The lead project developer is NORPAK power AS a Norwegian Company.

### *2.4.4 Private sector participation Challenges.*

Despite the Ugandan government's liberalisation efforts and attempts to implement conducive reforms, private sector participation and investment in new hydropower generation facilities is still limited, faced with many pitfalls and many proposed projects have not materialise. For instance, in the case of 250MW at Bujagali negotiations for the construction of the Bujagali dam commenced in 1994 with AES Nile Power as the private project sponsors proposing to construct the dam at a cost of US$582.0 Million. However as a result of protracted negotiations, allegations of corruption, resistance from environmental and civil society groups the project stalled in 2003 (Sasha, 2003) and the private project sponsor AES Nile Power pulled out of negotiations in 2004. The cancellation necessitated a costly re-bidding process that culminated in the appointment of Bujagali Energy Limited as the preferred bidder. Bujagali Energy Limited owned by SG Bujagali Holding Ltd (a subsidiary of Sithe Global power) and IPS (Kenya) Ltd.

There have also been delays in project implementation despite expressions of interest by the private sector. A notable example is the proposed construction of a hydropower dam at Karuma Falls on the river Nile by the Norwegian company Norpak (Energy Information Administration, 2004). The dam which is intended to generate 200MW has also been on hold since 2003. Final approval for the project was only granted in early 2006 with construction expected to start in September 2007.

Under the Rural electrification program, which has attracted more private sector interest as a result of mainly government subsidises being offered, a number of firms have expressed intentions to develop mini and micro-hydropower generation facilities on the numerous rivers in the country. Unfortunately many of these projects have not been realised (GoU, 2004).

Furthermore, challenges in obtaining project financing by the private developers have been identified as a major cause for the delays in commissioning additional hydroelectric power through public private partnerships in Uganda (Bbumba, 2006).

The above mentioned bottlenecks and inefficiencies in the implementation of private power projects increasingly make it more difficult to attract the private sector participation in the electricity sectors of many developing countries with the possible mismatch of investors expectations and investment conditions being a probable cause for the slow growth of private sector participation in the electricity sector (Izzaguire, 2000; Lamech *et al.*, 2003).

As contractual arrangements, PPP'Ss have been identified as having an immense potential in enabling a number of developing countries to meet their infrastructure needs, but the level of its success in different countries and different sectors within these countries varies. This variance suggests that the institutional environment within which a public private partnerships arrangement is implemented plays a significant role in its success or failure.

Therefore, in order to understand the cause of this and develop measures to promote private participation in the provision of infrastructure, an examination of the institutional environment within which PPP arrangements are implemented together with the incentives and disincentives that lie therein is necessary.

## 2.5 Theory of Institutions

### *2.5.1 Importance of Institutions*

Institutions provide humanely imposed frameworks of informal (e.g. taboos, customs) and formal constraints (e.g. laws and rules) that together form. the "rules of the game" that shape social, political and economic aspects of human interaction (North, 1990; Ostrom *et al.*, 1993; Furubotn *et al.*, 1998). These institutional constraints provide a stable structure

for human interaction and incentives for individuals or organisations (groups of individuals bound by a common goal) to engage in economic activity; inevitably determining the performance of an economy (North, 1990). The institutional environment plays an important role in promoting economic development by providing varying structures of exchange depending on the complexity of the exchange or transaction (*ibid*).

The institutional framework gives rise to entrepreneurs / organisations who, through different contractual arrangements, take advantage of the opportunities created by a given institutional environment. These entrepreneurs /organisations can be defined as "players in the game" (North, 1990) and their choices of contractual arrangements are dependent on the risks and transaction costs involved in addition to anticipated benefits from carrying out the transaction (Furubotn *et al.*, 1998).

In order to encourage these transactions to take place, it is important that the institutional environment meets the criteria of being stable and provide enforceable rules. An important function of the institutions is to reduce uncertainty; thus frequent and arbitrary changes to the rules would serve to increase uncertainty and the perception of risk involved with the transaction. This could invariable lead to an increase in the transaction costs involved (North, 1990; Furubotn *et al.*, 1998). A similar concern exists when it comes to enforceability of the rules, the cost involved in ensuring adherence to the contractual agreement should not be excessive as not to make the venture worthwhile to either contracting party (North, 1990).

Therefore, the importance of institutions in determining the performance of an economy and of economic transactions or arrangements such as public private partnerships can be discussed on the basis of its impact on property rights and transaction cost involved in the successful implementation and completion of a transaction.

### *2.5.2 Property rights*

The institutional environment defines and enforces the property rights upon which the transactions are based. Property rights are the benefits and restrictions to the use of an asset by a firm or an individual (North, 1990) and include the right to use the asset, earn income from it and /or transfer its ownership (Furubotn *et al.*, 1998). The importance of property rights is derived from the recognition of and willingness to enforce them by members of

society making them credible and thus able to offer a degree of certainty to transaction. Eggertsson (1995) categorises property rights as being:

- *Private property* - Where an owner has exclusive rights and can transfer these rights to others.
- *State property* –. Control over the resource is retained by the state and the user has no rights to transfer
- *Community property* – Control over the resources lies with a community of users
- *Open access* – open to all with no limitations

By means of contractual agreements, bundles of property rights over an asset can be exchanged between parties bearing in mind that one cannot transfer more rights than he possesses (Furubotn *et al.*, 1998). Eggertsson (1995) further shows that the degree of control over assets affects the decisions taken by the owners or users of these assets.

As a result of the heavy initial investment required in developing electricity infrastructure, with project revenues and profits projected over a long period of time, a stable, consistent and clearly defined regime of private property rights is obviously important to encourage private sector participation. Credibility of the property rights regime provides a higher degree of certainty in transaction which acts as an incentive because the perception of risk e.g. the risk of government expropriation or failure to owner contract obligations is reduced (North, 1990; Ostrom *et al.*, 1993; Henisz, 2002). Key to the success of contractual agreement is the ability to have mechanisms to be able to enforce and resolve conflicts concerned with property rights (Ostrom *et al.*, 1993).



### *2.5.3 Transaction costs*

North (1990) defines transaction costs as the costs involved in establishing (measurement costs) and enforcing (enforcement costs) the transaction. The measurement costs are those that are concerned with the process of measuring the attributes of the good being exchanged together with costs of measuring and defining the rights being exchanged (North, 1990). Ostrom, 1993 identifies these costs as ex- ante and include costs that arise from activities like conducting of feasibility studies, correspondence with different parties and negotiating contract terms.

On the other hand, the enforcement costs are *ex-post* and include cost involved in monitoring contractual performance, litigation, contract amendment, maintaining

harmonious relationships amongst the different parties to a contract (Ostrom *et al.*, 1993).Consequently, the magnitude of transaction costs is determined by the frequency of interaction between the parties, uncertainty of transaction and nature of asset involved in the interaction.

The success of an institutional arrangement is influenced by the perception of the players as to what the risks of transaction failure are and the associated transaction costs. That is an individual or organisation is motivated by the anticipated benefits that will accrue from the successful completion of a transaction. Therefore should the transaction costs or risks be greater than the anticipated benefits, the transaction is likely to fail. Failed transactions are a loss to society through the denial of the wider benefits that would have otherwise accrued to them.

Ostrom (1993) associates the institutional environment with incentives and disincentive to sustainable development of infrastructure. For instance the lack of adequate incentives within the institutional environment has been identified as a cause for the failure to improve infrastructure provision in developing countries (World Bank, 1994).

In conclusion it is recognised that the institutional environment has a significant role to play in enabling infrastructure investment thereby increasing the infrastructure stock. A stable private property regime acts as an incentive to private sector participation in the provision of public infrastructure for it allows for certainty to transactions. An unstable property regime only serves to increase the transaction costs resulting in less motivation for the individual to take advantage of an opportunity through a given contractual arrangement. It is therefore important that the framers of the "rules of the game" are aware of the expectations of the participants in order to establish an appropriate institutional environment or improve upon an existing one.

PPP's as vehicles for delivering this investment and increasing infrastructure stock are invariable affected by the existing investment environment in a country and variance in the institutional environments could offer explanation to the success or failures of many PPP initiatives more importantly for sectors like the electricity sector that need large amounts of capital and are long-term investments.

## 2.6 Constraints to Private participation in the energy sector in developing Countries

The inadequacies institutional environment to effectively deliver infrastructure framework has been identified as one of the hindrances to private sector participation in efforts geared at increasing the power supply in developing countries (Jyoti *et al.*, 1998; UNECA, 2006; William *et al.*, 2006). The source of constraints to the development of private sector participation in the energy sector of developing countries can broadly be categorised under Legislative and regulatory inefficiencies and restrictions, difficulty in obtaining finances and institutional challenges.

The formation of effective regulatory and legal environment is widely regarded as important to enable private sector participation in infrastructure development. Effective regulatory processes should provide guidelines to private sector participation thus offering an element of predictability to the investor (ADB, 2000; Sader, 2000). In addition, it is important that a regulatory regime balances the need to provide incentives to attract investment with that of protecting the interests of the consumers thus maintaining public confidence in the regulatory regime.

The appropriate legislation in terms of Commercial law, property law and contract law should be in place for it provides avenues of redress in situations of dispute and it is imperative that governments show the willingness to abide by these when the need does arise (ADB, 2000; Sader, 2000; William *et al.*, 2006).

However presence of regulatory framework doesn't necessary guarantee success of private sector participation but an effective legal and regulatory environment provides for a degree of predictability helping instil investor confidence and reducing the investor's perception of both political and regulatory risk (ADB, 2000; Sader, 2000). This withstanding, in adequate regulatory and legal frameworks have has been a major factor for the failure to realise private sector participation in the energy sector of many countries (Sader, 2000; Fraser, 2005; Woodhouse, 2005; Gervog, 2006 UNECA, 2006).

When formulated, the regulatory and legal frameworks should be clear and unambiguous. Ambiguity or lack of clarity of relevant laws and regulations only serves to increase the level of perception of risk to the investors leading them to rely on special situations or political patronage as a means of securing contracts and this is detrimental in that contracts

are then not awarded on merit (ADB, 2000). In a World Bank survey (Lamech, 2003), clarity of regulations and the strength of legal frameworks were considered as the lead concern of investors when deciding where to invest (Lamech, 2003). A case in point was in China where the ambiguous nature of Chinese law as regards BOT investments has been ranked as the lead cause of foreign investor apathy to investing in the energy sector (Blackman *et al,* 1999).

Restrictive conditions imposed by regulations also deter private sector participation. The restrictions on the rate of return on investment in Pakistan to 15% (Sader, 2000) and China 12%, latterly revised to 15% (Blackman *et al*, 1999) are examples of cases where private sector participation has been impinged. On the other hand, concerns were raised of the high rate of return at 20 % being achieved by the investors on the Shajiao B Power Plant project (Wang & Tiong, 2000). Therefore it is important that when formulating regulations, governments strike a favourable balance as far as a cap on the rate of return is concerned. A 2002 World Bank survey indicated that the majority of investor favoured a rate of return of above 16% (Lamech, 2003). Note should also be made that investors will desire a higher rate of return in an environment where the perception of risk is high a case in point is the Shajiao B power project where it is argued that an increased perceived country risk was the justification used for the high rate of return (Ye & Tiong ,2000).

Furthermore, regulation imposing restriction on foreign ownership of power sector assets e.g. Malaysia 25%, China 30% and Philippine 40% (Jyoti *et al.*, 1998; Blackman *et al.*, 1999; Fraser, 2005; Woodhouse, 2005) inhibits the full realisation of the potential of private sector participation in a number of countries. Restriction on ownership is usually deemed necessary to prevent undue influence arising from the foreign control of key power sector assets but as an alternative, it has been argued that by strengthening the regulatory environment abuses by these companies can be controlled (Blackman *et al*, 1999; Colin, 2004). Secondly, giving priority during the selection process to foreign companies partnering with local companies would still be able to achieve the desired goal of controlling foreign ownership of key assets while providing the added advantage of developing the local skills capacity (ADB, 2000).

Reforms that usually preceded private sector participation in the electricity sector characteristically led to the creation of a regulatory body to oversee the sector. Independence while carrying out its duties is important in order for the regulatory body to

perform its dual role of encouraging private sector investment and protecting the consumer's interest. The regulatory body should be independent from government interference and have the ability to with stand pressure from public opinion and industry players more so when setting tariffs and enforcing contracts. This should be facilitated by providing sufficient financing and qualified staff to the regulatory body. Regulatory independence is an incentive and influences the decisions to invest in a given country (Lamech, 2003; Colin, 2004).

In relation to this, political interference has also been cited as a cause for failure of private sector investment in the power sector a case in example is in Zimbabwe where a contract was arbitrarily awarded to the Malaysian firm YTL as the preferred bidder for the Hwange project after a state visit by the Malaysian prime minister short-circuiting an ongoing tender process (Sader, 2000), Similar occurrences have been reported in the Indonesian energy sector with regards to award of Paiton and Tanjung Jati IPP's tenders to enterprises suspected of having close links to the politically powerful Suharto family (Williams, 2006) raising concerns about corruption and cronyism.

Failure to honour their contract obligation by some governments in the developing countries causes a lack of interest from the private sector. An example is Pakistan where a change in government led to the cancellation or renegotiation of contract terms for a number of IPP projects (Sader, 2000; Fraser, 2005), others being in India (Jyoti *et al*, 1998) and China (Blackman et al, 1999). This is especially significant for given that independent power producer (IPP) contracts range from 10-30 years and are thus likely to span over a number of political government changes. Other forms of renegade on contracts by governments e.g. failure to implement power increases or purchase power at the agreed cost have also been identified as a reason for limited private sector participation in the power sector (Woodhouse, 2005).

The role political will and support plays in the development of privately sponsored infrastructure projects and cannot be underestimated. This was evident in the reform of the Armenian power sector where the commitment of the Armenian government saw the country through a turbulent process of increasing and improving the electricity sector through private sector participation (Gevorg, 2006). The influence of politics on regulatory framework is immense (Chege, 2004) and should be positively harnessed to encourage private sector participation in developing countries. Farlem (2005) goes on to mention

public private partnerships including the N4 toll road project in South Africa, water and electricity provision in Gabon amongst others that have succeeded as a result of political support.

The slow implementation of sector reform programs has variously been identified as a cause for the slow or non realisation of private sector developed projects in the electricity sector. Slow implementation of reforms in the energy sector in China (Blackman et al, 1999) and Pakistan (Fraser, 2005) are credited as having had a contribution to the slow realisation of IPP projects. William (2006) identifies the implementation of a "standard menu of reforms" as a possible cause for the difficulty experienced in undertaking reforms in the electricity sector of many developing countries. To overcome this, it is suggested that countries should implement reforms that are in response to the country's sector problems and in tandem with their institutional capabilities, political and social characteristics.

Lack of established project approval processes (Blackman *et al*, 1999) or other areas where there is a lack of transparency (Sader, 2000) have caused delays increasing transaction costs in the development of independent power project and served to discourage private sector investment especially considering that there is a long payback period associated with power projects (Antonette, 1999) which conflicts with the majority short term gains desired by private investors.

Delays in obtaining government approvals and licences as a result of lengthy bureaucratic processes and many project approval requirements have also been identified as a cause for failure of private sector investments in developing countries (Lamech, 2003). India is a classic example where shared authority and responsibility between the central government and the state government leads to the need to obtain more than 100 clearances before promoters can approach lenders (Jyoti 1999; Sader, 2000). Besides being time consuming, this level of bureaucratic complexity unnecessarily increases the lag time between project conception and final implementation stifling private sector initiatives and increasing the associated overhead costs.

Project financing of IPP schemes is normally of limited or non-recourse financing, therefore the project depends on streams of revenue to be generated on completion. In a system where there is a single buyer, the promoters of IPP projects have to rely on the

creditworthiness or guarantees offered by the power purchaser. In India, the perceived lack of creditworthy of the State Electricity boards and reluctance of the government to provide guarantees to promoters of IPP projects has caused the failure to reach financial closure on a number of IPP projects (Jyoti, 1999; ADB, 2000). This is exacerbated in many other developing countries by the lack of information to rate the creditworthy of government utilities involved in private infrastructure projects (Devapriya, 2003)

Project financing for IPP schemes relies to a great extent on foreign capital both for debit and equity financing particularly in developing countries where capital markets are usually underdeveloped, therefore foreign exchange risks i.e. availability, transferability and convertibility are important consideration for investor interest. Possibly more important to promoters of IPP's are the conversion losses in a volatile foreign currency environment especially since the projects are long term and rely on cash flows that are predominantly in domestic currency (Sader, 2000; ADB 2000)

The constraint of foreign exchange risk identified above could be minimised by utilising credit facilities in local currency from domestic financial institutions but the weak and immature nature of the financial markets in many developing countries has made the raising of long term debt from local companies difficult (Jyoti *et al.*, 1998; ADB, 2000) with the isolated exceptions of countries such as South Africa.

The onset of private sector participation in the energy sector as often experienced public resentment as a result of prices increases and assertive payment collection mechanisms through prepaid meters and disconnection without a commensurate improvement in service delivery. These price increases are as usually a result of governments holding the cost price below market rates by a complex system of subsidies (ADB, 2000). Furthermore, the setting of electricity prices is also problematic to the private entity because of the lag in time between cost increases and price adjustments by the regulatory authorities to reflect these increased costs (Blackman *et al.*, 1999).

Additional resistance from different interest group's represented by NGO's, civic societies and community organisations has also led to the reduction of foreign private sector investment in a number of developing countries. In the energy sector, different groups e.g. public interest groups, as a result of the potential price increase, usually manifest this resistance (Hall *et al.*, 2005). Increasing concern for environmental issues, opposition from

environmental groups and the accompanying bad press have been identified as important factors in the reluctance of financial institutions to get involved in the development of hydropower projects (WCD, 2000). As identified previously, pressures from environmental groups have slowed the implementation of PPP's for hydropower generation in Uganda.

