Outline Business Case Report for Omi-Kampe Hydro Power Project

Client:
Federal Ministry Of Power
Federal Secretariat Complex
Abuja. Nigeria.

PREPARED BY:

Magnartis Finance & Investment Ltd

(Member of The Nigerian Stock Exchange)
16, Boyle Street, Onikan, Lagos
Email: bjo@magnartis.com

New Shimla, Shimla 171009,
Himachal Pradesh, India

Date: 06 November 2013

Contents

1. General

1.1 Client

The Federal Ministry of Power (FMOP)

1.2 Consultant

The Federal Government of Nigeria (FGN) has appointed Magnartis Finance & Investment Ltd. (Magnartis) as Transaction Advisor, to assess the feasibility of the proposed Small Hydro Power Project at the Omi-Kampe Dam with the purpose of formulating a PPP arrangement to invite private investors to develop and operate the hydro power plant at Omi Kampe Dam.

1.3 Scope of Assignment

The detailed scope of the assignment encompasses the following:

i. Due diligence of the Omi-Kampe dam and Review of the feasibility studies and Design reports prepared for the proposed Omi Kampe Hydro Power Project

ii. Commercial & Financial modeling to evaluate the potential of the hydro power project and the prospects of longer term financial viability.

iii. PPP Structuring

iv. Outline Business Case writing

This document deals with the fourth part of the above stated assignment, i.e. to encapsulate the proposed process of implementation of Omi Kampe Hydro project through the PPP mode.

The following points have been covered in detail under various sections in this report:

- An assessment of the need for the project
- An analysis of the current status of the available infrastructure (the OMI Kampe Dam) and a review of the already available technical studies of the dam and the works anticipated for the proposed hydro power project.
- International trends in energy projects developed via the PPP and a review of the service delivery options.
- A study of the types of Public Private Partnerships, its participants, the various stages, the agreements, and the suitable type of PPP for the proposed Omi Kampe Hydro power project along with a detailed financial analysis, analyzing the value for money for the various participants in the PPP and the various sensitivity runs.
- Analysis of the risks associated with the project and its allocation

2. Abbreviations

Sr. no.	Terms	Description
1	BOT agreement	"Build-Operate-Transfer" concession arrangement in which, the project company builds (construct) the infrastructure facility, operates it to recover the construction costs and achieve a return on their investment (including repayment of loans) and transfer the facility to the government at the end of the concession period.
2	BOT/BOOT/BOO/BOSS	Build, Operate and Transfer/Build, Own, Operate and Transfer/Build, Operate, Own/Build, Operate, Sell and Start again
3	BPP	Bureau of Public Procurement
4	CAC	Corporate Affairs Commission
5	CFRN, 1999	Constitution of the Federal Republic of Nigeria, 1999
6	COD	Commissioning Operation Date
7	Concession agreement	The agreement between the government and the project company conferring on the project company a right to provide infrastructure services in exchange for the project company constructing and/or operating the facility.
8	Construct	The design, construction, integration, installation, testing and commissioning of the facility, to include the rehabilitation and renovation of the facility, and "**construction**" and "**constructing**" have corresponding meanings.
9	Contractor	The company responsible for the construction of the facility, usually as a subcontractor of the project company under an EPC agreement.
10	Customer	The users of the infrastructure services.
11	DBO/DBFO/DBFT	Design, Build, Operate/Design, Build, Finance and Operate/ Design, Build, Finance and Transfer

Sr. no.	Terms	Description
12	Debt finance	To finance through lenders or third parties other than sponsors advancing monies, usually under a loan agreement.
13	DFI	Development Finance Institution
14	Disco	PHCN successor electricity Distribution Company
15	DMO	Debt Management Office
16	Due diligence	The exercise in the examination and evaluation of risks affecting a transaction.
17	EBRD	European Bank for Reconstruction and Development.
18	ECA	An export credit agency.
19	EIA	Environmental Impact Assessment
20	Engineer	The engineer appointed for the project.
21	EPC	Engineering, Procurement and Construction
22	EPC Agreement	The Engineering, Procurement and Construction agreement between the contractor and the project company to construct the facility.
23	EPSRA	Electric Power Sector Reform Act
24	Equity finance	To finance through the sponsors investing in shares, options or other securities that represents an equity interest. Or The securities representing ownership interest in a company, for example shares.
25	Escrow agent	A corporation (normally a financial institution) appointed by the project company and the lenders to hold funds accrued to the project company for the benefit of the project company and the lenders to be disbursed in accordance with the conditions of the loan agreements.
26	ESIA	Environmental & Social Impact Assessment

Sr. no.	Terms	Description
27	ESMP	Environmental & Social Management Plan
28	Facility	(a) In relation to a loan agreement, the amount made available by the lender to the project company under the loan agreement, and (b) otherwise, any infrastructure asset procured or developed under the project.
29	FBC	Full Business Case
30	FC	Financial Closure
31	FGN	Federal Government of Nigeria
32	FIDIC	Federation Interriationale des Ingenieurs-Conseils or the International Federation of Consulting Engineers.
33	Fiduciary obligations	Obligations imposed by the law on one person to another as a consequence of the first person holding a position of trust and power in relation to the second person, for example a legal adviser owes fiduciary obligations to his or her clients.
34	FMOF	Federal Ministry of Finance
35	FMOP	Federal Ministry of Power
36	Genco	PHCN successor electricity Generation Company
37	HEP/ HPP	Hydro Electric Project/ Hydro Power Project
38	IBRD	International Bank for Reconstruction and Development.
39	ICB	International Competitive Bidding
40	ICRC Act	Infrastructure Concession Regulatory Commission (Establishment) Act
41	IDA	The International Development Association.
42	IEDN	Independent Electricity distribution Network
43	IFC	The International Finance Corporation.

Sr. no.	Terms	Description
44	Infrastructure	The basic facilities, services, installations and capital equipment needed for the functioning of a community or society. Generally, without limitation, infrastructure refers to transportation and communications systems; air and sea ports; utilities such as water, sanitation and power; and public institutions including schools, post offices, hospitals and prisons.
45	Infrastructure services	The basic facilities or services forming part of Infrastructure.
46	Insurer	The insurance company providing insurance for the project or the facility.
47	Intercreditor agreement	The agreement between the lenders in relation to rights, priorities and enforcement of security under the loan agreement(s).
48	IPP	Independent Power Producers
49	IPP	Independent Power Producer
50	KW	Kilowatts
51	Lender	The person or company, usually banks, responsible for providing the debt finance to the project.
52	LFN	Laws of the Federation of Nigeria
53	Loan Agreement	An agreement between the lender and the project company to provide debt finance.
54	MDA	Ministries, Departments and Agencies
55	MIGA	The Multilateral Investment Guarantee Agency.
56	MoU	Memorandum of Understanding
57	MTEF	Medium Term Expenditure Framework
58	MW	Mega Watts

Sr. no.	Terms	Description
59	MYTO	Multi Year Tariff Order
60	NA	National Assembly
61	NBET	Nigeria Bulk Electricity Trading PLC
62	NEPA	National Electric Power Authority
63	NEPP	National Electric Power Policy
64	NERC	Nigerian Electricity Regulatory Commission
65	NESI	Nigerian Electricity Supply Industry
66	NESREA Act	National Environmental Standards and Regulations Enforcement Agency Act
67	NPC	National Planning Commission
68	NPPP	National Policy on Public Private Partnerships
69	O&M agreement	An operation and maintenance agreement between the project company and the operator in relation to the operation of the project.
70	OBC	Outline Business Case
71	Off-take agreement	An agreement between the project company and the customer for the project company to supply and the customer to purchase infrastructure services produced under the project.
72	Operation	The operation and maintenance of the infrastructure, and "operation" and "operating" have corresponding meanings.
73	Operator or O&M Operator	A company responsible for the operation of the project.
74	Option	A security in the project company conferring a right to hold an equity interest in the future.

Sr. no.	Terms	Description
75	Options agreement	An agreement under which sponsors have a contractual right to purchase equity (generally shares but at times other equity interests) in the future or if certain events occur.
76	Performance guarantee	A guarantee of the performance of the project company's obligations, usually this is a guarantee by a project company for the completion of the construction.
77	PHCN	Power Holding Company of Nigeria Plc
78	PP Act	Public Procurement Act, 2007
79	PPA	Power Purchase Agreement
80	PPP	Public Private Partnerships
81	PRG	World Bank's Partial Risk Guarantee
82	Private Participant	Private (non- government) parties that bid for the project in a PPP
83	Project	A scheme to construct and operate the facility for the purpose of providing infrastructure.
84	Project company	Means: (a) a company owned by a consortium of private individuals or corporations that has been granted a concession by the government to conduct the project, and (b) In the context of a loan agreement, means the borrower under the loan agreement.
85	Public Participant	Either a state owned enterprise, an administrative entity, a division of the government, a municipality, a local government or a similar organization, whether incorporated or not, that represents the interests of the public sector in the project.
86	Public Participant consultant(s)	An adviser to the Public Participant in relation to the project, usually legal, financial and technical advisers.

Sr. no.	Terms	Description
87	Quasi-equity	Securities in a project company that is not quite an equity interest, and not quite a debt, but somewhere in between, for example, bonds and options.
88	REA	Rural Electrification Agency
89	Retainer	An agreement between the government and the consultants in relation to the appointment of the consultants.
90	Securities	Shares, bonds or other equitable interests in the project company.
91	Security documents	Documents provided to lenders to confer rights or assets that crystallizes if there is a default under the loan agreements.
92	Security holder	A holder of quasi-equity securities.
93	Shareholder	A Shareholder has the same meaning as a "Sponsor".
94	Shareholders' agreement	An agreement between the sponsors in relation to the rights, obligations, management and control of the project company.
95	Shareholders' loan agreement	An agreement between the project company and a sponsor for the sponsor to provide a loan to the project company on a subordinated basis.
96	Sponsor	A holder of equity securities (or a shareholder) in the project company.
97	Subordinated debt	A borrowing by the project company from its sponsors under a shareholders' loan agreement.
98	Subordinated loan	A finance provided by the sponsors to the project company under a shareholders' loan agreement.
99	Supplier	A company supplying raw materials or equipment needed to produce the infrastructure.

Sr. no.	Terms	Description
100	Supply agreement	An agreement between the supplier and either the project company, the contractor or the operator to supply raw materials or equipment needed to produce the infrastructure.
101	T&C	Terms and Conditions
102	Tariff	The price charged for providing the infrastructure services.
103	TCN	Transmission Company of Nigeria Plc
104	TSP	Transmission Service Provider
105	VfM	Value for Money

3. Executive Summary

3.1 Introduction

The Omi Kampe dam on the Oyi River in Kogi state of Nigeria was built to serve the primary purpose of irrigating nearly 8,000 Ha land along the alignment of the water supply network. The nearly 2 km long dam has a catchment area of ~1,642 Km^2, and bounds a reservoir with storage capacity of 250 million cubic meters (MCM). The dam can be accessed via a 12 Km road connected to the Egbe-Isanlu federal Highway. A small hydro power project has been proposed on the Omi dam to utilize the water stored in the reservoir more effectively.

3.2 Electricity situation in Nigeria

Nigeria with a population of ~162 million people has a total installed electricity generation capacity of 8,644 MW. However the peak generation is much lower at around 4,000 MW. The reasons for the shortfall in generation can be attributed to the inadequate fuel supply to thermal plants which constitute over 80% of the installed capacity, hydrological factors for hydro power stations, maintenance outages at power plants and transmission & distribution outages.

The Peak Demand is forecasted at 12,800 MW. When seen against the available power of less than 4,000 MW, it can be noticed that there is a peak load shortage of more than 8,000 MW. As a result, the available generation capacity is less than one-third of the total peak demand for electricity. This calls for new power projects to be implemented which are dependable, renewable and cost effective.

3.3 Justification for small hydro power at Omi dam

Small hydro power is a clean, efficient & dependable source of electric power at affordable prices. The technology for small hydro is mature and has been in use for decades. The compact nature of a small hydro power project causes a limited impact on the flora and fauna of the project area, has no displacement or rehabilitation impact on human population in the region In case of Omi dam, since the dam and reservoir is already in place, no incremental impact on the population is expected due to installation of the hydro power project.

Due to the above mentioned reasons, small hydro power project are being actively promoted and installed in many developing nations. China has taken a lead in being the leading small hydro power developer in the world with over 50,000 operational small hydro power projects (about 45,000 are larger than 1 MW). Many governments support the development of small hydro power projects by providing the developers with Subsidies, high Feed in tariff, Tax breaks/ holidays, Accelerated depreciation and setting up dedicated nodal agencies to assist the project developers.

Over the past four decades, the electricity generation in Nigeria has increased 14 times to 26.1 TWh growing at a Compounded Annual Growth Rate of 6.8%. Though this growth rate might seem adequate in percentage terms, it has not been so given the low per capita consumption & low electricity coverage in the population. The per capita consumption of electricity in Nigeria at 136.5 kWh (in 2010) is substantially less than the same indicator for Sub-Saharan Africa (552.5 kWh in 2010). Nigeria has one of the lowest per capita electricity consumption figures, well below that of even developing countries in Africa and Asia, let alone the developed world. Nearly half of the population does not have access to electricity.

The Kogi State situated in central Nigeria is estimated to have a population of approximately 3.5 Million. The Ajaokuta Steel Company Limited, the largest iron and steel factory in Nigeria, is situated in Kogi state and is in the process of being revived. Dangote Cement's Obajana plant is also situated in the Kogi state. The state also has a substantial mining potential. A number of small towns such as Isanlu, Idofin, Ejiba, Egbe, Okunran, Erufu are situated within a 20 km radius of the Omi dam. These towns experience severe power outages, at times receiving only 20 hrs. of electricity per week. They rely heavily on diesel power generating sets to fulfill their power demand.

Keeping in view the above, there is no paucity of demand for the electricity produced by the proposed small hydro power project. A hydro power project in the vicinity will help in reducing dependence on costly and polluting options such as diesel generating sets. This will help in reducing cost of power as well as help in reducing environmental degradation being caused by burning diesel. It is a clean, dependable and affordable method of generating electricity.

3.4 Implementation of Omi Hydro Power Project

Technical studies for the project have been conducted & reports are available for those studies. Over the years the dam has suffered neglect although currently it appears to be structurally sound. Two of its four automatic gates have been converted to manual and the remaining two gates are non-function. The water flow into the canal is not regulated. The discharge inflow and outflow from the dam is not being gauged.

Various reports are available concerning the Omi dam (see Appendix A1). A study of the proposed hydro power project at the Omi dam has been conducted by Decrown Consulting Engineers Limited in the year 2010. An analysis of the reports prepared by the consultants has been shared in this report (Appendix A2 and A3).

Hydrological studies were also conducted as a part of the feasibility assessment done by DeCrown. This study covered the aspects of Inflow study, Water Demand Assessment Study, Flood Study and Sedimentation Study. A Regional Water Supply & Treatment Plant Project with treatment capacity of 60,000m^3/day has been designed by Messrs John-Solomon &

Partners (JPS) to be sourced from the Omi Dam as far back as 2006 for the Lower Niger River Basin Development.

Based on the limited data available, the capacity of the project has been stated to be 2.0 MW. It has been proposed that the waters shall be diverted from the outlet portal of the dam via a 165 m long pressurized reducer pipe to feed the penstock. The proposed reducer pipe shall have an inlet diameter of 3000mm and an outlet diameter of 2000mm. The proposed penstock is 10 meters in length, with a 1500 mm diameter.

The location of the penstock has been proposed on the right side of the irrigation canal at an average elevation of El. 218 m a.s.l. The tail water level is around 16 m below the irrigation canal. Hence the usage of water is exclusive, either of power generation or for irrigation, as the waters discharged in the Tail race channel cannot be diverted back to the main canal due to the difference in head.

The project is estimated to cost approximately US$ 3.95 million. Out of this the civil works are estimated to cost 1.39 million USD, E&M works 1.72 Million USD and approximately 0.84 million USD is estimated to cover costs such as Working capital, capitalized spares, IDC, Contingency, DSRA Cost loaded upfront, Escalation during construction, Indirect Cost etc.

The development period is scheduled over a span of 12 months and the construction of the project is phased over a span of 24 months. The project is proposed to be funded via a combination of debt and promoter Equity in a ratio of 70:30.

The Project is proposed to have a base PLF of 49%. In cognizance with the MYTO II tariff the project is scheduled to have a revenue potential of over one million USD. The project is proposed to have a 94% EBITDA as a percentage of revenue and 46% PAT as a percentage of revenue. The Project can support an IRR of 24.4% for the private participant and an NPV of close to one Million USD for all receivables to the public Participant. The project supports an average DSCR of 2.32 X and a minimum DSCR of 1.82 X. The sensitivity analysis yields positive results. The project has enough cushion to absorb variations in sensitivity inputs.

A detailed study of the daily inflow discharge and outflow discharge of the Omi dam should be commissioned. The requirements for irrigation and drinking water should also be ascertained.

