

Failures of Independent Power Producers in Nigeria: The Inimical Challenges

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ABSTRACT

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Independent power producers have for long been misunderstood. This is more so because of the fact that the activities of IPPs are just becoming popular amidst the common man on the street. They are simply companies that generate electricity privately for onward sale to utilities or the general public. They are also referred to as non-utility generators.

Currently, there are over thirty IPP licensees in Nigeria. However, despite the procurement of licences by these IPPs, a review of the performance of these IPPs reveals that most of them have not been functional.

It is in the light of the inability of most these licensees to come on board despite acquiring licences with huge sums of money and very little successes recorded by a very few of them that I have decided to conduct a research to shed light on their failures. It is my belief that a critical study of the hindrances or challenges faced by these IPPs will reveal the reasons for their failures. This research aims to unravel the problems or causal factors responsible for the failure of IPPs in Nigeria despite been granted operation licence for over five years.

In undertaking this research I encountered numerous challenges or limitations. One of the major challenges is the lack of funds to make schedule visits to the sites of these IPPs in order to ascertain on a first hand their problems as well as feel their pulse on such problems.

In the cause of the research, I reviewed the developmental phases of setting up an IPP. These phases which include the project definition, project development and continuous operations were extensively dealt with in the theoretical framework. Due to the scope of this research, only the first two were treated in details in the empirical part. This is due to the fact that the failed IPPs are at these stages of their development.

The outcome of the interview granted reveals many problematic areas which currently stand as stumbling blocks against the success of these IPPs. The observed problems include lack of cost reflective tariff, unavailability of a recognised counter-party to sign PPAs on behalf of government, the failure of the IPPs to secure Power Purchase Agreement and most importantly the lack of provision of payment guarantee in the power purchase agreement.

Having observed these problems, appropriate recommendations were made to the Nigerian government and her agents to find lasting and amicable solutions to solve them.

Key Words Independent Power Producers, IPP Development, Nigeria

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Yksityiset voimantuottajat ovat pitkään olleet väärinymmärrettyjä. Tämä johtuu pääosin siitä että IPP tehtävät ovat tulleet yhä suosituimmiksi tavallisten ihmisten keskuudessa. Ne ovat yhtiöitä jotka tuottavat sähköä yksityisesti myyntiin julkisiin palveluihin tai yhteisöön. Tällä hetkellä Nigeriassa on yli 30 IPP toimilupaa. Kuitenkin, huolimatta siitä IPPt yhä enemmän ostaa lisenssejä, näiden yhtiöiden toiminnan tarkastelu paljastaa, että suurin osa niistä eivät ole toimineet hyvin.

Tämän tähden, ja syystä että vaikka suuria summia on käytetty näiden lisenssien hankkimiseen mutta silti vain muutamat näyttävät olleen menestyksekkäitä, haluan tutkia mahdollisia syitä siihen. Uskon että IPPden kohtaamien hidastavien tekijöiden ja haasteiden kriittinen tutkimus paljastaa syyt niiden huonoon menestykseen. Tällä tutkimuksella pyrin ratkaisemaan ongelmia tai pääsyitä IPPden huonoon menestykseen Nigeriassa vaikka ne ovat ostaneet toimilupia yli viiden vuoden ajan.

Tehdessäni tätä tutkimusta kohtasin useita haasteita tai rajoituksia. Yksi suurimmista haasteista on rahoituksen puuttuminen vierailuihin IPPden toimipaikkoihin jotta voidaan lähietäisyydellä varmistua näistä ongelmista sekä nähdä yhtiöiden suhtautuminen näihin ongelmiin. Tehdessäni tutkimusta, kävin myös läpi IPPn luomisen kehitysvaiheet. Nämä vaiheet kuten projektin suunnittelu, kehittäminen ja jatkuvat toimenpiteet tarkasteltiin kattavasti jo olemassaolevan kirjallisuuden kautta, mutta tutkimuksen tavoitteen vuoksi vain kaksi ensimmäistä vaihetta tarkasteltiin lähemmin kokeellisessa osassa. Tämä taas johtuu siitä että kaikki epäonnistuneet IPPt ovat näissä vaiheissa kehityksessään.

Suoritettujen haastattelujen tulokset paljastavat monia ongelmallisia alueita, jotka tällä hetkellä ovat esteinä IPPden menestykseen. Näitä ongelmia ovat muun muassa maksuja heijastavan tariffin puute, tunnustetun vastaliikkeen riittämätön saatavuus PPAden allekirjoittamiseen valtiojohdon puolesta, IPPden epäonnistuminen Power Purchase Agreement sopimusten täyttämisen, ja ennen kaikkea maksutakuun puuttuminen sopimuksesta.

Huomioitua ongelmia on tuotu julki ja tarpeelliset ehdotukset Nigerian hallinnolle tai sen valtuutetuille on lähetetty, jotta sopivat ja kestävätkin ratkaisut ongelmien ratkaisuun voitaisiin saavuttaa.

Asiasanat Independent Power Producers, IPP Development, Nigeria

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1 INTRODUCTION

1.1 Background of the study

Electricity is considered one of the most important inventions of the twentieth century. Meaningful development in modern economies has been fundamentally tied to electricity use. Erratic power supply or insufficient electricity supply a total lack of it is the concern of governments in many countries. Its absence has been linked to poverty in many developing nations (Hirsh, Richard 2000).

In recent years, the energy sector in Nigeria has drawn a lot of attention from the government, corporate institutions as well as the citizens of the country. This is due in part to the inefficiency and abysmal low level of electricity production to support the industrialization process and also the continued increasing demands of the fast growing population of the country.

There have been several attempts by previous government administrations to find a lasting solution to the problems of electricity supply in the country the latest been the decentralization of the energy sector and the granting of licences to different Independent Power Producers (IPPs).

It is the believe of government that the generation of power close to the final point of use will tackle the moribund inefficiencies of transmitting energy from the centralized distant power generating plants through the national power grid to the various states where it is finally consumed. It also believed that this is the finest solution to the challenges of rural electrification. Most importantly, government believes that being private investors, IPPs would be able to run the energy sector more efficiently. Hence it granted licenses to many IPPs to generate energy for onward distribution to utility companies and domestic consumers. Despite the approval of these licenses, only a handful has managed to become operational.

Currently, there are over thirty IPP licensees in Nigeria (www.nercng.org). However, despite the huge costs involved in procuring these licences which averages about fifty thousand US dollars (www.nercnng.org), a review of the licences granted so far to the

IPPs has shown that most of them have not been functional (<http://ndn.nigeriadailynews.com/templates/?a=21724>) February 2010.

It is in the light of the inability of most these licensees to come on board despite acquiring licences with huge sums of money and very little successes recorded by a very few of them that I have decided to conduct a research to shed light on their failures. It is my belief that a critical study of the hindrances or challenges faced by these IPPs will reveal the reasons for their failures. If the reasons for these failures are known this will generate further enquiries as to how they could be solved.

1.2 Objective of the study

This research aims to unravel the problems or causal factors responsible for the failure of IPPs in Nigeria despite been granted operation licence for over five years.

1.3 The research problem

Quite a lot of studies have been conducted with a view to determining the problems and challenges faced by the sector, the linkages between the sector and other sectors of the economy, the economic gains that may accrue to the country if the sector is up and functioning optimally etc.

These and many more researches, have however, not been able to solve the problems at hand i.e. the consequences of an inefficient energy sector topmost of which is inadequate or erratic power supply. This is due to the fact that for proper positioning and efficiency of the sector, private investors must be allowed to run the sector while the government provides the enabling environment and legal framework for the investors to operate.

Most recently, researches have delved into studying the likely effects of the power sector reforms in Nigeria on power reliability and stability in the country (Adoghe, A.U. 2008)

Despite all the aforementioned researches, most of the IPPs which have gotten licence as at the time of conducting research have failed or cannot operate despite procuring the licences with huge sums of money.

This study will attempt to research into the reasons why these IPPs have failed and try to uncover the reasons for the little successes that have been achieved so far.

1.4 Methodology of the thesis

This study will combine both desk and field research. The desk research will focus primarily on the theoretical basis of the study. This will be done by reviewing several relevant secondary data available. It will be used to explain the current state of the decentralized energy market in Nigeria.

The field work will employed to determine empirically from all perspectives the causal factors for the failures and if there are any successes recorded so far by the IPPs in Nigeria. It will involve the use of questionnaires to get qualitative data from the case company and other relevant organisations such as the regulatory body for electricity in Nigeria, The National Electrical Commission (NERC).

1.5 Significance of the research

Been the first ever research of its kind, this study is significant in many ways. They include the following:

1. It will bring to bear the reasons for the failure of the IPPs in Nigeria
2. The recommendations cited there-in will assist the government of Nigeria to make more effective policies towards creating a better enabling environment for the IPPs.
3. It will serve as a point of reference or a secondary data source for future researchers who will be willing to research on the possible solutions for the problems identified.

1.6 Limitations of the thesis

1. In undertaking a research of this magnitude, I am been constrained by time and lack of funds to visit the IPPs physically in Nigeria to conduct the necessary interviews.
2. Due to lack of adequate funds to carry out the research as I have resolved to send a general questionnaire to the IPPs. A personal face-to-face interview would have achieved better results.
3. Most of the IPPs lack a functional website or email address so it was quite difficult to contact them and some of them they never responded to the requests sent to them through regular mails.
4. There are over thirty licensees in the country but the unwillingness of most of them to grant interviews or divulge necessary information is a setback perhaps due to lack of trust in the intent of the study. All efforts were made to convince them but still they didn't yield.
5. Continuous delay from respondents is another limitation suffered in the course of this research.

1.7 Structure and organisation of the research

This research is basically divided into seven chapters. The first chapter contains the introductory aspect to the research. An attempt was made to explain what the research was all about giving the circumstances that led to current situation of the energy sector in Nigeria. The chapter consists of subchapters that deal with a brief background of the research, the objectives of the study where the motivation and what intent of the study is being described.

Also, included in the introductory chapter is the research problem. This shows the problems that the research aims to provide solutions to. The methodology of the research is described in another subchapter as well as the significance of the research. Chapter two of the research deals with the literature review. It is in this chapter that previous researches related to the current research theme are referred to. The developmental phases of an independent power project are reviewed as well as the multiparty negotiations undertaken by the developers of IPPs. This might give an indication or a dimension as to what actually led to the failures of these companies. These and others are been cited as the basis for the necessity of this current research. The third chapter contains the empirical analysis. This is where the field research and fact findings are undertaken. The IPPs are served questionnaires to fill. This gives a clue as to what problems or factors have caused their failures.

The remaining chapters deal with the research methodology, summary, conclusions and references respectively. (The structure of the thesis is presented in figure 1)

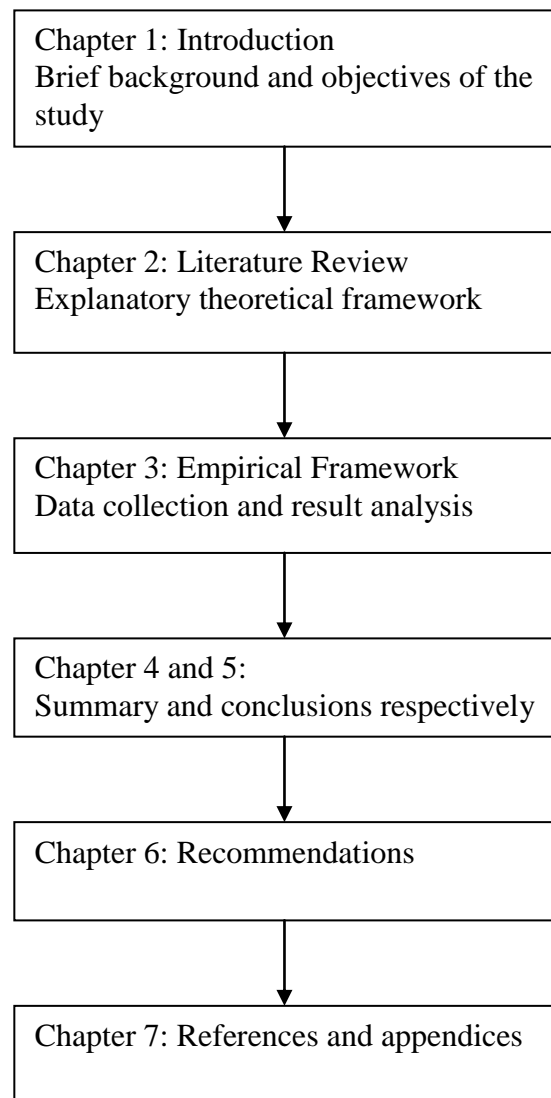


Fig 1.0 Diagrammatic representation of the research structure

1.8 Definition of terms

1.8.1 Failure

As defined by the free dictionary (<http://www.thefreedictionary.com/failure>) failure is a condition or fact of not achieving the desired end or ends. It can also be described as the condition or fact of being insufficient or falling short of desired end results.