Another cause of delays has been attributed to the low level of skills both in the public and private sector with regard to the implementation and development of public private partnerships(Moreldge *et al.*, 1998; Bing Li *et al.*, 2005).This is attributed to the fact that PPP's are a new concept in many countries and the frequency of their implementation still low (Bing Li *et al.*, 2005).

It is also recognised that though more familiar with the traditional procurement and engineering aspects of infrastructure projects, lack of in-depth knowledge and experience by public sector representatives on the various financial and legal aspects of IPP's has always handicapped them during negotiations with their more skilled private sector counterpart (ADB, 2000; Sader, 2000). This has lead to the implementation of contracts that are unfavourable often requiring renegotiation or at times complete abandonment (Ahadzi *et al.*, 2004)

In a review of PPPs in the UK, Bates suggests the need to increase the interaction between the public and private sector in addition to training the practitioners involved in PFI to increase there knowledge. (Bates 1992)



## 2.7 Outline of constraints

From the above discussion below is a summary of the identified constraints to private sector investment and participation in the provision of public infrastructure through public private partnerships. These can be categorised as Regulatory, legal, Financial, Institution and political:

### A. Regulatory

i. Lack of an enabling regulatory framework to support the participation of the private sector.
ii. Weak regulatory framework: lacking in clarity and ambiguous.
iii. Slow implementation of power sector reforms.
iv. Lack of independence of the regulatory body.

v. Many requirements to obtain project approval.
vi. Lengthy project approval process.
vii. Restrictions on rate of return on investment.
viii. Restrictions on the level of foreign ownership of companies.

**B Institutional**

ix. Poor coordination between government departments.
x. Delays as a result of lengthy bureaucratic procedures.
xi. Low level of skills of personnel involved with PPP.
xii. Accusations of corruption and corrupt tendencies.
xiii. Resistance from environmental groups.
xiv. Resistance from civil society organisations.
xv. Public resentment as a result of tariff increases.
xvi. Investors concerns for need for intensive managerial resources.

**C Political**

xvii. Political Interference in procurement process
xviii. Lack of political will and support.

**D Legal and Financial**

xix. Lack of enabling legal framework.
xx. Failure of government to honour its contract obligations.
xxi. Investors concerns of foreign exchange risk.
xxii. Inability of local Institutions to provide equity financing.
xxiii. Poor creditworthiness of power off-taker.

### *2.7.1 Outline of effects on deal closure*

Furthermore from the discussion, the following effects of the above mentioned constraints on the uptake and implementation of public private partnerships were identified

i. Increased perception of country risk by the private sector.
ii. Increased exposure to foreign exchange risks as a result of the lack of readily available local financing.
iii. Lengthy contract negotiations.
iv. Increased transaction costs.
v. Poorly formulated contracts and projects.

vi. Contract cancellation or renegotiation.

vii. Public resistance to the implementation of projects.

viii. Failure to reach financial close of initiated projects.

ix. Limited or no private sector participation.

x. Slow implementation of Independent power projects.

## 2.8 Conclusion

This chapter has reviewed the literature identifying the importance of infrastructure in enabling and sustaining economic and social growth. The chapter goes on to identify constrained public budgets and poor service delivery as the major motivations for the use of PPP as a public infrastructure delivery vehicle. Subsequently the chapter presents the anticipated benefits and criticisms for the use of PPP. The role of PPP in the electricity sector is discussed. Attention is drawn to the significant impact the institutional environment and the incentives therein have on the development and implementation of public private partnership as an institutional arrangement. The chapter concludes by presenting a classification of the constraints encountered in the implementation and development of public private partnerships in the electricity sector.

# CHAPTER THREE

# METHODOLOGY

## 3.0 Introduction

This chapter expounds on the methodology used to determine the relative importance of the factors that constrain the uptake and implementation of public private partnerships in the Ugandan electricity sector. Discussed in this chapter are the research, data collection and data analysis methods together with the reasons for their choice.

The methodology consisted of three phases:

*Phase 1 Preliminary study*

This involved a detailed literature review aimed at obtaining an understanding of Public private partnerships, the Ugandan electricity sector and constraints that affect the implementation of Public private partnerships in the electricity sectors of developing countries. Information was obtained from journal articles, conference publications, newspaper articles, organisational data bases, reference books and internet searches.

*Phase 2 Data collection*

The identified constraints from the literature, supplemented by interviews with professionals in the sector were used to develop a five point scale Likert questionnaire that was administered to a wider range of professionals involved in the development of public private partnerships in the electricity sector in Uganda. Purposive and *"snow balls"* sampling techniques were used to identify respondents. The sample consisted of managerial level professionals who have had work experience on the development of public private partnership projects in the Uganda electricity sector.

*Phase 3 Data analysis, discussions and conclusions*

The data collected was coded, entered and analysed using SPSS. Respondent characteristics where determined using frequency tables generated from the data, the mean score method was used to rank the constraints and nonparametric tests were done to determine correlations and relationships between the different categories of respondents. The results were then discussed in relation to literature review findings and research objectives.

## 3.1 Research method

There are two main approaches to conducting research. These are the quantitative and qualitative methods linked to the positivism and interpretive paradigms respectively (Fellows *et al.*, 2003).

Easterby –Smith *et al.* (2002) observes that a key aspect of positivism is that the social world exists externally and that its properties should be measured through objective methods rather than being inferred subjectively through sensation, reflection and intuition. He further identifies that the positivist paradigm is underpinned by a number of assumptions at the ontological and epistemology levels. At the ontological level, the assumption is that reality is external and objective, while at the epistemological level, the assumption is that knowledge is significant only if it is based on observations of this external reality.

Associated with positivism are the ideas of rationalism, objectivity and empiricisms (Fellows *et al.*, 2003) which are manifested in the characteristics enumerated by and adapted here from Easterby –Smith *et al* 2002.

**Table 3. 1 Characteristics of the positivist paradigm**

| **Characteristic** | |
|---|---|
| The observer | Must be independent |
| Human Interest | Should be irrelevant |
| Explanations | Must demonstrate causality |
| Research progress through | Hypotheses and deduction |
| Concepts | Need to be operationalised so that they can be measured |
| Units of analysis | Should be reduced to simplest terms |
| Generalisation through | Statistical probability |
| Sampling requires | Large numbers selected randomly |

This research was undertaken based on the positivist paradigm and encapsulated the aforementioned characteristics. A hypothesis was developed section 1.6.2 and utilising quantitative methods, elucidated below, sought to objectively determine the relative importance of identified factors as constraints to the development of public private partnerships as perceived by stakeholders in the electricity sector in Uganda.

### *3.1.1 Qualitative and Quantitative research methods*

Qualitative research methods seek to understand people and their perceptions. The qualitative approach allows for the collection of detailed data over a relatively long period. It is inductive and explanatory in nature. Qualitative approaches are suitable for use in investigating processes, new subject areas or areas where little information exists and are acknowledged as a suitable strategy for developing hypothesis. Qualitative methods further render themselves useful when it comes to validating findings obtained through quantitative methods. The shortcomings of this approaches is the , large volume of data collected that needs to be subjected to complex and labour intensive analysis techniques. Quite often the objectivity of qualitative data analysis is questioned (Amaratunga *et al.*, 2001; Fellows *et al.*, 2003).

Quantitative research methods on the other hand are deductive in nature seeking to test hypothesis generated from theory and a literature review. Data collected is subjected to statistical analysis and conclusions drawn in relation to the theory and literature. Quantitative approaches are usually criticised for their inability to offer deeper underlying meanings or explanations to phenomenon but the capacity to be replicated, tested for reliability, validity and enabling objective analysis are identified as the advantages (Neuman, 1994; Amaratunga *et al.*, 2001; Fellows *et al.*, 2003).

In addition to the above considerations, the choice of a research method is influenced by accessibility to information required to solve the research problem. Easterby *et al.*, (2002) recognises the influence access to information has on the nature of research problems investigated and methods adopted in the management research domain

A quantitative approach was used in this study to identify the importance of the identified constraints to the development of PPPs in the Uganda electricity sector. Considerations that further motivated the use of quantitative approach were; the anticipated difficulty in accessing project specific documents and the possibility of present or past employees of organisations involved in the development of PPP being unwilling to discuss project related activities in detail. This is founded on the premise of the need to protect their current positions or not jeopardise company activities.

Similarly, a number of studies on perceptions of stakeholders as to the constraints to the implementation of PPP/PFI have used quantitative methods e.g. (Akerele *et al.*, 2003; Bing Li *et al.*, 2005).

## 3.2 Data collection instrument

A Likert scale style questionnaire was used for data collection. Arguments abound on whether a Likert scale is an ordinal or interval scale. Considered as an ordinal scale, there is no meaning attached to the difference or distances between two numbers on the scale unlike if considered as an interval scale (Siegel *et al.*, 1988; Jamieson, 2004). Jamieson (2004) further points out that though the categories with ordinal scales have a rank order to them, it cannot be assumed that the intervals between the values are the same. The nature of scale used is important as it determines what statistical processes can be used for analysis in order to get meaningful conclusions (Siegel *et al.*, 1988; Neuman, 1994; Jamieson, 2004). The Likert scale used for this research was ordinal.

Used as an ordinal scale, Fellows and Liu (1997) identify the advantages of the Likert scale as:

i. Allowing the researcher elicit peoples opinions i.e. extent of agreement or disagreement with a statement;
ii. Enabling the production of hierarchies of preferences of the respondents; and,
iii. Generating a hierarchy of preferences for different categories of respondents in the sampling space that can be compared.

Some disadvantages have been identified with the use of questionnaires and these include limitation to use with only literate respondents, low response rates in some instances and challenges in their effective design. The advantages of questionnaire method for data collection and still underpinning its popularity are; it is cost effective, relatively easy to implement and ensures anonymity of the respondent (Neuman, 1994; Easterby *et al.*, 2002).



## 3.3 Questionnaire development

The questionnaire consisted of two sections. The first section consisted of a combination of open and closed ended questions aimed at collecting information regarding the characteristics of the respondents. Open ended questions allow the respondent to provide there own answers where the researcher cannot with confidence anticipate all the probable responses to a question (Eckhardt *et al.*, 1977; Easterby *et al.*, 2002; Fellows *et al.*, 2003). Included in this section were questions regarding the kind and duration for which they have worked for the organisation, years of work experience in the electricity sector both in Uganda and elsewhere, experience with PPP projects?

The second section solicited their perception regarding the importance of twenty three constraints to the development and uptake of public private partnerships for hydropower generation as identified through the literature review. The second section was designed in a five point Likert scale with the respondents being asked to indicate their level of agreement or disagreement to the statements according to the following scale strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.

Neuman (1994) states the need for the questions in a questionnaire to be tested for clarity and ability to deliver the intended meaning to the respondent. This is done on a small sample of respondents with similar characteristics as to those for whom the survey is intended. To check the suitability, clarity and appropriateness of the questions, drafts of the questionnaires were discussed with three government officials, two private sector company representatives and one energy professional/consultant all having experience with the development of hydropower projects through public private partnerships in Uganda. The questionnaire was subsequently refined before distributing to a wider group of respondents. A copy of the questionnaire is in appendix A

### 3.4 Sampling

The target population of the survey consisted of managerial level staff representing government ministries and departments, electricity regulatory body, private companies both those that have expressed interest or are involved in the PPP projects in the electricity sector, representative of civil society organisations and energy professionals e.g. energy consultants, researchers and specialist advisors e.g. lawyers working in organisations that are involved in the development of PPPs.

The Lack of a comprehensive reliable list of all participants in the development of hydropower projects through PPP necessitated the use of non random sampling techniques. The respondents were identified through purposive and "snowballing" sampling techniques. To use the purposive sampling technique, the researcher should use professional judgement to identify respondents who are knowledgeable in the subject area (Rea *et al.*, 2005). For this research, the respondents were selected on the basis that their work experience with PPP projects provides them with sufficient knowledge to respond to the issues that will be raised in the questionnaire. With "Snowballing", a person contacted in an organisation recommends another either in the same or another organisation to whom the questionnaire can be administered (Rea *et al.*, 2005).

### 3.5 Questionnaire administration

A total of Seventy one (71) self administered questionnaires where delivered by hand to the identified possible respondents. Prior to delivering the questionnaire, the respondents were contacted by telephone to ensure their willingness to participate in the survey. The questionnaire had a cover letter indicating the objectives of the research and guaranteeing confidentiality to the respondent. Sixteen (16) questionnaires where administered to respondents from the private companies involved in the development of PPP for hydropower generation, eight (8) questionnaires to all possible respondents from top level management of the electricity regulatory body, thirty five (35) questionnaires to various respondents from different government bodies / ministries. Seven (7) questionnaires to professionals/ consultants involved with PPP projects, five (5) questionnaires to respondents from civil society organisations.

Follow up visits to pick up or remind the respondents about the questionnaires were repeatedly done. To further encourage respondents and increase the response rate, it was made known to the respondents that the finding of the study could be availed to them on request. The process of data collection was done from January to February 2007.

It was particularly a challenge to administer the questionnaire to the latter categories of energy professionals and civil society organisations because lack of coordination and knowledge about each others activities, secondly there was repeated failure to honour / agree to appointments previously set.

### 3.6 Data Analysis

The data collected was analysed using Statistical Package for Social Scientists (SPSS). The questionnaire was coded to enable entry into SPSS. The respondents where categorised into 5 groups depending on the organisation they work for. Response options C and F to Question 1' "what kind of organisation worked do you work for?" were collapsed to form the category private sector and data obtained from respondents entered accordingly.
Similarly the responses to number of years as requested in questions 2 and 4 were collapsed into 5 groups consisting of a range of four years each i.e. 1-4, 5-8, 9-12, 13-16, 17-20,

Non parametric tests were chosen for the analysis of the data collected. Nonparametric tests are used when the data violates parametric assumptions of normality and interval measured data (Siegel *et al.*, 1988; Field, 2005). Non random sampling methods were used

for data collection, hence non- normally distributed and the data collected was ordinal in nature.

### *3.6.1 Reliability test*

Reliability of a scale can be viewed in terms of stability i.e. the scales ability to elicit same responses when administered to the same respondent under similar circumstances and internal consistency which is concerned with the scales ability to measure the construct under investigation (Eckhardt *et al.*, 1977; Neuman, 1994). Cronbach's coefficient Alpha was determined and used as an indicator of the reliability of the five point Likert scale (Field, 2005).

### *3.6.2 Respondent characteristics*

Using SPSS, frequency tables and cross tabulations were generated to describe the data obtained from the respondent's. This enabled the identification of the characteristics of the respondents and patterns in the data. These data manipulation techniques were conducted on responses to questions in Section 1 of the questionnaire.

### *3.6.3 Ranking of constraints*

Section II of the questionnaire sought to determine the perceptions of the respondents with regard to the relative importance of the identified constraints.

The overall ranking of the constraints by the respondents was obtained by the mean score method (Chan *et al.*, 2003; Shaokai Lu *et al.*, 2007). The mean score (MS) for each constraint was calculated using the formulae

$$MS = \frac{\Sigma (f \times s)}{N}$$

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 for Strongly disagree to 5 for strongly agree;

N = Number of responses to that constraint.

Using the same method, rankings of the constraints are obtained among the various categories of the respondents as defined by the nature of organisation they work for. The weighting for the scale was scale 5 = strongly agree, 4 = agree, 3 = neither agree nor

disagree, 2 = disagree, 1 = strongly disagree. 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.

### *3.6.4 Kendall's coefficient of concordance w*

Kendall's coefficient of concordance *w* analysis was done to measure the degree of agreement of the respondents within a category on their ranking of the constraints. The null hypothesis $H_0$ and alternative hypothesis $H_1$ respectively are,

*$H_0$ = No agreement within the respondents in each group on their ranking of the constraints;*
*$H_1$ = there is agreement within the respondents in each group on their ranking of constraints*

If Kendall's coefficient of concordance ($w$) is significant at the 5% level, then an acceptable degree of consensus to the ranking of the constraints exists among the respondents in that category and the null hypothesis $H_0$ is rejected (Siegel *et al.*, 1988; Field, 2005). Kendall's coefficient of concordance ($w$) is in the range of $0 \leq w \leq 1$. Stronger degree of agreement is indicated by $w$ being closer to one (Siegel *et al.*, 1988; Field, 2005).

### *3.6.5 Mann Whitney U test*

The Mann Whitney U test was done to determine whether the mean ranks for each constraint are equal between the government and private sector respondents.

*$H_0$ = there is no difference between the mean ranks of the private and government sector respondents*
*$H_1$ = there is a difference between the mean ranks of the private and government sector respondents*

A p value lower than 0.05 on the Mann- Whitney U test serves to show 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; Field, 2005).

The Mann Whitney U tests were conducted on the data obtained for Government and private sector respondents since these are considered the major actors in a public private partnership arrangement.

### *3.6.6 Spearman rank correlation coefficient $r_s$*

To compliment this, Spearman rank correlation coefficient ***($r_s$)*** test was done to measure the agreement between the two respondent groups on their ranking of constraints to the uptake of PPP in the electricity sector.

*$H_0$ = there is no significant disagreement between the government and private sector respondents on the ranking of the constraints to PPP*
*$H_1$ = there is significant disagreement between the government and private sector respondents on the ranking of the constraints to PPP*

An association in the rankings by the respondents is indicated by $r_S$ being significant at level of 0.05 i.e. if $r_S > 0.05$, *$H_0$ is accepted (Siegel et al., 1988; Field, 2005).*



## 3.7 Ethical considerations

The respondents where briefed about the purpose of the survey and their consent obtained before handing them the questionnaire for filling. In some instances especially in the government departments approval was required and obtained from a senior officer to administer the questionnaire to staff that are directly responsible for the development of the public private partnerships. Confidentiality was guaranteed to the respondents in the cover letter and the questionnaire was designed with no provision for entry of personal details to further facilitate the anonymity of the respondents. see (Eckhardt *et al.*, 1977; Neuman, 1994) for further discussion on this issue.