Besides providing electricity to the grid, the proposed project will have subsidiary benefits as well, such as:

- Employment to the local population during the construction phase
- A drinking water scheme can be explored
- 30% of the revenue generated by the project will be shared with the Hydroelectric Power Producing Area Development Commission post commissioning.

Implementation of hydro power project at the Omi Dam would entail the involvement of many stake holders. These include the project developer, various concerned government departments, the state government, River Basin Development Authority, Power transmission companies, electricity traders such as NBET, Banks / DFI lenders, Community participants & local residents living in the vicinity of the dam. For the project to succeed, all the stakeholders need to be taken into confidence regarding the implementation process. Therefore, a stakeholder consultation process needs to be conducted so that the project is introduced to all the stake holders. This will help in developing a common vision for the project among all the stake holders.

The project can be allotted to a project developer on the basis of an International competitive bidding (ICB) based on parameters such as:

- Highest Free power
- Highest Free equity
- Highest Upfront premium
- Lowest concession period
- Highest lease or rent payment
- Lowest tariff for electricity
- Lowest cost of project
- Or a combination of two or more parameters

While each individual parameter can used as a single bidding parameter, it is advisable to use two or more bidding parameters. When used together they tend to mitigate the risks the other bidding parameters pose. E.g. while free power provides a long term revenue stream (along with an upside potential) and free equity provides a steady stream of long term revenues, they do not provide any short term gains. This can be made up by including the upfront premium parameter in the bid. Also a bid based on lowest concession period may help in returning the project in a shorter span to the Public Participants.

Based on our analysis, the following combination of bidding parameters is considered as the most optimum for the public sector participant: Free power, Free equity, Upfront premium and Lowest concession period. The combination that yields the best case results is described in detail in section 13.9.9:

- Free Power: 7%
- Free Equity: 12.0%
- Upfront Premium: 120,000 USD/MW
- Concession Period: 24 Years (6 Years below the base concession period)

The above combination results in a 20% IRR for the Private Participant and a Net present value of USD 1.03 Million for the public participant.

While various methodologies of Public Private Partnerships can be explored (see Appendix 7) the best type of PPP method is found to be the Build – Own – Operate – Transfer (BOOT) type (see section 13.9.10).

3.5 Option Analysis

In comparison to developing the project via the PPP mode, various other options are considered and evaluated (see section 19). The options considered are:

Option 1: Maintain Status quo.
Option 2: Government / Public Participants Develop, Construct and operate the project:
Option 3: Privatization of the proposed project including the ownership of the Omi dam.
Option 4: Development of the hydro power project via the PPP mode.

Three primary criteria of evaluation are identified for choosing the best possible option:

1. Electricity being made available for the public
2. The government should invest the least possible resource (financial and manpower)
3. The option should be lucrative financially for Private Sector investments

Based on careful and detailed evaluations, option 4, i.e. “Development of the hydro power project via the PPP mode” is considered the best possible option.

The project is proposed to be allotted via a two-step arrangement; the first being the RfP where proposals are invited from interested parties and a first round of elimination is conducted, the second being RfQ (request for quotations) where the quotes, bids for the bidding parameter is called for. The winning bid is allotted the project.

3.6 Concession Agreement & Contractual Structure

The PPP arrangement will be based on a number of contractual agreements between the concerned parties such as Public participant, Private participant, financing institutions, EPC contractors, & Operators among others (see section 18).

The concession agreement will define the assets that can be transferred to the project company. It will also provide a basis for the private participants’ right to abstract a specified amount of water from the Omi Kampe Dam, right to modify the existing structures of the dam, right to make alternative arrangements to divert or modify the flow of water for a specified time during execution of project works & right to control the operation of outlet gates of the dam to regulate the flow of the water.

The various agreements that have been identified and discussed at length in this report are as follows:

Party I	Party II	Name of agreement
Government	Consultants	Retainer
Government	Project Company	Concession Agreement
Sponsors	Project Company	Equity Finance/ Share Subscription Agreement/ Share Holders Agreement
Lenders	Project Company	Financing documents/ Facilities agreement
Bond-Holder	Project Company	Quasi-equity Finance agreement
Contractors & Consultants	Project Company	Design, Construct, Operate and Maintain / EPC contract/ O&M contract
Customers	Project Company	Off-take agreements/ PPA

3.7 Legal Framework

The legal and regulatory framework clearly indicates that the FMOP is empowered under the NPPPP and the ICRC Act to carry out the Project in line with the provisions of the ICRC Act, the Public procurement Act and its accompanying Manual. Consistent compliance with the provisions of these Acts is a required for the Project to be validly executed. In executing this Project, the FMOP would need to interface with the following government agencies amongst others: the ICRC, the Federal Ministry of Environment, the River Basins Development Authorities, the Ministry of Water Resources and the Nigerian Electricity Regulatory Commission.

3.8 Environmental Studies

An Environment and social impact assessment study should be conducted to assess the social and environmental impact of the project. The various stake holders should be considered while conducting the ESIA study. The study should cover three phases of the project namely Greenfield site assessment, the Construction phase and the Project Operations phase. The impact and mitigation measures for each phase should be considered in detail.

3.9 Project risks & mitigation

The structuring of project risk is an important part of any PPP project. The identification, analysis, mitigation and allocation of risk are crucial to the planning and success of every project. The following risks have been identified and discussed in detail in this report:

i) Construction and completion risks
ii) Developer Risk
iii) Operating risks
iv) Demand, Power off-take and price risks
v) Technology risks
vi) Change of law risks

vii) Environmental risks
viii) Casualty risks
ix) Ownership and Borrower risks
x) Property and contingent liabilities
xi) Country and political risk
xii) Counterparty credit risk
xiii) Exchange rate risks
xiv) Interest rate risks
xv) Hydrology Risk
xvi) Geological Risks & Surprises
xvii) Financing Risk
xviii) Force Majeure conditions / Risks

3.10 Project Implementation process

The following stages have been identified in the project implementation process (see section 20):

- Project Identification & Definition
- Project Structuring
- Procurement notice, prequalification and shortlisting
- Invitation to Tender
- Interaction with Bidders
- Evaluation of tenders and award of PPP Contract
- Monitoring of Project Implementation till commissioning

The entire process from inviting requests for qualifications to awarding the contract is estimated to last for around 210 days. For the timely and smooth execution of the project, it is imperative that the public participants in the project commit to the project a number of specific resources such as (see section 22):

a. Financial resources
b. Dedicated skilled manpower to attend and address the communication with the Private participants
c. Liaison personal
d. Specialists and Consultants
    - Lawyers
    - Financial Consultants
    - PPP Expert
    - Technical consultants

In addition to these, the government will have to establish nodal officers in each concerned department to facilitate and smooth and efficient flow of information between the various departments and to provide seamless support to the project developers.

4. Project Background

Omi Dam is located in the Kogi state of Nigeria. It is a multipurpose dam with primary purpose of irrigation along with domestic water supply. It has been proposed to utilize the waters of the dam to generate hydroelectric power.

The Omi Dam was constructed to regulate the flows of the Oyi River which in turn is a tributary to The Kampe River. The dam is a homogeneous embankment type with grass protection downstream & boulder protection upstream. The length of the dam is 1,976 meters with a total reservoir capacity of 250 million cubic meters (MCM). The catchment area of the Omi Dam is ~1,642 Km^2. The dam can be accessed via a 12 Km road connecting Egbe-Isanlu federal Highway. The geographical coordinates of the dam are 8°12'27.84"N, 5°38'12.27"E.

The Dam axis is bounded on the left abutment by a massive rock outcrop identified as medium/fine granite. A slope of 2.5:1 is maintained by the rock on the left bank and a slope of 8:1 on the right bank.

The irrigation network supported by the dam consists of a ~31 km long network of irrigation canals. Barring the first 200m of concrete lined canal, the rest of the canal network is unlined / earthen. Severe soil erosion along the banks of the canal can be seen. This network of canals, were meant to support irrigation in 8,000 Ha of land. As of today, these canals suffer neglect and are not adequately fulfilling their purpose of irrigation.

A 2.0 MW small hydro power project has been proposed on the Omi Dam. A number of studies have been conducted to evaluate the feasibility of a small hydro power project on the dam. A list of previous studies conducted with regards to the Omi Dam has been shared in Appendix A1.

5. Project Location

The location of the Omi Dam in the Kogi state of Nigeria is shown in the maps below:

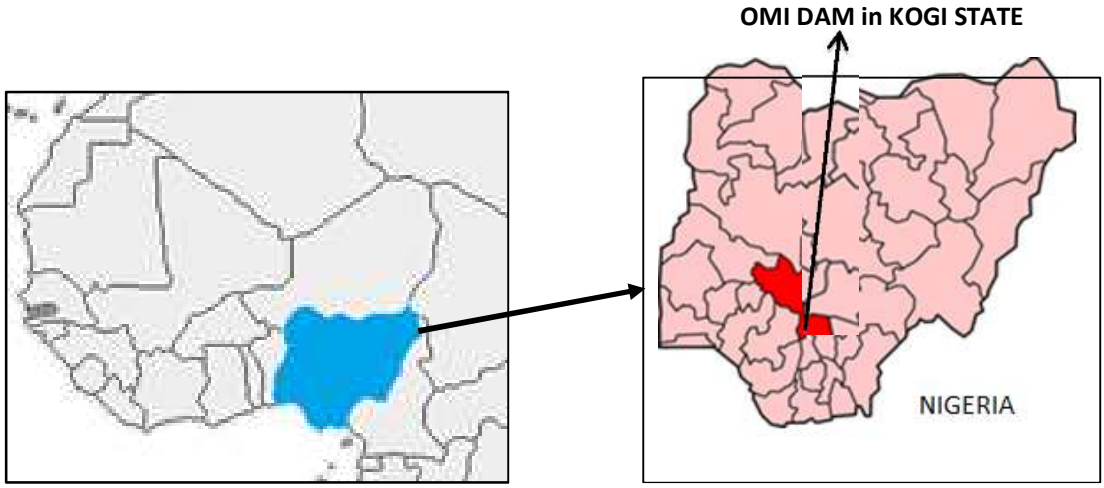


Image 1: a) Nigeria in African Continent, b) Project Location in Kogi State, Nigeria

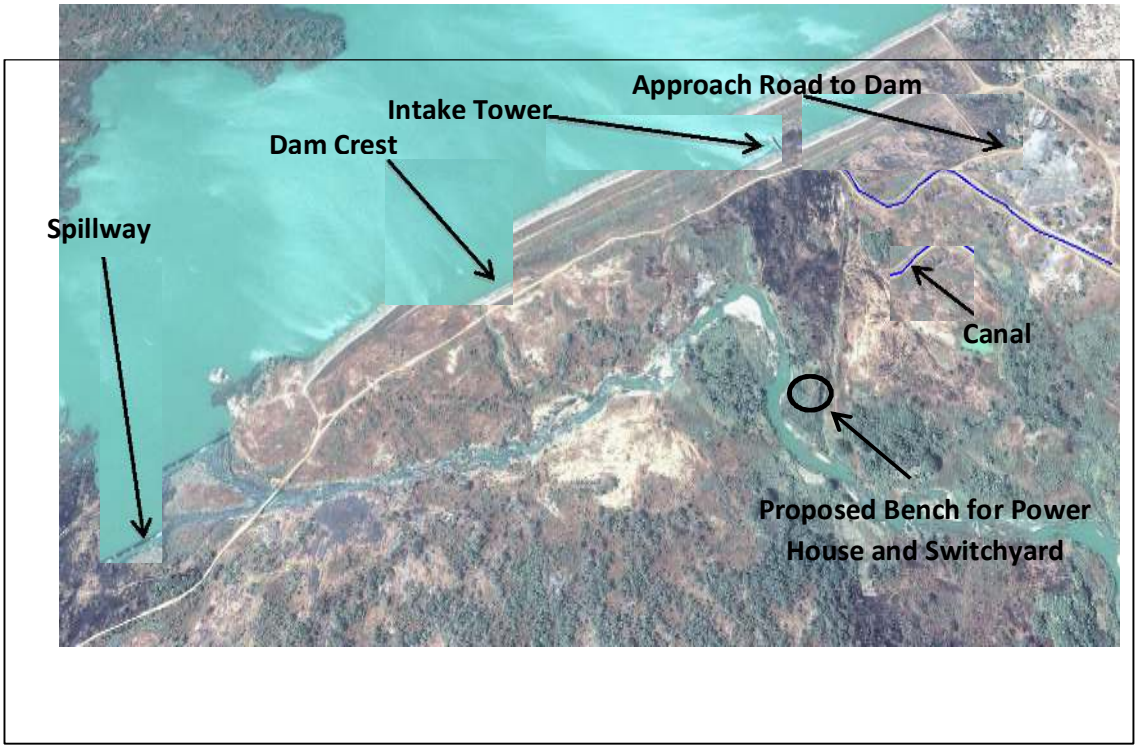


Image 2: Google Earth Image showing the approach road, reservoir and other associated facilities

The image above shows an overview of the Omi dam and area for the proposed Hydro Power Project site.

6. Strategic Needs Assessment of the Project

This section deals with the electricity demand and supply situation in Nigeria as a whole as well as the area in the vicinity of the project. The electricity demand has been worked out based on the overall macro situation in the country as well as localized demand centers identified nearer to the Project. The revenue for the project has been worked out in detail as per the MYTO II (Multi Year Tariff Order II) framework of the Nigeria Electricity Regulatory Commission (NERC).

I. The demand supply gap in Nigeria

Nigeria has a total population of approximately 162 million, but only about half of the population has access to electricity1. The total installed electricity generation capacity in the country is approximately 8,644 MW[2] of which over 80% is government owned. However, according to the generation report prepared by the Presidential task force on power[3], the key electricity generation & demand statistics as on 7th July, 2013 are as follows:

Peak Generation:	3,923.20 MW
Peak Demand Forecast:	12,800.00 MW
Energy Generation:	81,996.58 MWH
Energy Sent Out:	79,918.62 MWH
Highest Peak Generation:	4,517.6 MW (on December 23, 2012)

It can be observed that even though the installed capacity is more than 8,000 MW, the peak generation is much lower at around 4,000 MW. With over 80% of the installed capacity being fossil fuel based, inadequate supply of Natural gas to the power plants is one of the major reasons for this supply shortfall. Nigeria also has close to 2,000 MW of installed hydroelectric capacity, out of which the largest project - Kainji Power Station (760 MW) - is around 45 years old. Generation at hydro power plants is susceptible to hydrological factors. Secondly, old plants require significant maintenance and overhauling to operate at peak capacity.

Thus, the reasons for the shortfall in generation (as compared to the installed capacity) can be identified as inadequate fuel supply to thermal plants, hydrological factors for hydro power stations, maintenance outages at power plants and transmission & distribution outages.

When the Peak Demand forecast figure of 12,800 MW is seen against the available power of less than 4,000 MW, it can be seen that there is a peak load shortage of more than 8,000

1 Source: ***http://data.worldbank.org/indicator/EG.ELC.ACCS.ZS/countries*** Retrieved on 05 August 2013
2 Source: Bureau of Public Enterprises (BPE): ***http://bit.ly/dQbXr8*** Retrieved on 05 August 2013
3 Source: ***http://nigeriapowerreform.org/*** Retrieved on 05 August 2013

MW. In other words, the available generation capacity is less than one-third of the total peak demand for electricity.

This massive supply shortfall suggests that Nigeria is not in a position to cater to its peak demand and needs significant investments in generation capacity and transmission & distribution networks.

This calls for newer power projects to be implemented which are renewable, dependable and cost effective. In this regard, the advantages offered by implementation of mini hydroelectric power projects on existing dam sites are discussed in detail.

II. Mini hydro power and its advantages

Mini hydro power projects utilize the potential energy of water to generate electricity. The energy generated in hydro power projects is a function of:

a. The flow rate of water, generally expressed in meters per second or Cumecs; &
b. The difference in height or level of water between two points; called as Head and generally expressed in meters.

Thus the installed power capacity for a site can be estimated by the following formula:

Installed capacity in kW
= η (efficiency) X g (acceleration due to gravity) X Q (water flow in cumecs) x h (Head in meters)

The efficiency for small hydro systems is generally in the range of 0.8-0.85. This formula can be applied to calculate hydro power potential for water flowing in streams, rivers, man-made canals & water stored in dams.

Small hydro power is a clean, efficient & dependable source of electric power at affordable prices. The technology for small hydro is mature and has been in use for decades. Therefore, there is very low risk of obsolescence of technology. The power supply is dependable and firm and amount of electricity generated can be predicted quite accurately based on historical data. Because of its compact nature it has a limited impact on the flora and fauna of the project area. It has no displacement or rehabilitation impact on human population in the region as generally there is not storage or reservoir creation. In case of Omi dam, since the dam and reservoir is already in place, no incremental impact on the population is expected due to installation of the hydro power project.

The following table provides a comparison of small hydro with solar and wind technologies. It can be seen that small hydro is efficient, more dependable, has mature technology and provides better load factors.