Failure in the context of this research refers to the inability of the IPPs in Nigeria to become operational after been granted operational licences since 2005.

1.8.2 Power

Power could be defined as the rate of doing an electrical work or expending electrical energy. It can also be defined as the measure of the rate at which electrical work is done or at which electrical energy is expended. Its unit of measurement is watts or kilowatts.

Mathematically, this can be represented thus:

$$\text{Power} = \text{Work} / \text{Time}$$

$$P = W/t$$

$$P = \text{change in work} / \text{change in time}$$

$$P = W/t = E/t$$

Where W and E are, respectively, the work done or energy converted in time t .

1.8.3 Independent power producer (IPP)

The phrase independent power producer has for long been misunderstood. This is more so because of the fact that the activities of IPPs are just becoming popular amidst the common man on the street.

According to the energy dictionary (http://www.energyvortex.com/energydictionary/independent_power_producer_%28i_pp%29_non_utility_generator_%28nug%29.html) this phrase refers to a company

that generates electricity privately for onward sale to utilities or the general public. They are also referred to as non-utility generators.

Independent power producers (IPPs) are privately owned business concerns which generate electricity for sale to public utilities. The company is not owned by the government; hence it focuses on the generation of electricity thereby leaving the transmission to public utilities.

An IPP may sell to utilities but this is based on the policies and regulation of the business environment in which it operates. For better pricing, it is a common phenomenon for IPPs to cooperate to get the best deals in term of pricing from the companies that buys electricity from them. (<http://www.wisegeek.com>)

The commonness of IPPs vary around the world. In several countries, they are very obvious. They may include private firms, cooperatives, and industrial facilities which commercialise the excess power generated to the utility companies. They may be very scarce in some other regions due to the small level of operation in which they engage in. They do increase by the continuous adding of new facilities and services to their installations. (<http://www.wisegeek.com>)

Alternatively, IPPs are also referred to as non-utility generators this most especially because they seldom have transmission facilities. They generate power using variety of methods but lease transmission facilities from public utilities. Sometimes, these public utilities erect the transmission facilities and maintain them as part of a sales agreement with the IPPs. These agreements are clearly spelt out as to what to generate in terms of power, at what selling rate etc. (<http://www.wisegeek.com/what-are-independent-power-producers.htm>)

On the contrary, public utilities buy at cheaper whole sale prices from these IPPs and resell to their consumers than generating the power themselves or maintaining or building new power plants themselves.

Most often, IPPs complement the grid which guarantees adequate supply of energy always irrespective of the demands at peak or off peak periods when the grid are out of operation due to maintenance operations. (<http://www.wisegeek.com>)

In summary, the first chapter of this work briefly gives an insight to the background information vis-à-vis the research problem and the motivations behind this research i.e. the objectives of the research.

Having concluded this introductory chapter, it is pertinent to review relevant literatures which explain in details the working environment, intricacies which power developers must surmount and most importantly the process of independent power production which the IPPs under investigation seek to achieve.

I believe these literatures will definitely assist in the development of the questionnaires for the empirical part of this research and ultimately reveal the perfect state which an IPP ought to achieve before it could lay claim to having achieved success in the development of its power project. Chapter two of this research work will handle the relevant literatures mentioned earlier.

Inimical

The online free dictionary defines inimical as an adjective which is used to describe something which is injurious or harmful in effect (URL> <http://www.thefreedictionary.com/inimical>). The intent of this word as used in this research is to qualify the challenges which act as stumbling blocks against the success of the IPPs in Nigeria.

2 LITERATURE REVIEW

A cursory look at previously published works reveals that quite a number of extensive researches have been conducted on the development and current state of the independent power subsector of the Nigeria's energy sector, most of it bordering on the reforms, challenges, macro-economic opportunities in the sector.

I will make a short review of some relevant published works with a view to cite the necessity for this current research of mine.

According to Okoro and Chikuni (2007), the motive for the reforms in the sector is primarily to stimulate efficiency, affordability and availability of electricity in the country. This they assert will require an increased generation of power to the national grid through the construction of new power stations by Independent Power Producers (IPPs) and a reactivation of the grounded power stations of the nation. They opined that though the construction of new power stations is generally capital-intensive, the power producers will earn more as a compensation for supplying constant electricity to consumers.

A deeper analysis of the investment opportunities identified by Okoro and Chikuni (2007) portrays macro-economic gains which might be incapable of been a lead for prospective foreign investors who are mostly concerned about their profit. The investment opportunities identified by them is briefly highlighted below.

Okoro and Chikuni (2007) enumerated the efficiency and reliability of services through constant power supply as an opportunity to be benefitted from by privatising the energy sector. They also cited the increased share ownership and employment benefits which Nigerians stand to gain as they observed that with the influx of private investors, the sector could generate 800 000 share holders which will lead to capital formation and also large employment opportunities for Nigerians as the new companies will need the services of locals to operate. Lastly, they also mentioned the transfer of technical knowhow from the foreign investors to their local counterparts due to the fact that the foreign investors generally have a higher technical knowhow on the operations in the sector.

Adoghe A.U (2008) researched extensively on the likely effects of the power sector reforms in Nigeria on power reliability and stability in the country. He opined that the reform currently taking place in the sector is rapidly increasing with a substantial increase in sophistication. He also found out that the reforms currently going in Nigeria have been earlier adopted by many large countries like China including smaller countries like Bolivia. They effectively tailored these reforms to their local needs.

In his report, Adoghe cited the reasons given by previous authors as the motivational forces behind the reforms in most economies. These he mentioned to include the abysmal performance or failure of the grid system most especially due to transmission and gross inefficiency. Also mentioned is the inability of the state to finance new investments in the sector.

Kuale, P.A., Tsado (2006) in their research corroborated Adoghe in his findings however they made some exceptions to the generality of the rules set earlier. They found out that some public utilities have actually performed well but due to the increasing awareness during the early eighties that the monopolies of the state inhibits competition and ultimately result in low service quality, poor investment decisions etc.

It is the aspiration of Nigeria to become the powerhouse of Africa. This is an allusion to the future plans of the government. But despite this, irregular and unreliable power supply is the order of the day and this poses the greatest challenge to investors and their investments in the country. This frequent power cuts that manifests all over the country results into additional overhead cost of production being incurred due to power improvisation by the investors. It is estimated that this power cuts costs Nigerian economy an estimated 1 billion USD annually. (James Eedes 2005).

The obvious investment opportunities in Nigeria's energy sector are seen vis-a-vis the aspiration of Nigeria to become the powerhouse of Africa. These opportunities can be better explained or demonstrated by comparing the installed capacity of Nigeria's

state owned power company NEPA to Eskom, South Africa's state owned power company. James Eedes (2005).

According to James Eedes (2005), Eskom, owned by a country of population of about 41 million people has an already has an installed capacity of 41,860 megawatts (mw) while NEPA owned by a country of about 140 million people has an installed capacity of 6000 megawatts (mw) but generates less than 3000 megawatts (mw). This portrays a huge investment potential in the sector.

As regards the demand estimate for electricity in Nigeria, available estimates are unreliable due to the poor and unreliable data available. Also, there are latent demand for electricity when adequate electricity supply is been achieved. Besides, a modest estimate for electricity demand in the country is assumed to be in the range of 10000 megawatts (mw) by 2010. James Eedes (2005).

According to James Eedes (2005), though it is clear that there are obvious investment potentials in the sector going by the previous analysis, it is very unclear as to what regulatory frame work which will govern the industry though government has pronounced to provide a private-sector friendly regulatory frame work for prospective investors.

James Eedes (2005) also observed some recent deregulation steps been taken by government. The most recent been the enactment of the power sector reform law which primarily focuses on five key areas namely; the restructure of NEPA; the privatisation of the unbundled operating units; the development of a competitive electricity market through the involvement of IPPs; the creation of a regulatory body to license and regulate generation, transmission and distribution; and a process for determining tariffs.

This step taken by government obviously paves the way for foreign direct investment into the sector as it gives leverage for the participation of private investors.

Finally, James Eedes (2005) noted some incentives by government to attract leverage and facilitate FDIs into the sector to include tax holidays for five years and tax allowance on capital investment which can be carried forward after the tax holiday period. Also there is an exemption of duty on imported equipment for investors.

Every country or economy aspires to be industrialized or at least move away from being categorised as underdeveloped. The process of industrialisation of an economy can only be expedited by putting the necessary energy infrastructure in place. Ross, William and Robert (2000)

It is therefore, alarming that a country like Nigeria which aspires to transform its economy to become the twentieth largest in the world by 2020 (Vision 20, 2020) (Ifey Ikeonu, 2006) has 92 percent of its manufacturing firms improvising electricity supply (World Bank Report 2007)

To begin with, it is important to project an overview of what the Nigerian electricity sector and the electric sector reform act 2005 looks alike. This will set this theoretical frame work on a broader beginning.

2.1 A Review of the electricity sector in Nigeria

In an attempt to understand fully the problems been faced by the IPPs in Nigeria, I found out that any research on this thesis topic would not be complete without having a knowledge of the history of the electricity sector in Nigeria. This would enable a working knowledge of the environment in which these companies operate as well as appreciate comprehensively the forces at play in their operational environment. I have attempted to make an overview of the Nigeria electricity sector and most importantly the Electricity Sector Reform Act 2005 which serves to guide the operations of the IPPs at the moment.

According to the Nigerian Electricity Regulatory Commission (NERC) www.nerc.org the latest legislation that oversees the electricity sector is the electricity sector reform act passed into law in 2005.

The World Bank (2002) states that activities in the electricity sector in Nigeria began towards the end of the 19th century. The first electricity generating plants were installed in Lagos in 1898 by the British colonialist government. The management of the generating plants was named the public works department.

The Federal Government of Nigeria in 1950 passed the Electricity Corporation of Nigeria Ordinance No. 15 of 1950. Other legislations had been previously enacted such as the Niger Dam Authority (NDA) Act of Parliament in 1962 and the Degree No 4 of June 7 1972, which was used to establish the National Electric Power Authority (NEPA), was established. (Watts, P. C. (2001)

The initial concern of the Nigerian Electric Power Authority was to coordinate an efficient and economic system of the supply of electricity to all parts of Nigeria. A monopolistic status was thus conferred on NEPA.

Ukaegbu C. (1998) maintained that NEPA which solely runs the electricity business in Nigeria as at then as a public utility was very inefficient in its delivery of service. In 1986, the then government made several attempts to put in place several measures to revamp the ailing sub-sector (Ukaegbu C. 1998).

To consolidate on the restructuring efforts for efficiency of the energy sector, Ayo, D.A (2007) noted that the Electric Power Sector Reform Bill 2005 was signed into law to finally break the monopoly which NEPA has maintained over the years. The specific objectives of this move as observed by Ayo, D.A (2007) was to fulfil the following.

1. To ensure a safe, efficient, affordable and cost effective system of generation, transmission, distribution and marketing of electricity. Most importantly the provision of access to electricity devoid of the grid.
2. To position electricity supply to reliably support the socio-economic development of the country.
3. To reposition the energy sector for privatisation
4. To improve the environmental impact of the electricity generation.
5. To formulate a master plan for a power pool in West Africa.

It is this electric sector reform act that spells out the policy frame work for IPPs in Nigeria. The next section will shed light on what the framework for IPPs is in Nigeria.

2.2 Policy framework for IPPs in Nigeria

Investors willing to set up IPPs in Nigeria will have to contend with the Electric Power Sector Reform Act 2005, which is the current legislation by which the sector is regulated.