## 3.8 Conclusion

To attain the objective of identifying the importance of the factors that constrain the uptake and implementation of public private partnerships in the electricity sector, a literature review was undertaken to identify the constraints to implementation of PPP in the electricity sector. A Likert scale questionnaire was developed incorporating these constraints. Using the mean score method, the relative importance of these constraints in the Ugandan electricity sector was established from the stakeholders. Relationships in the data were determined by using nonparametric test in SPSS for data analysis.

The findings are limited to public private partnerships aimed at increasing the electricity generation capacity through the construction of hydropower facilities in Uganda. The findings provide insight into what factors are important when considering the implementation of hydropower projects through public private partnership arrangements.

# CHAPTER FOUR

# SURVEY RESULTS

## 4.0 Introduction

The purpose of this chapter is to present the results/findings as obtained from the analysis techniques indicated in the previous chapter. It highlights the importance of the identified constraints in the Ugandan electricity sector. Non directional two tailed probability test results are reported at a significance level of 0.05. The implication and relevance of the findings presented in this chapter are discussed in relation to the literature review and research objectives in the subsequent chapter.

The statistical package SPSS was used to carry out the following statistical tests

i. Descriptive statistics i.e. frequency counts and cross tabulations
ii. Reliability test - Cronbachs coefficient alpha
iii. Kendall's coefficient of concordance w
iv. Mann Whitney test
v. Spearman rank correlation coefficient $r_s$

## 4.1 Data collection

During the period from January to February 2007, a total of seventy one (71) questionnaires were distributed using the purposive sampling and snow balling techniques. An overall response rate of 59.2% was attained. The number of questionnaires distributed and received as per respondent category is indicated in *Table 4.1* below.

## 4.2 Reliability test

Field, (2005) quoting Kline (1999) identifies that values of Cronbach's alpha $\alpha \geq 0.7$ are an acceptable indication of the reliability of the scale with values considerably lower indicating unreliability of the scale. The value of Cronbach's alpha $\alpha = 0.8231$ was obtained in the survey indicating good reliability of the Likert scale used.

**Table 4. 2 Data collection and response rate**

| | Organisation | Questionnaires sent out | Questionnaire Received | Questionnaires answered Completely | Response rate % |
|---|---|---|---|---|---|
| 1 | Government | 35 | 19 | 19 | 54.3 |
| 2 | Regulatory Body | 8 | 6 | 6 | 75 |
| 3 | Private Sector | 16 | 9 | 9 | 56.3 |
| 4 | Energy Professional | 7 | 5 | 5 | 71.4 |
| 5 | Civil society organisation | 5 | 3 | 3 | 60.1 |
| | **Total** | 71 | 42 | 42 | 59.2 |

***Source: Survey data collected for this research***

## 4.3 Characteristics of the respondent

### *4.3.1 Response rate and respondent categories*

As indicated above, a total of 42 questionnaires where returned representing a response rate of 59.2%. The categorisation of the respondents as per organisation they work for is shown in *Table 4.1* below. As indicated, 45.2% and 21.4 % of the respondents worked for government bodies and private sector companies respectively.

**Table 4. 3: Respondent categories**

| Organisation | Frequency | % of total respondents |
|---|---|---|
| Government Body | 19 | 45.2 |
| Regulatory Body | 6 | 14.3 |
| Private Sector | 9 | 21.4 |
| Energy Professional | 5 | 11.9 |
| Civil society organisation | 3 | 7.1 |
| | 42 | 100 |

***Source: Survey data collected for Msc research***

### *4.3.2 Employment duration in current organisation*

As a function of the target group desired, all respondents sampled were senior managers, the majority 45.2% having worked in their current organisation for between 1-4 years. The results show that 50% of the respondents from the regulatory body have worked with the organisation for at least five years.

**Table 4. 4 Employment duration in current organisation**

| Employment in current organisation (years) | Government Body % | Regulatory Body % | Private Company % | Energy Professional % | Civil Society Organisation % | Overall respondent % |
|---|---|---|---|---|---|---|
| 1-4 | 36.8 | 50.0 | 55.6 | 40.0 | 66.7 | 45.2 |
| 5-8 | 31.6 | 50.0 | 44.4 | 20.0 | 33.3 | 35.7 |
| 9-12 | 15.8 | 0.0 | 0.0 | 20.0 | 0.0 | 9.5 |
| 13-16 | 10.5 | 0.0 | 0.0 | 0.0 | 0.0 | 4.8 |
| 17-20 | 5.3 | 0.0 | 0.0 | 20.0 | 0.0 | 4.8 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

***Source: Survey data collected for Msc research***

### *4.3.3 Work experience in the Uganda electricity sector*

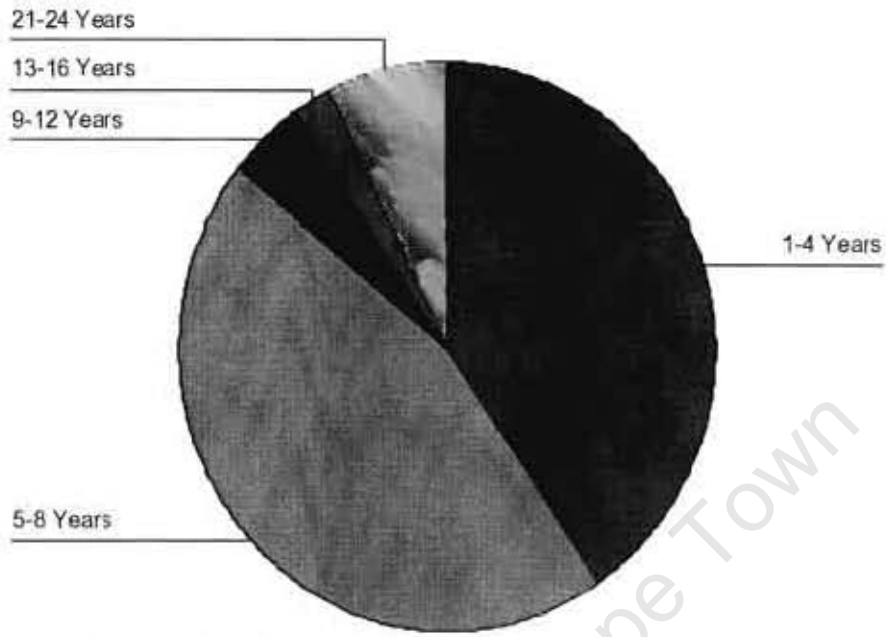
As illustrated in the pie chart below, 45.2% of the respondents indicate a 5 to 8 years work experience in the electricity sector, 40.5% 1 to 4 years of work experience and only one respondent representing 2.4% indicated that he had spent more than thirteen years working in the electricity sector in Uganda. A further breakdown of the years of experience depending on the organisation worked for shows that the 36.8% and 83.3% of the government and private sector respondents respectively have worked in the electricity sector for a period of 5 to8 years. On the other hand the majority 66.7% of the civil society organisation respondents have had 1 to 4 years experience in the Uganda electricity sector

**Table 4. 5: Work experience in Uganda electricity sector: responses Categorised per respondent organisation**

| Years | Government Body % | Regulatory Body % | Private Company % | Energy Professional % | Civil Society Organisation % | Overall respondent % |
|---|---|---|---|---|---|---|
| 1-4 | 31.6 | 16.7 | 66.7 | 40.0 | 66.7 | 40.5 |
| 5-8 | 36.8 | 83.3 | 33.3 | 60.0 | 33.3 | 45.2 |
| 9-12 | 10.5 | 0.0 | 0.0 | 0.0 | 0.0 | 4.8 |
| 13-16 | 5.3 | 0.0 | 0.0 | 0.0 | 0.0 | 2.4 |
| 21-24 | 15.8 | 0.0 | 0.0 | 0.0 | 0.0 | 7.1 |
| Total % | 100 | 100 | 100 | 100 | 100 | 100 |

Source: Survey data collected for Msc research

**Figure 4** **Respondents Work experience in Uganda electricity Sector**




***Source: Survey data collected for Msc research***



### *4.3.4 Work experience in the electricity sector of another country*

The respondents were asked to indicate whether they have worked in the electricity sector of another country, the majority of the respondents thirty eight in number representing (90.5%) responded in the negative to this question. Four respondents two from the category of energy professionals and one each from the government and private sector provided positive responses to the question. The results are presented in table 4.4.

**Table 4. 6: Work experience in the electricity sector of another country besides Uganda**

| Employment in electricity sector in other country (years) | Government Body (Number) | Regulatory Body (Number) | Private Company (Number) | Energy Professional (Number) | Civil Society Organisation (Number) | Overall respondent (Number) |
|---|---|---|---|---|---|---|
| No | 18.0 | 6.0 | 8.0 | 3.0 | 3.0 | 38.0 |
| Yes | 1.0 | 0.0 | 1.0 | 2.0 | 0.0 | 4.0 |
| Total | 19.0 | 6.0 | 9.0 | 5.0 | 3.0 | 42.0 |

Source: Survey data collected for Msc research

## 3.2 Data collection instrument

A Likert scale style questionnaire was used for data collection. Arguments abound on whether a Likert scale is an ordinal or interval scale. Considered as an ordinal scale, there is no meaning attached to the difference or distances between two numbers on the scale unlike if considered as an interval scale (Siegel *et al.*, 1988; Jamieson, 2004). Jamieson (2004) further points out that though the categories with ordinal scales have a rank order to them, it cannot be assumed that the intervals between the values are the same. The nature of scale used is important as it determines what statistical processes can be used for analysis in order to get meaningful conclusions (Siegel *et al.*, 1988; Neuman, 1994; Jamieson, 2004). The Likert scale used for this research was ordinal.

Used as an ordinal scale, Fellows and Liu (1997) identify the advantages of the Likert scale as:

i. Allowing the researcher elicit peoples opinions i.e. extent of agreement or disagreement with a statement;
ii. Enabling the production of hierarchies of preferences of the respondents; and,
iii. Generating a hierarchy of preferences for different categories of respondents in the sampling space that can be compared.

Some disadvantages have been identified with the use of questionnaires and these include limitation to use with only literate respondents, low response rates in some instances and challenges in their effective design. The advantages of questionnaire method for data collection and still underpinning its popularity are; it is cost effective, relatively easy to implement and ensures anonymity of the respondent (Neuman, 1994; Easterby *et al.*, 2002).



## 3.3 Questionnaire development

The questionnaire consisted of two sections. The first section consisted of a combination of open and closed ended questions aimed at collecting information regarding the characteristics of the respondents. Open ended questions allow the respondent to provide there own answers where the researcher cannot with confidence anticipate all the probable responses to a question (Eckhardt *et al.*, 1977; Easterby *et al.*, 2002; Fellows *et al.*, 2003). Included in this section were questions regarding the kind and duration for which they have worked for the organisation, years of work experience in the electricity sector both in Uganda and elsewhere, experience with PPP projects?

The second section solicited their perception regarding the importance of twenty three constraints to the development and uptake of public private partnerships for hydropower generation as identified through the literature review. The second section was designed in a five point Likert scale with the respondents being asked to indicate their level of agreement or disagreement to the statements according to the following scale strongly agree, agree, neither agree nor disagree, disagree, strongly disagree.

Neuman (1994) states the need for the questions in a questionnaire to be tested for clarity and ability to deliver the intended meaning to the respondent. This is done on a small sample of respondents with similar characteristics as to those for whom the survey is intended. To check the suitability, clarity and appropriateness of the questions, drafts of the questionnaires were discussed with three government officials, two private sector company representatives and one energy professional/consultant all having experience with the development of hydropower projects through public private partnerships in Uganda. The questionnaire was subsequently refined before distributing to a wider group of respondents. A copy of the questionnaire is in appendix A

### 3.4 Sampling

The target population of the survey consisted of managerial level staff representing government ministries and departments, electricity regulatory body, private companies both those that have expressed interest or are involved in the PPP projects in the electricity sector, representative of civil society organisations and energy professionals e.g. energy consultants, researchers and specialist advisors e.g. lawyers working in organisations that are involved in the development of PPPs.

The Lack of a comprehensive reliable list of all participants in the development of hydropower projects through PPP necessitated the use of non random sampling techniques. The respondents were identified through purposive and "snowballing" sampling techniques. To use the purposive sampling technique, the researcher should use professional judgement to identify respondents who are knowledgeable in the subject area (Rea *et al.*, 2005). For this research, the respondents were selected on the basis that their work experience with PPP projects provides them with sufficient knowledge to respond to the issues that will be raised in the questionnaire. With "Snowballing", a person contacted in an organisation recommends another either in the same or another organisation to whom the questionnaire can be administered (Rea *et al.*, 2005).

### 3.5 Questionnaire administration

A total of Seventy one (71) self administered questionnaires where delivered by hand to the identified possible respondents. Prior to delivering the questionnaire, the respondents were contacted by telephone to ensure their willingness to participate in the survey. The questionnaire had a cover letter indicating the objectives of the research and guaranteeing confidentiality to the respondent. Sixteen (16) questionnaires where administered to respondents from the private companies involved in the development of PPP for hydropower generation, eight (8) questionnaires to all possible respondents from top level management of the electricity regulatory body, thirty five (35) questionnaires to various respondents from different government bodies / ministries. Seven (7) questionnaires to professionals/ consultants involved with PPP projects, five (5) questionnaires to respondents from civil society organisations.

Follow up visits to pick up or remind the respondents about the questionnaires were repeatedly done. To further encourage respondents and increase the response rate, it was made known to the respondents that the finding of the study could be availed to them on request. The process of data collection was done from January to February 2007.

It was particularly a challenge to administer the questionnaire to the latter categories of energy professionals and civil society organisations because lack of coordination and knowledge about each others activities, secondly there was repeated failure to honour / agree to appointments previously set.

### 3.6 Data Analysis

The data collected was analysed using Statistical Package for Social Scientists (SPSS). The questionnaire was coded to enable entry into SPSS. The respondents where categorised into 5 groups depending on the organisation they work for. Response options C and F to Question 1' "what kind of organisation worked do you work for?" were collapsed to form the category private sector and data obtained from respondents entered accordingly.
Similarly the responses to number of years as requested in questions 2 and 4 were collapsed into 5 groups consisting of a range of four years each i.e. 1-4, 5-8, 9-12, 13-16, 17-20,

Non parametric tests were chosen for the analysis of the data collected. Nonparametric tests are used when the data violates parametric assumptions of normality and interval measured data (Siegel *et al.*, 1988; Field, 2005). Non random sampling methods were used

for data collection, hence non- normally distributed and the data collected was ordinal in nature.

### *3.6.1 Reliability test*

Reliability of a scale can be viewed in terms of stability i.e. the scales ability to elicit same responses when administered to the same respondent under similar circumstances and internal consistency which is concerned with the scales ability to measure the construct under investigation (Eckhardt *et al.*, 1977; Neuman, 1994). Cronbach's coefficient Alpha was determined and used as an indicator of the reliability of the five point Likert scale (Field, 2005).

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Using SPSS, frequency tables and cross tabulations were generated to describe the data obtained from the respondent's. This enabled the identification of the characteristics of the respondents and patterns in the data. These data manipulation techniques were conducted on responses to questions in Section 1 of the questionnaire.

### *3.6.3 Ranking of constraints*

Section II of the questionnaire sought to determine the perceptions of the respondents with regard to the relative importance of the identified constraints.

The overall ranking of the constraints by the respondents was obtained by the mean score method (Chan *et al.*, 2003; Shaokai Lu *et al.*, 2007). The mean score (MS) for each constraint was calculated using the formulae

$$MS = \frac{\Sigma (f \times s)}{N}$$

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 for Strongly disagree to 5 for strongly agree;

N = Number of responses to that constraint.

Using the same method, rankings of the constraints are obtained among the various categories of the respondents as defined by the nature of organisation they work for. The weighting for the scale was scale 5 = strongly agree, 4 = agree, 3 = neither agree nor

disagree, 2 = disagree, 1 = strongly disagree. 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.

### *3.6.4 Kendall's coefficient of concordance w*

Kendall's coefficient of concordance *w* analysis was done to measure the degree of agreement of the respondents within a category on their ranking of the constraints. The null hypothesis $H_0$ and alternative hypothesis $H_1$ respectively are,

*$H_0$ = No agreement within the respondents in each group on their ranking of the constraints;*
*$H_1$ = there is agreement within the respondents in each group on their ranking of constraints*

If Kendall's coefficient of concordance ($w$) is significant at the 5% level, then an acceptable degree of consensus to the ranking of the constraints exists among the respondents in that category and the null hypothesis $H_0$ is rejected (Siegel *et al.*, 1988; Field, 2005). Kendall's coefficient of concordance ($w$) is in the range of $0 \leq w \leq 1$. Stronger degree of agreement is indicated by $w$ being closer to one (Siegel *et al.*, 1988; Field, 2005).

### *3.6.5 Mann Whitney U test*

The Mann Whitney U test was done to determine whether the mean ranks for each constraint are equal between the government and private sector respondents.

*$H_0$ = there is no difference between the mean ranks of the private and government sector respondents*
*$H_1$ = there is a difference between the mean ranks of the private and government sector respondents*

A p value lower than 0.05 on the Mann- Whitney U test serves to show 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; Field, 2005).

The Mann Whitney U tests were conducted on the data obtained for Government and private sector respondents since these are considered the major actors in a public private partnership arrangement.

### *3.6.6 Spearman rank correlation coefficient $r_s$*

To compliment this, Spearman rank correlation coefficient ***($r_s$)*** test was done to measure the agreement between the two respondent groups on their ranking of constraints to the uptake of PPP in the electricity sector.

*$H_0$ = there is no significant disagreement between the government and private sector respondents on the ranking of the constraints to PPP*
*$H_1$ = there is significant disagreement between the government and private sector respondents on the ranking of the constraints to PPP*

An association in the rankings by the respondents is indicated by $r_S$ being significant at level of 0.05 i.e. if $r_S > 0.05$, *$H_0$ is accepted (Siegel et al., 1988; Field, 2005).*



## 3.7 Ethical considerations

The respondents where briefed about the purpose of the survey and their consent obtained before handing them the questionnaire for filling. In some instances especially in the government departments approval was required and obtained from a senior officer to administer the questionnaire to staff that are directly responsible for the development of the public private partnerships. Confidentiality was guaranteed to the respondents in the cover letter and the questionnaire was designed with no provision for entry of personal details to further facilitate the anonymity of the respondents. see (Eckhardt *et al.*, 1977; Neuman, 1994) for further discussion on this issue.