	Small Hydro Power[4]	Solar Power	Wind Power
Cost of installation	US$ 1.5 - 2.0 Million	US$ 2.0-2.5 Million	US$ 1.8 - 2.2 Million
Land Requirement	Moderate	Moderate to High	High
Efficiency	80%	15-20%	40%
Annual Plant Load Factor	40% - 70%	15% - 20%	20% - 30%
Average Levelized cost of generation US c/ kWh	10.0	15.0	13.0
Dependability of generation	Firm	Non-firm	Non-firm
Possibility of Firm power generation	Yes	No	No
Rehabilitation issues	Low	Low	Low
Environmental Impact	Low to medium	Medium	Low
Technology	Mature	Early stage & rapidly changing	Nearing maturity
Operating Costs	Negligible	Moderate	Moderate

III. Small hydro power in developing countries

While developed nations like Norway have realized most of their available small hydro power potential, developing nations too have been actively working on harnessing the small hydro power resources at their disposal.

As per the European Small Hydro Association (ESHA), projects up to 10 MW are classified as Small hydro power. The classification differs regionally and the following table provides a definition of small hydro in various countries/ regions.

Region	SHP Classification[5]
UK (NFFO)	< 5 MW

4 Source: AHEC: *http://bit.ly/13C0rnj Retrieved on 05 August 2013*

5 Source: AHEC: *http://bit.ly/13HcqMv* Retrieved on 05 August 2013

UNIDO	<10 MW
Sweden	< 15 MW
Colombia	< 20 MW
Australia	< 20 MW
India	< 25 MW
China	< 25 MW
United States	<30 MW
Brazil	< 30 MW
Philippines	< 50 MW
New Zealand	< 50 MW

Micro hydro power projects, Mini hydro power projects and Small hydro power are sub-classifications that come under the definition of small hydropower.

The most successful story in Small Hydro power development is undoubtedly that of China. China seems to have understood the fact that small hydro power projects entail lower investments and lower risk (as compared to other renewable energy projects). Given also their long service life, unwavering top line & bottom line, and low operational cost, China has supported small hydro power with in-house technology development and favorable policies. China has successfully managed to develop over 65% of their available SHP potential[6].

According to the Chinese Bureau of Statistics[7], close to 50,000 small hydro power projects are operational in China (about 45,000 are larger than 1 MW). This is by far largest number of operating projects in any country worldwide. The USA, which has about the same land mass as China, has roughly 4,000 operating hydro projects as per the Federal Energy Regulatory Commission[8].

The reasons for success of the Chinese model of hydro power development can be identified as:

a. Lower capital cost per megawatt (through in-house technology development & standardized manufacturing)
b. Higher Capacity factor or utilization of projects
c. Lower operating costs through cheap spares developed in-house, and

6 Source: ***http://bit.ly/16oy5vn*** Retrieved on 05 August 2013
7 Source: ***www.hydroworld.com*** ; ***http://bit.ly/13A8iBL*** Retrieved on 05 August 2013
8 Source: ***www.hydroworld.com*** ; ***http://bit.ly/13A8iBL*** Retrieved on 05 August 2013

d. Supportive tariff mechanisms

In addition to the above parameters, the ready and cheaper loans by the government and the favorable climate provided by the state for development of small hydro power projects have contributed to the success of small hydro in China.

In certain other countries such as India, Peru, Brazil and Nepal, equipment manufacturers have established dedicated manufacturing facilities for small hydro power. This has significantly contributed to local development and has employed many thousands of people.

Globally the small hydro power potential is estimated to be around 180,000 MW9. Asian countries and mainly China, lead the world in terms of installed capacity of small hydro power. The following table gives a region wise breakup of the installed small hydro capacities:

Region	**Percentage of installed capacity of small hydro[10]**
Asia	68.73%
Africa	0.48%
South America	2.69%
North & Central America	6.17%
Europe	21.52%
Australasian Oceania	0.42%
Total	**100.0%**

The available small hydro potential and the installed capacity of a few countries are given below:

	SHP Potential (MW)[11]	**SHP installed + under implementation (MW)[12]**
India	15,000	3,500
China	100,000	65,000
Brazil	15,000	4,300
Thailand	328	231
Kenya	3,000	46
Uganda	210	17
Tanzania	250	120

It has been observed that in the developing nations, the small hydro capacities are initially developed by the governments and state agencies as a pilot or a show case project. Once

9 Source: AHEC: ***http://bit.ly/1epim1U*** Retrieved on 05 August 2013
10 Source: AHEC: ***http://bit.ly/16tRb51*** Retrieved on 05 August 2013
11 Source: ***http://map.ren21.net/#fr-FR/search/by-technology/3,13,14,29*** Retrieved on 05 August 2013
12 Sources: ***http://www.hindawi.com/isrn/re/2012/132606/#B34*** Retrieved on 05 August 2013
http://www.mnre.gov.in/related-links/grid-connected/small-hydro/ Retrieved on 05 August 2013
http://www.ren21.net/gsr Retrieved on 05 August 2013
http://bit.ly/1enlr2j Retrieved on 05 August 2013

proven, the projects are promoted via the IPP model. The governments of various countries have been promoting the development of small hydro power in various countries by providing various incentives to the IPPs such as subsidies, feed in tariffs, tax holidays etc.

a. Subsidies

Various governments provide capital subsidies to for development of small hydro power projects. The subsidies in India e.g. are structured differently for projects based on their size (micro/ mini/ small hydro power) and location (higher subsidies for backward areas or remote locations)[13].The subsidy may be paid to the developer after commissioning or may be disbursed pro-rata during construction of the project.

b. Feed in tariff

The Feed in tariff mechanism offers long-term contracts to renewable energy producers usually based on the cost of generation of each technology. Instead of paying equal tariff for energy generated from different sources / technologies, tariffs are based on the cost of the technology used to generate electricity. The cost of operating the plant, financial costs and suitable equity return are also included in the tariff.

c. Tax breaks/ holidays

Many developing countries are offering tax breaks to small hydro power developers. For instance, in India, there is a 10 year tax holiday for SHP developers[14]. In China, a favorable VAT (value-added tax) of 6% is levied on Small Hydro Projects as compared to versus higher 17% rate for large/medium hydropower. In certain regions of China, no tax is payable on SHP income during the first 2 years of operation[15], and further tax concessions are available in the subsequent three years of operation. In other areas tax is levied initially, but part or even all of it is refunded for further investment under the "supporting electricity with electricity" policy. In Hunan (China), the tax liability can be reduced by a certain amount till the investor recovers the construction costs in full[16].

d. Accelerated depreciation

This is a mechanism to provide for a larger portion of the project cost to be written off during the initial years of operation of the project, thereby reducing tax liability in the initial years. This provides a front ended cash flow to the project developer, which is helpful as the interest payment is high in the first few years. This helps in increasing the internal rate of return (IRR) for the investor.

13 Source: Ministry of New & Renewable Energy ***http://bit.ly/1cD8UJX*** Retrieved on 05 August 2013
14 Source: ***http://www.investindia.gov.in/?q=power-sector*** Retrieved on 05 August 2013
15 Source: ***http://www.un.org/esa/sustdev/sdissues/energy/op/hydro_zhao_english.pdf*** Retrieved on 05 August 2013
16 Source: ***http://www.un.org/esa/sustdev/sdissues/energy/op/hydro_zhao_english.pdf*** Retrieved on 05 August 2013

e. Government support for project development

World over, Governments have formed nodal agencies to help project developers in identifying project sites and getting all the required approvals in a timely manner. A few such nodal agencies are listed in table below:

Country	**Nodal agency for Small hydro power**
Brazil	Program for Incentive of Alternative Electric Energy Sources (Proinfa.) Brazil National Agency for Electrical Energy (ANEEL)
India	Ministry of New and Renewable energy; Various renewable energy development agencies at the State Government levels.
Thailand	Energy Generating Authority of Thailand
Tanzania	Tanzania Electricity Supply Commission
Malawi	Department of Energy Affairs
Ghana	Energy Foundation of Ghana
Switzerland	Department of the Environment, Transport, Energy and Communications
Kenya	Ministry of Energy, Government of Kenya

The various activities undertaken by these nodal agencies are as under:

- Preliminary Survey & Investigation of the project area
- Collection and monitoring of discharge data in streams, rivers and canals
- Preparation of feasibility reports, project plans
- Provide Soft loans for small hydro power projects
- Provide Capital subsidy
- Rationalization of Hydro Tariff
- Promoting Hydel Project with Joint Venture (JV), or through Public Private Partnerships
- Provide appropriate Technical Expertise
- Simplified procedure for regulatory clearances and land acquisition

The advantages of small hydro power over other renewable energy technologies such as solar or wind power are proven. Small hydro power is a dependable source of electric power and occupies an important place in the energy mix of many developing & developed countries across the world. Small hydro power, due to its lower operating costs and free fuel (water), forms a perfect hedge against inflation and local currency depreciation. Small hydro power is an important part of Nigeria's energy security strategy. The Omi small hydro project should therefore be pursued & implemented as early as possible.

IV. Electricity generation

Over the past four decades Nigeria's electricity production has increased 14 times from 1.9 TWh to 26.1 TWh, at a Compounded Annual Growth Rate of 6.8%[17]. Chart 1 shows the growth in electricity generation in Nigeria from 1971 to 2011.

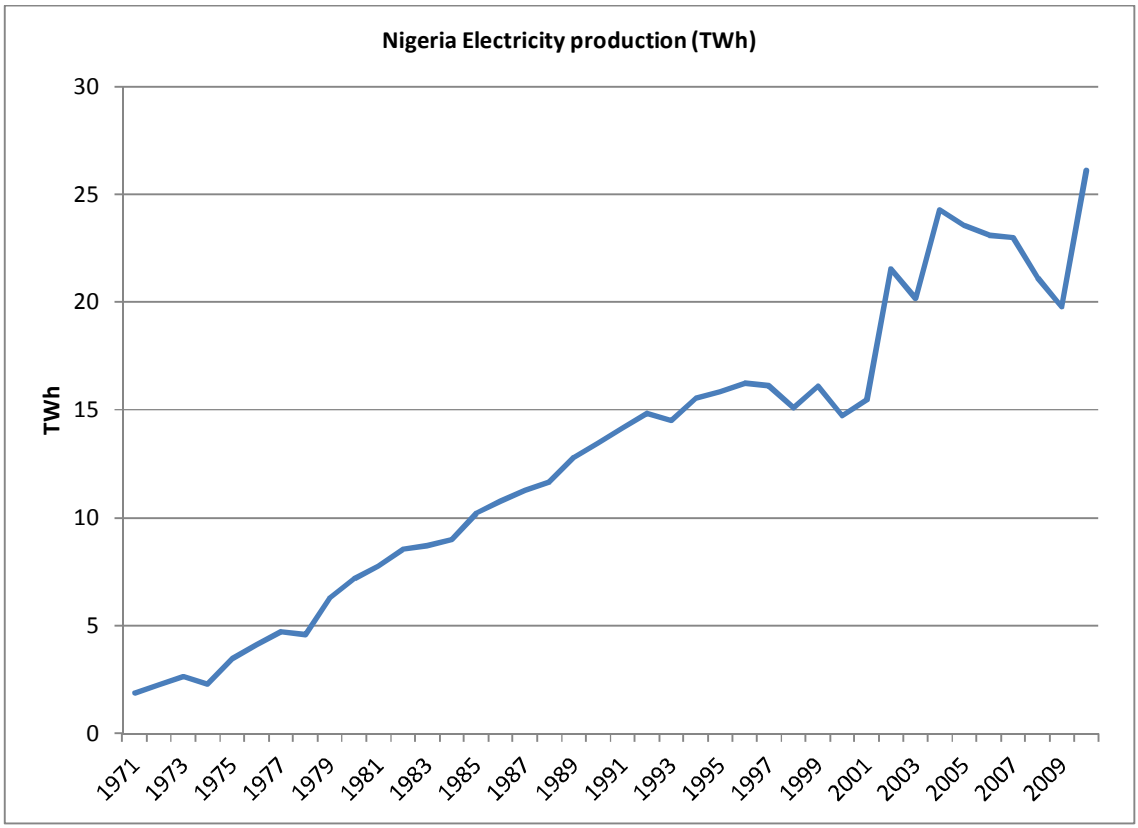


Chart. 2: Nigeria Electricity Production[18]

Although this growth rate might seem adequate in percentage terms, it has not been so given the low per capita consumption & low electricity coverage in the population. The per capita consumption of electricity in Nigeria at 136.5 kWh (in 2010) is substantially less than the same indicator for Sub-Saharan Africa (552.5 kWh in 2010)[19].

When compared with various nations across the world, Nigeria has one of the lowest per capita electricity consumption figures (Chart 2). It is well below that of even developing countries in Africa and Asia, let alone the developed world.

17 Source: World Bank Retrieved on 05 August 2013
18 Source: World Bank Retrieved on 05 August 2013
19 Source: World Bank *http://bit.ly/13Ai0nE* Retrieved on 05 August 2013

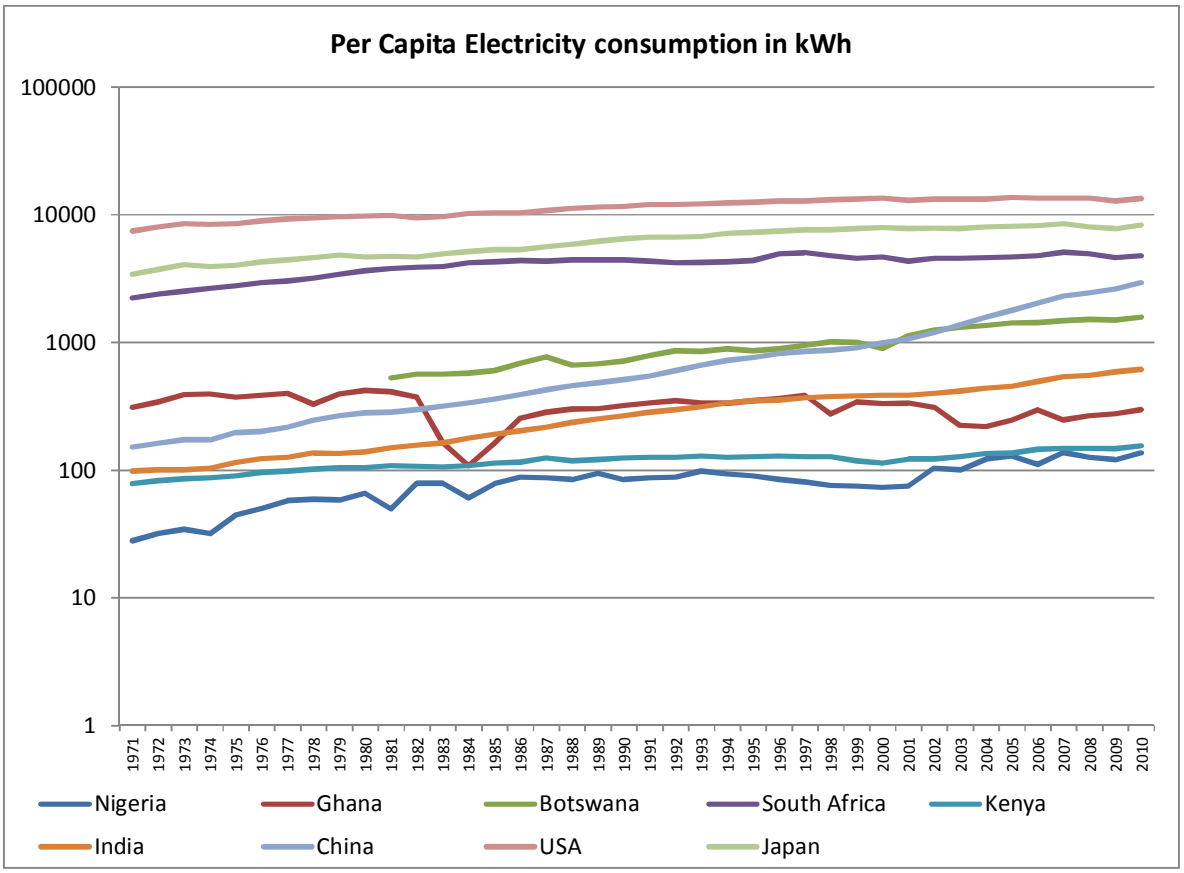


Chart. 3: Per Capita Electricity consumption in kWh

(the Y axis is in Logarithmic scale)

Electricity Generation (in TWh) for various countries is shown in Chart 3, while Chart 4 displays indexed growth of population and electricity generation in Nigeria for the past four decades. It can be seen that growth rate for electricity generation has been greater than the population growth. But the electricity generation is still low when compared with other developing and developed nations.