This reform act which was recently signed into law aims amongst others to

1. Put in place an efficient and cost effective system of generating, transmitting, distributing and marketing of electricity which is safe and affordable and will ultimately provide constant access to electricity by Nigerians.
2. Ensure that electricity supply in the country supports the long-term industrialization process of the country
3. Make the energy sector attractive to private investors local or foreign.
4. To reduce to the barest minimum, the environmental impact of the activities of the players in the sector
5. To make Nigeria the power hub of the West African subcontinent.

In order to instil competition in the sector, the reform act adopts a model which is directly opposed to a single-player model but rather a wholesale competition model (<http://www.nercng.org>) . The principle behind this strategy adopted by the act is to disallow one company to vertically own an electricity generation, transmission and distribution company. Distribution companies will be allowed to buy wholesale electricity directly from generating companies while they choose from the array of transmission companies to get the electricity to the workstations for onward distribution to their customers.

The arrangement as the act claims will engender quality completion in the energy sector which will expedite its efficiency. (Electric Power Sector Reform Act 2005)

2.3 Effects of Nigeria's business and investment environment on IPP operation

Investments in energy are quite capital intensive in nature (Gonzalez-Eiras, Martín and Prado, Jose M., 2007). It would only be commonsensical that the business environment in Nigeria be adequately analysed so that prospective companies willing to invest in her energy sector would have an idea as to what to expect and hence, make adequate preparations towards it.

Bird (1989) defines the business environment as events, circumstances, situations, settings and niches, which surround entrepreneurial activity. Also, Gnyawali and Fogel (1994) conceptualise the business environment as the overall economic, socio-cultural and political factors that influence people's willingness and ability to undertake entrepreneurial activities.

I would make a quick attempt to review the business environment in Nigeria vis-a-vis the available infrastructure, access to credit facility, bureaucratic practices and regulatory policies.

2.3.1 Infrastructure and access to finance

A recent report by the World Bank in 2007 states that there is high transport costs in Nigeria which was a direct manifestation of the poor road and rail conditions. The report cited an example of the cost of moving a truck trailer from Maiduguri which is at the northern tip of the country to Lagos which lies on the coast. This costs about N320 000 (approximately 1500 Euros), this amount, the report states is more than the equivalent sea freight of the same truck trailer from Europe to Nigeria.

The World Bank report (2007) also quoted its survey of 2001, which found out that the annual average expenditures of representative business enterprises in the country amounts to N50, 703 for electricity. 31 percent of the amount was for the payment of public-sector electricity while 69 percent was expended on self generated electricity through generators.

Also, an earlier study by the World Bank on 179 firms found that 92% of the firms improvised electricity through generators due to the electricity infrastructure deficit in the country.

Similarly, the same survey found that two-thirds of the companies examined invested in private water sources i.e. boreholes.

In Nigeria, access to credit facilities from the banks is quite rigid and the interest rates are highly volatile (World Bank, 2007). The World Bank report also refers to a survey conducted in 2002, in which less than 16 per cent of the respondents reported that they have a loan with terms longer than one year. So, it is instructive to note that the existing credit facilities most often do not support long term financing needs of capital intensive or infrastructure projects such as that of energy. In a nutshell, the financial market in Nigeria is characterised by volatile interest rates and short term funds.

In the next section of this theoretical frame of reference, an illustration of the energy resources for the use of IPPs will espoused with a view to ascertain the availability of raw materials for energy production in Nigeria

2.4 Energy sources for IPPs in Nigeria

The production of electricity in Nigeria in the last 40 years has primarily been gas-fired, oil-fired, hydroelectric power stations, coal-fired stations which uses has priority hydro-electric power systems and gas-fired systems. The reason adduced to this is the fact that the country abounds with primary sources of fuel such as coal, oil and water. (Bustros, 1983)

The coal reserves in Nigeria are very large and estimated at 2 billion metric tonnes of which 650 million Tonnes are proven reserves and a substantial part of the Nigerian coal product has been devoted to local consumption, mainly for the construction of railway transportation; electricity n and industrial heating in cement production (Bustros, 1983).

The Energy commission of Nigeria, (<http://www.energy.gov.ng/>) has found that the country has abundant natural gas which surprisingly doubles the doubles the oil reserves. Most importantly, the commission says the horizon for the accessibility of gas is naturally longer than that of oil.

Nigeria has an estimated 2.4×10^{12} cubic metres of gas reserves which is projected to last for more than a century for domestic fuel and also as a major export commodity (Bustros, 1983)

The third primary source of energy in Nigeria, oil, is the country's major foreign exchange earner which is majorly used for the country's development. By the end of 2005, the country has a crude oil reserve estimated at 35.2 billion barrels as there are plans by the government to expand its proven reserves to over 40 billion barrels this year, 2010. Some of these are the favourable factors contributing to the export prospect of electricity from Nigeria due to the relatively low production costs, ease of oil recovery, good relations with equity producers and the relative proximity of major markets (Ekwue, 1989).

2.4.1 Renewable energy resources

Renewable energy resources abound in Nigeria. These include solar energy resources, etc. These renewable are being intended for penetration into the energy supply mix. Below is a brief illustration on the renewable energy resources in Nigeria.

Biomass

This refers energy that can be derived from plant sources such as trees, grasses, agricultural crops and their constituents (<http://www.thefreedictionary.com/biomass>). They are considered to be renewable since they are naturally occurring and could be harvested without depletion with proper management.

Biomass resources available in the Nigeria include: fuel wood, waste from animal dung, sawdust particles, shavings from wood etc (<http://www.energy.gov.ng/>).

This renewable energy source is available in Nigeria in accordance with the pattern of the nation's vegetation. The southern part of the country is majorly a rainforest belt while the northern part is a guinea savannah region. Wastes and residues are generated in the high-density urban areas. (<http://www.energy.gov.ng/>)

Fuel wood

The presidency in its report claim that the country the country abounds with forest resources to such an extent annually that a huge amount of hectares of land were lost at the inception of the last decade due to several factors. Between the years 1989-2000, there was an average of forty percent charcoal consumed. This demand was estimated at about forty million tonnes in the year two thousand. Over ninety five percent of the fuel wood consumed was meant for cooking food and for small scale industrial activities. These are in close connection to household chores. A minute fraction of the fuel wood and charcoal consumed was used in the services sector (The Presidency, 1992).

Having noted the energy resources for IPPs in Nigeria, it suffices to say at this juncture that the model of IPP in the country must be examined. This would be examined vi-a-vis the different IPP models in the following section.

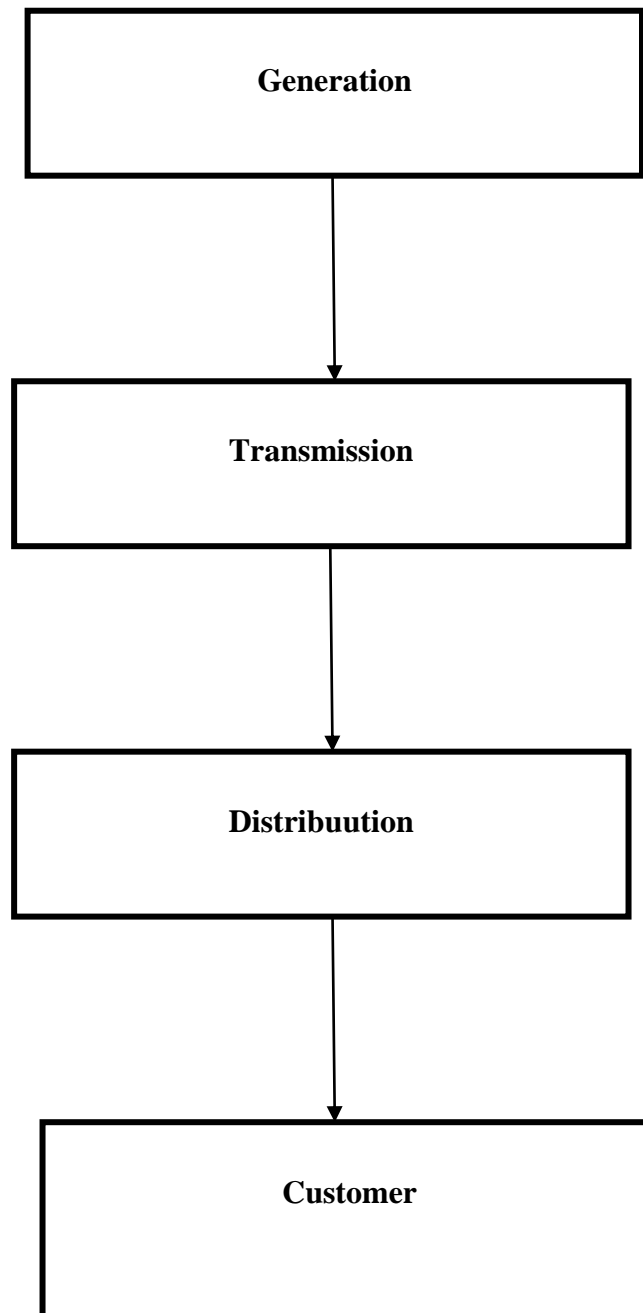
2.5 IPP Models

As mentioned earlier under the discussion of the policy frame work for IPPs in Nigeria, the country has adopted a whole sale model of IPPs. In order to show what the model adopted is all about, it suffices that a very brief explanation of the different IPP models be made. A diagrammatic representation of the different models is used to explain shortly what the models are. Ultimately, the model adopted by the Nigerian government is finally described.

Natural monopoly of IPP

There is a vertically integrated utility with no competition in generation, transmission and distribution.

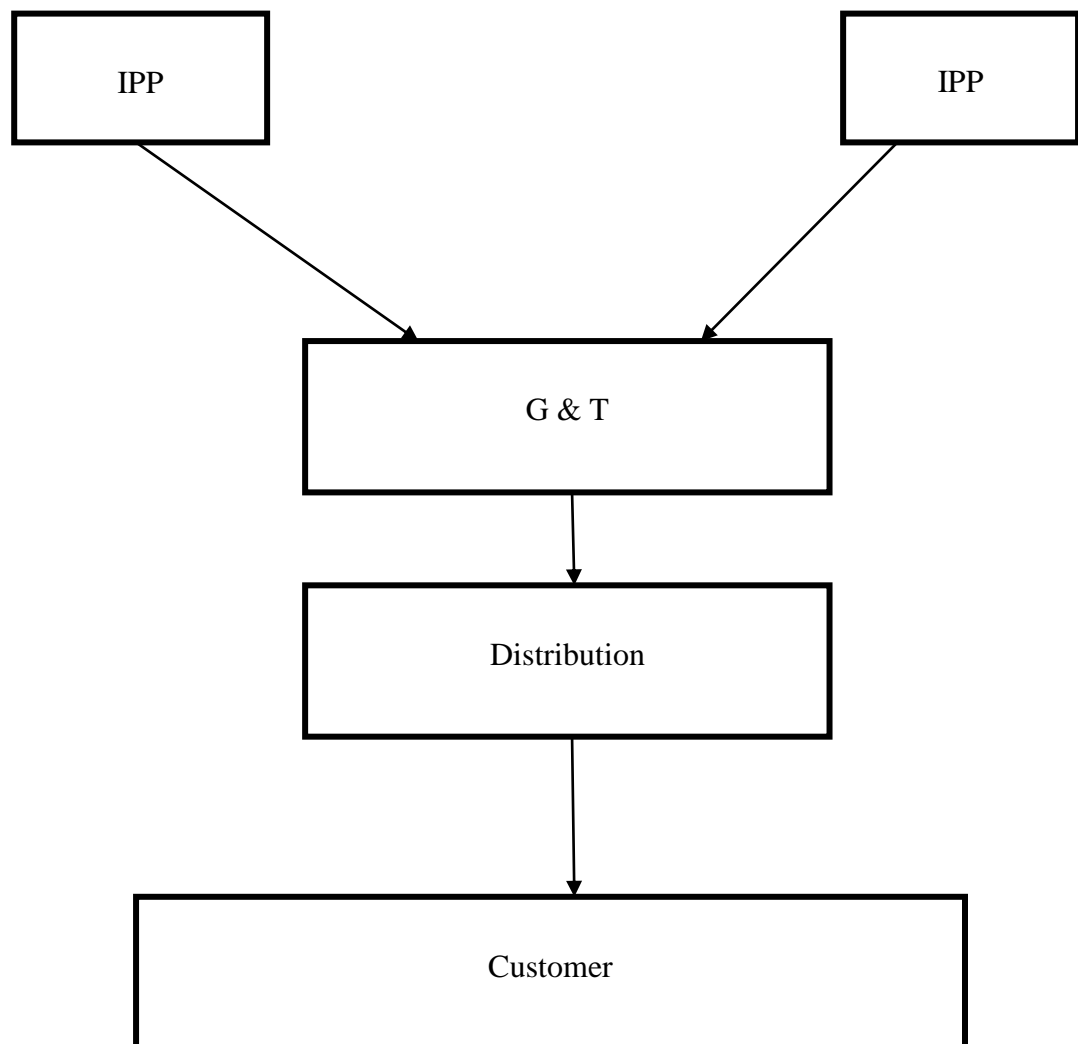
Fig 2.3: Source: <http://www.docstoc.com/docs/2173439/National-Electricity-Regulator-%E2%80%98Regulating-for-efficiency-in-the->