## 3.8 Conclusion

To attain the objective of identifying the importance of the factors that constrain the uptake and implementation of public private partnerships in the electricity sector, a literature review was undertaken to identify the constraints to implementation of PPP in the electricity sector. A Likert scale questionnaire was developed incorporating these constraints. Using the mean score method, the relative importance of these constraints in the Ugandan electricity sector was established from the stakeholders. Relationships in the data were determined by using nonparametric test in SPSS for data analysis.

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# CHAPTER FOUR

# SURVEY RESULTS

## 4.0 Introduction

The purpose of this chapter is to present the results/findings as obtained from the analysis techniques indicated in the previous chapter. It highlights the importance of the identified constraints in the Ugandan electricity sector. Non directional two tailed probability test results are reported at a significance level of 0.05. The implication and relevance of the findings presented in this chapter are discussed in relation to the literature review and research objectives in the subsequent chapter.

The statistical package SPSS was used to carry out the following statistical tests

i. Descriptive statistics i.e. frequency counts and cross tabulations
ii. Reliability test - Cronbachs coefficient alpha
iii. Kendall's coefficient of concordance w
iv. Mann Whitney test
v. Spearman rank correlation coefficient $r_s$



## 4.1 Data collection

During the period from January to February 2007, a total of seventy one (71) questionnaires were distributed using the purposive sampling and snow balling techniques. An overall response rate of 59.2% was attained. The number of questionnaires distributed and received as per respondent category is indicated in *Table 4.1* below.

## 4.2 Reliability test

Field, (2005) quoting Kline (1999) identifies that values of Cronbach's alpha $\alpha \geq 0.7$ are an acceptable indication of the reliability of the scale with values considerably lower indicating unreliability of the scale. The value of Cronbach's alpha $\alpha = 0.8231$ was obtained in the survey indicating good reliability of the Likert scale used.

**Table 4. 2 Data collection and response rate**

| | Organisation | Questionnaires sent out | Questionnaire Received | Questionnaires answered Completely | Response rate % |
|---|---|---|---|---|---|
| 1 | Government | 35 | 19 | 19 | 54.3 |
| 2 | Regulatory Body | 8 | 6 | 6 | 75 |
| 3 | Private Sector | 16 | 9 | 9 | 56.3 |
| 4 | Energy Professional | 7 | 5 | 5 | 71.4 |
| 5 | Civil society organisation | 5 | 3 | 3 | 60.1 |
| | **Total** | 71 | 42 | 42 | 59.2 |

***Source: Survey data collected for this research***

## 4.3 Characteristics of the respondent

### *4.3.1 Response rate and respondent categories*

As indicated above, a total of 42 questionnaires where returned representing a response rate of 59.2%. The categorisation of the respondents as per organisation they work for is shown in *Table 4.1* below. As indicated, 45.2% and 21.4 % of the respondents worked for government bodies and private sector companies respectively.

**Table 4. 3: Respondent categories**

| Organisation | Frequency | % of total respondents |
|---|---|---|
| Government Body | 19 | 45.2 |
| Regulatory Body | 6 | 14.3 |
| Private Sector | 9 | 21.4 |
| Energy Professional | 5 | 11.9 |
| Civil society organisation | 3 | 7.1 |
| | 42 | 100 |

***Source: Survey data collected for Msc research***

### *4.3.2 Employment duration in current organisation*

As a function of the target group desired, all respondents sampled were senior managers, the majority 45.2% having worked in their current organisation for between 1-4 years. The results show that 50% of the respondents from the regulatory body have worked with the organisation for at least five years.

**Table 4. 4 Employment duration in current organisation**

| Employment in current organisation (years) | Government Body % | Regulatory Body % | Private Company % | Energy Professional % | Civil Society Organisation % | Overall respondent % |
|---|---|---|---|---|---|---|
| 1-4 | 36.8 | 50.0 | 55.6 | 40.0 | 66.7 | 45.2 |
| 5-8 | 31.6 | 50.0 | 44.4 | 20.0 | 33.3 | 35.7 |
| 9-12 | 15.8 | 0.0 | 0.0 | 20.0 | 0.0 | 9.5 |
| 13-16 | 10.5 | 0.0 | 0.0 | 0.0 | 0.0 | 4.8 |
| 17-20 | 5.3 | 0.0 | 0.0 | 20.0 | 0.0 | 4.8 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

***Source: Survey data collected for Msc research***

### *4.3.3 Work experience in the Uganda electricity sector*

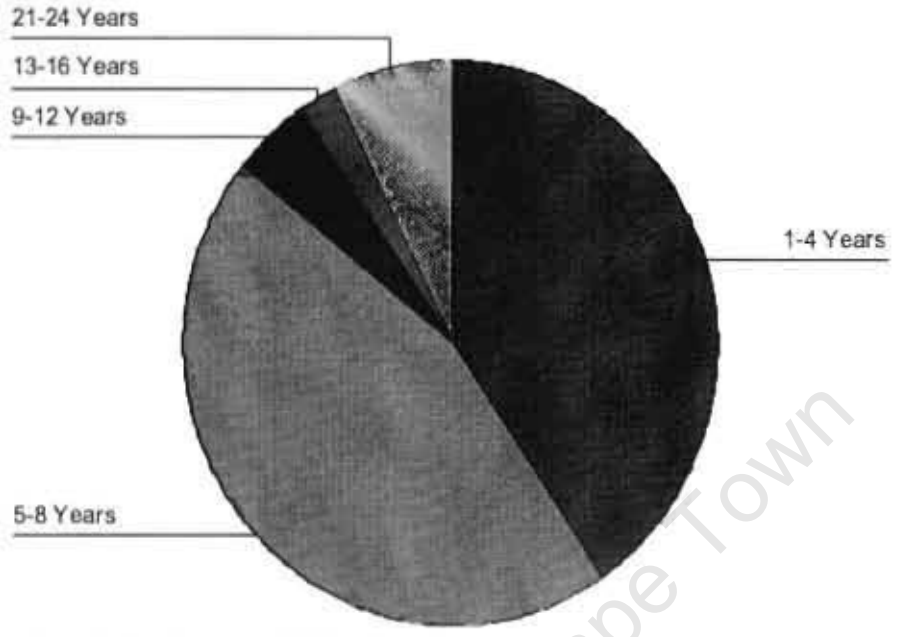
As illustrated in the pie chart below, 45.2% of the respondents indicate a 5 to 8 years work experience in the electricity sector, 40.5% 1 to 4 years of work experience and only one respondent representing 2.4% indicated that he had spent more than thirteen years working in the electricity sector in Uganda. A further breakdown of the years of experience depending on the organisation worked for shows that the 36.8% and 83.3% of the government and private sector respondents respectively have worked in the electricity sector for a period of 5 to8 years. On the other hand the majority 66.7% of the civil society organisation respondents have had 1 to 4 years experience in the Uganda electricity sector

**Table 4. 5: Work experience in Uganda electricity sector: responses Categorised per respondent organisation**

| Years | Government Body % | Regulatory Body % | Private Company % | Energy Professional % | Civil Society Organisation % | Overall respondent % |
|---|---|---|---|---|---|---|
| 1-4 | 31.6 | 16.7 | 66.7 | 40.0 | 66.7 | 40.5 |
| 5-8 | 36.8 | 83.3 | 33.3 | 60.0 | 33.3 | 45.2 |
| 9-12 | 10.5 | 0.0 | 0.0 | 0.0 | 0.0 | 4.8 |
| 13-16 | 5.3 | 0.0 | 0.0 | 0.0 | 0.0 | 2.4 |
| 21-24 | 15.8 | 0.0 | 0.0 | 0.0 | 0.0 | 7.1 |
| Total % | 100 | 100 | 100 | 100 | 100 | 100 |

Source: Survey data collected for Msc research

**Figure 4** **Respondents Work experience in Uganda electricity Sector**




***Source: Survey data collected for Msc research***



### *4.3.4 Work experience in the electricity sector of another country*

The respondents were asked to indicate whether they have worked in the electricity sector of another country, the majority of the respondents thirty eight in number representing (90.5%) responded in the negative to this question. Four respondents two from the category of energy professionals and one each from the government and private sector provided positive responses to the question. The results are presented in table 4.4.

**Table 4. 6: Work experience in the electricity sector of another country besides Uganda**

| Employment in electricity sector in other country (years) | Government Body (Number) | Regulatory Body (Number) | Private Company (Number) | Energy Professional (Number) | Civil Society Organisation (Number) | Overall respondent (Number) |
|---|---|---|---|---|---|---|
| No | 18.0 | 6.0 | 8.0 | 3.0 | 3.0 | 38.0 |
| Yes | 1.0 | 0.0 | 1.0 | 2.0 | 0.0 | 4.0 |
| Total | 19.0 | 6.0 | 9.0 | 5.0 | 3.0 | 42.0 |

Source: Survey data collected for Msc research

### *4.3.5 Work experience in sectors other than the electricity sector*

Table 4.4 summarises the findings for the responses to question 7 regarding work experiences in sectors other than the electricity sector. The majority of the respondents (76.2%) indicated prior experience in other sectors. It is observed from table 4.4 that 33.3% of the respondents from the regulatory authority have had experience in the education sector as academicians at higher institutions of learning while 42.1% of the government respondents have no work experience outside the electricity sector.

It is further noted that 19%, representing the majority of the respondents have had prior experience in the finance sector with the education at 14.3% being the next largest sector where the respondents had previously been employed. Only 2.4% of the respondents had been employed each in either the telecommunications or health sector.

**Table 4. 7: Work experience in sectors other than the electricity sector: responses categorised per respondent organisation**

| Name of other sector besides the electricity sector | Government Body % | Regulatory Body % | Private Company % | Energy Professional % | Civil Society Organisation % | Overall respondent % |
|---|---|---|---|---|---|---|
| Non | 42.1 | 0.0 | 22.2 | 0.0 | 0.0 | 23.8 |
| Transportation | 0.0 | 0.0 | 0.0 | 20.0 | 0.0 | 2.4 |
| Manufacturing | 15.8 | 0.0 | 11.1 | 0.0 | 33.3 | 11.9 |
| Telecommunication | 0.0 | 16.7 | 0.0 | 0.0 | 0.0 | 2.4 |
| Media | 10.5 | 16.7 | 11.1 | 0.0 | 0.0 | 9.5 |
| Legal | 5.3 | 0.0 | 0.0 | 20.0 | 0.0 | 4.8 |
| Finance | 15.8 | 16.7 | 33.3 | 20.0 | 0.0 | 19.0 |
| Water | 0.0 | 16.7 | 11.1 | 20.0 | 33.3 | 9.5 |
| Education | 5.3 | 33.3 | 11.1 | 20.0 | 33.3 | 14.3 |
| Health | 5.3 | 0.0 | 0.0 | 0.0 | 0.0 | 2.4 |
| Total | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** | **100.0** |

***Source: Survey data collected for Msc research***

### *4.3.6 Experience with public private partnerships*

Respondents were required to indicate any work experience with PPP prior to their current posting or assignment. A total of 50% of the respondents had worked on PPP projects prior to their current assignments. In addition 31 % of those with experience having obtained it in the various PPP initiatives in the energy sector though under different jobs/assignments. Significant to note is that 88.9% of the private sector respondents indicated that this was their first experience at developing hydropower generation facilities through public private partnerships with 52.6% of the government sector respondents having no prior experience.

**Table 4. 8:** Experience with public private partnerships

| PPP Sector experience | Government Body % | Regulatory Body % | Private Company % | Energy Professional % | Civil Society Organisation % | Overall respondent % |
|---|---|---|---|---|---|---|
| Water | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 | 7.1 |
| Energy | 36.8 | 50.0 | 11.1 | 40.0 | 0.0 | 31.0 |
| Housing | 5.3 | 0.0 | 0.0 | 20.0 | 0.0 | 4.8 |
| Tourism | 5.3 | 0.0 | 0.0 | 0.0 | 0.0 | 2.4 |
| Telecommunication | 0.0 | 16.7 | 0.0 | 20.0 | 0.0 | 4.8 |
| Non | 52.6 | 33.3 | 88.9 | 20.0 | 0.0 | 50.0 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |

***Source: Survey data collected for Msc research***

## 4.4 Kendall's coefficient of concordance w

Kendall's coefficient of concordance ($w$) for the ranking of the constraints among all respondents is 0.231; among the Government sector respondents is 0.328, 0.491 among the regulatory sector respondents, and 0.365 among the private sector respondents and 0.318 for energy professional respondents. These Kendall's coefficients of concordance are all significant at the 0.05 level and there fore 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 Public private partnerships in the electricity sector. Kendall's coefficient of concordance w is 0.371 at a significance level of 0.321 for the respondent within the civil society organisation category.

## 4.5 Ranking of constraints

The ranking of the importance of the constraints by the different categories together with the respective Kendall's coefficient of concordance are indicated in the table 4.7.

Overall the respondents identified "the reluctance of local institutions to provide equity financing" as being the number one constraint and "restriction to the level of foreign ownership of companies" as the least constraint to the uptake and implementation of PPP for the development of hydropower generation facilities in Uganda.

All respondents ranked the constraints "resistance from environmental groups" and "poor coordination between government departments" among the top ten constraints. Expropriation concerns in form of governments failure to honour contracts was not considered as a significant constraint to the development of Public private partnerships.

The respondents with the exception of those from the private sector, ranked lack of an enabling regulatory environment among the last five constraints though there was general consensus to its mid ranking as a constraint for its lack of clarity and ambiguity. The ranking is further examined in chapter five of this thesis.

## 4.6 Mann Whitney U tests

The Mann Whitney U tests as conducted on the data obtained for Government and private sector respondents is shown in table 4.8 below. These tests compare the perception of the Government sector and private sector respondents as to the importance of the identified constraints. The results of the Mann Whitney test show that there is a general consensus of perception as regards the importance of the identified constraints to the implementation of public private partnerships ($0.01 \leq p \leq 0.93$ at 5% significance level). However there is a difference in perception between the two groups i.e. ($p < 0.05$) 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 4. 1: Ranking of constraints to Public Private Partnerships**

| Constraint | All respondents | | Government | | Private sector | | Regulatory Body | | Energy Professionals | | CSO | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Mean | Rank | Mean | Rank | Mean | Rank | Mean | Rank | Mean | Rank | Mean | Rank |
| Inability of local Institutions to provide equity financing | 4.17 | 1 | 3.74 | 4 | 4.78 | 1 | 4.67 | 1 | 4.40 | 2 | 3.67 | 3 |
| Resistance from Environmental groups | 3.83 | 2 | 3.79 | 2 | 3.78 | 6 | 4.33 | 2 | 3.80 | 6 | 3.33 | 5 |
| Poor coordination between Government departments | 3.69 | 3 | 3.37 | 6 | 4.33 | 2 | 3.33 | 8 | 4.00 | 5 | 4.00 | 2 |
| Delays as a result of lengthy bureaucratic procedures | 3.67 | 4 | 3.74 | 5 | 4.11 | 4 | 3.33 | 7 | 4.00 | 4 | 2.00 | 19 |
| Many requirements to obtain project approval | 3.55 | 5 | 3.84 | 1 | 4.22 | 3 | 2.67 | 13 | 3.40 | 13 | 1.67 | 21 |
| Lengthy project approval process | 3.45 | 6 | 3.79 | 3 | 4.11 | 5 | 2.33 | 16 | 3.40 | 12 | 1.67 | 20 |
| Political Interference in procurement process | 3.29 | 7 | 2.63 | 11 | 3.56 | 9 | 3.67 | 4 | 4.80 | 1 | 3.33 | 5 |
| Low level of skills of personnel Involved with PPP | 3.21 | 8 | 3.11 | 7 | 3.33 | 10 | 2.50 | 14 | 3.80 | 7 | 4.00 | 1 |
| Poor creditworthiness of power off taker | 3.07 | 9 | 3.05 | 8 | 2.89 | 17 | 3.67 | 3 | 3.40 | 10 | 2.00 | 18 |
| Resistance from Civil society organisations | 3.02 | 10 | 3 | 9 | 3.11 | 16 | 3.00 | 9 | 3.40 | 11 | 2.33 | 15 |
| Investors concerns for need of intensive managerial resources | 2.90 | 11 | 2.89 | 10 | 3.11 | 13 | 2.83 | 10 | 3.00 | 19 | 2.33 | 14 |
| Lack of political will and support | 2.86 | 12 | 2.21 | 18 | 2.89 | 18 | 3.33 | 6 | 4.20 | 3 | 3.67 | 4 |
| Accusations of corruption and corrupt tendencies | 2.71 | 13 | 2.47 | 12 | 2.78 | 19 | 2.83 | 11 | 3.60 | 9 | 2.33 | 16 |
| Weak regulatory framework lacking in clarity and ambiqous | 2.71 | 14 | 2.42 | 14 | 3.67 | 8 | 1.67 | 22 | 3.20 | 16 | 3.00 | 11 |
| Investors concerns of foreign exchange risk | 2.64 | 15 | 2.11 | 20 | 3.11 | 12 | 3.50 | 5 | 3.00 | 18 | 2.33 | 12 |
| Restrictions on the return on investment | 2.64 | 16 | 2.47 | 13 | 3.11 | 16 | 2.50 | 15 | 2.80 | 21 | 2.33 | 17 |
| Public resentment as a result of tariff increases | 2.60 | 17 | 2.32 | 15 | 3.11 | 14 | 2.17 | 17 | 3.00 | 20 | 3.00 | 8 |
| Lack of independence of regulatory body | 2.57 | 18 | 2.16 | 19 | 2.78 | 20 | 2.83 | 12 | 3.20 | 15 | 3.00 | 10 |
| Slow implementation of power sector reforms | 2.57 | 19 | 2.26 | 16 | 3.67 | 7 | 1.67 | 21 | 3.40 | 14 | 1.67 | 22 |
| Lack of enabling legal framework | 2.45 | 20 | 2.21 | 17 | 2.44 | 23 | 2.00 | 18 | 3.60 | 8 | 3.00 | 7 |
| Lack of an enabling regulatory framework | 2.40 | 21 | 2.11 | 21 | 3.22 | 11 | 2.00 | 19 | 3.20 | 17 | 1.33 | 23 |
| Failure of government to honour its contract obligations | 2.14 | 22 | 1.95 | 22 | 2.56 | 22 | 1.83 | 20 | 2.40 | 22 | 2.33 | 13 |
| Restrictions to the level of foreign ownership of companies | 2.05 | 23 | 1.79 | 23 | 2.67 | 21 | 1.33 | 23 | 2.20 | 23 | 3.00 | 9 |
| **Kendall's coefficient of concordance w** | 0.231 | | 0.328 | | 0.365 | | 0.491 | | 0.318 | | 0.371 | |
| **Level of Significance** | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.039 | | 0.321 | |

**Table 4. 10: 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 and ambiguous. | 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 to the level of 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 managerial resources. | 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 |

*Source: Survey data collected for Msc research*

## 4.7 Spearman's rank correlation coefficient

Spearman's correlation coefficient tests whether there is agreement between the private and government sector respondent as to the ranking of constraints. The correlation coefficient ($r_s$) of the ranking of the constraints is 0.717 for private and government sector respondents (Table 4.9). 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 has to be accepted. Implying with 99% confidence that there is significant agreement on the ranking of constraints between the private and government sector respondents

**Table 4. 11: Spearman's rank correlation coefficient**

| | | Government | Private |
|---|---|---|---|
| **Government** | $r_s$ | 1.000 | 0.717 |
| | Significance | NS | 0.000 |
| **Private** | $r_s$ | 0.717 | 1.000 |
| | Significance | 0.000 | NS |

***Source: Survey data collected for Msc research***

## 4.8 Conclusion

This chapter has presented findings from the analysis of data obtained through the questionnaire interviews. A response rate of 59.2% was obtained for the survey. Findings indicate 45.2 % of the respondents have worked for 5-8 years in the Uganda electricity sector with 50 % of the respondents having had prior work experience in the development of public private partnership.