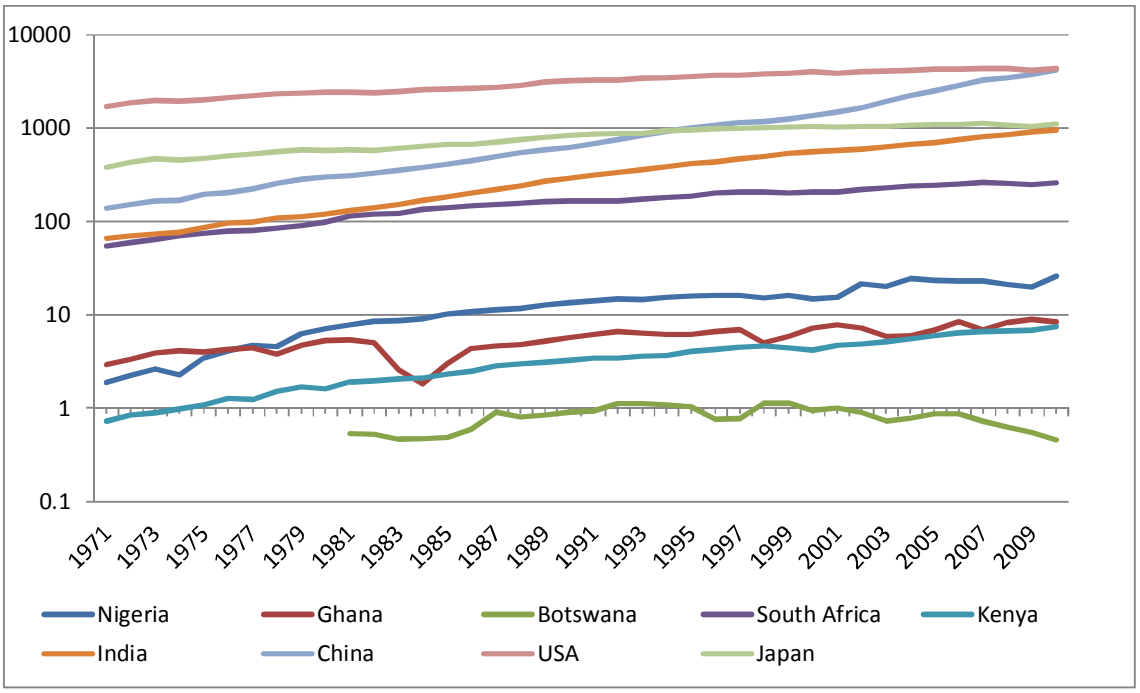


Chart. 4: Electricity Production in TWh of different countries[20]

(the Y axis is in Logarithmic scale)

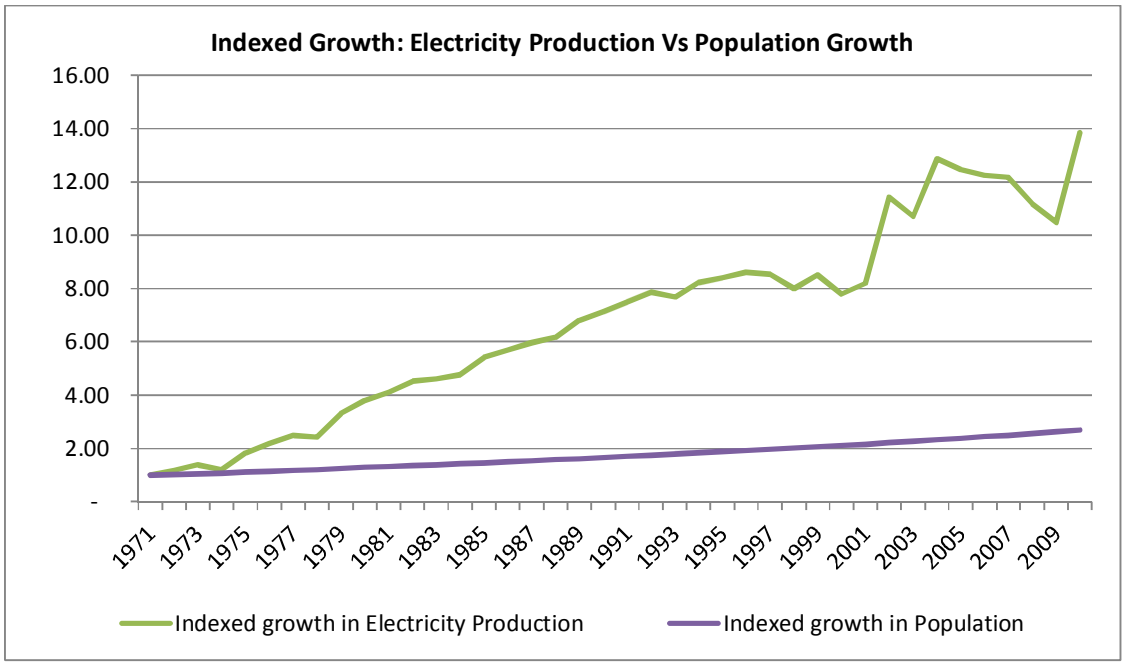


Chart. 5: Indexed Growth Electricity production Vs. Population growth[21]

Close to half the population in Nigeria did not have access to electricity as per 2009 data (latest available). As shown in Chart 5, South Africa, India, China, Nicaragua, Syria, Morocco

20 Source: World Bank; Retrieved on 05 August 2013

21 Source: World Bank; Retrieved on 05 August 2013

and Mongolia are nations where a higher proportion of the population has access to electricity as compared to Nigeria. Increasing access to electricity will result in higher demand for power.

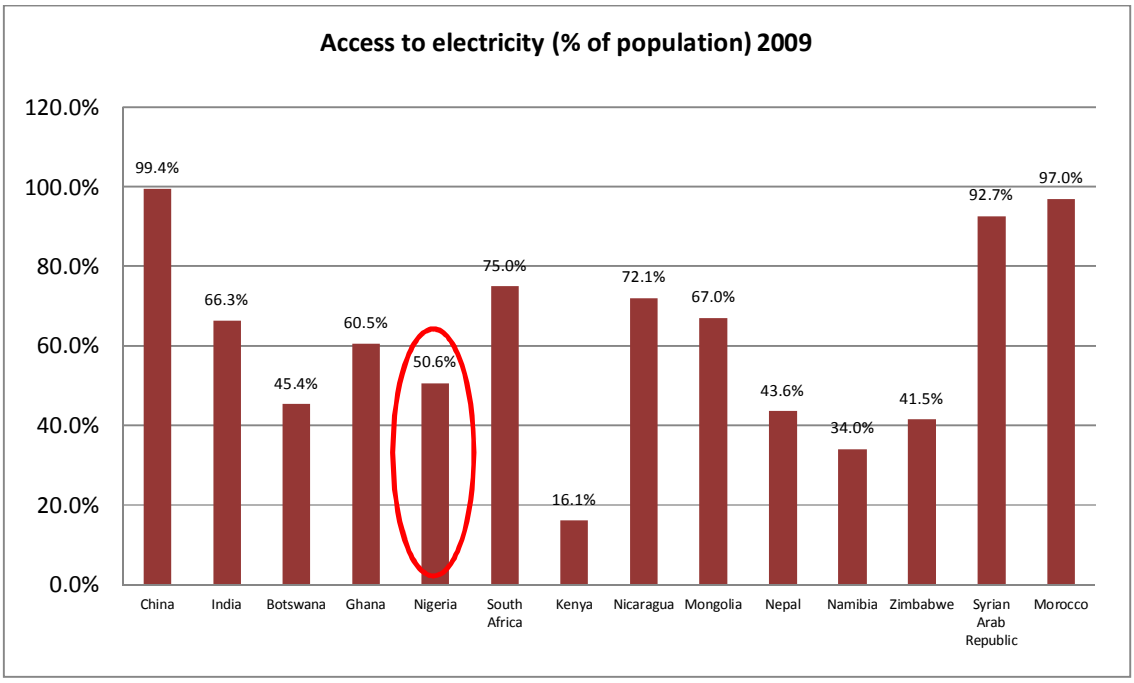


Chart. 6: Access to electricity (% of population) 2009[22]

According to the Energy commission of Nigeria (ECN), more than 60 Million Nigerians depend on diesel generators for their electricity needs. They end up spending close to US$ 13.35 Million on fuel for these generators[23]. The estimated capacity of diesel generators in use is between 4,000 MW and 6,000 MW[24]. If adequate reliable electricity supply is made available to all those who are currently not covered by the grid, there can be a significant improvement in the quality of life for millions of Nigerians.

Another area of improvement is the transmission and distribution (T&D) losses in the national and state grid. As a percentage of electricity generated, the T&D Losses in Nigeria were approximately 17% in 2010. Although this is a significant reduction 31.2% T&D loss figure in 1979, there is still room for improvement compared to some of the developed and developing nations across the world (Chart 6). Losses put strain on the already inadequate electricity generation and should be reduced to below 10% levels.

22 Source: World Bank *http://bit.ly/12DgyvD* Retrieved on 05 August 2013

23 Source: *http://www.energy.gov.ng/index.php?option=com_content&view=article&id=74* Retrieved on 05 August 2013

24 Source: *http://bit.ly/13SmUib* Retrieved on 05 August 2013

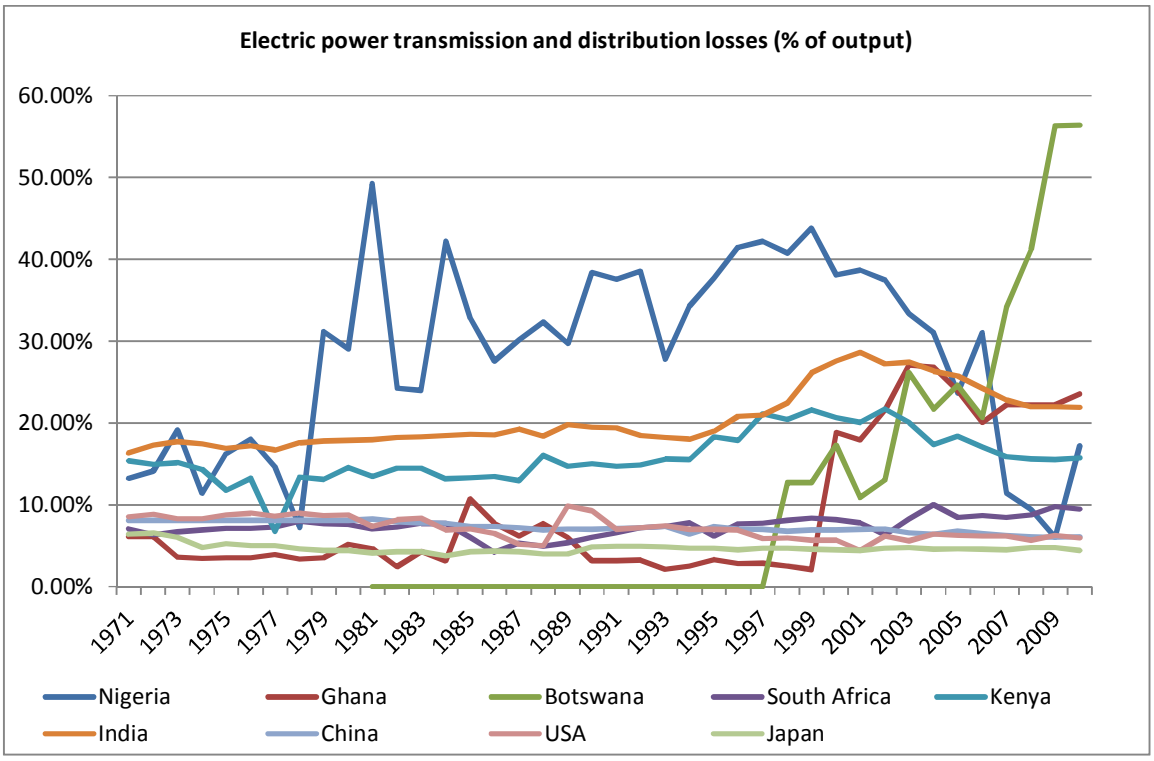


Chart. 7: Electric power transmission and distribution losses (% of output)[25]

These factors show that there is a significant room for improvement in electricity supply, increased electricity coverage, higher per capita consumption and growth in electricity production and consumption.

The low per capita consumption of electricity, the low levels of penetration of the transmission and distribution system and the T&D losses, the 7% p.a. growth rate of GDP, the population growing at 2.5% every year, and the outages in the Natural Gas based power plants together make a compelling case for developing small hydro power projects in Nigeria.

25 Source: World Bank; Retrieved on 05 August 2013

V. Electricity situation in Kogi state and the project area

Kogi State situated in central Nigeria has an area of 29,833 km^2 and is estimated to have a population of approximately 3.5 Million (as of 2005)[26]. The state is divided into 21 local government areas and has its capital at Lokoja. Ajaokuta Steel Company Limited, the largest iron and steel factory in Nigeria, is situated in Kogi state and is in the process of being revived. Once operational, this will be a huge demand center for electricity in the state. Dangote Cement's Obajana plant is also situated in the Kogi state. Besides this, the state is rich in mineral resources such as coal, limestone, iron, petroleum and tin and reliable electricity supply can give a boost to the mining and related sectors.

A number of small towns such as Isanlu, Idofin, Ejiba, Egbe, Okunran, Erufu are situated within a 20 km radius of the Omi dam. Currently these towns experience severe power outages and rely heavily on diesel power generating sets to fulfill their power demand. A hydro power project in the vicinity will help in reducing dependence on costly and polluting options such as diesel generating sets. This will help in reducing cost of power as well as help in reducing environmental degradation being caused by burning diesel.

The Kogi state currently has a 414 MW simple cycle gas turbine based power station (Geregu I) which was commissioned in 2007[27], and the 506 MW Geregu II Power Station in Ajaokuta that was commissioned in 2012[28].

The Kogi state is currently being serviced by the Abuja Electricity Distribution Plc, Nigeria (Abuja Disco)[29]. The Abuja DISCO catered to the needs of 469,306 customers in 2008, but its coverage area also included FCT Abuja, & the Niger and Nassarawa states[30]. The Abuja Disco distributed 1,802 GWh of electricity in 2009 and its distribution losses were 15%[31].

The source of power for the Kogi state is the BENIN 2X150MVA, 330/132KV Transmission substation. It feeds power to the following two substations:

- Ajaokuta Transmission substation
- Okene Transmission substation

The load allocation and the distribution capacities at these two transmission substations are as follows:

26 Source: ***http://en.wikipedia.org/wiki/Kogi_State*** Retrieved on 05 August 2013
27 Source: ***http://bit.ly/16NIH5F*** Retrieved on 05 August 2013
28 Source: ***http://www.nipptransactions.com/?page_id=73*** Retrieved on 05 August 2013
29 Source: ***http://www.nercng.org/index.php/myto-2/discos*** Retrieved on 05 August 2013
30 Source: ***http://bit.ly/1dBvP6g*** Retrieved on 05 August 2013
31 Source: FGN Bureau of Public Enterprises ***http://bit.ly/1dBvP6g*** Retrieved on 05 August 2013

Table showing Load allocation over a period of seven months in MW[32]:

Transmission Station	July, 2011	August, 2011	September, 2011	October, 2011	November, 2011	December, 2011	January, 2012
Ajaokuta Transmission Station	30.00	31.00	29.00	32.00	31.00	31.00	31.00
Okene Transmission Station	76.00	85.70	77.00	81.10	79.00	82.00	85.80

Table showing Distribution capacity in MW[33]:

Transmission Station	33KV	11KV
Ajaokuta Transmission Station	62.6	43.82
Okene Transmission Station	33.5	23.4

As of 2012, the distribution coverage in Kogi state as per the Abuja Electricity Distribution is categorized into three business units: Lokoja, Okene and Idah. The total number of customers and the installed meters at each business unit is as follows[34]:

Business unit	Categorization by Abuja DISCO	No. of customers	Total meters installed
Lokoja	Business Unit	20,285	11,065
Okene	Business Unit	46,481	20,230
Idah	Special Project Area	20,467	6,717
Total		**87,233**	**38,012**

From the metering statistics above, one can see that less than half of the customer base is metered. This means that a large number of customers may be paying fixed nominal amounts for electricity use. Increase in metering coverage will help the distribution company in better revenue collection.

The population of Kogi state was estimated to be 3.5 Million in 2005, and considering the national average population growth rate of 2.5% p.a., the population in 2012 would be approximately 4.2 Million. Given that around 50% of the population lacks access to electricity on average in the country, 2.0 Million people in Kogi state may not have access to electricity. Considering the per capita electricity consumption figure of 136.5 kWh (which itself is low and will go up as the economy grows), the latent annual demand for power would be around 273 GWh, or close to 70 MW of installed capacity. This represents a significant latent demand for electricity, in addition to the commercial and industrial demand. So, rising per capita electricity consumption, along with increased access to electricity, is likely to increase the localized demand for electricity in Kogi state. The demand

32 Source: Presidential task force on power ***http://bit.ly/17hLIx7*** Retrieved on 05 August 2013
33 Source: Presidential task force on power ***http://bit.ly/17hLIx7*** Retrieved on 05 August 2013
34 Source: Presidential task force on power ***http://bit.ly/17hLIx7*** Retrieved on 05 August 2013

for electricity is likely to further go up as the economy grows and the per capita consumption of electricity creeps closer to that of other developing countries (700 kWh).