Single buyer model of IPP

There is only one buyer (one Distribution Company) who chooses from various generators. There is some competition in this case but only in generation

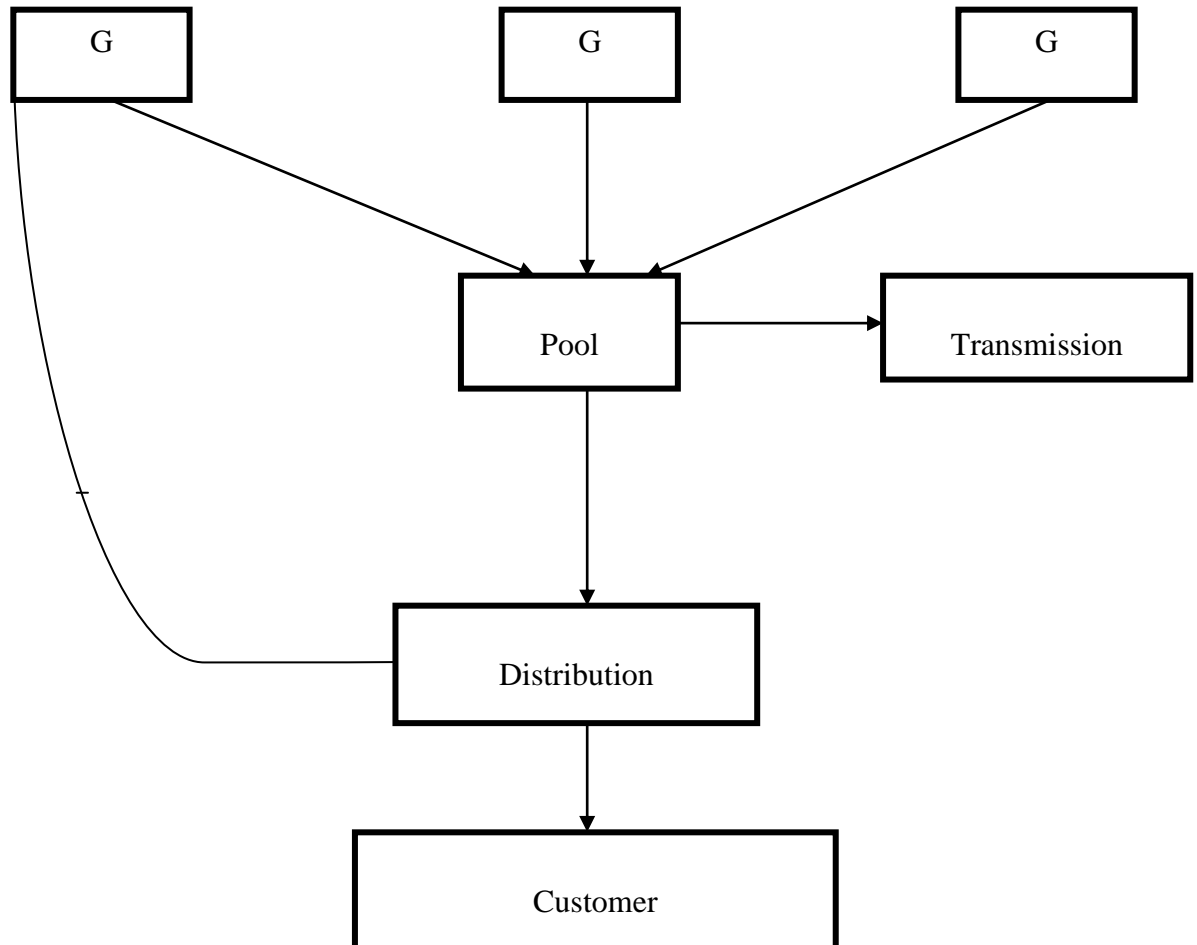
Fig 2.4: Source: <http://www.docstoc.com/docs/2173439/National-Electricity-Regulator-%E2%80%98Regulating-for-efficiency-in-the->



Wholesale competition model of IPP

In this case, there are several distribution companies and they buy directly from the IPPs. However, customers of distribution companies have no option but to buy from single supplier (their distribution company). There is competition in generation and distribution becomes transparent.

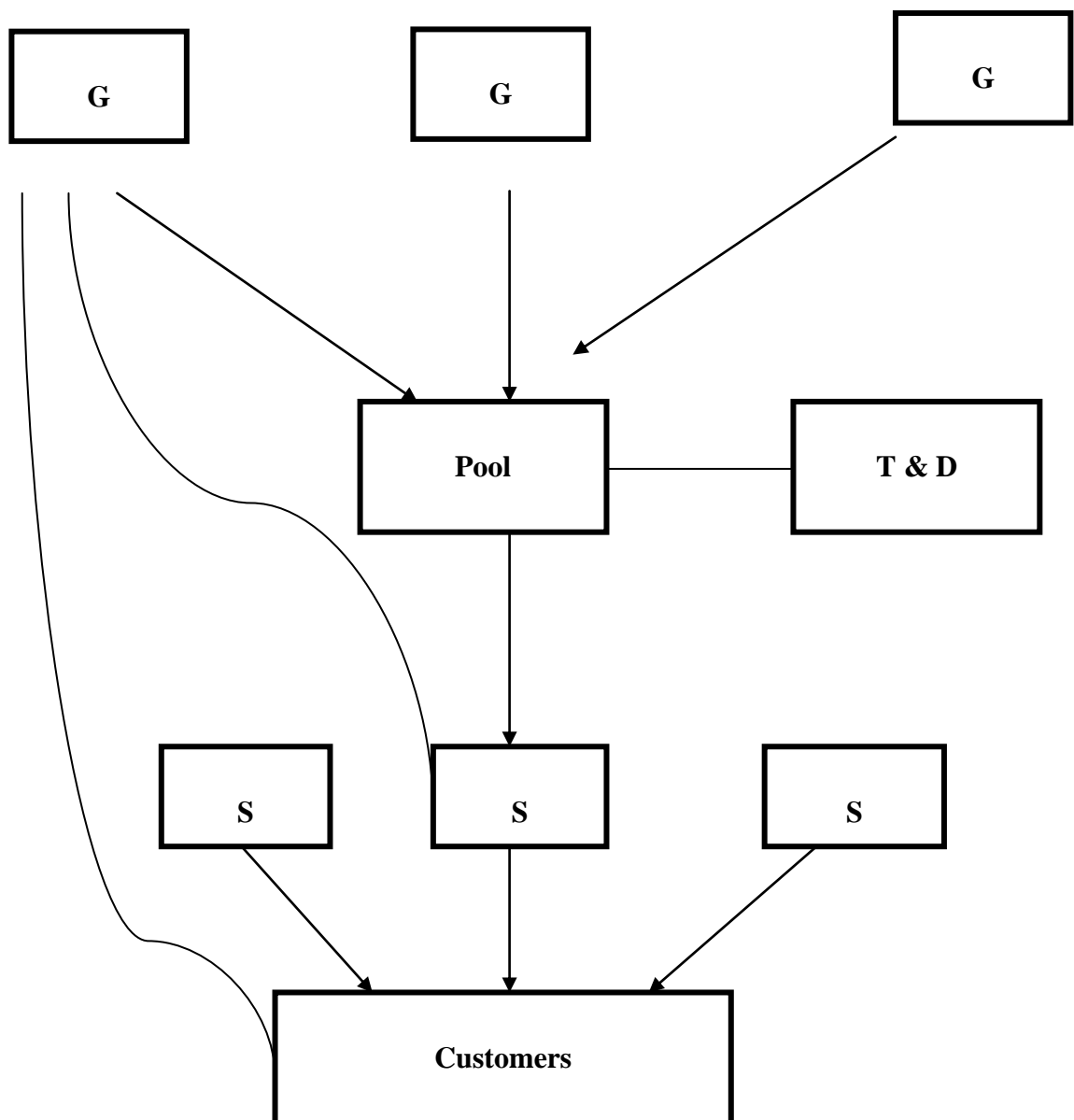
Fig 2.5: Source: <http://www.docstoc.com/docs/2173439/National-Electricity-Regulator-%E2%80%98Regulating-for-efficiency-in-the->



Retail competition model of IPP

This is close to the full competition as all customers also have choice of supplier in addition to the conditions that exist in wholesale competition. Distribution is further split to retail level and retail industry is competitive.

Fig 2.6: Source: <http://www.docstoc.com/docs/2173439/National-Electricity-Regulator-%E2%80%98Regulating-for-efficiency-in-the->



The IPP model in Nigeria

The Electric Power Sector Reform Act 2005 serves as the basis for regulation within the electricity industry in Nigeria. This act was signed into law by the then president Olusegun Obasanjo. The act aims to enable private companies to participate in electricity generation, transmission, and distribution.

Until that time, the publicly owned Power Holding Company PLC subjugated the power sector. The government has divided NEPA into eleven distribution firms, six generating companies, and a transmission company, ostensibly to prepare them for the privatization exercise.

Al-Faris, A.R (2002) observed that Nigeria electricity market is a peculiar and special case study for the electricity market model. This is because the system has a number of local challenges which must be handled with great caution in order not to jeopardize the restructuring process that is going on. In his research, he made analysis to such effect that the tariff charged is still under the supervision of the government hence it might be practically impossible for the Independent power Producers in the country to implement their own tariff structure that could have adequately made the market a self-sustaining sector.

The government realises that there is need to entrench quite a handful of facilities and man power in the electricity sector in order to produce a superior solution to the market demands for stable and efficient power supply. Hence the choice of the wholesale competition model for the IPPs in the country (Al-Faris, A.R 2002).

This model avails a proper bilateral market between the big customers who most often are off takers and the generators. In addition whenever a particular power producer is not able to meet its bid it can negotiate with a neighbouring generator to assist with some volume of electricity for it to meet the demand (its bid) from its clients.

The volume of electricity produced by these power producers is being coordinated by the independent system operator (which is been defined and licensed by the Nigerian Electricity Regulatory Commission (NERC)) and this shall be assisted by the Transmission Company of Nigeria (TCN) as the transmission service provider.

Developers of IPPs build their projects in tune with the competition model set by the government of the host country. This is to enable them compete favourably in the country. This is the more reason why the models of IPPs were explained earlier before the project development itself. The next section deals with the development of an independent power project.

2.6 INDEPENDENT POWER PROJECT DEVELOPMENT

The process of setting up an IPP begins with a project initiation phase. This phase entails in some cases a bidding process where a government might invite bidders to undertake such projects.

The government in this case defines the project and the modus operandi for the bidding process. This is followed by careful examination of the bidders to select who is or is best fit to be granted license or permits as the case may be.

The bidding could be done by an IPP on behalf of an off taker. When the suitable developers for the project are selected, they undergo the following project development phases.

2.6.1 Project definition phase

The project definition phase involves the evaluation of the demands by government or its agency requesting IPPs to tender bids for the generation of a required capacity of electricity. The developer undertakes a feasibility study to determine the schemes for the project thereby defining what is to be done.

The studies conducted by the developer at this stage addresses issues such as the economic s and the environmental impact of the project to be undertaken.

The outcome of the feasibility report determines the terms of reference such as the functional and technical specifications of the project. When this is done the developer presents a request for proposal (RFP) to the government or the advertiser of the bid for the power project.

The request for proposal spells out the criteria by which the developer evaluates the project. It is based on this that the qualified bidders are awarded the permits or licenses to start the project.