With reasonable agreement (Kendall's $w = 0.231$ significant at 5%), the respondents rank failure to access equity financing from local financial institutions as being the major constraint to the development of PPP. Of least importance is the restriction to level of foreign ownership of companies intending to partner with the government for purposes of developing hydropower generation facilities. Divergence in perception of the importance of certain constraints is observed when the ranking by the respondents is subjected to the Mann Whitney and Kruskal - Wallis test. Spearman's rank correlation shows a strong relationship between the ranking of constraints by the government and private sector respondents.

The next chapter will present the discussion of these findings in relation to the research questions and literature review.

# CHAPTER FIVE

# DISCUSSION OF SURVEY RESULTS

## 5.0 Introduction

This chapter presents the discussion of the results obtained in relation to the literature review and research questions. It begins by examining the respondent characteristics, then the ranking of the identified constraints with respect to importance as perceived by the respondents. The final section of the chapter develops the strategies and measures that could be used to mitigate the identified constraints.

## 5.1 Discussion of survey results

### *5.1.1 Response rate and respondent categories*

From Table 4.1 and Table 4.2 it is observed that the number of respondents to whom questionnaires were administered for the categories energy professional (Consultants, researchers and lawyers) is low compared to other respondents. This is attributed to the lack of awareness of each other's activities; a hindrance that was encountered during the data collection stage of this research. This illustrates a shortcoming of the "*Snowballing*" method for sampling. However using the same sampling method, it was possible to reach a large group of the government and private sector respondent within the data collection period.



The overall response rate of 59.2% is considered sufficient and compares favourably with studies that have used a similar sampling approach in similar studies e.g. 58 % (Shaokai Lu *et al.*, 2007) and 12 % (Bing Li *et al.*, 2005)

### *5.1.2 Employment duration in current organisation*

As a function of the target group desired, all respondents sampled were senior managers in their respective organisations, with the majority (45.2%) having worked in their current organisation for between 1-4 years. Table 4.2 shows that half of the respondents from the regulatory organisation have been employed by the body for at least five years, implying that they have been with the organisation since its inception in 2000.

### *5.1.3 Work experience in the Uganda electricity sector*

From Table 4.3, it was deduced that a majority (45.2%) of the respondents have 5 to 8 years work experience in the electricity sector. These figures indicate the existence of staff with considerable experience in the electricity sector and by implication, a good understanding of the workings and challenges of the sector.

A significant finding from the responses to the question on work experience presented as per respondent organisation is that 42.1% of the government sector respondents indicated no previous work experience in other sectors. This could mean that a significant number of the government sector respondents are career civil servants in the energy sector. It can further be concluded that the possible benefits that would have occurred from direct work experience obtained from another country, are not there as deduced from the result in Table 4.4 which shows that only 4 respondents (9.52%) have work experience in the electricity sector of another country

### *5.1.4 Experience with public private partnerships*

The results from the responses to this question proffer insights into the use of PPPs to increase the hydropower generation capacity in Uganda. Overall 50% of the respondents had no prior experience with use of public private partnership for the delivery of public infrastructure. It can also be noted that 88.9% of the private sector respondents indicated that besides their current undertaking, they had no prior experience with the development of public private partnerships. In reality, the presence of firms with little previous experience in PPPs could be indicative of the possibility that many of the companies were formed in response to the incentives offered by government in form of subsidises, in the quest to develop the Mini and Micro hydropower stations across the country (MoEMD, 2001). Moreover the use of PPP's is a relatively new concept in the in the Uganda electricity sector.

## 5.2 Ranking of constraints

Kendall's Coefficient of Concordance $w$ ($w = 0.231$ significant at $\alpha = 0.000$) established a reasonable degree of agreement among the respondents with regard to the overall ranking of the constraints to implementation and uptake of public private partnerships. On assessing the perception of the respondents as classified in the different categories of government sector, private sector, regulatory body, energy professionals and civil society organisation respondents, it was observed that the values of Kendall's Coefficient of

Concordance *w* were increased. This indicates that a stronger agreement on ranking was achieved in the different groups separately.

The respondents' overall ranking of the reluctance by financial institutions to provide debt or equity financing as the number one constraint highlights the difficulties encountered in obtaining financing for PPP projects. Access to and reliability of financing especially from local financial institutions helps mitigate a number of risks e.g. foreign exchange risk and effects of currency devaluation. The difficulty in raising financing correlates with the significant constraint to private sector participation in power infrastructure development in developing countries identified in the literature review (Jyoti *et al.*, 1998; ADB, 2000; Sader, 2000), and public private partnerships generally (Akerele *et al.*, 2003).

The respondents ranking of "pressure from environmental groups" as the second most significant constraint to the development of hydropower stations through the PPP route is clearly reflective of the situation in Uganda. Environmentalists have been opposed to and instrumental in the delayed take off of a number of proposed projects, the most outstanding being the Budjagali hydropower station. This has been as a result of insufficient consideration of environmental impact concerns by the project promoters (Sasha, 2003; World Bank, 2007). In order to address the environmentalists' concerns, it is now a requirement for project promoters to present an environmental impact assessment report approved by NEMA before obtaining a licence to develop a hydropower plant (Electricity Act, 1999; MoEMD, 2001).

Furthermore, delays resulting from the bureaucratic nature of the institutional system are a significant constraint. The delays in obtaining the necessary project approvals are a major barrier to attracting private sector participation in the power sector in developing countries (Sader, 2000); China (Blackman *et al.*, 1999), India (Jyoti *et al.*, 1998; Antonette *et al.*, 1999) and were identified as a significant issue in investors decision whether or not to invest in a country (Lamech *et al.*, 2003). The delays also increase the transaction costs involved in the project development phase and thus act as a disincentive to project promoters.

From the overall ranking of constraints, the respondents express satisfaction with the regulatory and legal frameworks. This is indicated by low ranking of "lack of enabling legal framework" (ranked 20), "lack of enabling regulatory framework" (ranked 21) and

the related item of "lack of independence of the regulatory body" (ranked 18). The satisfaction with a conducive regulatory and legal framework is in line with the findings of a previous study, (Engorait, 2004), which demonstrated that the regulatory and legal frameworks were adequate to attract private sector participation in the sector.

Confidence in the Ugandan government's policy encouraging private sector participation is further illustrated with the respondents' low ranking of "failure of government to honour its contract obligation," (ranked 22). This confidence may be attributed to government's continued expression of its commitment to developing a number of hydropower projects as PPPs both in policy documents (Electricity Act, 1999; MoEMD, 2001; MoMED, 2002) and in public statements. Investor's confidence has further been boosted by the willingness of the regulatory body to increase electricity tariffs (Engorait, 2004) even amidst public expressions of displeasure. These acts provide credibility to the government's willingness to enforce contract obligations as stipulated by the legal and regulatory frameworks and lessen investor perception of risk in a given institutional environment (ADB, 2000)

However, with regard to "lack in clarity of the regulatory framework," while other respondents ranked it beyond the top ten, the private sector respondents ranked it eighth in terms of importance as a constraint to implementation and uptake of PPPs. The perceived lack of clarity of the regulatory framework could be as a result of the many government departments they have to deal with during the project preparation phase (REB, 2006). This possibility is further supported by their high ranking as a constraint of the item "poor coordination between government department" (ranked 2). To resolve this constraint, it is suggested that a unit to which private investors should make their submissions be set up either within the regulatory agency or ministry. This unit should specifically deal with the implementation of public private partnership projects.

The government and private sector respondents ranked among the top five the items, "many requirements to obtain project approval." and "lengthy project approval process." This is unlike the other categories of respondents who ranked both items beyond the top ten constraints to the development of public private partnerships in the electricity sector. The greater level of importance attached to these items by the government and private sector respondents could be as a result of the greater level of interaction between the two groups during the project preparation stages and an indication of the shared belief that there are too many procedural requirements thus making the process unnecessarily long.

On the other hand the regulatory body maybe unwilling to attach great importance as a constraint to the procedural requirements of which they are initiators and custodians.

Though corruption and accusations of corruption have been touted as significant factors that have affected the development and implementation of public private partnerships in the Uganda electricity sector (Sasha, 2003; Engorait, 2004; Bbumba, 2006; Mbendi, 2006), the respondents did not take the items as important. Indeed, the item was not ranked highly and therefore was not perceived as a significant constraint. It is possible that the respondents might have deliberately misrepresented their opinion on the importance of this constraint in order not to portray the sector unfavourably; a handicap of the survey as a research method identified by (Leedy *et al.*, 2005) when he states that at times the respondents might misrepresent facts in order to present a favourable impression on the researcher.

Low levels of skills by personnel involved with PPP have been identified as an unattractive feature of PPPs and a constraint to development and implementation thereof. This is brought about by PPP being a relatively new concept in many developing countries and the small number of projects so far undertaken (Moreldge *et al.*, 1998; Bing Li *et al.*, 2005). A similar view was expressed by the respondents to this survey who identified "low level of skills of personnel involved with PPP" among the top ten constraints (ranked 8), to the development of PPPs in the electricity sector in Uganda.

Interestingly while all categories of respondents ranked "low level of skills of personnel involved with PPP" among the top ten, the respondents from the regulatory body ranked it 14. This difference in ranking can be attributed to the fact that the respondents from this category have undergone training with regard to the development of PPPs; a fact that was brought to light in the researcher's interaction with these respondents. To harness the benefits of this and increase the knowledge base with regard to PPPs, it is recommended that their counterparts from the government sector undergo similar training.

A restriction to the level of foreign ownership of companies is identified as the least significant constraint to private sector participation in the power sector by all respondents. The results suggest that Uganda as intended by the power sector reforms is operating a liberalised electricity sector where foreign direct investment is being encouraged (Electricity Act, 1999; MoEMD, 2002). This is evidenced by the fact that all companies

currently in some form of partnership with the government are fully foreign owned (Engorait, 2004; World Bank, 2007).

### 5.3 Differences in perception.

The Mann Whitney tests were conducted responses obtained from government and private sector participants to determine whether there was a statistically significant difference in perception between the two categories. These two categories were considered the key players in the development of public private partnerships.

The results from the Mann Whitney tests indicate that there is a statistically significant difference in perception between the government and private sector respondents with regard to the importance of the following constraints:

i. Lack of an enabling regulatory framework;
ii. Weak regulatory framework lacking in clarity and ambiguous;
iii. Slow implementation of power sector reforms;
iv. Restrictions to the level of foreign ownership of companies;
v. Investors concerns of foreign exchange risk; and
vi. Inability of local institutions to provide equity financing.

The mean rank values for private sector are all higher than the government sector respondents indicating that the former category considers the above factors more important as constraints to the implementation and uptake of projects through public private partnerships than the latter.

In relation to items 1 of Part B of the questionnaire i.e. "lack of an enabling regulatory environment," the Z ratio for the above item is -2.30 with an observed significance of 0.02. The mean ranks for the two respondent groups on this item are private sector (19.33) and government sector (12.21). The results suggest that the private sector puts much more weight on the presence of a regulatory environment that favours private sector participation and is therefore more sensitive to any shortcomings in the regulatory framework. This view is similar to that available in literature (Sader, 2000; Fraser, 2005; Woodhouse, 2005; William *et al.*, 2006).

Similarly for item 2 "weak regulatory environment lacking in clarity and ambiguous," the mean ranks are private sector (19.78) and government sector (12.00). The significance is

0.02 and Z ratio for the item is -2.44. This further illustrates a higher sensitivity by the private sector respondents to inadequacies in the regulatory environment.

The perception of the private sector and government sector respondents also statistically 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. From Table 4.8, it is observed that the level of significance is 0.01; the mean ranks are 19.83 and 11.91 for the private and government sector respondents respectively. The Z-ratio on this item -2.48.

The difference in roles when structuring a PPP is illustrated in the difference in perception between the key players i.e. the private and public sector on the factors of "investors concern for foreign exchange risk" and "inability of local financial institutions to provide financing". Private sector respondents show more awareness of these two factors as constraints to the implementation of PPPs compared to their counterparts in the public sector. The Mann Whitney Test (Table 4.8) supports this view. Meanwhile, "investors concern for foreign exchange risk" Z ratio is -2.54 and mean ranks are private sector (19.83) and government (11.97). Similarly for the item "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 greater awareness exhibited by the private sector respondents of the above two mentioned factors stems from the greater responsibility they have to structure the project financing and ensure viability and profitability of the venture. As discussed in the literature (ADB, 2000; Sader, 2000), foreign exchange risk is of concern to investors as it directly impacts on their returns (profit).



## 5.4 Summary

In way of a summary, the following are highlighted as significant findings from the survey results discussion given above:

i. Inability to access local financing is the major constraint to the development of public private partnerships for the development of hydropower projects in Uganda;

ii. Insufficient consideration by project promoters to environmental aspects of the project has been a significant reason for delay in uptake and implementation of public private partnerships in the electricity sector. This fact has been

demonstrated by the resistance from environmental groups encountered on a number of proposed projects;

iii. Lack of prior experience in the development and implementation of public private partnerships by the stakeholders has also hamstrung the development of PPPs in the electricity sector. This is further exacerbated by the fact that despite it being a government policy and initiative, there is no stated policy on training of its own staff;

iv. There is a general perception especially among the key players (private and government sector) in the development of PPPs that the procedural requirements are cumbersome and unnecessarily lengthen the process. The situation is aggravated by the large number of government departments the private sector has to deal with in the process and the associated bureaucracy; and

v. The regulatory and legal frameworks that have been developed and are being implemented are attractive to private sector participation in the electricity sector.

## 5.5 Strategies and measures

From the findings of the research, it is recommended that the following measures be adopted to facilitate speedy implementation and uptake of PPPs

***Emphasis on environmental and social impact assessment***

To facilitate speedy uptake and implementation of public private partnerships in the electricity sector, it is suggested that the project promoters undertake in-depth environmental and social impact studies. The studies should address all possible effects of the project and suggest measures to mitigate the adverse effects. Adherence to both national and international guidelines is a must. Discussions with the relevant stakeholders e.g. environmentalists should be held and their concerns addressed at this stage. This could render proposed project more acceptable to both the local population and financers (both local and international) thus avoiding many unnecessary delays.

***Training of staff***

Personnel from the regulatory body and public sector should undergo training in the different aspects of public private partnerships e.g. identification of suitable projects,

incentivising the private sector, negotiation, financial evaluation and structuring of public private partnership deals. Furthermore, on job experience through staff exchange programme initiatives with countries implementing PPPs would bring on much needed practical experience

***Establishing a PPP unit***

It is also suggested that the creation of a specialised unit within either the regulatory body but preferably in the energy sector line ministry would facilitate a faster development of PPP projects. The unit whose mandate would be to oversee the development and implementation of PPP would *inter alia* eliminate the need for private sector partners' interaction with a myriad of government agencies to get one project moving. It is important that the unit has well trained staff and be facilitated adequately in order to retain good quality personnel. Depending on the number of projects undertaken, expertise with PPP would be developed and thus be possible to transfer this to other sectors should the need arise.

***Process map development***

The identification above of the relative importance of the constraints to the development and implementation of public private partnerships in the Uganda electricity sector as perceived by the stakeholders provides useful information that can be used in the development of a process map to guide the development and implementation of public private partnerships in the Uganda electricity sector.

***Development of PPP guidelines***

Finally from the lessons learnt in the electricity sector in addition to those from other infrastructural sectors and drawing from international experience in the development and implementation of public private partnerships, it is suggested that guidelines for the use of public private partnerships for infrastructural development in Uganda be developed and refined as the use of PPPs continues to grow.