A part of this increased demand can be easily met locally by developing the Omi hydro power project. The capacity added by Omi hydro power project is quite insignificant as compared to the local demand for power. More reliable power supply is likely to provide impetus to small scale industries and commercial activities. This provides employment, increases the standard of living and brings prosperity to the local population.

Thus, we do not foresee any problems in absorption of this added capacity in the local electricity network. From an electricity demand-supply perspective, the Omi small hydro power project should definitely be pursued.

7. Key stakeholders and their requirements

FGN has proposed to develop a hydro power project at the Omi Kampe dam, under the Public Private Partnership (PPP) mechanism. The following participants have been identified as probable stakeholders in the PPP structure for developing these small hydro power projects:

i. Private developer identified on the basis of the competitive bidding process
ii. FGN represented by the Government ministries and departments such as FMoP, FMoWR. These Ministries/departments may be associated as owners or as regulatory authorities awarding permits, licenses and clearances for the project
iii. The Kogi State Government
iv. The River Basin Development Authority (RBDA) governing/ owning the concerned dam
v. Power transmission companies (TCN), electricity traders such as NBET, and the Disco of the area
vi. Banks / DFI lenders extending project finance to the hydro power project
vii. Community participants
viii. Citizens likely to be affected

7.1. Project Owners – Public and Private Participants

The Public stake holders in the ownership of the project under the proposed PPP structure will be:

i. Federal Government of Nigeria (FGN) through its Ministries and departments
ii. Respective State Government
iii. Authority operating/ owning the Dam (e.g. River Basin Development Authority)

The Public stakeholders will have to arrive at an internal understanding as to the actual structuring of the Public ownership in the Project. This will include mechanism for determining present ownership of existing assets (Dam) and compensating the current owners of the assets suitably through upfront payments or free equity in the developing Project.

The mechanism to compensate the Public participants/Owners for their existing assets may involve one or many of the following, based on the valuation of assets:

i. Upfront payment for existing assets
ii. Free equity stake in the developing project
iii. Free power/royalty from the power sales
iv. Annuity/ Lease payment for the existing assets for the life of the project

Depending upon the PPP arrangement agreed upon, the Public participants may also have the opportunity to invest equity funds in the project at a pre-determined valuation.

The Private participant will be the investor/ private developer selected on the basis of a competitive bidding procedure conducted by FGN under the framework devised by the ICRC.

The project concession shall be awarded to the private participant on a PPP arrangement (e.g. Build, Own, Operate & Transfer - BOOT) for a fixed period (e.g. 30 years). The project shall be allotted on the basis of a competitive bidding procedure. The allotment may be based on one or many of the following parameters:

a. Free power to the Public participants
b. Tariff based bidding
c. Upfront premium payable, or
d. Free equity stake to Public participants.

The private participant shall invest all or majority of the equity funds required for developing/constructing the Hydro power project. They would be responsible for arranging the project finance debt required for construction of the Project. The Private participant would undertake the operation and maintenance of the project throughout the concession period, and would hand over the project to the Public participants at the end of the concession period.

7.2. Banks / DFI Lenders

Project finance structure would typically allow debt funding for around 70-80% of the capital cost incurred for construction of the hydro power project. The debt would typically be provided by a consortium of commercial banks, development finance institutions (DFI), multilateral agencies etc. The private and public participants (owners) may have to jointly or separately provide debt support in terms of securities/ guarantee(s) to the lenders.

7.3. Ministries and Government departments

FGN through its relevant Ministries and various associated departments would be responsible for granting the licenses and permits required to develop, construct and operate the hydro power plant and dam. The following permits/ licenses may be required by the project developer:

i. Generation License from Federal Ministry of Power (FMoP)
ii. Water use/abstraction license from Federal Ministry of Water Resources (FMoWR)
iii. Concession agreement, other agreements & PPP Structure to be approved by Infrastructure Concession Regulatory Commission (ICRC)
iv. PPA, PTA, Tariff structure to be approved by Nigerian Electricity Regulatory Commission (NERC)

The other ministries / departments such as Department of Dams, Nigeria Hydrological Services Agency (NiHSA), RBDAs may be responsible for granting other mandatory permits and clearances required for the hydro power project. The project developer may be required to commission studies such as Environment and Social Impact Assessment (ESIA) studies and obtain Environmental clearance from the National Environmental Standards & Regulations Enforcement Agency (NESREA). Other permits and clearances may be required from concerned departments as per the policy.

7.4. Power Purchaser and other associated entities

The power generated by the hydro power projects will be eventually sold to the customers in the distribution network but to reach to the end customers, it will have to be evacuated and transmitted to the distribution company (DISCO) network. The potential entities in this power transmission and purchase process would be Nigerian Bulk Electricity Trading PLC (NBET or Bulk Trader), Transmission Company of Nigeria (TCN) and the local Distribution Company (DISCO) of the area.

For this, the project company may execute a PPA with NBET or directly with the DISCO of the area. There would also be a Power Transmission Agreement or Transmission Services Agreement with TCN. TCN will charge a transmission fee (or wheeling charge) to transmit the power generated by the hydro power project to the relevant DISCO network.

Options for selling power to the local grid/ the local government could also be explored.

7.5. Community participants

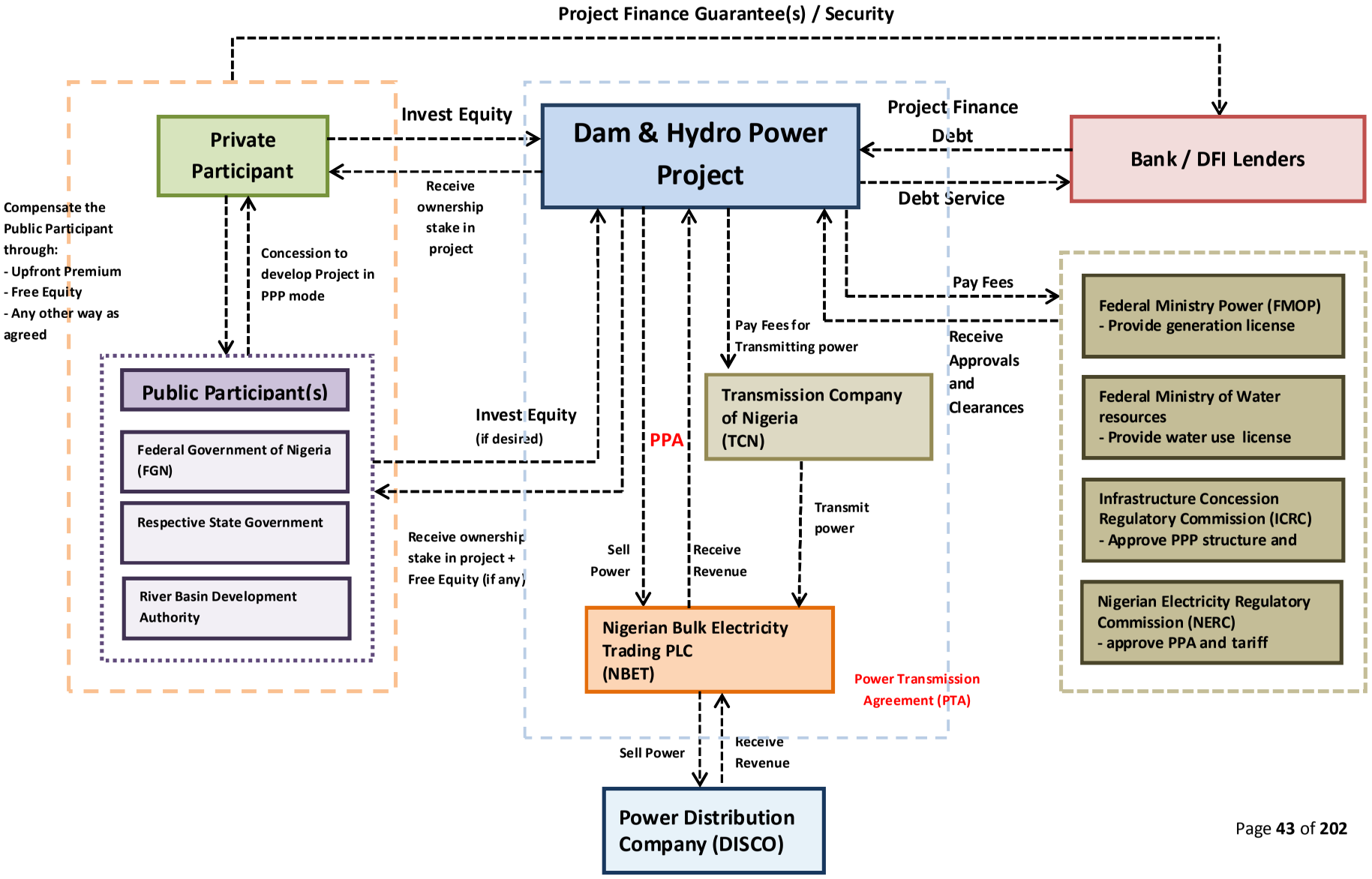
Community participants are the people of the local area/ vicinity who are likely to be affected by the development of the project. These are likely to be constituted by the people residing downstream of the dam area and/ or drawing the waters released by the dam into the irrigation canal.

7.6. Citizens likely to be affected

Besides the persons residing downstream of the dam, who are land owners, farmers etc., the citizens likely to also comprise of the employees entrusted with the upkeep and maintenance of the dam.

The flowchart on the following page identifies and outlines the relationship between the various stakeholders.

Key stakeholders and their requirements



8. Consultation plan with key stakeholders

A consultation process with the key stakeholders should be planned so as to ensure that the project remains relevant. A stakeholder meeting is a strategic and efficient way to conduct the consultation process and to gain commitment to the primary business objectives and usability. It also disseminates information about the purpose of the project and its overall context of use.

Its primary objectives can be outlined as follows:

- It ensures that all stakeholders that relate to use of the project or will be affected by the development of the project are identified before design work starts.
- It brings together all the people relevant to the development, to create a common vision.

The key stake holders in the development of the small hydro power project are enlisted below:

- Land owners in the project vicinity
- Irrigation dependant farmers/ other users
- Various Government departments and agencies
    - Project Area Commissioner
    - Local administration office
    - River basin development authority
    - Land and Revenue department
- Employees currently working in the dam and trade unions, if any
- Community organizations
- NGOs active in the area
- Contractors of goods and services, Suppliers
- Investors

An individual or a joint “stake holders meeting” should be conducted and the following should be outlined in the meeting:

- The reason for the development of the project
- The key benefits that will accrue from it
- Key persons/ officers that can be contacted in case of any grievances
- Impact of the project development works on the environment
- A brief on the methodology of development works
- The time frame of development and construction works

A general consensus should be obtained where there is uncertainty or disagreement. If information is missing, a plan to obtain this should be provided.

9. Service Standard – Output and Services

The proposed small hydro power project at the Omi dam is surrounded by many small towns such as Isanlu, Idofin, Ejiba, Egbe, Okunran, Erufu, etc. These towns experience severe prolonged powers cuts and rely heavily on expensive diesel power generators (see section 6). The electricity generated at the proposed 2.0 MW small hydro power plant will definitely assist in reducing the power cuts and provide a dependable source of power to the region.

The project will have certain allied benefits as well

- Employment to the local population during the construction phase
- A drinking water scheme can be explored
- 30% of the revenue generated by the project will be shared with the Hydroelectric Power Producing Area Development Commission post commissioning.

Besides the local demand once the Ajaokuta Steel Company Limited, the largest iron and steel factory in Nigeria is operational, there will be surge in the requirement for electricity in the state. The demand for electricity in the Kogi state is greater than the supply (see section 6 point V.) and electricity produced by the Omi Kampe HEP will be absorbed.

10. Technical Feasibility Study

The technical feasibility of the Omi Kampe project was assessed by the Federal Ministry of Power through a contract for Consultancy Services for Feasibility Studies, Engineering Designs and Preparation of Contract Documents for Small and Medium Hydropower Plant at Omi Dam awarded to Decrown Consulting Engineering Limited in October 2010.

As a part of their contract, Decrown submitted the following documents:

(i) The First Report submitted in two volumes as follows:
   i. Volume 1: Project Manual, Site Assessment and Data Collection
   ii. Volume 2: As-Built Drawings of Omi Dam.

(ii) Second Report consisting of three volumes as follows:
- Volume 3 (Part 1): Omi Dam Hydropower Project - Feasibility Study Report
- Volume 3 (Part 2): Omi Dam Hydropower Project – Preliminary Engineering Design Report
- Volume 4: Omi Dam Hydropower Project – Preliminary Engineering Design Drawings
- Volume 5: Omi Dam Hydropower Project – Tender Documents

(iii) Volume 3 (Part 1) presents the current situation and condition of the main features of Omi Dam comprising Engineering Surveys, Geotechnical Investigations, Hydrology and Water Demand, the Assessment of Civil Works As-Built Conditions for

Hydropower Generation Potential including the possibilities of power evacuation. It is ended with an Economic Analysis, conclusion and recommendation.

(iv) Volume 3 (Part 2) presents background, objectives and the design report contents. The main contents are the Reservoir simulations and energy production; Hydropower Design Criteria, Hydropower waterways and plant designs, construction cost estimates and economic analysis. Also included is a schematic presentation of the proposed power evacuation.

(v) Volume 4 presents an album of Draft Engineering Drawings for the Omi Dam Hydropower Project indicating the longitudinal profile of the penstock – powerhouse route, powerhouse arrangement and turbine configuration.

(vi) Volume 5 contains the necessary Tender Documents, i.e. BEME, Specifications, Instructions to Tender, Conditions of Contract) for the procurement of the Construction of the Omi Hydropower Plant.

The aforementioned reports may be available with the respective federal government departments or the Ministry of Power. We were able to source the following reports for our analysis:

1. Volume 1: Project Manual, Site Assessment and Data Collection. (**Vol-1**)
2. Volume 3 (Part 1) – Feasibility Studies Report by Decrown Engineers Ltd. (**Vol-3 Part-1**)
3. Volume 3 (Part 2) – Preliminary Engineering Design Report (**Vol-3 Part-2)**
4. OMI HPP Design (**Excel Workbook**)

However, the following volumes were not available for reviewing:

- Volume 2: As-Built Drawings of Omi Dam.
- Volume 4: Omi Dam Hydropower Project – Preliminary Engineering Design Drawings
- Volume 5: Omi Dam Hydropower Project – Tender Documents

As per the technical studies made available, the following salient features of the dam can be ascertained:

Salient Features of Omi Dam

- **Dam**

Dam type	-	Homogeneous Zoned earth Dam
Crest elevation	-	247m
Length of crest	-	1,976m
Maximum height above river bed	-	43m
Crest width	-	6m
Upstream slope	-	2.5:1

Downstream slope	-	2.5:1
Upstream Protection	-	Dumped Rip-rap
Downstream Protection	-	Grass fill

- **Overflow Spillway**

Length of spillway	-	250m
Spillway crest level	-	241.2 m
Maximum flow over spillway	-	3,500m^3/s

- **Bottom Outlet/Intake**

Size of bottom outlet pipe	-	3000mm
No. of bottom outlet pipe	-	2
Shape of Pipe	-	Horse shoe
Size of intake pipe	-	N/A
No. of intake pipes	-	N/A
Size of irrigation pipe	-	N/A
No. of irrigation pipe	-	N/A
Size of ecological pipe	-	N/A
Types of pipes installed	-	Reinforced Concrete

- **Design Soil Parameters**

Classification of soil of dam body/Fdn.	-	SC
Cohesion of the soil of dam body	-	33KN/m^2
Cohesion of foundation soil	-	34KN/m^2
Angle of internal friction of soil in dam	-	50^0
Angle of internal friction (foundation soil)	-	25^0
Coefficient of permeability of soil in dam	-	2.7 – 8.61 x 10^{-7}cm/s
Coefficient of permeability (foundation soil)	-	6.7-15 x 10^{-9}cm/s

- **Reservoir**

Normal free board	-	2.1m
Minimum free board	-	1.0m
Normal water level (NWL)	-	241m
Water stored at normal water level	-	250x10^6m^3
Maximum water level (MWL)	-	244.9m
Water stored at maximum water level	-	255x10^6m^3
Reservoir surface area at NWL	-	25.7km^2
Minimum water level	-	226m
Dead storage	-	57x10^6m^3
Maximum reservoir emptying time	-	70days

- **Water Demand**

Domestic/Industrial Demand	-	135,000m^3/d

Irrigation Water Demand	-	951,000m^3/d
Ecological Water Demand	-	484,000m^3/d

- **Hydrology of the Catchments Area**

Catchments area	-	1,642km^2
Design flood inflow	-	3,500m^3/s
Design storm	-	215mm

- **Water Treatment Plant** **-** 60,000m^3/day

Water Treatment Plant

A Regional Water Supply & Treatment Plant Project with treatment capacity of 60,000m^3/day has been designed by Messrs John-Solomon & Partners (JPS) to be sourced from the Omi Dam as far back as 2006 for the Lower Niger River Basin Development Authority, Ilorin. About 30 rural communities and urban towns with populations ranging from 5,000 to 10,000 persons with domestic water service level of 75 to 150 litres per day would require about 45 million liters per day.