2.6.2 Project development phase

The development process or activities of the power project is shared among the equity owners. It is at this stage that the owners determine the plant configuration with the aim of concluding the engineering, procurement and construction (EPC) contract with the EPC contractor.

Also the group concludes at the same time the contract with the operations and maintenance (O & M) contractor. This is the more reason the IPP negotiations are interwoven and determined almost simultaneously. It is this that makes the negotiations a very complex process. Next is loan agreement with the lenders is negotiated.

The successful completion of these major aforementioned negotiations signals the construction phase for the power plant itself. The initial funding for the EPC contractor is made and notice is given to the EPC contractor to start operation based on the EPC contract agreement and hence the plant construction begins. This phase also includes the process of constructing the plant as explained below.

Plant construction

This is the stage at which the EPC contractor moves to site for the construction of the power plant according to the specified configurations in the EPC contract. Most often, the IPP appoints its own engineer to oversee the execution of the EPC contract. As expected, the EPC contractor submits a detailed outline of his activities to the IPP. The contractor completes the technicalities involved in the plant construction such as engineering, drawings etc. These are reviewed and approved by the developers in good time.

As soon as the engineering designs have been reviewed and accepted by the developer, the contractor moves to prepare the site for construction activities and afterwards proceed to procure long-lead items. This initiates the civil, mechanical and electrical erection of equipments.

The final stage of the plant construction is the commissioning of the power plant which is preceded by the conduct of performance and reliability tests. Finally if these tests are passed by the plant then a completion certificate is awarded to the developers. This marks the commencement of the commercial operation of the plant.

2.6.3 Continuous operation phase

Though as explained above, the plant operation begins after the plant must have passed the performance and reliability tests, the Operations and maintenance contractor however begins the various mobilization activities during the construction phase of the plant.

As part of efforts geared at efficient operation and proper maintenance, the mobilization activities of the O & M contractor includes but not limited to the recruitment of highly skilled personnel, training, reviewing the procedures for the operations and maintenance, receiving and storing spare parts etc.

The O & M contractor takes charge of the plant at the inception of its commercial operations.

The major activities of the operations and maintenance include responding to dispatch orders, detailed monitoring and a precise reportage on the plant performance. Above all the O & m staff carries out regular inspections and tests in accordance with the operations manual to ensure optimum performance of the plant. Due to the limitations of this thesis little emphasis will be paid to this phase in the empirical part.

All the elaborations made in the previous sections under this literature review helps to lay a solid foundation for the next and most important section of the theoretical frame of reference of this research. The next section of this research deals with the multi party negotiations which an IPP should effectively carry out to successfully implement its power project. Having said this, it should be carefully understood that these negotiations are carried out simultaneously.

Therefore, the failure or delay to effectively conclude one of the negotiations could undermine the implementation process of the power project. Though most often, due

to the strong linkages of the negotiations, some may as well be concluded in a very short time before the other.

I have taken my time to dig out and present a diagrammatic representation of these negotiations for the ease of understanding for my readers.

Section 2.7, which is the next section of this research, explains adequately what these negotiations are and carefully shows their interconnections. Also, the section goes further to explain the roles of the parties in the successful development of an IPP. This will give us a broader picture of the activities of the developer of an IPP and help to run a check or investigate the activities of IPPs in Nigeria to cross check if their activities correspond with those explained in this chapter. Any shortfall could be further investigated to confirm if it is an inimical factor resulting in the failure of the IPPs in Nigeria.

2.7 IPP MULTI-PARTY NEGOTIATIONS

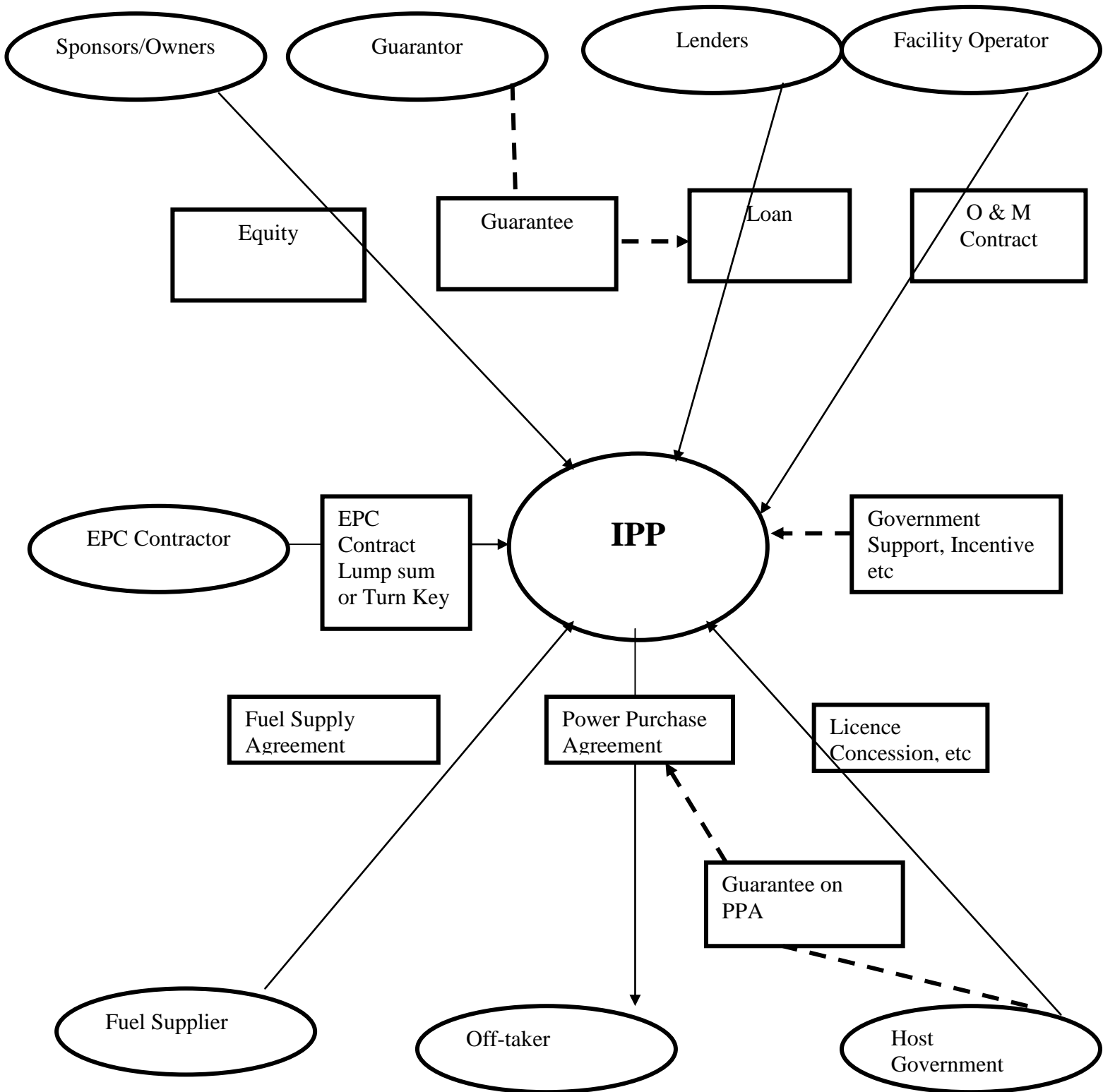


Fig 2.0: Schematic representation of the parties and issues involved in a power project development.

Source: Journal of World Business

A step by step analysis of the construction of an independent power plant brings to bear a multiparty negotiation which most often involves a complex undertaking. This complexity could arise from known and unknown factors.

Wang and Tiong in their research observed carefully that the implementation of a power project is a complex phenomenon which involves simultaneous multi party negotiations. (Wang & Tiong, 2000) Also (Williams, 1999) submitted that the complexities involved in a power project could be as a result of structural complexities and most often unforeseen circumstances.

A pictorial explanation of the negotiations of an IPP is given above. As noted in the diagram, due to the simultaneous negotiations which the IPP has to be involved in at different phases of the power project implementation, structural complexities could arise from the different actors in the multi-party agreements. This could be the regulatory agencies which represent the government at all levels of hierarchy, the financial institutions where the IPP intends to source for funds, the engineering, procurement and construction contractors (EPC) and most importantly external stakeholders in form of the host community, environmental activists etc.

I have come to realise throughout the course of this research that due to the physical and economic visibility of power projects most especially the big power projects, IPPs attract the attention of environmentalists, community residents etc. Also (Jergeas, Williamson, Skulmoski, & Thomas, 2000) showed in their findings that it necessitates dealing with numerous stakeholders which always include the influential set of people in the society.

These external stakeholders are worried about the environmental impact of these large projects. These impacts span safety to economic implications of such projects in a particular community. Safety issues could include gas emissions etc while economic impact of the project involves the effect of such project on property value in the area. However, these concerns are not the aim of this research.

All the above mentioned groups have different agenda and hence it is almost practically impossible for an IPP to meet the demands or expectations of these stakeholders (McManus, 2002).

The schematic diagram above portrays interdependency in the negotiations of an IPP. Several parties involved in different phases of the project implementation could insist on negotiating with the IPP based on the outcome of the negotiation with another party. The most common example that can be cited is that of the Power Purchase Agreement (PPA) which serve as a guarantee of income for the IPP. Most financial institutions are only willing to transact with IPPs only when this is secured. On the other way round an IPP may not be able to secure a PPA with an off taker. These imbroglios are many of the natural problems or challenges which IPPs have to surmount for the success of their project.

It often arise as its has been discovered by IPP analysts that buyers may have a long-term power purchase program which could extend over for several years with varieties of projects involved to meet demand growth. However, discordant tunes between the buyer and the power developer may jeopardize the success of subsequent projects for either party.

The roles of the parties involved in these negotiations are clearly defined in the following chapter.

2.8 Explanation of the roles and activities of the stakeholders in the IPP multiparty negotiations

To be able to understand the roles played by specific stakeholders in the build up to actualising a power project, I find it very important to include into this theoretical frame work an explanation of the roles played by each party. These roles as much as the activities as earlier said are interwoven and connected. Explained below are the roles by the stakeholders in an IPP multi party negotiation.

2.8.1 Sponsors/owners

This is the owner of the plant. Most often the developer owns the largest share of the equity as a proportion of all the equity investments in the project. Typically, in an IPP, the developer is often a group of investors with different equity interests in the project.

It could as well be that the developer acts as a non-owner until a certain stage of completion of the project is reached. Thereafter, the owners take charge based on the multi-party negotiations that have been reached in the cause of the project development.

The project company is a special purpose company formed by the owner(s) to oversee the affairs of the project in accordance with the agreements reached by all shareholders.

2.8.2 Guarantors

Most often, guarantors are agencies or corporate bodies who agree to stand as surety and pay the IPP's debt in case it defaults on its loan. Before an agency could stand as a guarantor, proper checks would have been conducted on the credit worthiness of the IPP. This is more so the fact that power projects are massive economic projects.

It is often the parent company who is investing in the IPP guarantees the loan on behalf of the IPP at the bank. This is because most IPPs are the offshoot of bigger companies.

2.8.3 Lenders

As a matter of popularity, nonrecourse financing has been majorly used in the development of independent power projects. The owners or investors usually contribute about 20% to 30% of the capital expenses (CAPEX) to be incurred in the course of the project. This takes the form of equity financing while the rest of the funds needed is sourced through debt financing.

The actual number of lenders usually depends on how large the debt financing is and most often there could be multiple debt tranches accompanied with different conditions, interest rates, start of repayment and fees.

Apart of the conditions set by the lenders is guarantee for repayment. This serves as a necessary tool to protect the lenders fund and also appropriate clauses are included in the contract which allows for the protection of the lenders rights throughout the life of the loan.

2.8.4 Facility operators and EPC contractors

The IPPs engage mostly the services of two major contractors viz: engineering, procurement and maintenance (EPC) contractors and the operation and maintenance (O & M) contractors.

The EPC contractor executes the project as per the agreement signed with the IPP based on the EPC contract. Usually the terms agreed upon in the EPC contract are as listed below.

- Definitions
- Contractor responsibilities
- Owner responsibilities
- Notice to proceed
- Compensation and payment
- Testing and acceptance
- Substantial completion and final acceptance
- Variations
- Warranties

- Remedies/liquidated damages
- Subcontractors
- Insurance
- Indemnity
- Assignment
- Termination and suspension
- Force majeure
- Confidentiality
- Site risk

Attachments

Fig 2.1: Typical items covered in an engineering, procurement, and construction (EPC) contract.