## 5.6 Conclusion

This chapter has presented a discussion of the survey results in respect to the literature and presented a summary of the discussion in which failure to access local financing, pressure from environmentalists, lengthy and cumbersome procedural requirements, lack of experience and knowledge in the development PPPs were highlighted as significant

constraints. The survey results showed respondents' general satisfaction with the ability of the regulatory regime and legal framework to attract private sector participation in the electricity sector through public private partnerships. The results also illustrated the fact that compared to the government sector, the private sector is more conscious of the shortcomings of the regulatory and financial environment with respect to the implementation of public private partnerships. The findings led to suggestions of measures and strategies that could be implemented to mitigate the constraints. These included training of personnel, stringent adherence to environmental and social impact assessment, the creation of a PPP unit, development of a process map for PPP implementation in the electricity sector and finally guidelines to the use of PPP for infrastructural development.

The following chapter presents the main findings of this research and examines the extent to which the research questions were answered and research objectives achieved.

# CHAPTER SIX

# CONCLUSIONS AND RECOMMENDATIONS

## 6.0 Introduction

In this chapter, the findings in relation to the research questions are presented. An assessment is made on whether the objectives of the research were achieved. Finally conclusions are drawn from the research findings and recommendations made.

The research problem was stated in chapter one as:

*Despite the potential of Public Private Partnership to enhance the delivery of physical infrastructure, failure to attain deal closure on many proposed projects hinders their implementation.*

And the Research question:
*How can the process of delivery of hydropower generation facilities through Public Private Partnerships be enhanced?*

The findings with respect to the subsidiary questions formulated to guide the investigation are presented below:

## 6.1 Findings based on the subsidiary questions

### *6.1.1 Research question 1*

*What are the constraints that inhibit the successful realisation of public private partnership arrangements for the development of hydropower generation facilities?*

A detailed literature review was undertaken to identify the constraints to the uptake and implementation of public private partnerships in the electricity sector of developing countries. Twenty three constraints outlined below were identified and are discussed in the literature review (Chapter 2). These were broadly categorised under regulatory, legal, institutional, political and financial constraints as shown below:

**A Regulatory**

i. Lack of an enabling regulatory framework to support the participation of the private sector.
ii. Weak regulatory framework: lacking in clarity and ambiguous.
iii. Slow implementation of power sector reforms.
iv. Lack of independence of the regulatory body.
v. Many requirements to obtain project approval.
vi. Lengthy project approval process.
vii. Restrictions on rate of return on investment.
viii. Restrictions on the level of foreign ownership of companies.

**B Institutional**

ix. Poor coordination between government departments.
x. Delays as a result of lengthy bureaucratic procedures.
xi. Low level of skills of personnel involved with PPP.
xii. Accusations of corruption and corrupt tendencies.
xiii. Resistance from environmental groups.
xiv. Resistance from civil society organisations.
xv. Public resentment as a result of tariff increases.
xvi. Investors concerns for need for intensive managerial resources.

**C Political**

xvii. Political Interference in procurement process
xviii. Lack of political will and support.

**D Legal and Financial**

xix. Lack of enabling legal framework.
xx. Failure of government to honour its contract obligations.
xxi. Investors concerns of foreign exchange risk.
xxii. Inability of local Institutions to provide equity financing.
xxiii. Poor creditworthiness of power off-taker.

### *6.1.2 Research question 2*

*How do the constraints affect the development of the public private partnerships?*

Similarly a synthesis of the literature review enabled the identification of the effect these constraints have on the development of the public private partnerships as:

i. Increased perception of country risk by the private sector.
ii. Increased exposure to foreign exchange risks as a result of the lack of readily available local financing.
iii. Lengthy contract negotiations.
iv. Increased transaction costs.
v. Poorly formulated contracts and projects.
vi. Contract cancellation or renegotiation.
vii. Public resistance to the implementation of projects.
viii. Failure to reach financial close of initiated projects.
ix. Limited or no private sector participation.
x. Slow implementation of Independent power projects.

### *6.1.3 Research question 3*

*How can the constraints be addressed?*

To facilitate this, the constraints identified were incorporated into a questionnaire and the survey conducted. The aim of the survey was to determine the importance in the Uganda electricity sector of the identified constraints to the development and implementation of public private partnerships. These constraints were ranked by stakeholders in the Uganda electricity sector with work experience on PPP projects. Data analysis was done using statistical tests as enabled by computer programme SPSS (Chapter 3).

A response rate of 59.2% was obtained on the survey and the survey results revealed a consensus among the respondents perception as to the ranking in terms of importance of the identified constraints to the implementation of public private partnerships in the Uganda electricity sector. The top ten constraints in decreasing level of importance as perceived by the respondents are as follows:

1. Inability of local institutions to provide equity financing
2. Resistance from Environmental groups
3. Poor coordination between Government departments
4. Delays as a result of lengthy bureaucratic procedures
5. Many requirements to obtain project approval
6. Lengthy project approval process
7. Political interference in procurement process
8. Low level of skills of personnel involved with PPP
9. Poor creditworthiness of power off-taker
10. Resistance from civil society organisations

The following were perceived to be of less importance as constraints to the uptake and implementation of public private partnerships in the electricity sector. Starting with the least important:

1. Restrictions to the level of foreign ownership of companies;
2. Failure of government to honour its contract obligations;
3. Lack of an enabling regulatory framework;
4. Lack of enabling legal framework;
5. Slow implementation of power sector reforms; and
6. Lack of independence of regulatory body.

A discussion of the survey results then enabled the synthesis of the following as the significant findings:

i. Inability to access local financing is the major constraint to the development of public private partnerships for the development of hydropower projects in Uganda.

ii. Insufficient consideration by project promoters to environmental aspects of the project has been a significant reason for delay in uptake and implementation of public private partnerships in the electricity sector.

iii. Lack of experience in the development and implementation of public private partnerships on the part of stakeholders has also hamstrung the development of PPPs in the electricity sector. This is further aggravated by lack of a stated policy on training of staff on the part of government.

iv. There is a perception especially among the key players (Private and government sector) in the development of PPPs that the procedural requirements are cumbersome, and unnecessarily lengthen the process. The situation is further exasperated by the many bureaucratic government departments the private sector has to deal with in the process; and

v. However, regulatory and legal frameworks developed and being implemented are generally attractive to private sector participation in the electricity sector.

***Strategies and measures suggested***

From the above findings, strategies and measures were suggested. The suggestion of theses strategies and measures was done with the view of remedying the most significant constraints identified by the respondents. It is in no way suggested that the other constraints are of lesser importance in the Uganda electricity sector nor that they are insignificant. The following were suggested as strategies and measure to facilitate faster uptake and implementation of Public private partnerships:

1. Emphasis on environmental and social impact assessment during the project development phase with additional stress on the effective involvement of different stakeholders;
2. Training of regulatory body and government sector in aspects of identification of suitable projects, incentivising the private sector, negotiation, financial evaluation and structuring of public private partnership projects;
3. Development of practical experience through on job staff exchange programmes with units in other countries that are implementing public private partnerships;
4. Creation of a unit within the regulatory body or ministry to specifically oversee the implementation of PPP projects; and
5. Development of a process map to identify the requirements and roles of the public and private sector during the different stages of a public private partnership.
6. Development of guidelines to the use of public private partnerships for infrastructural development in Uganda based both on country experience and international practise.



## 6.2 Achievement of research objectives

The research had five objectives namely;

1. *Identify the drivers for public private partnerships including the process of implementation, characteristics, propounded advantages and disadvantages of the partnerships*
2. *To review literature on the Uganda electricity sector in order to identify the characteristics of demand, Supply of power, understand the institutional framework, organisational setup and the experiences so far in the implementation of Public Private Partnerships.*

3. *To identify institutional constraints to the implementation of public private partnerships especially with regard to the development of hydro electricity generation capacity.*
4. *Establish the relative importance of the identified constraints as perceived by the stakeholders involved in the development and implementation of public private partnership projects for hydropower generation facilities in the Uganda electricity sector*
5. *Identify or propose measures and strategies through which the constraints could be addressed.*

The first through to the third objectives have been achieved through the literature review as detailed in chapter two of this thesis. Importance of physical infrastructure for economic and social development, motivation for use of public private partnerships and constraints encountered in the implementation of public private partnerships in the electricity sector were discussed. Chapter two presented a discussion on the Uganda electricity sector.

The fourth objective has been achieved through conducting the statistical tests enumerated in chapter three – methodology- and the results presented in chapter four- survey results of this thesis.

The fifth objective has been achieved through the findings and conclusions drawn from the survey result as reported in chapter four and the discussion presented in Chapter five.



## 6.3 Research hypothesis

The research has tested the hypothesis that *institutional bottlenecks are constraining the uptake and implementation of public private partnerships* in the Uganda electricity sector. The hypothesis was explored through the literature review and the questionnaire survey as presented in chapter 2, 4 & 5.

Findings from the survey showed that the hypothesis was supported i.e. there are aspects discussed in chapter five of the institutional environments that were considered significant constraints to the uptake and implementation of public private partnerships in the electricity sector necessitating the identification of strategies and measures to mitigate them.

## 6.4 Conclusions

In an effort to bolster the hydropower generation capacity, the government of Uganda has driven initiatives intended to encourage private sector participation. These initiatives are manifested by the structural reforms that were undertaken in the sector culminating in the enacting of the Electricity Act 1999. However to date there has been limited private sector participation in the electricity sector with many proposed projects based on public private partnerships failing to materialise. This suggests that stakeholders have encountered a set of disincentives within the institutional environment that have proffered constraints thus stifling the growth of private sector investment and participation in the sector. The aim of the research was to establish the relative importance of identified constraints arising from the institutional environment in hamstringing the development and implementation of PPP in the electricity sector specifically in for hydropower generation facilities. This was done with the view of identifying what measures or strategies could be employed to mitigate the constraints.

The findings from the research have established that despite the formulation of a regulatory framework that is perceived by stakeholders as being conducive for the formulation of public private partnerships in the electricity sector, structuring the financial package for the PPP poses the most significant constraint to the development and implementation of these collaborative ventures followed in significance by resistance to the proposed projects on environment grounds. In addition, these efforts are hampered by the numerous procedural requirements and bureaucratic processes project developers have to undertake exacerbated further by inexperienced personnel in the myriad of institutions they have to deal with during this process.

To overcome these challenges, the research suggested a number of measures that included the training of personnel, stringent adherence to environmental and social impact assessment, creation of a PPP unit, the development of a process map for PPP implementation in the electricity sector and finally guidelines to the use PPP for infrastructural development.

## 6.5 Recommendations

Further research effort is suggested in investigating the reasons for difficulty in structuring the financial package for public private partnerships for the development of hydropower

generation infrastructure in developing countries with a view of smoothing this aspect of the partnerships.

Furthermore, an investigation should be undertaken to determine from the stakeholders as to what intervention method would be most appropriate to facilitate the speedy delivery of projects through public private partnerships.

The research suggested the development of a process map for the implementation of public private partnerships in the electricity sector. It is recommended that research efforts be geared in this direction. The map should satisfactory encompass the requirements and expectations of all stakeholders in the development and implementation process.

Finally, research effort should be expended towards the development of guidelines to the use of public private partnerships in Uganda. These efforts could begin with documenting the experiences with the development and implementation of these partnerships in the different sector, the overarching aim being to identify how the process could further be improved.

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**APPENDIX 1 Survey Questionnaire- Introduction Letter**

TELEGRAMS: ENERMIN
TELEPHONE: 230243,235895,230926
GENERALLINE:234733/257863/349010
FAX: 230228/234732/ 349342
E-MAIL: psmemd@energy.go.ug
IN ANY CORRESPONDENCE ON
THIS SUBJECT PLEASE QUOTE NO:

THE REPUBLIC OF UGANDA

MINISTRY OF ENERGY AND
MINERAL DEVELOPMENT
P. O. BOX 7270
KAMPALA

ENG/251/500/01

30th January 2007

.....

.....

.....

Dear Sir/Madam,

**M.SC RESEARCH THESIS**

The bearer Mr. Emmanuel Akampurira is pursuing his Master's in Construction Economics and Management at the University of Cape Town, South Africa. His research project is titled "Public Private Partnership in the Electricity Sector in Uganda".

As a major stakeholder in the Electricity Sector, we believe that the results of his research will be of interest to all of us.

The purpose of this letter is to request you provide Mr. Emmanuel Akampurira with every possible assistance by providing necessary information including, the filling of his questionnaire

Yours Sincerely

AlRugumayo

Eng. Dr. Albert Rugumayo
**For: PERMANENT SECRETARY**

**Frequency Tables**

**What Kind of organisation do you work for**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| | Goverment Body | 19 | 45.2 | 45.2 | 45.2 |
| | Regulatory body | 6 | 14.3 | 14.3 | 59.5 |
| | Private Company | 9 | 21.4 | 21.4 | 81.0 |
| | Energy professional | 5 | 11.9 | 11.9 | 92.9 |
| | civil sociey organisation | 3 | 7.1 | 7.1 | 100.0 |
| | Total | 42 | 100.0 | 100.0 | |

**Employment duration with organisation**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| | 1-4 years | 19 | 45.2 | 45.2 | 45.2 |
| | 5-8 years | 15 | 35.7 | 35.7 | 81.0 |
| | 9-12 years | 4 | 9.5 | 9.5 | 90.5 |
| | 13-16 years | 2 | 4.8 | 4.8 | 95.2 |
| | 17-20 Years | 1 | 2.4 | 2.4 | 97.6 |
| | 33 | 1 | 2.4 | 2.4 | 100.0 |
| | Total | 42 | 100.0 | 100.0 | |

**What is your role in the organisation**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| | Project Manager | 20 | 47.6 | 47.6 | 47.6 |
| | Financial Manager | 3 | 7.1 | 7.1 | 54.8 |
| | Implementation Coordinator advisor | 17 | 40.5 | 40.5 | 95.2 |
| | Lawyer | 2 | 4.8 | 4.8 | 100.0 |
| | Total | 42 | 100.0 | 100.0 | |

**How long have you worked in the Uganda electricity sector**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| | 1-4 Years | 17 | 40.5 | 40.5 | 40.5 |
| | 5-8 Years | 19 | 45.2 | 45.2 | 85.7 |
| | 9-12 Years | 2 | 4.8 | 4.8 | 90.5 |
| | 13-16 Years | 1 | 2.4 | 2.4 | 92.9 |
| | 21-24 Years | 3 | 7.1 | 7.1 | 100.0 |
| | Total | 42 | 100.0 | 100.0 | |

**Have you worked in electricity sector in another country besides Uganda**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| | Yes | 4 | 9.5 | 9.5 | 9.5 |
| | No | 38 | 90.5 | 90.5 | 100.0 |
| | Total | 42 | 100.0 | 100.0 | |

**If yes name country**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| | UK | 2 | 4.8 | 4.8 | 4.8 |
| | USA | 1 | 2.4 | 2.4 | 7.1 |
| | Zambia | 1 | 2.4 | 2.4 | 9.5 |
| | Non | 38 | 90.5 | 90.5 | 100.0 |
| | Total | 42 | 100.0 | 100.0 | |

**Have you worked in another sector besides the electricity sector**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| | Yes | 32 | 76.2 | 76.2 | 76.2 |
| | No | 10 | 23.8 | 23.8 | 100.0 |
| | Total | 42 | 100.0 | 100.0 | |

**Name of other sector besides the electricity sector**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| | Health | 1 | 2.4 | 2.4 | 2.4 |
| | Education | 6 | 14.3 | 14.3 | 16.7 |
| | Water | 4 | 9.5 | 9.5 | 26.2 |
| | Finance | 9 | 21.4 | 21.4 | 47.6 |
| | Legal | 2 | 4.8 | 4.8 | 52.4 |
| | Media | 4 | 9.5 | 9.5 | 61.9 |
| | Telecommunication | 1 | 2.4 | 2.4 | 64.3 |
| | Manufacturing | 7 | 16.7 | 16.7 | 81.0 |
| | Transportation | 1 | 2.4 | 2.4 | 83.3 |
| | Non | 7 | 16.7 | 16.7 | 100.0 |
| | Total | 42 | 100.0 | 100.0 | |

**Have you previously involved with development of PPP**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Yes | 21 | 50.0 | 50.0 | 50.0 |
| | No | 21 | 50.0 | 50.0 | 100.0 |
| | Total | 42 | 100.0 | 100.0 | |

**Name of sector**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Water | 3 | 7.1 | 7.3 | 7.3 |
| | Energy | 12 | 28.6 | 29.3 | 36.6 |
| | Housing | 2 | 4.8 | 4.9 | 41.5 |
| | Tourism | 17 | 40.5 | 41.5 | 82.9 |
| | Telecommunication | 2 | 4.8 | 4.9 | 87.8 |
| | Non | 5 | 11.9 | 12.2 | 100.0 |
| | Total | 41 | 97.6 | 100.0 | |
| Missing | 77 | 1 | 2.4 | | |
| Total | | 42 | 100.0 | | |

## Reliability

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Alpha if Item Deleted |
|---|---|---|---|---|
| LACKREGU | 65.8095 | 121.5726 | .7585 | .7976 |
| WEAKREGU | 65.5000 | 125.3780 | .5609 | .8069 |
| SLOREFO | 65.6429 | 121.9425 | .6680 | .8009 |
| REGINDEP | 65.6429 | 134.9669 | .2688 | .8209 |
| REQUIREN | 64.6667 | 127.6911 | .4689 | .8116 |
| LONGAPRV | 64.7619 | 130.4785 | .3851 | .8159 |
| INVESCAP | 65.5714 | 136.3484 | .2367 | .8220 |
| OWNCAP | 66.1667 | 132.3374 | .3936 | .8156 |
| CORDPOOR | 64.5238 | 131.6702 | .3622 | .8169 |
| DELAY | 64.5476 | 127.4245 | .5658 | .8077 |
| LOWSKIL | 65.0000 | 130.8780 | .4272 | .8140 |
| CORUPTON | 65.5000 | 132.9390 | .3562 | .8172 |
| ENVIRESI | 64.3810 | 139.6562 | .1097 | .8266 |
| CSORESI | 65.1905 | 139.1823 | .0851 | .8301 |
| PUBRESI | 65.6190 | 139.5099 | .0981 | .8279 |
| INTMANAG | 65.3095 | 134.4628 | .4477 | .8150 |
| PROCPOOR | 64.9286 | 130.1167 | .3828 | .8161 |
| POLWIL | 65.3571 | 132.3815 | .3028 | .8202 |
| LACLEGAL | 65.7619 | 130.3322 | .4424 | .8133 |
| EXPORIA | 66.0714 | 133.0436 | .4398 | .8144 |
| FORXCHGE | 65.5714 | 136.4460 | .2477 | .8214 |
| NOLOCBAK | 64.0476 | 134.0952 | .3395 | .8179 |
| CREDITOF | 65.1429 | 136.8084 | .2075 | .8233 |