Irrigation Scheme

Originally, **Omi Dam** was a multipurpose dam proposed to impound the raw water of Oyi River for water supply to selected rural and urban communities of Kogi State and for the irrigation of some cultivable lands far away from the dam site. The towns and villages expected to benefit from the project include Egbe, Oke Ere, Omi, Jege, Ejuku, Ejiba, Isanlu, Mopa, Odokoro-Gbedde, Kabba, Oranre, Aginmi, Igbagun, Ekirin-Adde etc. to mention but a few. The size of irrigable land originally conceived was for about 8,000 Ha for such crops as rice, maize, wheat and vegetables.

Hydrological studies were also conducted as a part of the feasibility assessment done by DeCrown. The hydrological studies were divided into the following parts:

- An Inflow study, which was handled and concluded in the Original Hydrological Report by Progress Engineers Consultants and the New Hydrological Report further conducted by Decrown Consultants. DeCrown appraised and updated the reports to affirm whether the present reservoir capacity of Omi Dam can sustain the proposed Hydropower Generation.

- A Water Demand Assessment Study, which defined and analyzed all the water uses, abstractions and demands in the vicinity of the project area.

- A Flood Study, which assessed the propensity of the Oyi River at different locations of interest at the dam and hydropower plant outlet in particular.

- A Sedimentation Study, which involved field observation of the site and identification of possible severe riparian erosion hazard or mass-wasting processes. The purpose was to determine the main factors of influence, which are the sediment load as it affects reservoir capacity and power generation; and grain shape/size as it affects abrasion of hydraulic/power facilities and equipments.

All these studies are described in detail in the aforementioned reports submitted by DeCrown Consultants. In conclusion, DeCrown states that "*…a firm energy of about 1,600kWh for a 1.5MW power output (during both the dry and rainy seasons), peaking to 3,500kWh for a 2.5MW power output (during the rainy season only)*" is possible at Omi dam.

The feasibility study also recommends "*The need for the exploitation of Omi Dam hydropower potential...".*

As part of our assessment, we have reviewed the existing feasibility studies & suggested further steps/ studies to enhance the technical feasibility of the project. Our assessment are shared in Appendix A2. Our technical team also conducted a site visit to the project and our findings are shared in Appendix A3.

Recommendation & Conclusion based on our technical review

The Omi dam appeared to be sound structurally; nevertheless it called for better maintenance of the various structures of the dam in general.

The dam was initially constructed to primarily cater to the irrigation demands for irrigating 8000 Ha of land. However it was noted that no substantial cultivation was being carried out in the irrigated area. Also the discharge from the dam was not being controlled or monitored. This clearly indicates that the waters stored in the Omi dam can be put to better use such as that of power generation.

The following conclusions can be drawn:

1) The hydrology of the reservoir needs to be studied thoroughly using daily inflow data.

2) The need for the irrigation, domestic household purpose, ecological release, etc. need to be ascertained before the firming up of the power potential is done.

3) Based on the assumptions made and the data shared in the reports, the dam can support either hydro power plant or irrigation demand, domestic/industrial demmand and other associated works. The elevation difference of ~16m between the irrigation canal and the

tail water level of the proposed Hydro power project make the two schemes mutually exclusive.

4) If hydro power plant is considered then based on the assumptions stated above the optimum capacity will be of 2 MW with 48.55% plant load factor. The annual energy generation is approximately 8.51 GWh with 4,687 hours of operation annually. However a thorough study with detailed flow / discharge analysis needs to be conducted to firm up these numbers.

5) A wing wall is recommended for safe guarding the powerhouse civil structures and E&M equipment in case of flood. The elevation of the powerhouse elevation is ~218 m whereas the Tail water level is 209 m. The highest flood discharge is 3550 cumecs. In order to block this discharge of 3550 m^3/sec, a suitably designed wing wall has been proposed to be contructed. The reach of the flood discharge needs to be ascertained to analyse the effectiveness of the wingwall.

11. Revenue forecasting for the proposed Omi Kampe Hydro power project

Revenue forecasting forms an important part of viability assessment for the project. The power project revenues depend mainly on two factors:

a. The power generated and sold by the project and
b. The tariff for sale of power.

Thus, the revenue generated by the proposed hydro power project is a function of the '*Net energy sold*' and the '*Electricity Tariff*'.

I. Calculation of net energy sold

The Net Energy sold is calculated in the financial model as follows:

(a) **Generation at 100% availability (in GWh)** is calculated for a particular period is equally to **[** Plant Load Factor (PLF) X Installed capacity (in MW) X number of days X 24 (hrs.) / 1000**]**

(b) Generation at 100% availability obtained above is then multiplied by the **"Annual availability of plant**" to get the "**Generation at actual availability**". This calculation takes into account the downtime of the plant and hence the loss of generation during such downtime (whether planned or unplanned outage).

(c) "**Auxiliary consumption**" and "**Transformation Losses**" are subtracted from the "Generation at actual availability" to obtain "**Net Energy at Bus Bar**".

(d) The "**Transmission losses to Interconnection point**" are subtracted from the "**Net Energy at Bus Bar**" to arrive at the "**Energy at interconnection point".**

(e) The "**Free power**" if any offered by the Private participant to the public participant during the allotment process, is subtracted from the "**Energy at interconnection point"** to arrive at the "**Net energy sold**".

The Net energy sold multiplied by the tariff (Explained below under MYTO II calculation and assumptions) gives the "**Total regulated power revenue**". If any rebate is to be offered for prompt payment by the electricity purchaser, this will be subtracted from the "Total regulated power revenue" to arrive at "**Total revenue from power sales".**

II. Tariff: Multi Year tariff Order II[35]

The Nigerian Electricity Regulatory Commission issued a multiyear tariff order in order to provide a 15 year tariff plan for Nigerian Electricity Supply Industry. Minor reviews and changes in the rate of inflation, foreign exchange rate are made annually. Major reviews and changes are conducted every five years. The first set of tariffs under MYTO I were issued in July 2008. MYTO II provides for the tariff determination from 1 June 2012 to 31 May 2017.

MYTO uses the 'building block' approach to determine the tariff. This helps it to incorporate the positive attributes of both the rate of return mechanism and the price gaps mechanism of tariff determination. The primary building block on which the MYTO has been built can be summarized as below:

i. Allowed rate of return on the capital invested
ii. Distributing the capital invested over the useful life of the project (i.e. Depreciation)
iii. Efficient operating costs and overheads.

a. Treatment of Capital Cost in MYTO:

i. It is stated in the "MYTO Methodology" that "the initial value of the asset is rolled forward each year. Depreciation reduces the valuation and new capital increases it. Replacement cost, actual capacity ratings and remaining economic life were taken into account in this valuation".
ii. The cost of capital has been addressed in two notations:
    - In terms of depriciation
    - Return measured by the cost of capital

These values are calculated using the annual asset value, i.e. the rolled forward asset value.

b. Treatment of Depreciation in MYTO

The optimized depreciated replacement cost (ODRC) method has been used for the calculation of tariffs in MYTO.
This involves the following:

[35] Source: http://www.nercng.org/index.php/myto-2 Retrieved on 05 August 2013

a. Adjusting the price of the asset from its year of purchase to the year of tariff calculation.
b. Optimizing its capacity
c. Applying the depreciation over the economic life of the asset.

Different groups of assets will be subjected to different rates of depreciation.

c. Treatment of Cost of capital in MYTO

The cost of capital used in calculating the tariff order is estimated using the Weighted Average Cost of Capital (WACC) method.

d. Treatment of Operational expenses in MYTO

The initial operating cost used (2000 – 2006) in the calculation have been obtained from the Nigerian electricity industry. The O&M expenses are assumed to include an allowance to improve the performance required under the performance indicators. It is stated that the operation, maintenance and staff costs are expected to be higher in the initial years and have been accounted for in the tariff calculation

The assumptions in the MYTO concerning the electricity industries' ability to collect sales revenue begin at current low levels but are assumed to improve over the first five years, coinciding with an increase in metering roll-out and billing expenditure.

e. The major assumptions in the MYTO tariff calculation are as follows:

- Inflation for Local Costs (CPI for Nigeria)

Inflation has been estimated till 2041 and values are input in the tariff model. Inflation is used to adjust the variable operation and maintenance cost annually. It also used to adjust the calculation of "Local cost Component" of the capital cost annually.

- Change in Forex rate (US$ / NGN)

The exchange rate of US$/ NGN has been input as actual average annual values till 2011. From year 2012 onwards, an annual depreciation of 5% has been assumed in the value of the Naira.

- Forex Under PPP (Purchasing Power Parity) Assumptions

In this row, the local inflation rate is adjusted with the US inflation.

- US Inflation (CPI) per annum

The US inflation rate has been input as 2.5% p.a. till 2010 after which it is input as 3% p.a. till the end. This is used in the calculation of the "US Components Split" in calculating the capital cost used in the tariff calculation each year.

- US CPI FX Adjusted Inflation per annum

As the name suggests, the US CPI inflation is adjusted for the "Naira Change".

- US CPI FX Adjusted

The indexed depreciation of the Naira using 2010 as the base year is calculated here.

- Corporate Income Tax Rate (+ Education Tax)

This has been input at 32%.

- Other Assumptions

Particulars	Units	
Auxiliary requirements	%	1.00%
Average Degradation	%	2.00%
Capacity factor	%	60.00%
Transmission Losses	% of sent out	8.05%
Generation	(MWh)	5,098.32
Equivalent capex payment per MW	Naira/ MW	80,214.36
Equivalent tax payment per MW	Naira/ MW	23,934.00
Capital cost (2011 Basis)	US $/kW	3,500.00
US Components Split	%	100%
Fixed O&M	N/MW/year	5,655,000.00
Variable O&M (sent out)	N/MWh	87.00

- Generation

= 365 x 24 x [Capacity factor x (1- Average Degradation - Auxiliary requirements)]

= 365 X 24 X [60% X (1 - 2.0% -1.0%)]

= 5,098.32

III. Tariff Calculation

Tariff is calculated using the following formula:

Wholesale contract prices (N/MWh) = Fixed O&M (N/MWh) + Variable O&M (N/MWh) + Capital cost (N/MWh) + Tax cost (N/MWh) + Carbon Cost (N/MWh) + Transmission loss cost (N/MWh)

These tariff components are calculated as follows:

a. Fixed O&M (N/MWh)

Formula:

= Fixed O&M / 365 / 24 / (Capacity factor X (1-Auxiliary requirements-Average Degradation))

b. Variable O&M (N/MWh)

Formula:

= [Variable Operation and Maintenance (sent out) assumed for base year (2011)] X (1+ Variable Operation and Maintenance escalation)

c. Capital cost (N/MWh)

Formula:

= [Equivalent Capex payment per MW (assumed for base year)] X 1000 / Generation (MWh)

d. Tax cost (N/MWh)

Formula:

= Equivalent tax payment per MW (assumed for base year) X 1000 / Generation (MWh)

e. Carbon Cost (N/MWh)

Formula:

Assumed to be nil.

f. Transmission loss cost (N/MWh)

Formula:

= [Transmission Losses as a % of sent out] X Wholesale contract prices

The MYTO II tariff calculation has been replicated in the Financial Model in the 'Tariff MYTO II' Sheet.

IV. The Clean Development Mechanism (CDM)[36]

In addition to the "Total revenue from power sales", revenue is also generated from sales of carbon credits earned by the project through CDM. The calculations for CDM revenues are explained here. The Clean Development Mechanism (CDM) is a United Nations initiative under the UNFCCC (United Nations Framework Convention on Climate Change) banner to promote emission-reduction projects in developing countries that can earn certified emission reduction (CER) credits. Each CER equates to one ton of CO_2 abated. The CERs generated can be traded / sold to the developed / industrialized nations to a meet a part of their emission reduction targets under the Kyoto Protocol.

The revenue generated by the hydro power project through CDM is calculated as follows:

a. The "Energy at interconnection point" is multiplied with the "**Grid intensity factor for Nigerian Grid**" to obtain the "**Number of CERs generated**".
b. Next the Number of CERs generated is multiplied with the "**Price per CER**" to obtain the "**Revenue to IPP from CER sales".**

The "Revenue to IPP from CER sales" and "Total revenue from power sales" constitute the "**Total Revenue"** for the project. Of the "Total Revenue" so calculated, 30% share is to be provided to the "**Hydroelectric Power Producing Areas Development Commission**" as per the existing law. "Total Revenue" less the "Revenue shared With Hydroelectric Power Producing Areas Development Commission" thus gives us the "**Net Revenue**" for the project.

The revenues from the sale of CER will be an additional source of revenue from the project. On analyzing the financial results without the revenues from CER sales, the following results were obtained:

Particulars	Unit	Returns with CDM Benefits	Returns without CDM Benefits
Project IRR	%	19.40%	19.25%

[36] Source: http://cdm.unfccc.int/about/index.html Retrieved on 05 August 2013

Particulars	Unit	Returns with CDM Benefits	Returns without CDM Benefits
Private Participant Returns			
IRR	%	24.42%	24.15%
Payback period	years	7	7
NPV	MM USD	0.87	0.84
Public participant Returns			
NPV of Dividends received	MM USD	0.12	0.12
NPV of Total Revenue	MM USD	0.22	0.22
Debt Service Coverage Ratio			
Average DSCR		2.32x	2.29x
Minimum DSCR		1.82x	1.81x

We would like to note here that the CDM revenues are just about 1% of the total revenues of the project. The majority of the revenues are coming from sale of electricity. Therefore, the sensitivity of the financial results to the CDM revenues is expected to be very low. Even without the CER sales revenue, the financial results are equally encouraging.

V. Revenue sharing and project ownership

The Hydro power project will be allotted to the private participant on the basis of an International competitive bidding (ICB) based on one or more of the following parameters:

a. Up front premium to the public participant
b. Free power to the public participant
c. Free Equity to the public participant

The Public participant may, at its own option, invest funds at par for an equity share in the project. In such a case, the public participant will be allotted equity shares proportional to the investment made. Thus, project ownership of the Public participant will consist of (a) Free Equity (if any) & (b) Equity allotted to Public Participant at Par investment (in case the Public participant exercises the option of investment).

In the financial model for the base case, we have assumed that the Public participant will NOT invest any money in the project as equity investment. The public participant investment in the project thus has been assumed to be NIL. The total equity investment required for the project is estimated at US$ 1.18 million and is fully invested by the Private Participant.

i. Equity ownership of Public Participant

E_{PB} = Free equity + Equity share for par investment

Free equity has been currently assumed to be 5% in the Financial Model. The equity share for par investment can be worked out as:

= [(Equity invested by Public Participant at Par investment) / (Total Equity investment)] X [1 - Free Equity to Public participant]

= (0.0 / 1.18) / (1 – 5%)

= 0.00%

Thus total equity ownership of Public Participant in project is:

E_{PB} = 5% + 0.00% = 5.00%

In case the Public Participant exercises its option of investment in the project, the total equity ownership of the Public Participant will be calculated as per the above formula.

ii. Equity ownership of Private Participant

E_{PP} =1 – E_{PB}

= 1– 5.00%

= 95.00 %

Project Ownership	Percentage
Private Participant	95.00%
Public Participant	5.00%
O/W Equity to Public Participant at Par investment	*0.00%*
O/W Free Equity for Public Participant	*5.00%*
Total	100.00%

12. Project Cost estimate

It is estimated that the project will cost approximately US$ 3.95 million. The table below summarizes the total project cost.