Source: Encyclopedia of Energy Engineering and Technology

When the EPC contractor completes its work, the IPPs signs an operation and maintenance contract with an O & M contractor to which handles the operations and maintenance of the project. This contract usually spans through a number of years say 10 to 15 years.

The terms agreed under the O & M contract usually include but not limited to those listed below.

- Definitions
- Term
- Scope of services
- Responsibilities and Rights of owner
- Reporting and Audits
- Operating plan
- Maintenance program
- Expenses
- Subcontracting

- Fees, Bonuses and Penalties
- Remedies
- Force majeure
- Indemnity
- Limits of liability
- Insurance
- Confidentiality
- Assignment
- Dispute resolution
- Attachments

Fig 2.2: Typical items covered in an operations and Maintenance (O & M) contract.

Source: Encyclopedia of Energy Engineering and Technology

2.8.5 Regulators and government authorities

These are the agencies of government saddled with the responsibility of granting licenses and permits to prospective IPPs. The IPP developers undertake several steps to acquire the permit to engage in IPP activities.

Most often due to the economic visibility of power projects the regulators in charge scrutinize carefully the track records of the applicants for a power project license. The permits are granted based on the existing laws regulating the power sector.

The permits granted are mostly for a period of time which can be renewed as at when due.

2.8.6 Fuel supplier

This most often is a company whose major business is oil or gas supplies to industries. The developers enter into a fuel supply agreement (FSA) with the supplier over a period of time. The provisions discussed and agreed upon in the FSA include the following:

- a. Term
- b. Quantity

- i. Minimum
 - ii. Maximum
- c. Fuel Specifications
 - i. Primary
 - ii. Back-up fuel
- d. Acceptance Criteria
- e. Delivery Point
- f. Metering
- g. Billing
- h. Force Majeure

2.8.7 Off takers

The off taker is the buyer of the electricity produced by the Independent Power Producer. The arrangement for the sale of electricity between the producer and the buyer is always on a long term. The document which both parties agree to as a contract to guide such agreements is called the power purchase agreement (PPA).

The PPA details the obligations and rights of both parties. The content of the PPA primarily consist of the following terms.

- b. Off-take I Capacity I Phases (if any)
- c. Term
- d. Charges
 - a. Capacity charges
 - b. Energy charges (Fixed and Variable)
 - c. Availability-Penalties & Bonuses
- e. Dispatch
- f. Construction & Commissioning
- g. Testing
- h. Metering
- i. Billing

j. Force Majeure

The way the PPA works is that the owners of the project prepare the contents as to how it suits them then discuss it with the off taker.

2.8.8 Environmental agencies

Environmental agencies set standards and requirements of applicable laws for the IPPs to abide with. They are also central to the negotiations which the prospective IPPs have to reach accord with in order to proceed with their project.

The standards set by these environmental agencies include but not limited emissions, waste, and noise. The standards being set by the World Bank has come to stay as the reference point for most environmental agencies in different countries.

2.8.9 Advisers

Advisers are sometimes engaged during different stages of the project when the various stakeholders are short of the required in house skill. The advice sought from the advisers could range from technical e.g. engineering, environmental for the review of environmental impact study to financial advice for rescheduling of debts owed to creditors or lenders. Legal, insurance as well tax advice are sought as well.

2.8.10 Payment structure

The payment structure is a financial outlay that allows the IPP to figure out reasonably the expected returns on investment on its project on a long term. The payment structure is agreed with an off taker who has shown business interest in the energy produced by the IPP.

It is the prerogative of the IPP to weigh the expected revenue from such payment plans against the expenses incurred or to be incurred throughout the life time of the project. The power purchase agreement mentioned above regulates all the terms and

conditions of the payment structure. The revenue is divided into two namely the fixed charges and the variable charges.

As noted as well, the fixed charges are further subdivided into two; the capacity charge and the operations and maintenance charge. The charges function differently. Whilst the fixed charge takes care of the capital costs (development costs, EPC costs, loan financing and other expenditures) which might have been previously invested on the project, the operations and maintenance charge covers recurrent expenditures (for example wages for personnel etc) accrued on the operations of the plant.

The variable charge covers the net electrical energy bought by the off taker. It is based on a kilowatt-hour monthly charge. The variable charge is also further subdivided into fuel and operations and maintenance variable charges. Whilst the fuel variable charge covers the cost of fuelling the plant as the plant might require heavy duty fuels or gases to operate, the variable operations and maintenance charge covers expenses incurred by the IPP in running plants.

3 EMPIRICAL FRAMEWORK

I have decided to start this chapter with the practicalities involved in a research as well as shedding light on the different research methods. This is done in order for my readers to understand why I have chosen the type of research method used in this research. I will then move on to discuss and expatiate on the validity and reliability of the results of the research.

The analysis of the responses given by respondents to the questionnaires sent out will be carried out extensively as this serves as the backbone of the research itself. The empirical study of this research was carefully and precisely carried out to determine which challenges have resulted in the failure of IPPs in Nigeria.

3.1 Research methods

(Pervez, Kjell & Ivar: 1995) defines research method as a phenomenal approach adopted for a systemic collection data which is carried out to obtain valuable and reliable information to provide a precise response to a research problem. He further explains that this data collection could be carried out adopting many different scientific techniques which may be structured, semi-structured or unstructured interviews, observations as well as surveys.

A research methodology gives a detail explanation of the activities of a research. It describes how to proceed, how progress in the course of the research is been measured and what determines or constitutes success of a research. The basics of a research are to collect and analyse data. The approach used for this should be carefully chosen to reflect the problems and intent of the research. (White Brian 2000)

Majorly there are two types of research methods namely quantitative and qualitative research. These aforementioned research types would be extensively analysed with a

view to explaining the differences between the two and also highlighting where they fit into in a research.

Qualitative research is basically an inductive process used to formulate theory while quantitative research is primarily a deductive process used to test pre-specified concepts, constructs, and hypotheses that make up a theory (www.oraui.gov)

This as it may, qualitative research entails a more subjective process which tries to describe a problem or a condition vis-a-vis the view point those experiencing it. It engages the use of text-based data. It is used to gather in-depth information on a few cases using unstructured or semi structured response. Its validity and reliability is a function of the skill and rigor of the researcher. (White Brian 2000)

Quantitative research on the other hand is more of an objective process which tries to provide observed effects as been interpreted by the researchers of a problem. It uses number-based data but unlike qualitative research analyses broader informations across a larger number of cases. It makes use of statistical tests which are used for analysis. Its reliability and validity largely depends on the measurement device used (White Brian 2000).

Qualitative research

This principally involves a process of inquiry with the goal of understanding a social or human problem from different directions; conducted in a natural setting with the goal of building a complex and holistic picture of the phenomenon of interest. It involves analysis of data such as words, videos, artefacts etc. This is commonly used to research social or human problems. (<http://www.oraui.gov>).

Consequently, this form of research is a subjective interpretive theory research method used to formulate theories. In this case, the researcher is a part of the research process. The aim is to analyse and describe the meaning of what is discovered.

It engages data collection methods such as interviews. A sharp contrast of quantitative research which tries to generalize, this research methods strive for exclusivity. The researcher determines the sample size, but in any case the sample size must be big enough to enable a valid and reliable research.

Examples of different qualitative research methods include phenomenological, historical etc. This could be a case study which applies techniques such as depth interviews and projective techniques (Salkind, 2003; 209-214)

This type of research is majorly flexible though unstructured which the researcher engages to find out necessary informations from the point of view of the respondents.

Pervez, Kjell & Ivar: (1995) stated in their publication that qualitative research is connected to the research problems and the motives for conducting the research. They advocated that a qualitative research should be used when the researcher intends to gain a better understanding of a topic which he has little or insufficient information about. This is done to reveal the true situation of personal experiences, functions or behaviour.

This type of research is conducted with the aid of individual interview, case studies or with a focus group. Qualitative research sometimes adopts a nondirective interview structure which gives respondents the freedom to express their personal opinions on the subject of research. This is carried out in a relaxed atmosphere sometimes the researcher tries to reduce the extent of freedom granted to the respondents in their choice of response. This is done by limiting the discussion to specific areas of discourse.

Quantitative research

This involves an inquiry into a known problem, based on testing a theory composed of variables, measured with numbers, and analyzed using statistical techniques. The principal aim is to determine whether the predictive generalizations of a theory hold true. This is commonly used to collect data in market research. (<http://www.orau.gov>).

This is mostly structured mathematically. The validity of quantitative researches rates higher than that of qualitative researches. This is due to the fact that the researcher is separate from the research. This means that anyone that has a substantive knowledge about the topic or research area could always be the researcher. The starting point of a quantitative research is to the creation of a hypothesis.

Quantitative research uses methods such as surveys in getting its data. This is targeted at establishing the reasons and causal factors of a particular case while trying to logically make a generalization in a deductive process.

There are several designs of quantitative research and these include descriptive, correlation, quasi-experimental and experimental while cross-sectional, longitudinal and times series studies are the most common types of quantitative research (Salkind, 2003:188-202).

Most importantly, a quantitative research is carried out by using sampling techniques (e.g. surveys) to obtain large amount of data that can be analysed with the aid of statistical or mathematical data which will enable the researcher to understand extrapolate or make inferences based on the analysis of the collated data. (URL><http://www.businessdictionary.com/definition/quantitative-research.html>, 30.03.2010).

This is very much different from the qualitative data where the researcher can juggle with small amount of respondents say five for example, quantitative research methods requires as much respondent this is a calculated attempt to quantify the result adequately. The method engaged by the researcher involves structured questionnaires which are distributed to the targeted respondents. The respondents are given closed answer to choose from which most times is a major difference from qualitative research.

Differences between qualitative and quantitative research methods

Different authors have drawn conclusions from their various researches that both qualitative and quantitative research is closely related hence they could be simultaneously applied in a single research. However, a very close scrutiny of the two exercises reveals some obvious differences. This underlines the reason why one is specifically chosen to conduct a particular type research as opposed to the other (Pervez, Kjell & Ivar: 1995 pg 83).

I have endeavoured to replicate the diagram table below as found from Research Methods; a text used by students of business student to illustrate critically the differences between qualitative and quantitative research methods.

QUALITATIVE METHODS	QUANTITATIVE METHODS
<ul style="list-style-type: none"> • Emphasises understanding 	<ul style="list-style-type: none"> • Emphasises tests and verification
<ul style="list-style-type: none"> • Focuses more on understanding from the respondent's point of view 	<ul style="list-style-type: none"> • Focus on facts and reasons of social events
<ul style="list-style-type: none"> • observation and measurements are conducted based on natural settings 	<ul style="list-style-type: none"> • Uses a controlled form of measurement
<ul style="list-style-type: none"> • Interpretation and rational approach 	<ul style="list-style-type: none"> • Logical and critical approach

<ul style="list-style-type: none"> • subjective 	
<ul style="list-style-type: none"> • Explorative oriented • Process oriented 	<ul style="list-style-type: none"> • Objective • Hypothetical-deductive; focus on hypothesis testing • Result oriented
<ul style="list-style-type: none"> • Holistic perspective 	<ul style="list-style-type: none"> • Particularistic and analytical
<ul style="list-style-type: none"> • Generalization by comparison of properties and contexts of individual organism 	<ul style="list-style-type: none"> • Generalization by population membership.

Source: Research Methods in Business Studies, pg84.

3.2 Research design

According (Pervez & Kjell: 2005 pg 56), the research design is an overall plan outlined to build an interconnection between the conceptual research problem and the empirical research. The research design proffers an outline that will guide the researcher to choose the most suitable method for the research which ultimately decides the quality of the empirical research as well as the result. This can however be exploratory, descriptive or causal depending on the subject of research.

Explorative research

This research is used when the researcher have minute or no prior information on the subject of research. This means that the researcher is trying to examine an unfamiliar matter to provide a reliable and valid answer to the research question or problem; he is therefore searching for information to proffer answers as to why and how an event occur. To be able to effectively carry out an explorative research, the researcher needs to be inquisitive, be a good observer, have strong quest to get information and construct a theorizing explanation. (Pervez & Kjell: 2005 pg 58).