**Reliability Coefficients**

N of Cases = 42.0 N of Items = 23

Alpha = .8231

**NPar Tests**

**Mann-Whitney Test Government - Regulatory sector**

**Ranks**

| | What Kind of organisation do you work for | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| Lack of an enabling regulatory framework | Goverment Body | 19 | 13.13 | 249.50 |
| | Regulatory body | 6 | 12.58 | 75.50 |
| | Total | 25 | | |
| Weak regulatory framework lacking in clarity and ambiqous | Goverment Body | 19 | 14.11 | 268.00 |
| | Regulatory body | 6 | 9.50 | 57.00 |
| | Total | 25 | | |
| Slow implementation of power sector reforms | Goverment Body | 19 | 13.74 | 261.00 |
| | Regulatory body | 6 | 10.67 | 64.00 |
| | Total | 25 | | |
| Lack of independence from goverment interference of regulatory body | Goverment Body | 19 | 11.89 | 226.00 |
| | Regulatory body | 6 | 16.50 | 99.00 |
| | Total | 25 | | |
| Many requirements to obtain project approval | Goverment Body | 19 | 14.50 | 275.50 |
| | Regulatory body | 6 | 8.25 | 49.50 |
| | Total | 25 | | |
| Lengthy project approval process | Goverment Body | 19 | 14.95 | 284.00 |
| | Regulatory body | 6 | 6.83 | 41.00 |
| | Total | 25 | | |
| Restirictions on the return on investment | Goverment Body | 19 | 12.79 | 243.00 |
| | Regulatory body | 6 | 13.67 | 82.00 |
| | Total | 25 | | |
| Restrictions to the level of foreign ownership of companies | Goverment Body | 19 | 14.00 | 266.00 |
| | Regulatory body | 6 | 9.83 | 59.00 |
| | Total | 25 | | |
| Poor coordination between Goverment departments | Goverment Body | 19 | 13.11 | 249.00 |
| | Regulatory body | 6 | 12.67 | 76.00 |
| | Total | 25 | | |
| Delays as a result of lengthy bureaucratic procedures | Goverment Body | 19 | 13.58 | 258.00 |
| | Regulatory body | 6 | 11.17 | 67.00 |
| | Total | 25 | | |
| Low level of skills of perssonnel Involved with PPP | Goverment Body | 19 | 13.92 | 264.50 |
| | Regulatory body | 6 | 10.08 | 60.50 |
| | Total | 25 | | |
| Accusations of corruption and corrupt tendencies | Goverment Body | 19 | 12.34 | 234.50 |
| | Regulatory body | 6 | 15.08 | 90.50 |
| | Total | 25 | | |
| Resistance from Environmental groups | Goverment Body | 19 | 12.32 | 234.00 |
| | Regulatory body | 6 | 15.17 | 91.00 |
| | Total | 25 | | |
| Resistance from Civil society organisations | Goverment Body | 19 | 13.05 | 248.00 |
| | Regulatory body | 6 | 12.83 | 77.00 |
| | Total | 25 | | |
| Public resentment as a result of tarrif increases | Goverment Body | 19 | 13.24 | 251.50 |
| | Regulatory body | 6 | 12.25 | 73.50 |
| | Total | 25 | | |
| Investors concerns for intensive managerial resources on relatively small projects | Goverment Body | 19 | 13.13 | 249.50 |
| | Regulatory body | 6 | 12.58 | 75.50 |
| | Total | 25 | | |
| Interference in procurement, contract tendering and evaluation process | Goverment Body | 19 | 11.61 | 220.50 |
| | Regulatory body | 6 | 17.42 | 104.50 |
| | Total | 25 | | |
| Lack of political will and support | Goverment Body | 19 | 11.66 | 221.50 |
| | Regulatory body | 6 | 17.25 | 103.50 |
| | Total | 25 | | |
| Lack of enabling legal framework | Goverment Body | 19 | 13.50 | 256.50 |
| | Regulatory body | 6 | 11.42 | 68.50 |
| | Total | 25 | | |
| Failure of goverment to honour its contract obligations | Goverment Body | 19 | 13.42 | 255.00 |
| | Regulatory body | 6 | 11.67 | 70.00 |
| | Total | 25 | | |
| Investors concerns of foreign exchange risk ie stability of Ugandan currency | Goverment Body | 19 | 10.84 | 206.00 |
| | Regulatory body | 6 | 19.83 | 119.00 |
| | Total | 25 | | |
| Inability of local Institutions tp provide equity financing | Goverment Body | 19 | 11.74 | 223.00 |
| | Regulatory body | 6 | 17.00 | 102.00 |
| | Total | 25 | | |
| Poor creditworthiness of power offtaker | Goverment Body | 19 | 11.95 | 227.00 |
| | Regulatory body | 6 | 16.33 | 98.00 |
| | Total | 25 | | |

| | Lack of an enabling regulatory framework | Weak regulatory framework lacking in clarity and ambiqous | Slow implementation of power sector reforms | Lack of independence from goverment interference of regulatory body | Many requirements to obtain project approval | Lengthy project approval process | Restirictions on the return on investment |
|---|---|---|---|---|---|---|---|
| Mann-Whitney U | 54.500 | 36.000 | 43.000 | 36.000 | 28.500 | 20.000 | 53.000 |
| Wilcoxon W | 75.500 | 57.000 | 64.000 | 226.000 | 49.500 | 41.000 | 243.000 |
| Z | -0.173 | -1.434 | -0.974 | -1.451 | -1.872 | -2.456 | -0.288 |
| Asymp. Sig. (2-tailed) | 0.863 | 0.152 | 0.330 | 0.147 | 0.061 | 0.014 | 0.773 |
| Exact Sig. [2*(1-tailed Sig.)] | 0.877 | 0.198 | 0.400 | 0.198 | 0.069 | 0.017 | 0.828 |
| Exact Sig. (2-tailed) | 0.964 | 0.169 | 0.441 | 0.169 | 0.065 | 0.017 | 0.839 |
| Exact Sig. (1-tailed) | 0.523 | 0.096 | 0.235 | 0.080 | 0.034 | 0.008 | 0.435 |
| Point Probability | 0.174 | 0.042 | 0.085 | 0.002 | 0.003 | 0.004 | 0.062 |

| | Restrictions to the level of foreign ownership of companies | Poor coordination between Goverment departments | Delays as a result of lengthy bureaucratic procedures | Low level of skills of perssonnel Involved with PPP | Accusations of corruption and corrupt tendencies | Resistance from Environmental groups | Resistance from Civil society organisations | Public resentment as a result of tarrif increases |
|---|---|---|---|---|---|---|---|---|
| Mann-Whitney U | 38.000 | 55.000 | 46.000 | 39.500 | 44.500 | 44.000 | 56.000 | 52.500 |
| Wilcoxon W | 59.000 | 76.000 | 67.000 | 60.500 | 234.500 | 234.000 | 77.000 | 73.500 |
| Z | -1.347 | -0.131 | -0.760 | -1.168 | -0.835 | -0.972 | -0.067 | -0.308 |
| Asymp. Sig. (2-tailed) | 0.178 | 0.895 | 0.447 | 0.243 | 0.404 | 0.331 | 0.947 | 0.758 |
| Exact Sig. [2*(1-tailed Sig.)] | 0.246 | 0.926 | 0.514 | 0.274 | 0.437 | 0.437 | 0.975 | 0.780 |
| Exact Sig. (2-tailed) | 0.254 | 0.906 | 0.502 | 0.259 | 0.402 | 0.444 | 0.986 | 0.802 |
| Exact Sig. (1-tailed) | 0.162 | 0.475 | 0.225 | 0.151 | 0.187 | 0.273 | 0.480 | 0.370 |
| Point Probability | 0.123 | 0.020 | 0.035 | 0.024 | 0.007 | 0.154 | 0.018 | 0.034 |

| | Investors concerns for intensive managerial resources on relatively small projects | Interference in procurement, contract tendering and evaluation process | Lack of political will and support | Lack of enabling legal framework | Failure of goverment to honour its contract obligations | Inveators concerns of foreign exchange risk ie stability of Ugandan currency | Inability of local Institutions tp provide equity financing | Poor creditworthiness of power offtaker |
|---|---|---|---|---|---|---|---|---|
| Mann-Whitney U | 54.500 | 30.500 | 31.500 | 47.500 | 49.000 | 16.000 | 33.000 | 37.000 |
| Wilcoxon W | 75.500 | 220.500 | 221.500 | 68.500 | 70.000 | 206.000 | 223.000 | 227.000 |
| Z | -0.173 | -1.736 | -1.731 | -0.652 | -0.555 | -2.783 | -1.623 | -1.325 |
| Asymp. Sig. (2-tailed) | 0.863 | 0.083 | 0.083 | 0.515 | 0.579 | 0.005 | 0.105 | 0.185 |
| Exact Sig. [2*(1-tailed Sig.)] | 0.877 | 0.092 | 0.106 | 0.555 | 0.642 | 0.007 | 0.138 | 0.221 |
| Exact Sig. (2-tailed) | 0.964 | 0.084 | 0.100 | 0.571 | 0.645 | 0.002 | 0.125 | 0.201 |
| Exact Sig. (1-tailed) | 0.523 | 0.050 | 0.048 | 0.251 | 0.327 | 0.002 | 0.078 | 0.088 |
| Point Probability | 0.174 | 0.013 | 0.011 | 0.038 | 0.094 | 0.000 | 0.039 | 0.012 |

**NPar Tests**

**Mann-Whitney Test Government - Private sector**

**Ranks**

| | What Kind of organisation do you work for | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| Lack of an enabling regulatory framework | Goverment Body | 19 | 12.21 | 232.00 |
| | Private Company | 9 | 19.33 | 174.00 |
| | Total | 28 | | |
| Weak regulatory framework lacking in clarity and ambiqous | Goverment Body | 19 | 12.00 | 228.00 |
| | Private Company | 9 | 19.78 | 178.00 |
| | Total | 28 | | |
| Slow implementation of power sector reforms | Goverment Body | 19 | 11.97 | 227.50 |
| | Private Company | 9 | 19.83 | 178.50 |
| | Total | 28 | | |
| Lack of independence from goverment interference of regulatory body | Goverment Body | 19 | 12.95 | 246.00 |
| | Private Company | 9 | 17.78 | 160.00 |
| | Total | 28 | | |
| Many requirements to obtain project approval | Goverment Body | 19 | 13.63 | 259.00 |
| | Private Company | 9 | 16.33 | 147.00 |
| | Total | 28 | | |
| Lengthy project approval process | Goverment Body | 19 | 13.71 | 260.50 |
| | Private Company | 9 | 16.17 | 145.50 |
| | Total | 28 | | |
| Restirictions on the return on investment | Goverment Body | 19 | 12.79 | 243.00 |
| | Private Company | 9 | 18.11 | 163.00 |
| | Total | 28 | | |
| Restrictions to the level of foreign ownership of companies | Goverment Body | 19 | 12.47 | 237.00 |
| | Private Company | 9 | 18.78 | 169.00 |
| | Total | 28 | | |
| Poor coordination between Goverment departments | Goverment Body | 19 | 12.63 | 240.00 |
| | Private Company | 9 | 18.44 | 166.00 |
| | Total | 28 | | |
| Delays as a result of lengthy bureaucratic procedures | Goverment Body | 19 | 13.39 | 254.50 |
| | Private Company | 9 | 16.83 | 151.50 |
| | Total | 28 | | |
| Low level of skills of perssonnel Involved with PPP | Goverment Body | 19 | 14.03 | 266.50 |
| | Private Company | 9 | 15.50 | 139.50 |
| | Total | 28 | | |
| Accusations of corruption and corrupt tendencies | Goverment Body | 19 | 13.84 | 263.00 |
| | Private Company | 9 | 15.89 | 143.00 |
| | Total | 28 | | |
| Resistance from Environmental groups | Goverment Body | 19 | 14.87 | 282.50 |
| | Private Company | 9 | 13.72 | 123.50 |
| | Total | 28 | | |
| Resistance from Civil society organisations | Goverment Body | 19 | 14.37 | 273.00 |
| | Private Company | 9 | 14.78 | 133.00 |
| | Total | 28 | | |
| Public resentment as a result of tarrif increases | Goverment Body | 19 | 12.76 | 242.50 |
| | Private Company | 9 | 18.17 | 163.50 |
| | Total | 28 | | |
| Investors concerns for intensive managerial resources on relatively small projects | Goverment Body | 19 | 14.13 | 268.50 |
| | Private Company | 9 | 15.28 | 137.50 |
| | Total | 28 | | |
| Interference in procurement, contract tendering and evaluation process | Goverment Body | 19 | 12.50 | 237.50 |
| | Private Company | 9 | 18.72 | 168.50 |
| | Total | 28 | | |
| Lack of political will and support | Goverment Body | 19 | 13.00 | 247.00 |
| | Private Company | 9 | 17.67 | 159.00 |
| | Total | 28 | | |
| Lack of enabling legal framework | Goverment Body | 19 | 13.63 | 259.00 |
| | Private Company | 9 | 16.33 | 147.00 |
| | Total | 28 | | |
| Failure of goverment to honour its contract obligations | Goverment Body | 19 | 12.89 | 245.00 |
| | Private Company | 9 | 17.89 | 161.00 |
| | Total | 28 | | |
| Investors concerns of foreign exchange risk ie stability of Ugandan currency | Goverment Body | 19 | 11.97 | 227.50 |
| | Private Company | 9 | 19.83 | 178.50 |
| | Total | 28 | | |
| Inability of local Institutions tp provide equity financing | Goverment Body | 19 | 12.29 | 233.50 |
| | Private Company | 9 | 19.17 | 172.50 |
| | Total | 28 | | |
| Poor creditworthiness of power offtaker | Goverment Body | 19 | 14.68 | 279.00 |
| | Private Company | 9 | 14.11 | 127.00 |
| | Total | 28 | | |

| | Lack of an enabling regulatory framework | Weak regulatory framework lacking in clarity and ambiqous | Slow implementation of power sector reforms | Lack of independence from government interference of regulatory body | Many requirements to obtain project approval | Lengthy project approval process | Restirictions on the return on investment |
|---|---|---|---|---|---|---|---|
| Mann-Whitney U | 42.000 | 38.000 | 37.500 | 56.000 | 69.000 | 70.500 | 53.000 |
| Wilcoxon W | 232.000 | 228.000 | 227.500 | 246.000 | 259.000 | 260.500 | 243.000 |
| Z | -2.297 | -2.439 | -2.484 | -1.588 | -0.868 | -0.784 | -1.680 |
| Asymp. Sig. (2-tailed) | 0.022 | 0.015 | 0.013 | 0.112 | 0.386 | 0.433 | 0.093 |
| Exact Sig. [2*(1-tailed Sig.)] | 0.033 | 0.019 | 0.016 | 0.156 | 0.438 | 0.468 | 0.117 |
| Exact Sig. (2-tailed) | 0.377 | 0.495 | 0.669 | 0.243 | 0.025 | 0.018 | 1.000 |
| Exact Sig. (1-tailed) | 0.218 | 0.254 | 0.373 | 0.178 | 0.012 | 0.012 | 0.582 |
| Point Probability | 0.182 | 0.029 | 0.214 | 0.118 | 0.008 | 0.009 | 0.203 |

| | Restrictions to the level of foreign ownership of companies | Poor coordination between Goverment departments | Delays as a result of lengthy bureaucratic procedures | Low level of skills of perssonnel Involved with PPP | Accusations of corruption and corrupt tendencies | Resistance from Environmental groups | Resistance from Civil society organisations | Public resentment as a result of tarrif increases |
|---|---|---|---|---|---|---|---|---|
| Mann-Whitney U | 47.000 | 50.000 | 64.500 | 76.500 | 73.000 | 78.500 | 83.000 | 52.500 |
| Wilcoxon W | 237.000 | 240.000 | 254.500 | 266.500 | 263.000 | 123.500 | 273.000 | 242.500 |
| Z | -2.053 | -1.828 | -1.116 | -0.469 | -0.659 | -0.384 | -0.128 | -1.761 |
| Asymp. Sig. (2-tailed) | 0.040 | 0.068 | 0.265 | 0.639 | 0.510 | 0.701 | 0.898 | 0.078 |
| Exact Sig. [2*(1-tailed Sig.)] | 0.061 | 0.085 | 0.308 | 0.664 | 0.562 | 0.735 | 0.923 | 0.105 |
| Exact Sig. (2-tailed) | 0.090 | 0.541 | 0.016 | 0.224 | 1.000 | 0.616 | 0.485 | 0.365 |
| Exact Sig. (1-tailed) | 0.067 | 0.286 | 0.016 | 0.133 | 0.536 | 0.306 | 0.288 | 0.173 |
| Point Probability | 0.043 | 0.091 | 0.010 | 0.052 | 0.058 | 0.118 | 0.004 | 0.043 |

| | Investors concerns for intensive managerial resources on relatively small projects | Interference in procurement, contract tendering and evaluation process | Lack of political will and support | Lack of enabling legal framework | Failure of goverment to honour its contract obligations | Investors concerns of foreign exchange risk ie stability of Ugandan currency | Inability of local Institutions tp provide equity financing | Poor creditworthiness of power offtaker |
|---|---|---|---|---|---|---|---|---|
| Mann-Whitney U | 78.500 | 47.500 | 57.000 | 69.000 | 55.000 | 37.500 | 43.500 | 82.000 |
| Wilcoxon W | 268.500 | 237.500 | 247.000 | 259.000 | 245.000 | 227.500 | 233.500 | 127.000 |
| Z | -0.364 | -1.926 | -1.477 | -0.888 | -1.621 | -2.539 | -2.235 | -0.179 |
| Asymp. Sig. (2-tailed) | 0.716 | 0.054 | 0.140 | 0.374 | 0.105 | 0.011 | 0.025 | 0.858 |
| Exact Sig. [2*(1-tailed Sig.)] | 0.735 | 0.061 | 0.172 | 0.438 | 0.142 | 0.016 | 0.037 | 0.885 |
| Exact Sig. (2-tailed) | 0.377 | 0.488 | 0.032 | 0.423 | 0.370 | 0.645 | 0.805 | 0.204 |
| Exact Sig. (1-tailed) | 0.218 | 0.265 | 0.026 | 0.152 | 0.240 | 0.370 | 0.386 | 0.107 |
| Point Probability | 0.182 | 0.026 | 0.008 | 0.061 | 0.101 | 0.218 | 0.041 | 0.029 |