Sr. No.	Cost Components	US$ Million
1	Civil Works	1.39
2	E & M	1.72
	Out of which: Transmission Work	0.53
	Total cost without IDC & FC	**3.11**
3	Indirect Cost	0.03
(a)	**Total direct & indirect cost**	**3.14**
4	Initial Working capital, capitalized spares	0.05
5	Interest during Construction, Financial Charges	0.26
6	Escalation during construction	0.24
7	Contingency	0.16
8	DSRA Cost loaded upfront	0.11
(b)	**Total other cost**	**0.81**
9	**Total (a) + Total (b)**	**3.95**
10	Capacity in MW	2
11	Cost per MW	1.97
12	**Total project cost**	**3.95**

The chart below gives a graphical view of the breakup of the capital cost:

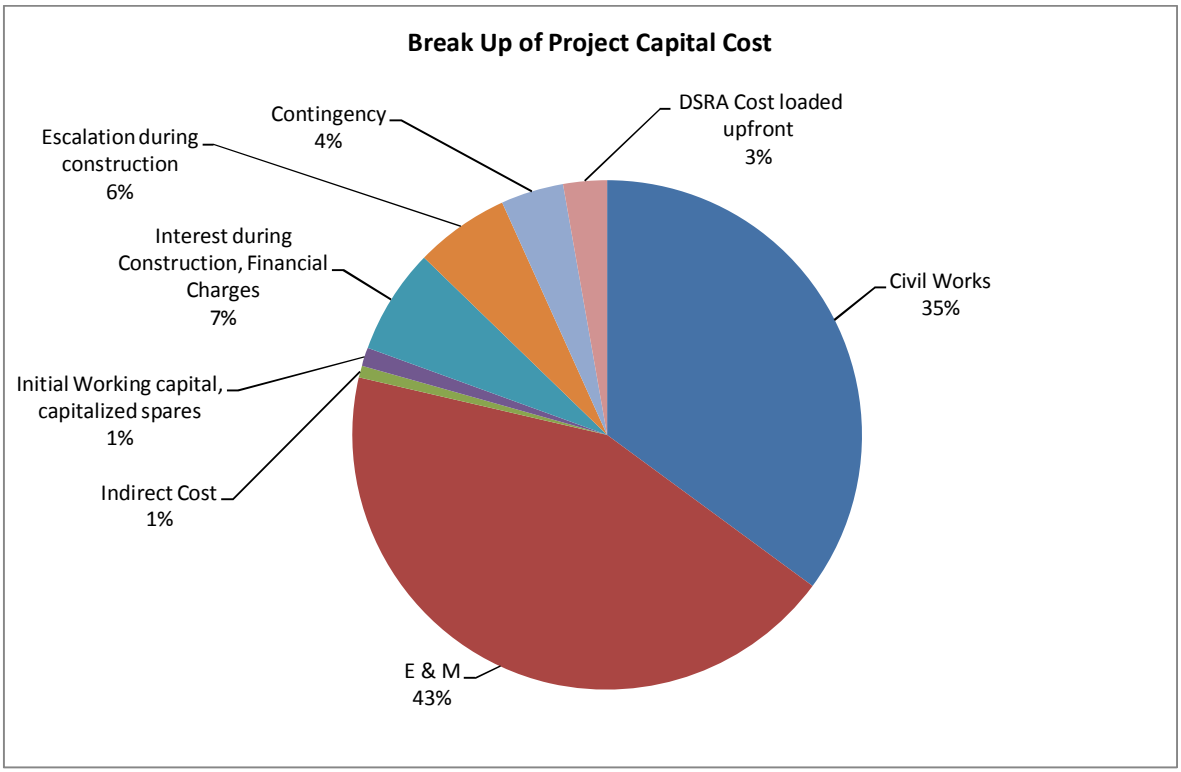


Chart. 8: Breakup of the capital cost

The detailed break up and explanation of cost of the various components of the project are shared in Appendix A4.

13. Financial Model

The Excel spreadsheet named '*OMI HEP FM - Nigeria - SCG 02082013.xlsm*' is a spreadsheet based Financial Model (the "Model" or "FM") for the proposed OMI Kampe Hydro Electric Power Project in the Kogi state of Nigeria (the "Project"). The FM provides financial projections for an assumed operation period of 30 years from the date of commissioning of the Project. The starting date for the FM is January 01, 2014, and the ending date is 31st December 2046. The operation period is from January 01, 2017.

The Model replicates the financial implications of project finance, construction and operation under a PPP mode. The FM contains projected financial statements and calculates the Internal Rate of Return (IRR) for the Private Participant and the Net Present Value of the potential cash flows to the Public Participant.

The model calculations are divided into two main parts: the construction & development periods which are modeled on monthly bases and the operations period which is modeled on a quarterly basis. The model phases the development expenditure over a period of 12 months and the construction expenditure over a period of 24 months.

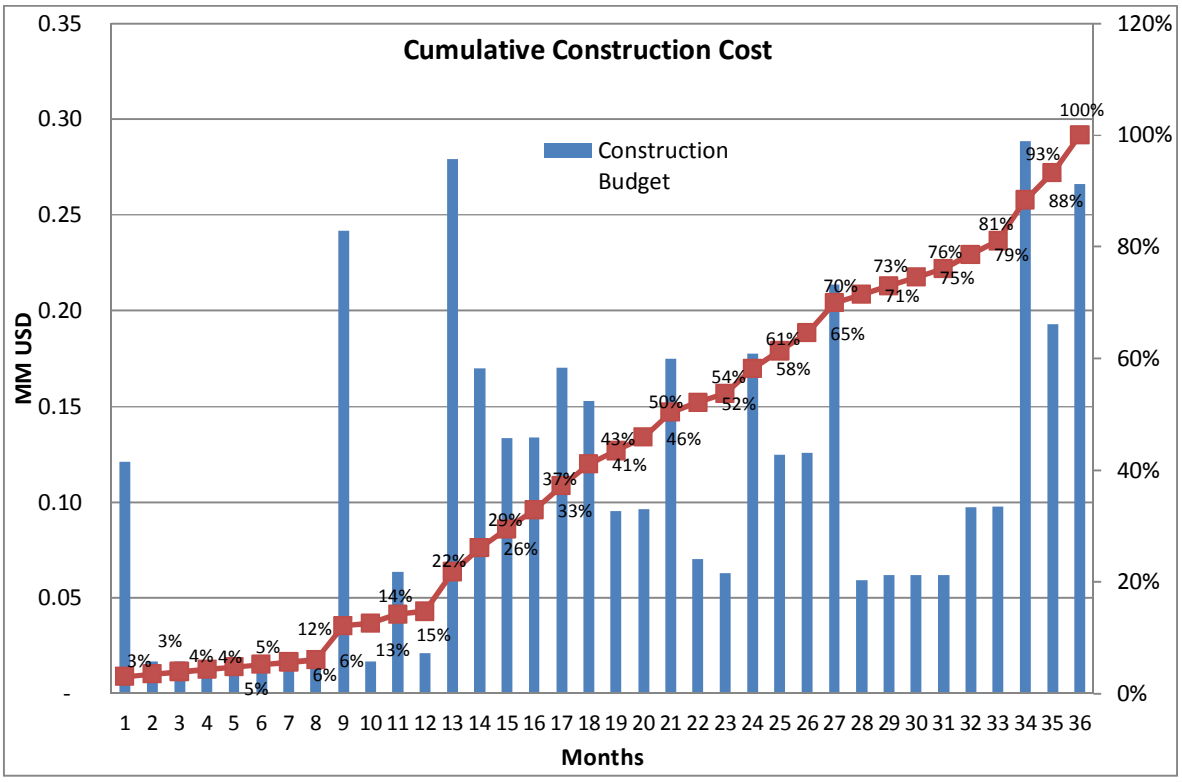


Chart. 9: Construction and development expenditure over a period of 36 months

The development expenditure is fully funded through equity. The equity funds are invested by the public & private participants in proportion to their ownership.

Debt is included as a source of funds in the debt: equity ratio (70:30) and Debt drawdown is permitted during the construction period after the financial closure.

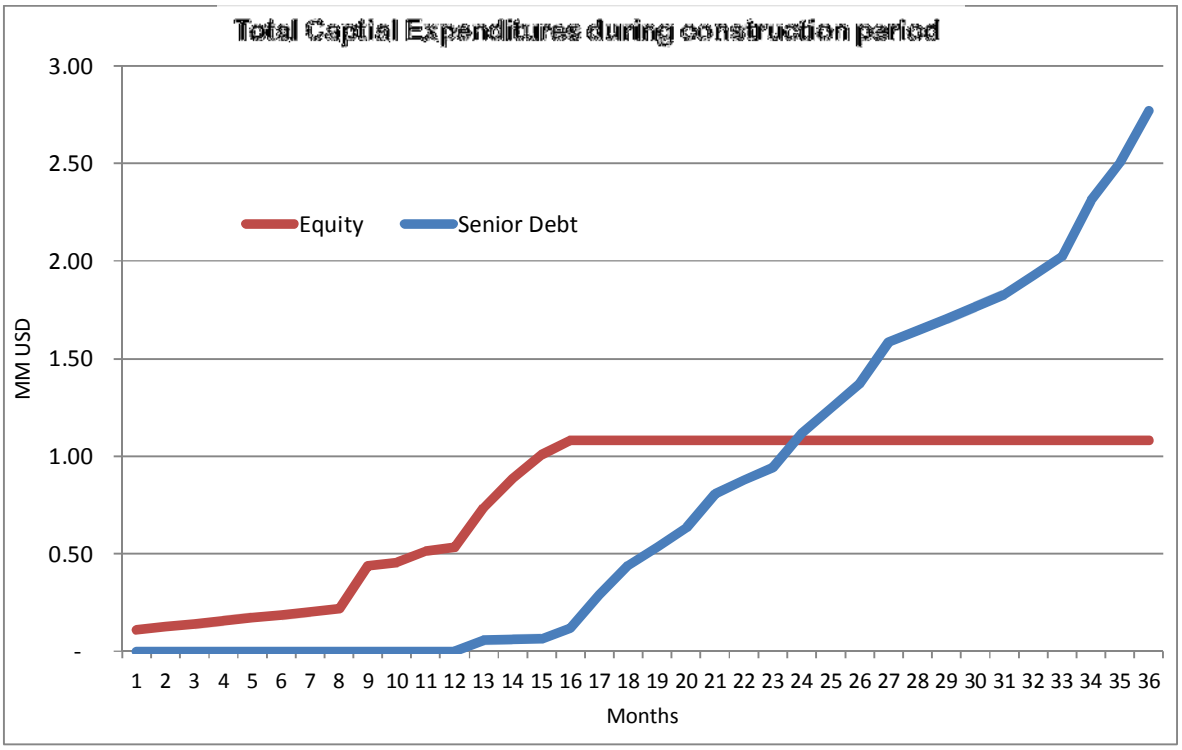


Chart. 10: Source of funds during construction

The model covers an operation period of 30 years, calculating the electricity generation and revenue realization for the project. It accounts for the operations and maintenance (O&M) cost, interest and principal payment & tax payments to generate financial statements such as P&L Account, Cash Flow and Balance Sheets. Other calculations such as depreciation and amortization, working capital are also included for each quarter.

The financial returns to the private & public participants are calculated in separate sheets in the financial model. The Debt Service Coverage Ratio is also calculated in the "DSCR" sheet.

The model identifies the critical variables that have a significant impact on the results of the model. The model conducts Sensitivity Analysis for these variables for a range of values and calculates their impact on financial indicators such as investor returns. The summary of results of the sensitivity analysis is shared in the "Sens." Sheet.

The model operating procedure, the assumptions and the results of the financial model have been discussed below:

13.1 Financial Model: General

The Model is a Microsoft Excel Version 2010 file consisting of 23 worksheets. The Model contains one macro, in the '*Sens.*' worksheet. Please see '*Macros'* section in this document for more details.

The model is based on the standard distinction between hard-coded inputs (in **blue ink** and yellow background) and calculated values (in **black ink** and white background). Although the *'Assumption'* worksheet contains a number of calculations, most of the hard coded inputs are contained in this Input worksheet. There are very few hard coded values used in the other Calculation or Output sheets.

13.2 Financial Model: Set up

The model covers two distinct periods: a construction period modeled on monthly basis in the '*Capex'* sheet, and an operating period, modeled on a quarterly basis. The construction period covers three years from CY 2014 through CY 2016, while the operating period covers 30 years from CY 2017 through CY 2046.

The Financial Model uses special date functions that require Excel Add-ins to be enabled. This can be enabled in the following manner.

If using Excel 2003 or earlier version of MSExcel: Please go to the 'Tools' button in the menu bar, select 'Add-ins' and select the boxes labeled 'Analysis Toolpak' and 'Analysis Toolpak – VBA.'

If using Excel 2007: Please click on circular office button at top left corner, click on 'Excel Options' at the bottom, Click on 'Add Ins' and Click on 'Go'. Select the boxes labeled 'Analysis Toolpak' and 'Analysis Toolpak – VBA.'

If using Excel 2010: Please click the 'File' Button and then click on 'Options'. In the pop-out box on the left hand side column, please select 'Add-Ins'. In the drop down menu at the bottom of the page next to 'Manage:' choose 'Excel Add-ins' and click on 'Go'. Select the boxes labeled 'Analysis Toolpak' and 'Analysis Toolpak – VBA.' Click on 'Ok'.

13.3 Financial model: Structure

The financial model is comprised of 23 worksheets, briefly described below.

Worksheet	Description
Index	Introduces the sheets and states the color conventions used in the model
Cover	Introduces the Client, Model Version and the Disclaimer
Check	Summarizes all the checks in the model for arithmetic and posting accuracy
Sens.	Displays the sensitivities of financial results vis-à-vis changes in inputs

Worksheet	Description
Summary	Presents the summary of the Power Generation, Commercial and financial calculations. Calculates the Levelized cost of generation
Assumptions	Contains most of the model inputs
Project cost input	Inputs for project cost are contained in this sheet
Capital cost	Summarizes the total capital cost of the project (Hard cost + Financial Cost + Contingencies)
Capex	Contains the Drawdown schedule of the project development and construction period; provides calculation of IDC, financing costs
Gen.	Calculates the generation of power based on installed capacity, PLF, and losses
Debt	Calculates the principal and interest repayment of the Senior Debt
Tariff MYTO II	Calculates the tariff for the respective year based on the MYTO II Guidelines
O&M costs	Calculates the Operation and Maintenance cost per quarter
Rev.	Calculates the revenue generated by sale of Power and sale of CERs
Working capital	Calculates the working capital requirement for the plant operations
Depr. & tax	Calculates the Depreciation and Tax payments
Financial stat.	Calculates and Displays the Financial Statements: Profit & loss Account, Cash Flow Statement and Balance sheet
DSCR	Calculates and displays the Debt Service Coverage Ratio for the Senior Debt
Private participant IRR	Calculates the IRR for the investment made by the Private participant
Public participant IRR	Calculates the IRR for the investment made by the Public participant
Public participant return	Calculates the returns to the Public Participant based on Free Equity, Equity issued at Par and upfront premium
Graphs	Displays the graphical interpretation of the Cash flow waterfall, expenditure during construction and the Debt service coverage ratio
Dev cost	Input for the various expenditures incurred during the project development period

Note – The above may not be in the same sequence as in the model.

13.4 Financial model: Macros

The Model contains the following Macro:

Macro Name	Objective
Sensitivity	To run the sensitivity cases listed in rows 23-41 in 'Sens.' Sheet

For the model to function correctly, the Macros need to be enabled from the security or macro settings toolbar.

13.5 Financial model: Checks

A number of checks have been incorporated in the financial model. The outcome of such checks is reported in the sheet "Check", which then returns an overall status check for the model: "TRUE" if no errors are reported or (Number of errors) "Error(s)" if one or more errors are reported. The base case should always report a "TRUE" status.

The various assumptions used in the financial model have been shared in Appendix A5.

13.6 Financial Model: Base case results

The base case results show that the project will cost US$ 3.95 MM and will be financed with an equity investment of US$ 1.18 MM and senior debt of US$ 2.77 MM. It is estimated that the project will be generate 8.49 GWh of electricity per annum at a levelized generation cost of 10.21 US c/KWh.

The net revenue from electricity sales has been calculated to be around US$ 1.00 MM in the first year. This is after accounting for the "Revenue shared With Hydroelectric Power Producing Areas Development Commission" at 30%. The project is expected to have an EBITDA of 94% and a PAT of 46%.