Descriptive research

The descriptive research is engaged when the research problem readily understandable with a clear focus. The purpose of engaging this style of research is that the researcher is trying to gather adequate information to be able to describe the subject of research with a precise description.

The researcher adopts a modus operandi where he starts with a clear elucidation of all the details in the subject of discourse and the key main information that is intended to be researched upon. This serves to pilot the direction which the research is going to adopt. To get accurate measurement of the results, a group of people are selected for interview. This group of people should be selected from within the same category. The researcher then determines the modalities on how to carry out the research, design a set of questions and make sure he adopts the same conditions and interview questions for the respondents.

Causal research

This type of research entails a clear and well structured research problem. It serves to investigate subject of discourse and its effect. The task involved under this form of research is to proof or show that if the resultant effect of a subject of discourse is as a

result of a factor or not. If the resultant effect is not exactly from the supposed causal factor then to what extent does this relationship conform? (Pervez & Kjell: 2005 pg 59-60).

3.3 Data collection

I got data for this research through email correspondences. Ordinarily I would have preferred a face-to-face interview with the respondents so that I could really feel their impulse on the subject of discourse. This couldn't happen as all the case companies were based in Nigeria.

I got contacts of these companies through the website of the Nigerian Electricity Regulatory Commission (NERC). All the IPP licensees were sent emails to request for interview but a only few of them replied. I was also able to get extra two contacts from Mr Joost Bos of Wartasilä Oy.

The questionnaire (see appendix 3) was based on my research of all the multiparty negotiations as reviewed under the theoretical part of this research. They were targeted at investigating at which level of preparation for the execution of the power projects the developers found it impossible to move ahead.

It was very difficult to get through to the respondents as most of the licensees of IPPs in Nigeria have either abandoned the projects or moved to other sphere of business. Many emails failed to deliver as most of the websites or email addresses of the supposed targets have been deactivated.

All in all, I was able to get responses from five IPPs, which I believe is enough to reflect the different views of the other failed IPPs.

I have subjected the data collected to data validity and reliability tests and the results are explained in the next chapter.

3.4 Validity and reliability of the research collected

This research which I have conducted can be said to be valid. However, the degree of validity is a reflection of the respondents' views on the subject matter. It must be stressed that though I interviewed five different IPPs, these five are just part of the over thirty IPPs currently holding permits to engage in independent power projects in the Nigeria.

The reliability of this research could be seen in the consistency of the five respondents. They are actually players in the industry; hence they are faced with similar bureaucratic bottle necks as their other counter parts.

This research is valid and reliable because I have not expressed my own views but rather those of the IPPs who are currently facing the inimical challenges in their operations in Nigeria.

Having been able to establish that the data collated were valid and reliable, next is the result analysis that will show what exact the stumbling blocks are for these IPPs in Nigeria.

3.5 RESULT ANALYSIS

The respondents were interviewed basically under two major phases of independent power project development. These phases are the project initiation phase and project implementation phase. Sub-phases or other processes and the various multiparty negotiations leading to the implementation of an independent power project were as well investigated under these two broad phases to ascertain where and what actually caused their failure to actualise their power projects. I carefully selected the interviewees so that I could get responses which will address the main issues of discourse. The areas of interview as categorised in the questionnaire bordered on the following:

1. Project definition stage

- a. Power Purchase Agreement (PPA)
- b. Fuel Supply Agreement
- c. Off Takers
- d. Licence or Permit Acquisitions
- e. Project Finance
- f. Government

2. Project development stage

- a. Site Acquisition
- b. Engineering, Procurement and Construction Contract (EPC)

3. Continuous operation stage

- a. Facility operation (Operations and Maintenance Agreements)
- b. Transmission

Power purchase agreement (PPA)

This agreement is a legal contract which the Independent Power producer signs with the power purchaser. The contract entails all areas of interactions between the seller and the buyer. The buyers which mostly are off takers may buy energy, capacities and sometimes ancillary services from the energy producer.

Under the Power Purchase Agreements , I took time out to address all the provisions which are addressed in the document.

The respondents who have preferred to be anonymous all agreed with most clauses in the agreement but have differences of opinion on some other clauses. The issues addressed under the document include the agreement period which stipulates the contracted duration of time which the off taker would buy the energy produced by the producer. All the respondents to this stipulation accept as being enough if adhered to strictly to guarantee the return on investment for the producer.

The respondents disagreed on the mechanism for the determination of tariff. Some maintained that the mechanism was faulty as it doesn't take into full cognisance the cost of producing the energy sold.

A critical analysis of the IPP who agreed to this provision of under the determination of tariff show that it has successfully implemented a power purchase agreement and it has close ties with the government. Hence the ease to get enough covers for its investments. Also cross-examined under the PPA include the nature of tariff, currency denomination, performance standards for operational IPPs which all the respondents are favourably disposed to.

The respondents all accepted the provisions of the PPA as regards the performance requirements and associated penalties in event of non-performance on both parties to the contract. Right of renegotiation and insurance coverage under the PPA document was accepted by the respondents likewise the provisions as regards force majeure and dispute resolution was agreed upon.

However, when further pressed if these provisions of the Power Purchase Agreements were enough guarantees for the IPPS to begin their operations, the respondents all answered in the negative. They all would like to see the provision for the form of

payment guarantee to be included in the provisions of the Power Purchase Agreement.

They, however, agreed that the failure to secure a Power Purchase Agreement is one of the reasons why many IPPs have failed. They maintained that without securing a PPA they can't get funding for their operations from the bank as this PPA serve as a guarantee for their income over the agreed period with the buyers.

As it has been observed, the respondents believed that the major reason for the difficulty in contracting a PPA is the unwillingness of government to guarantee a long term commitment to the developers.

Fuel supply agreement

Indications from the interviews conducted via questionnaires sent out to the respondents show that most of those with IPP licences already a long term fuel or gas supply agreement depending on the technology upon which their plants are based. They are also confident that the agreement they have signed with these marketers of fuel would be reliable and ensure constant fuel supply all year round.

I asked about the implications of the incessant fluctuations of fuel and gas price on their operations. Those operators whose facilities use gas responded that the price of gas has been fixed in the interim at 35 naira/scm hence there are no foreseen implications at the moment. However, they are hopeful that the passage of the Petroleum Industry Bill which is currently been debated by the national house of assembly would clearly define gas pricing mechanism for the country.

On the other hand, operators whose plants are based on heavy fuel admit there are several implications on their operations due to the incessant fluctuations of the fuel price in the country.

Technical problems in the supply of fuel supply are another major setback for the operations of these IPPs. They all expect occasional problems from the interruption or quality of fuel supply.

The reasons they expect occasional problems is that in the case of force majeure, as it might happen quite often due to the restiveness in the Niger Delta area, there might

not be immediate solution to the ceased supply of gas or fuel due to the time it takes to quell the restiveness of the area.

A major setback which was agreed upon is the inadequacy of fuel (processed natural gas or heavy fuel oil) for power generation and inadequate security of fuel supply infrastructure especially in the Niger-Delta.

Off takers

It appears virtually all the operators have gotten off-takers for their energy though they maintained there are not enough off-takers to choose from. They have, however, refused to disclose the difficulties they experienced in signing these agreements with the off takers. Also, they all agreed that getting off takers is not one of the major reasons for the failures of IPPs in the country.

It was quite difficult to press upon the respondents to disclose who their off-takers were, as these were secrets of their business which they wouldn't want to disclose.

My thinking was if these were released, I would have gone a further step to query them (the off-takers) on why they wouldn't want to buy the energy produced at an upward adjusted price and what they think could be the permanent solution to the pricing system.

A permanent solution to the pricing system could mean a lot for the whole industry. This is because the bulk of the price is passed on to the consumers and this guarantee not only enough returns for the developers but also sustained optimal operations.

IPP licences and permit acquisition

From the reactions of the respondents, it shows that the government or its representative, the Nigerian Electricity Regulatory Commission is readily willing to give out licences or permits to prospective operators in as much as the licensing fee is paid. There haven't been any checks to determine if those seeking licences have the capacity to successfully undergo all the rigours involved in setting up a power project. The acquisition of licence is not seen by the respondents as a setback for the operations of IPPs in the country.

Having gone through the conditions set by the NERC for granting licences or permits to prospective IPP developers, I have come to realise that there are no proper checks conducted by the body to actually determine the serious developers from those who may not be capable of constructing a plant at the end of the day.

It seems the major concern of the body is to raise money from the sale of licences.

Most importantly as well, I have discovered that most of the failed IPPs were actually not prepared for the rigorous task of developing a power project. There must have been a misinformation as regards the ease or otherwise and returns of investment in developing an IPP.

The only successful developers are majorly foreign owned IPPs with the exception of one or two which are locally owned. A proper check conducted on these successful ones shows that they have had a previous experience in this business at one point or the other in the history of their business whether as developers or off-takers themselves. So therefore, it was quite easy for them to start up their own plants.

The failed IPPs must have been lured to purchase the licences to develop these IPPs due to the relatively cheap cost of procurement of these licences. They assumed as it were that the returns could easily come like that of the recently decentralised telecommunications sector where the first comers in the industry made unprecedented returns on investment within a very short period.

Project finance

The respondents were divided along two lines on how they intend to finance their project. Most of them intend to use equity investments to finance their project while others intend to get bank loans. But as mentioned earlier, those who intend to get bank loans cite their inability to get a PPA for their failure to secure the required bank loan, hence their inability to build their plants. However those IPPs with the intent of using equity funds for their operations say that their equity partners are forth coming. Hence they don't see funding as the major setback for IPPs. This is in contrast to those who have based their operations on bank loans.

Bank loans are very difficult for IPP developers to get in Nigeria as observed due to a host of complicated issues.

First of all, as mentioned earlier, the lack of a power purchase agreement shows an unguaranteed source as cash flow and ultimately an evident of a guaranteed return on investment. Hence no finance company in the country will be willing to risk its finance on such investments. Also, the banking industry in Nigeria doesn't have robust experiences with the power industry most especially when it comes to the IPP subsector since it's a relatively new subsector in the country.

Aside the afore-mentioned reasons above, I have observed that most of the failed licensees don't have enough collateral to get loans to finance IPP projects. Lastly, the banks in Nigeria mostly give short term loans and this is obviously not convenient for IPPs due to the fact that their operations are on the long term.

Government

The government has been indicted to have inflicted one of the major roadblocks to the success of IPPs in the country. All the respondents agreed to this. They cited first, the inadequate infrastructures which ought to be provided by government as a major stumbling block for IPPs and most importantly government pay lip service to her commitment to encourage independent power producers through the provision of adequate incentives. The respondents mentioned precisely that the failure of government to provide payment guarantee and security, cost reflective tariff and a bankable power purchase agreement tops the reasons for the failures of the IPPs in the country. Also they cited the failure of the government to completely implement the power sector reform. The government is unwilling to sign PPA with the respondents and they claim this applies to virtually all IPPs except those that are very close to government and enjoy government patronage through their cronies.

Finally, it has been discovered that up to date there is no recognised counter-party to sign PPA on behalf of government. Therefore, the failed IPPs can't even begin operations because they don't know where or how to secure PPAs.

Site acquisition

The respondents cited inadequate space availability for some technological solutions as another setback which they face. As mentioned by the respondents under transmission, they are majorly into captive energy generation. Hence, their sites are close to the off-takers. These limit the space which is available for their use for some technological solutions. They cite this as another major setback for the implementation of IPPs in the country.

A further investigation conducted to unveil the real cause of inadequacy of site available for this type of project shows the same pattern as affecting other similar projects. This problem is deep rooted in the ownership of land arrangement in Nigeria as well as the land use act. Site acquisition for investments in Nigeria is informally sought as the land use act provides for ownership of lands by individuals.

Needless to say why the respondents believe the government is not doing enough to ensure that they get access to appropriate sites for their projects.

Engineering, procurement and construction contract

In their responses, the IPPs cross examined indicated that they don't find it difficult to sign an EPC contract and as such this is not regarded as a setback for their operations.

They claim have a perfect control over the process of entering into EPC contract with whichever company they seek to design and construct their plants (see appendix 4). It is obviously just a matter of making an order with specifications and ensuring they get the best out of the deal.

Facility operation (O & M agreement)

Very few of the respondents believe they have to sign an O & M agreement with external bodies while majority of the operators due to the small size of their operations believe they can successfully operate their plants on their own. Hence they don't see this operations and maintenance agreement has a stumbling block to the operations of IPPs in the country.