**NPar Tests**

**Mann-Whitney Test Government - CSO**

**Ranks**

| | What Kind of organisation do you work for | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| Lack of an enabling regulatory framework | Goverment Body | 19 | 12.13 | 230.50 |
| | civil sociey organisation | 3 | 7.50 | 22.50 |
| | Total | 22 | | |
| Weak regulatory framework lacking in clarity and ambiqous | Goverment Body | 19 | 11.16 | 212.00 |
| | civil sociey organisation | 3 | 13.67 | 41.00 |
| | Total | 22 | | |
| Slow implementation of power sector reforms | Goverment Body | 19 | 11.87 | 225.50 |
| | civil sociey organisation | 3 | 9.17 | 27.50 |
| | Total | 22 | | |
| Lack of independence from goverment interference of regulatory body | Goverment Body | 19 | 10.97 | 208.50 |
| | civil sociey organisation | 3 | 14.83 | 44.50 |
| | Total | 22 | | |
| Many requirements to obtain project approval | Goverment Body | 19 | 12.74 | 242.00 |
| | civil sociey organisation | 3 | 3.67 | 11.00 |
| | Total | 22 | | |
| Lengthy project approval process | Goverment Body | 19 | 12.76 | 242.50 |
| | civil sociey organisation | 3 | 3.50 | 10.50 |
| | Total | 22 | | |
| Restirictions on the return on investment | Goverment Body | 19 | 11.45 | 217.50 |
| | civil sociey organisation | 3 | 11.83 | 35.50 |
| | Total | 22 | | |
| Restrictions to the level of foreign ownership of companies | Goverment Body | 19 | 10.74 | 204.00 |
| | civil sociey organisation | 3 | 16.33 | 49.00 |
| | Total | 22 | | |
| Poor coordination between Goverment departments | Goverment Body | 19 | 11.13 | 211.50 |
| | civil sociey organisation | 3 | 13.83 | 41.50 |
| | Total | 22 | | |
| Delays as a result of lengthy burveucratic procedures | Goverment Body | 19 | 12.71 | 241.50 |
| | civil sociey organisation | 3 | 3.83 | 11.50 |
| | Total | 22 | | |
| Low level of skills of personnel involved with PPP | Goverment Body | 19 | 10.79 | 205.00 |
| | civil sociey organisation | 3 | 16.00 | 48.00 |
| | Total | 22 | | |
| Accusations of corruption and corrupt tendencies | Goverment Body | 19 | 11.50 | 218.50 |
| | civil sociey organisation | 3 | 11.50 | 34.50 |
| | Total | 22 | | |
| Resistance from Environmental groups | Goverment Body | 19 | 11.92 | 226.50 |
| | civil sociey organisation | 3 | 8.83 | 26.50 |
| | Total | 22 | | |
| Resistance from Civil society organisations | Goverment Body | 19 | 11.89 | 226.00 |
| | civil sociey organisation | 3 | 9.00 | 27.00 |
| | Total | 22 | | |
| Public resentment as a result of tarrif increases | Goverment Body | 19 | 10.92 | 207.50 |
| | civil sociey organisation | 3 | 15.17 | 45.50 |
| | Total | 22 | | |
| Investors concerns for intensive managerial resources on relatively small projects | Goverment Body | 19 | 12.13 | 230.50 |
| | civil sociey organisation | 3 | 7.50 | 22.50 |
| | Total | 22 | | |
| Interference in procurement, contract tendering and evaluation process | Goverment Body | 19 | 11.11 | 211.00 |
| | civil sociey organisation | 3 | 14.00 | 42.00 |
| | Total | 22 | | |
| Lack of political will and support | Goverment Body | 19 | 10.45 | 198.50 |
| | civil sociey organisation | 3 | 18.17 | 54.50 |
| | Total | 22 | | |
| Lack of enabling legal framework | Goverment Body | 19 | 11.00 | 209.00 |
| | civil sociey organisation | 3 | 14.67 | 44.00 |
| | Total | 22 | | |
| Failure of goverment to honour its contract obligations | Goverment Body | 19 | 10.97 | 208.50 |
| | civil sociey organisation | 3 | 14.83 | 44.50 |
| | Total | 22 | | |
| Investors concerns of foreign exchange risk ie stability of Ugandan currency | Goverment Body | 19 | 11.13 | 211.50 |
| | civil sociey organisation | 3 | 13.83 | 41.50 |
| | Total | 22 | | |
| Inability of local Institutions tp provide equity financing | Goverment Body | 19 | 11.68 | 222.00 |
| | civil sociey organisation | 3 | 10.33 | 31.00 |
| | Total | 22 | | |
| Poor creditworthiness of power offtaker | Goverment Body | 19 | 12.26 | 233.00 |
| | civil sociey organisation | 3 | 6.67 | 20.00 |
| | Total | 22 | | |

| | Lack of an enabling regulatory framework | Weak regulatory framework lacking in clarity and ambiqous | Slow implementation of power sector reforms | Lack of independence from goverment interference of regulatory body | Many requirements to obtain project approval | Lengthy project approval process | Restirictions on the return on investment |
|---|---|---|---|---|---|---|---|
| Mann-Whitney U | 16.500 | 22.000 | 21.500 | 18.500 | 5.000 | 4.500 | 27.500 |
| Wilcoxon W | 22.500 | 212.000 | 27.500 | 208.500 | 11.000 | 10.500 | 217.500 |
| Z | -1.243 | -0.659 | -0.725 | -1.115 | -2.334 | -2.402 | -0.108 |
| Asymp. Sig. (2-tailed) | 0.214 | 0.510 | 0.469 | 0.265 | 0.020 | 0.016 | 0.914 |
| Exact Sig. [2*(1-tailed Sig.)] | 0.265 | 0.586 | 0.523 | 0.356 | 0.021 | 0.014 | 0.929 |
| Exact Sig. (2-tailed) | 0.377 | 0.495 | 0.669 | 0.243 | 0.025 | 0.018 | 1.000 |
| Exact Sig. (1-tailed) | 0.218 | 0.254 | 0.373 | 0.178 | 0.012 | 0.012 | 0.582 |
| Point Probability | 0.182 | 0.029 | 0.214 | 0.118 | 0.008 | 0.009 | 0.203 |

| | Restrictions to the level of foreign ownership of companies | Poor coordination between Goverment departments | Delays as a result of lengthy bureaucratic procedures | Low level of skills of perssonnel Involved with PPP | Accusations of corruption and corrupt tendencies | Resistance from Environmental groups | Resistance from Civil society organisations | Public resentment as a result of tarrif increases |
|---|---|---|---|---|---|---|---|---|
| Mann-Whitney U | 14.000 | 21.500 | 5.500 | 15.000 | 28.500 | 20.500 | 21.000 | 17.500 |
| Wilcoxon W | 204.000 | 211.500 | 11.500 | 205.000 | 34.500 | 26.500 | 27.000 | 207.500 |
| Z | -1.544 | -0.693 | -2.364 | -1.355 | 0.000 | -0.892 | -0.751 | -1.141 |
| Asymp. Sig. (2-tailed) | 0.122 | 0.488 | 0.018 | 0.176 | 1.000 | 0.372 | 0.453 | 0.254 |
| Exact Sig. [2*(1-tailed Sig.)] | 0.191 | 0.523 | 0.021 | 0.226 | 1.000 | 0.464 | 0.523 | 0.308 |
| Exact Sig. (2 tailed) | 0.090 | 0.541 | 0.016 | 0.224 | 1.000 | 0.616 | 0.485 | 0.365 |
| Exact Sig. (1 tailed) | 0.067 | 0.286 | 0.016 | 0.133 | 0.536 | 0.306 | 0.288 | 0.173 |
| Point Probability | 0.043 | 0.091 | 0.010 | 0.052 | 0.058 | 0.118 | 0.004 | 0.043 |

| | Investors concerns for intensive managerial resources on relatively small projects | Interference in procurement, contract tendering and evaluation process | Lack of political will and support | Lack of enabling legal framework | Failure of goverment to honour its contract obligations | Investors concerns of foreign exchange risk ie stability of Ugandan currency | Inability of local Institutions tp provide equity financing | Poor creditworthiness of power offtaker |
|---|---|---|---|---|---|---|---|---|
| Mann-Whitney U | 16.500 | 21.000 | 8.500 | 19.000 | 18.500 | 21.500 | 25.000 | 14.000 |
| Wilcoxon W | 22.500 | 211.000 | 198.500 | 209.000 | 208.500 | 211.500 | 31.000 | 20.000 |
| Z | -1.243 | -0.738 | -2.001 | -1.027 | -1.058 | -0.757 | -0.349 | -1.455 |
| Asymp. Sig. (2-tailed) | 0.214 | 0.460 | 0.045 | 0.304 | 0.290 | 0.449 | 0.727 | 0.146 |
| Exact Sig. [2*(1-tailed Sig.)] | 0.265 | 0.523 | 0.053 | 0.408 | 0.356 | 0.523 | 0.787 | 0.191 |
| Exact Sig. (2-tailed) | 0.377 | 0.488 | 0.032 | 0.423 | 0.370 | 0.645 | 0.805 | 0.204 |
| Exact Sig. (1-tailed) | 0.218 | 0.265 | 0.026 | 0.152 | 0.240 | 0.370 | 0.386 | 0.107 |
| Point Probability | 0.182 | 0.026 | 0.008 | 0.061 | 0.101 | 0.218 | 0.041 | 0.029 |

**NPar Tests**

**Mann-Whitney Test Government - Energy**

**Ranks**

| | What Kind of organisation do you work for | N | Mean Rank | Sum of Ranks |
|---|---|---|---|---|
| Lack of an enabling regulatory framework | Goverment Body | 19 | 11.21 | 213.00 |
| | Energy professional | 5 | 17.40 | 87.00 |
| | Total | 24 | | |
| Weak regulatory framework lacking in clarity and ambiqous | Goverment Body | 19 | 11.74 | 223.00 |
| | Energy professional | 5 | 15.40 | 77.00 |
| | Total | 24 | | |
| Slow implementation of power sector reforms | Goverment Body | 19 | 11.29 | 214.50 |
| | Energy professional | 5 | 17.10 | 85.50 |
| | Total | 24 | | |
| Lack of independence from goverment interference of regulatory body | Goverment Body | 19 | 11.00 | 209.00 |
| | Energy professional | 5 | 18.20 | 91.00 |
| | Total | 24 | | |
| Many requirements to obtain project approval | Goverment Body | 19 | 13.16 | 250.00 |
| | Energy professional | 5 | 10.00 | 50.00 |
| | Total | 24 | | |
| Lengthy project approval process | Goverment Body | 19 | 13.11 | 249.00 |
| | Energy professional | 5 | 10.20 | 51.00 |
| | Total | 24 | | |
| Restirictions on the return on investment | Goverment Body | 19 | 12.05 | 229.00 |
| | Energy professional | 5 | 14.20 | 71.00 |
| | Total | 24 | | |
| Restrictions to the level of foreign ownership of companies | Goverment Body | 19 | 12.11 | 230.00 |
| | Energy professional | 5 | 14.00 | 70.00 |
| | Total | 24 | | |
| Poor coordination between Government departments | Goverment Body | 19 | 11.79 | 224.00 |
| | Energy professional | 5 | 15.20 | 76.00 |
| | Total | 24 | | |
| Delays as a result of lengthy bureaucratic procedures | Goverment Body | 19 | 12.24 | 232.50 |
| | Energy professional | 5 | 13.50 | 67.50 |
| | Total | 24 | | |
| Low level of skills of perssonnel Involved with PPP | Goverment Body | 19 | 11.63 | 221.00 |
| | Energy professional | 5 | 15.80 | 79.00 |
| | Total | 24 | | |
| Accusations of corruption and corrupt tendencies | Goverment Body | 19 | 11.24 | 213.50 |
| | Energy professional | 5 | 17.30 | 86.50 |
| | Total | 24 | | |
| Resistance from Environmental groups | Goverment Body | 19 | 12.84 | 244.00 |
| | Energy professional | 5 | 11.20 | 56.00 |
| | Total | 24 | | |
| Resistance from Civil society organisations | Goverment Body | 19 | 12.11 | 230.00 |
| | Energy professional | 5 | 14.00 | 70.00 |
| | Total | 24 | | |
| Public resentment as a result of tarrif increases | Goverment Body | 19 | 11.45 | 217.50 |
| | Energy professional | 5 | 16.50 | 82.50 |
| | Total | 24 | | |
| Investors concerns for intensive managerial resources on relatively small projects | Goverment Body | 19 | 12.24 | 232.50 |
| | Energy professional | 5 | 13.50 | 67.50 |
| | Total | 24 | | |
| Interference in procurement, contract tendering and evaluation process | Goverment Body | 19 | 10.26 | 195.00 |
| | Energy professional | 5 | 21.00 | 105.00 |
| | Total | 24 | | |
| Lack of political will and support | Goverment Body | 19 | 10.47 | 199.00 |
| | Energy professional | 5 | 20.20 | 101.00 |
| | Total | 24 | | |
| Lack of enabling legal framework | Goverment Body | 19 | 10.92 | 207.50 |
| | Energy professional | 5 | 18.50 | 92.50 |
| | Total | 24 | | |
| Failure of goverment to honour its contract obligations | Goverment Body | 19 | 11.53 | 219.00 |
| | Energy professional | 5 | 16.20 | 81.00 |
| | Total | 24 | | |
| Investors concerns of foreign exchange risk ie stability of Ugandan currency | Goverment Body | 19 | 10.95 | 208.00 |
| | Energy professional | 5 | 18.40 | 92.00 |
| | Total | 24 | | |
| Inability of local Institutions tp provide equity financing | Goverment Body | 19 | 11.74 | 223.00 |
| | Energy professional | 5 | 15.40 | 77.00 |
| | Total | 24 | | |
| Poor creditworthiness of power offtaker | Goverment Body | 19 | 11.95 | 227.00 |
| | Energy professional | 5 | 14.60 | 73.00 |
| | Total | 24 | | |

| | Lack of an enabling regulatory framework | Weak regulatory framework lacking in clarity and ambiqous | Slow implementation of power sector reforms | Lack of independence from goverment interference of regulatory body | Many requirements to obtain project approval | Lengthy project approval process | Restirictions on the return on investment |
|---|---|---|---|---|---|---|---|
| Mann-Whitney U | 23.000 | 33.000 | 24.500 | 19.000 | 35.000 | 36.000 | 39.000 |
| Wilcoxon W | 213.000 | 223.000 | 214.500 | 209.000 | 50.000 | 51.000 | 229.000 |
| Z | -1.873 | -1.092 | -1.736 | -2.220 | -0.928 | -0.858 | -0.649 |
| Asymp. Sig. (2-tailed) | 0.061 | 0.275 | 0.082 | 0.026 | 0.354 | 0.391 | 0.517 |
| Exact Sig. [2*(1-tailed Sig.)] | 0.088 | 0.331 | 0.103 | 0.044 | 0.406 | 0.446 | 0.581 |
| Exact Sig. (2-tailed) | 0.092 | 0.257 | 0.114 | 0.019 | 0.347 | 0.433 | 0.528 |
| Exact Sig. (1-tailed) | 0.060 | 0.129 | 0.057 | 0.012 | 0.197 | 0.224 | 0.257 |
| Point Probability | 0.045 | 0.004 | 0.026 | 0.002 | 0.027 | 0.025 | 0.010 |

| | Restrictions to the level of foreign ownership of companies | Poor coordination between Goverment departments | Delays as a result of lengthy bureaucratic procedures | Low level of skills of perssonnel Involved with PPP | Accusations of corruption and corrupt tendencies | Resistance from Environmental groups | Resistance from Civil society organisations | Public resentment as a result of tarrif increases |
|---|---|---|---|---|---|---|---|---|
| Mann-Whitney U | 40.000 | 34.000 | 42.500 | 31.000 | 23.500 | 41.000 | 40.000 | 27.500 |
| Wilcoxon W | 230.000 | 224.000 | 232.500 | 221.000 | 213.500 | 56.000 | 230.000 | 217.500 |
| Z | -0.578 | -0.999 | -0.384 | -1.225 | -1.792 | -0.519 | -0.561 | -1.513 |
| Asymp. Sig. (2-tailed) | 0.563 | 0.318 | 0.701 | 0.221 | 0.073 | 0.604 | 0.575 | 0.130 |
| Exact Sig. [2*(1-tailed Sig.)] | 0.629 | 0.367 | 0.731 | 0.265 | 0.088 | 0.679 | 0.629 | 0.160 |
| Exact Sig. (2-tailed) | 0.723 | 0.373 | 0.779 | 0.249 | 0.096 | 0.706 | 0.652 | 0.161 |
| Exact Sig. (1-tailed) | 0.340 | 0.203 | 0.437 | 0.149 | 0.049 | 0.353 | 0.321 | 0.069 |
| Point Probability | 0.037 | 0.064 | 0.176 | 0.023 | 0.012 | 0.011 | 0.025 | 0.002 |