However, those favourably disposed to this contract are embittered over the huge cost to secure this agreement. They claim that very few companies with expatriates could operate and manage the plants by themselves. This is because the expertise to manage such big energy investment is elusive in the country.

Transmission

The operations of all the respondents do not include transmission due to its nature of being captive generated power and its closeness to the off takers. However they maintained when big IPPs comes on board, the transmission facilities present in the country might not be technically adequate for their operations.

The respondents while laying blames on the dilapidated transmission line of the grid says it's obsolete and results in huge energy loss during the transportation of energy from the distant generating plants to the nooks and crannies of the country.

4 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

4.1 SUMMARY

This research has primarily focused on the inimical challenges that have caused the failures of many IPPs in Nigeria.

As I have shown in the theoretical part of the research, the country has all it takes to have effective IPPs running the electricity sector but due to the challenges stated below this have failed to materialise. The basis for the operations of the IPPs is linked to the recent deregulation of the power sector and the subsequent passage of the Electric Power Sector Reform Act 2005 which serves as the legal framework for the IPPs.

Due to the stage of completion of the deregulation process in the country, the NERC has adopted the wholesale completion model for IPPs in the country. However this is not a full scale completion model as found in the retail competition model.

This model avails a proper bilateral market between the big customers who most often are off takers and the generators. In addition whenever a particular power producer is not able to meet its bid it can negotiate with a neighbouring generator to assist with some volume of electricity for it to meet the demand (its bid) from its clients.

The volume of electricity produced by these power producers is being coordinated by the independent system operator (which is being defined and licensed by the Nigerian Electricity Regulatory Commission) and this shall be assisted by the Transmission Company of Nigeria (TCN) as the transmission service provider.

The key challenges to the operations of these IPPs were clearly mentioned in their responses to the questionnaire which I sent out to them. In order of their magnitude, the IPPs mentioned the following as the major stumbling blocks to their operations:

- a. Lack of cost reflective tariff
- b. There is no recognised counter-party to sign PPAs on behalf of government.
- c. Their failure to secure Power Purchase Agreement

- d. Failure of government to provide payment guarantee
- e. The lack of provision for the form of payment guarantee in the Power Purchase Agreement.
- f. The inadequacy of fuel (processed natural gas or heavy fuel oil) for power generation
- g. Inadequate security of fuel supply infrastructure especially in the Niger-Delta.
- h. The difficulty experienced in the process of site acquisition
- i. Inadequate infrastructures

4.2 CONCLUSIONS

The Nigerian electricity sector has failed to live up to the expectation of the business community and domestic consumers. The government has tried to fix the sector to perform optimally. However, it is unfortunate that after about five years of deregulating the electricity sector ostensibly to foster its efficiency, the government or its agencies have not been able to provide the necessary enabling environment for the private investors in the sector to begin operation optimally.

Whereas government thinks it has done enough to aid these Independent Power Producers, this research has been able to show that there is still more to be done in order to make these IPPs come on board.

In order of magnitude as shown above, I have been able to get detailed reasons why these IPPs have failed from about five different companies which responded to the questionnaire set out in the appendix below.

Nigeria has great potentials to become the power hub of West Africa. Virtually all the neighbouring countries would readily import electricity from Nigeria if the country gets it right. Most importantly the dwindling fortunes of the companies in Nigeria will automatically cease and better times will be recorded by these firms if there is adequate electricity supply. This is because previous researches have shown that more than half of production cost in Nigeria is incurred from the cost of improvising electricity. This has made the companies close down operations in Nigeria and has automatically resulted in large scale of unemployment.

As shown from the responses of the interviewed companies, the government only pays lip service to the power sector reforms which have not been fully implemented. The full implementation of this reform would definitely create a better enabling environment for these IPPs.

4.3 RECOMMENDATIONS

The outcome of this research shows that as a matter of urgency, further research has to be conducted in order to proffer a lasting solution to the failures of these IPPs.

I would recommend as a matter of urgency that research be conducted to find out the appropriate mechanism for electricity tariff in Nigeria. This is because it is one of the major reasons this IPPs have failed. The mechanism which the regulator adopts for electricity pricing and tariff has a multiplier effect for prospective IPPs. This serves as the basis for the projection of their income and cash flow and ultimately their ability to secure funding for their projects. Most recently, the government itself has faulted the present mechanism which is a right step in the right direction. However, there shouldn't be a rush to appropriate a new mechanism rather a concerted effort should be made to research extensively into what mechanism could be most appropriate for the country, vis-à-vis the state of the business environment.

Also very pressing is the recurrent problem of site acquisition for technological developments. It is very obvious that many hi-tech project developments will raise environmental safety concerns. It is the prerogative of the government to research into and identify possible sites that would be reserved for such projects. This is done in the developed world. I recommend that the government through its appropriate agencies research and identify the favourable places to be used as sites for such projects and ultimately pass a law to reserve these places for the purpose they were reserved.

Lastly, I would suggest that the regulatory commission in charge of awarding permits and licences to the prospective IPPs conduct proper checks to ensure only capable bidders are granted licences. This is very important because the failures of these IPPs have slowed down the economic prosperity of the country at large. This is due to the interconnectivity of the power sector and all other sectors of economy of the country. The current situation suggests that government believes these IPPs are capable of turning around the fortunes of the power sector which, in fact, is the direct opposite.

Proper investigations should be conducted to determine and grant permits and licences to deserving prospective IPPs.

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6 APPENDICES

6.1 Appendix 1: Table of energy resources in Nigeria

S/NO	RESOURCE TYPE	RESERVES (NATURAL UNITS)	PRODUCTION LEVELS	UTILIZATION
1.	Crude Oil	36.22 billion barrels	2.06 mill barrels per day	445,000 barrels/day
2.	Natural Gas	187 trillion SCF	7.1 Billion SCF/day	3.4 billion SCF/day
3.	Coal and lignite	2.734 billion tonnes	insignificant	insignificant
4.	Tar Sands	31 billion barrels of oil equivalent	-	-
5.	Large Hydropower	11,250 MW	1,938 MW (167.4 million MWh/day)	167.4 Million MWh/day
6.	Small Hydropower	3,500 MW	30 MW (2.6 million MWh/day)	2.6 million MWh/day
		3.5 -7.0 kWh/m2/day (485.1 millio	Excess of 240 kWpof	Excess of 0.01million

7.	Solar Radiation		MWh/day using 0.1% Nigeria land area)	solar PV or 0.01 million MWh/day	MWph/day of solar PV
8.	Biomass	Fuel wood	11 million hectares of forest and woodland	0.110 million tonnes/day	0.120 million Tonnes/day
		Animal waste	245 million assorted in 2001	0.781 million tonnes of waste/day in 2001	Not available
		Energy Drops and Agric Residue	72 million hectares of Agric. Land and all waste lands	Excess of 0.256 million tonnes of assorted crops residues/day in 1996	Not available
9.	Wind		(2-4) m/sat 10m height	-	-
10.	Nuclear Element		Not yet quantified	-	-

Sources: (i) Nigerian National Petroleum Corporation (NNPC) (2007) (<http://www.nnpcgroup.com/>)

(iii) Ministry of Mines and Steel Development (2008) (<http://www.mmsd.gov.ng/>)

6.2 Appendix 2: Sample of questionnaire

Faculty of Business Economics and Tourism
Vaasa University of Applied Sciences
65100 Vaasa
7th March, 2010.

Dear Sir/Madam

PLEA FOR RESPONSE TO RESEARCH QUESTIONNAIRE

I am a bachelor's degree student of International Business at Vaasa University of Applied Sciences, Vaasa Finland (www.vamk.fi). I am conducting a research on the challenges of setting up an IPP in Nigeria. I want to find out why several IPP licensees in Nigeria have failed to begin operation which has prompted the NERC to threaten to withdraw idle IPP licenses this year.

In order to collect empirical data for this research, I hereby solicit your objective answers to this questionnaire as the success of this research depends mainly on your response.

Accordingly, I would like to assure you that all informations supplied would be used strictly for academic purpose.

Therefore, may I respectfully appeal to you to assist in making this work a success by supplying answers to these questions.

Thanks

Giwa, Fatai Abimbola

PROJECT INITIATION STAGE

POWER PURCHASE AGREEMENT (PPA)

1. Why is it difficult to get a power purchase agreement? Please state briefly
 - a. Are you satisfied with the provisions of the PPA in the country on the following areas
 - agreement period Yes No
 - determination of tariff Yes No
 - Nature of tariff Yes No
 - currency denomination of tariff Yes No
 - Performance standards for operational IPPs Yes No
 - Performance requirements and associated penalties e.g. liquidated damages in the event of non-performance Yes No
 - Right of renegotiation Yes No
 - Insurance coverage under the PPA Yes No
 - Force Majeure events and any unforeseen event which is not covered under force majeure Yes No
 - Dispute resolution in the event that the PPA is terminated prematurely Yes No
 - b. Are these provisions of the PPA enough guarantees for you to begin your operations? Yes No
 - c. If no, what extra provisions would you like to be included? please state
 - d. Would you say that the failure to secure this PPA is a major reason for the failures of most IPPs in the country? Yes No

FUEL SUPPLY AGREEMENT

- a. Do you have a long term fuel or gas supply agreement? Yes No
- b. Are you confident that the agreement will be able to ensure a reliable and constant fuel supply all year round? Yes No
- c. Given the incessant fluctuation of fuel and gas price in the country, what implications do you foresee for your operations? Please state briefly

- d. Have you got a final solution to the instability of fuel or gas price in the country? Yes No
- e. Do you foresee any technical problems in terms of fuel or gas supply? Yes No

If yes, please state briefly

Why do you think these problems may occur? Please state briefly

OFF-TAKERS

- a. Have you been able to get off takers for your electricity? Yes No
- b. If no, what difficulties are you experiencing in signing an agreement or contract with off takers? Please explain briefly
- c. Is this one of the major reasons for failures of IPPs in the country? Yes No
- d. Are there enough off takers to choose from? Yes No

LICENCE AND PERMIT ACQUISITION

- a. Do you face challenges in getting permit or license to cover some of your intended operations? Yes No
- b. If yes, please state briefly

PROJECT FINANCE

- a. How do you hope to finance your project? Please tick as appropriate?
Equity finance Bank loan
- b. If you intend to finance your project through equity funds, are your equity financiers forth coming? Yes No
- c. If No, kindly state why you think they are not forth coming (what are their fears about financing the project) please describe briefly
- d. If you intend to get a bank loan to finance your project, do you have any challenges getting these loans? Yes No
- e. If yes, can you please state the exact problems or hurdles that have prevented you from acquiring these loans?
- f. Do you think the lack of access to loans is one of the reasons for the failures of many of the IPPs in the country? Yes No

PROJECT IMPLEMENTATION STAGE

SITE ACQUISITION

- a. If you have successfully gone through the above mentioned stages in planning your project, do you still face any challenges in acquiring a suitable site to implement your project?
Yes No
- b. If yes, can you briefly state the challenges

EPC CONTRACT

- a. If you have successfully gone through the planning stage of your project do you still have any difficulties getting the right EPC contract? Yes No

- b. If yes, please briefly state the difficulties

FACILITY OPERATION (O & M AGREEMENT)

- a. If you have successfully constructed your plant, do you currently face any challenges in signing an O & M agreement? Yes No
- b. If yes, please state the challenges

TRANSMISSION

- a. Does your IPP involve transmission? Yes No
- b. If no, do you think the transmission facilities currently in the country is adequate for the operations of IPPs Yes No

GENERAL QUESTIONS

GOVERNMENT

- a. Would you say the government has provided adequate infrastructures to support the operations of IPPs Yes No
- b. Have government incentives been enough to encourage investments in IPPs? Yes No
- c. What incentives do you expect the government to provide in order to enhance the success of IPPs in the country? Please state briefly
- d. Is the government willing to guarantee or sign PPAs with IPPs? Yes No
- e. How has the government responded to your request for a PPA? Please state briefly

- f. In what ways would say the actions or policies of government have contributed to the failures of IPPs in Nigeria? Please state briefly

Thank you very much for sparing your time.

6.3 Appendix 3: A pictorial view of a completed power plant



Source: <http://pubs.usgs.gov/circ/c1143/html/fig3.jpg>