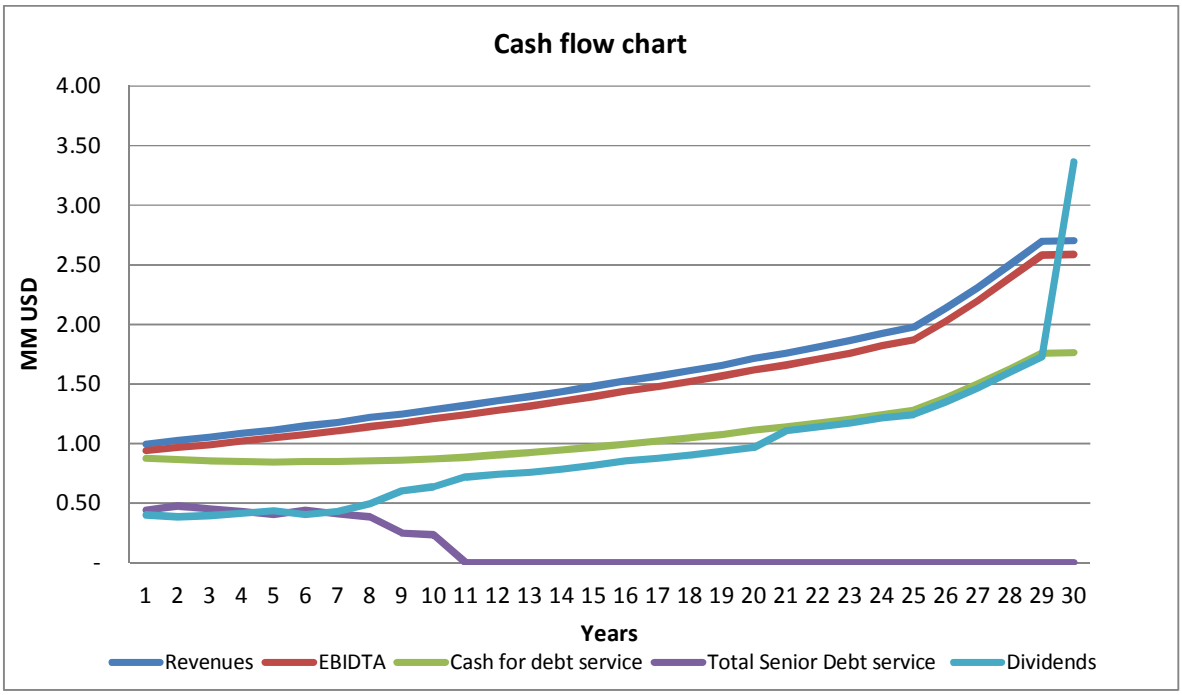


Chart. 11: Cash Flow over a period of 30 Years of operation

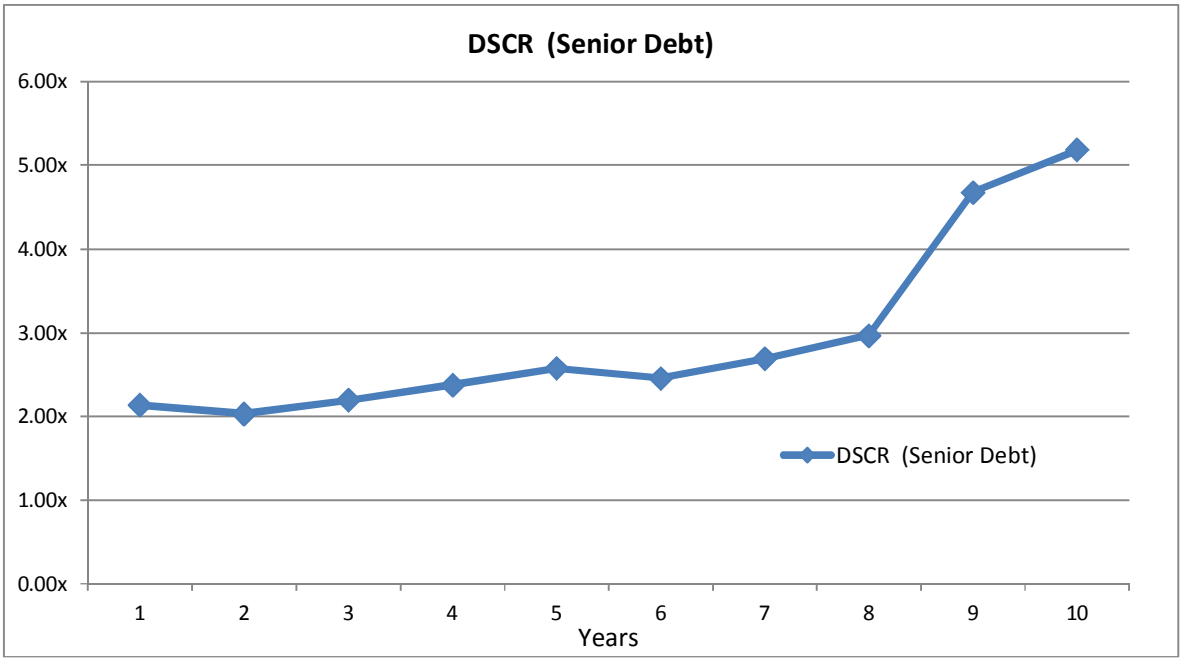


Chart. 12: Debt Service coverage ratio

The revenues from the project will support an average DSCR of 2.32x and a minimum DSCR of 1.82x which is in the acceptable range. The project IRR is expected to be around 19%, whereas the private participant equity IRR would be around 24.42% in the base case.

The payback time for the equity investment is expected to be seven (7) years from the start of project development activities. The Net Present Value (NPV) of the private sector equity investment over a period of 33 years is calculated to be US$ 869,747. Thus, in the base case, the project shows promising returns to the private sector participant.

The returns for the public participant are encouraging too. The NPV of the future cash flows from the project to the Public Participant is around US$ 223,029.

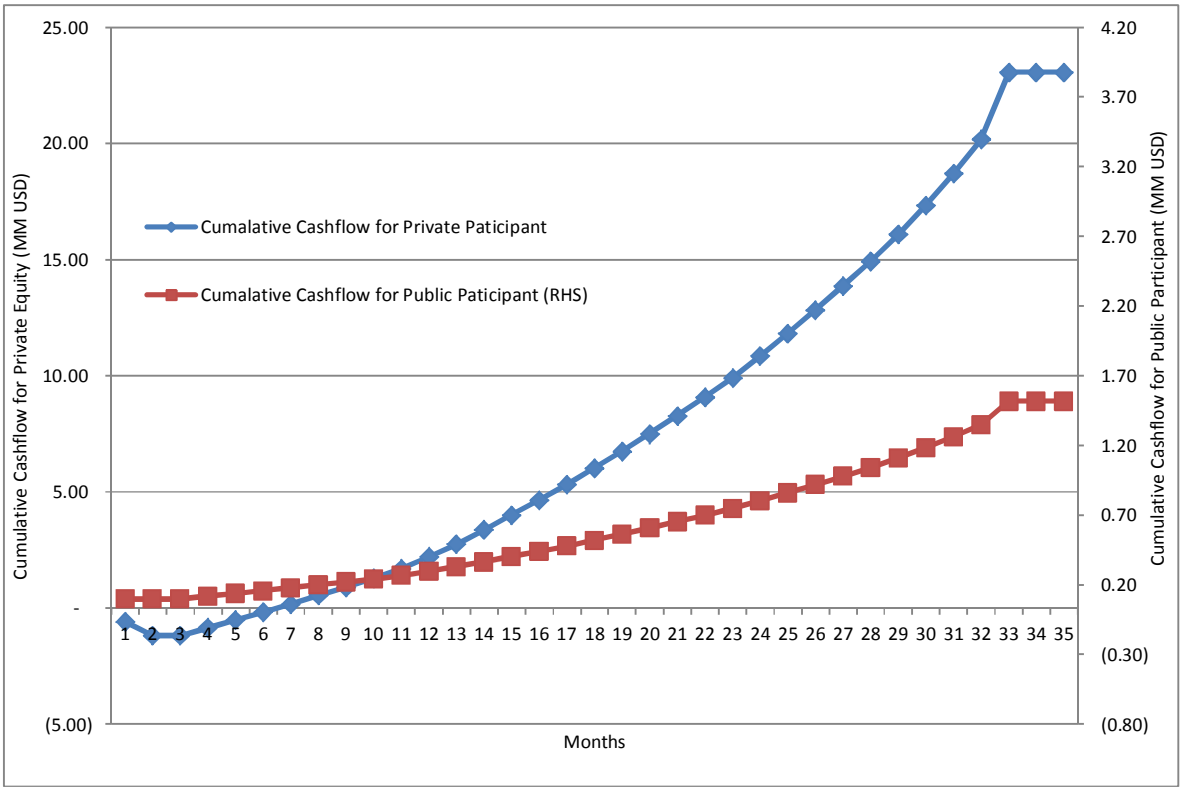


Chart. 13: Cumulative Cash flow to Project stake holders since start of construction

The results of the financial model have been shared in Appendix A6. All tables other than the sensitivity analysis are for the 'Base Case' model run:

Table 1.1 – 1.2:	Sensitivity analysis
Table 2.1- 2.3:	Balance Sheet
Table 3.1 – 3.3:	Profit and Loss Account
Table 4.1 – 4.3:	Cash flow statement
Table 5.0:	Private participant IRR
Table 6.0:	Project IRR
Table 7.1 - 7.4:	Returns to Public Participant
Table 8.0:	Levelized cost of generation
Table 9.0:	Debt Service Coverage Ratio

13.7 Financial model: Sensitivity Analysis

The 'Sens.' sheet lists down different sensitivity cases (rows 23-41) based on variation in values of critical input variables. For e.g. Sensitivity no 2 in row 25 is labeled as 'Case 2 - Increase in Capital Cost by 10 %'. The corresponding cell to be changed for this sensitivity is cell D25 which has 10% as its value currently. This means that this case will show the effects of a 10% increase in Capital Cost. The value in cell D25 can be changed so as to see the impact of the required % increase in capital cost. The 'Sensitivity' macro is run using the 'Run Sensitivity Analysis' button on the sheet. The output for this sensitivity case can be seen in cells from row 46 onward of the same sheet. The following list gives the case no and the sensitivities that can be run in those cases.

Table 1.1 Sensitivity analysis case description

Sr. No	Case & Description
0	Base Case - No Change
1	Case 1 - Increase in Capital Cost by 5 %
2	Case 2 - Increase in Capital Cost by 10 %
3	Case 3 - Decrease in Annual Plant Availability by 5 percentage points
4	Case 4 - Decrease in Annual Plant Availability by 8 percentage points
5	Case 5 - Increase in Base operating cost by 5 %
6	Case 6 - Increase in Base operating cost by 10 %
7	Case 7 - Lower Hydrology by 5 %
8	Case 8 - Lower Hydrology by 10 %
9	Case 9 - Bad year every five years (10 % less water)
10	Case 10 - Higher inflation by 5 % points
11	Case 11 - [Spare]
12	Case 12 - Lower number of carbon credits by 20 %
13	Case 13 - Lower price for carbon credits by 20 %
14	Case 14 - Increase in construction period by 12 months
15	Case 15 – [Spare]
16	Case 16 - Combined downside Case A
17	Case 17 - Combined downside Case B
18	Case 18 - Combined downside Case C

13.8 Financial model: Inferences from sensitivity analysis

The sensitivity analysis shows that the deviations in the cost of the project and the returns to investors are with a permissible range. The project has the cushion to absorb the changes in cost, construction period, changes in hydrology, etc. It is observed that the even when the cost of the project increases by 10%, the minimum DSCR is at 1.62x and the average DSCR is at 2.32x. The Internal rate of return to the private participant falls to 21.97% and NPV of future cash flows to the public participant is 0.22 MM USD.

A decrease in hydrology by 10% results in a minimum DSCR of 1.49x and average DSCR of 2.12x. The Internal rate of return to the private participant falls to 21.89% from 24.42% in the base case and NPV of future cash flows to the public participant falls to 0.20 MM USD from 0.22 MM USD in the base case. It is observed that the target DSCR is not breached in any of the assumed cases. The chart below summarizes the results obtained for the debt service coverage ratio in various cases:

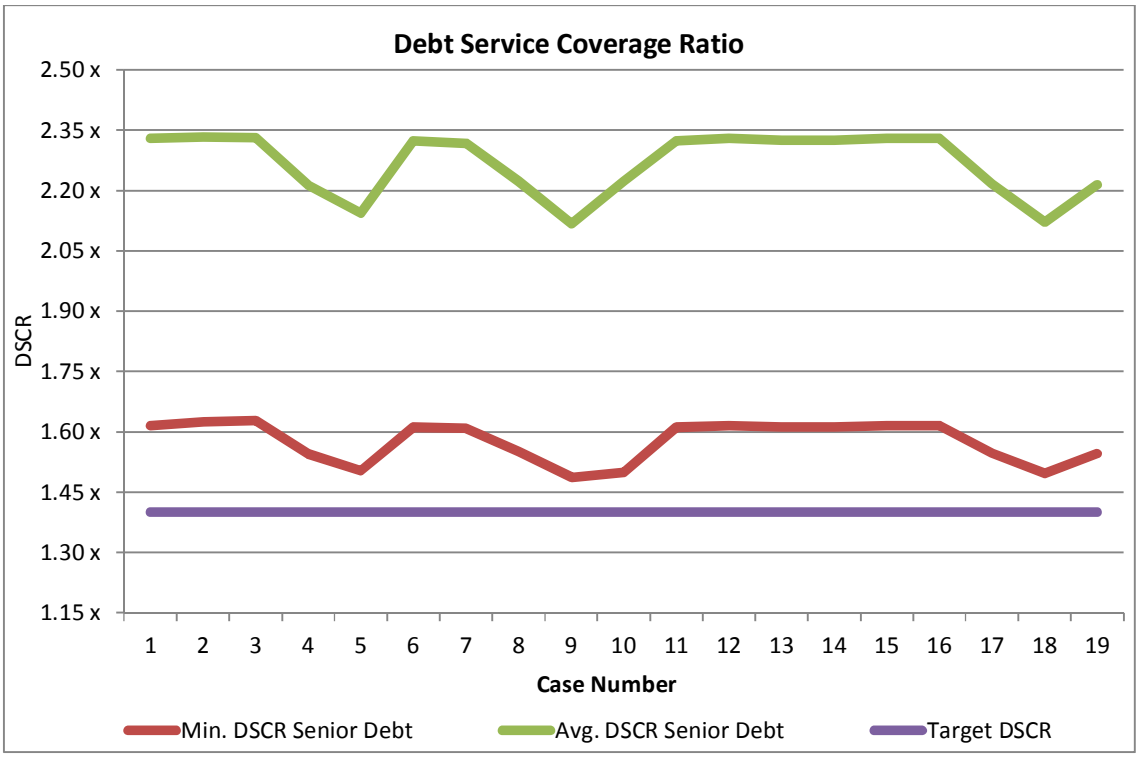


Chart. 14: Debt Service Coverage Ratio variation in sensitivity analysis.

It is also observed that the levelized cost of generation ranges between 10.21 US c/KWh and 11.20 US c/KWh. Both the numbers are below the levelized tariff of 19.04 US c/KWh defined under the MYTO II guidelines.

The sensitivity analysis checks for three cases of variation in capital cost: the base case, an increase of 5% in capital cost and an increase in 10% in capital cost. The results are satisfactory in all the three cases. While the equity employed increases from 1.18 MM USD in the base case to 1.35 MM USD with an increase of 5% in capital cost and to 1.53 MM USD with an increase in 10% in capital cost, the levelized cost of generation remains well below the Levelized tariff of 19.04 US c/ KWh. The graphical representation of the same is shown in the chart below:

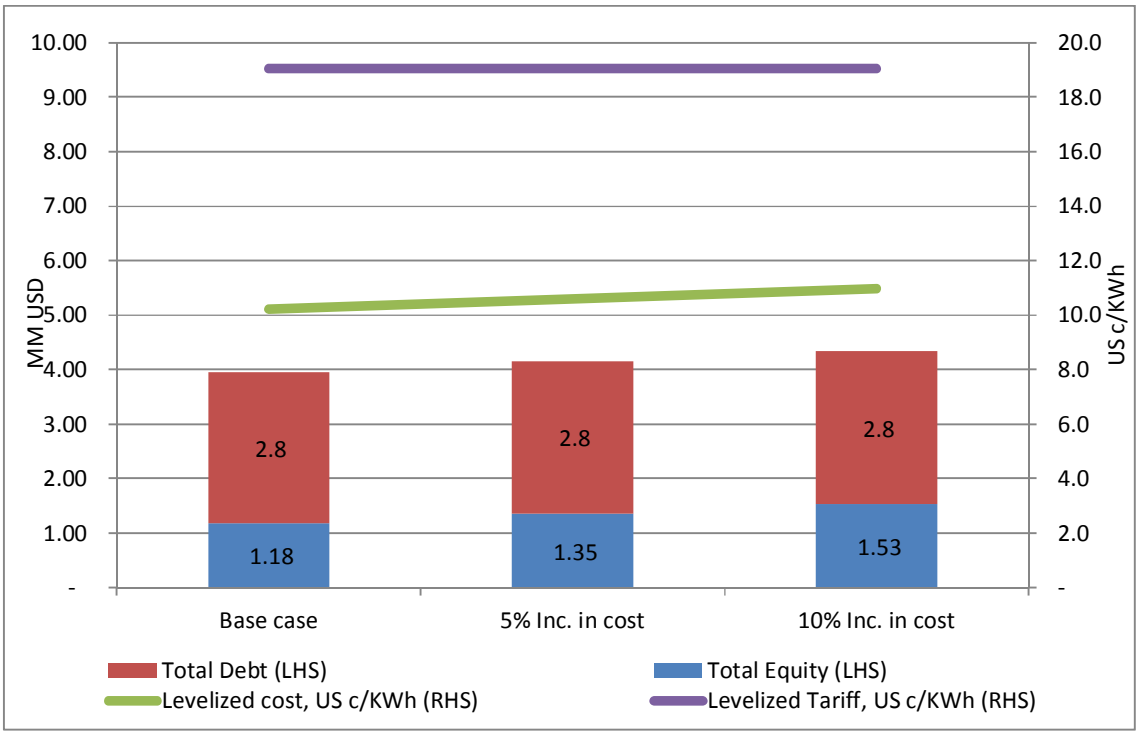


Chart. 15: Impact of increase in Project cost on Levelized cost of Generation

The sensitivity analysis also checks for five cases of variation in generation based on variation in plant availability and hydrology including the base case. The results show that even at the minimum generation of 7.61 GWh (for 10% lower hydrology), there is still a difference of 8.61 US c / KWh between the levelized generation cost and the levelized tariff under MYTO II. The chart below shows the results of this comparison.

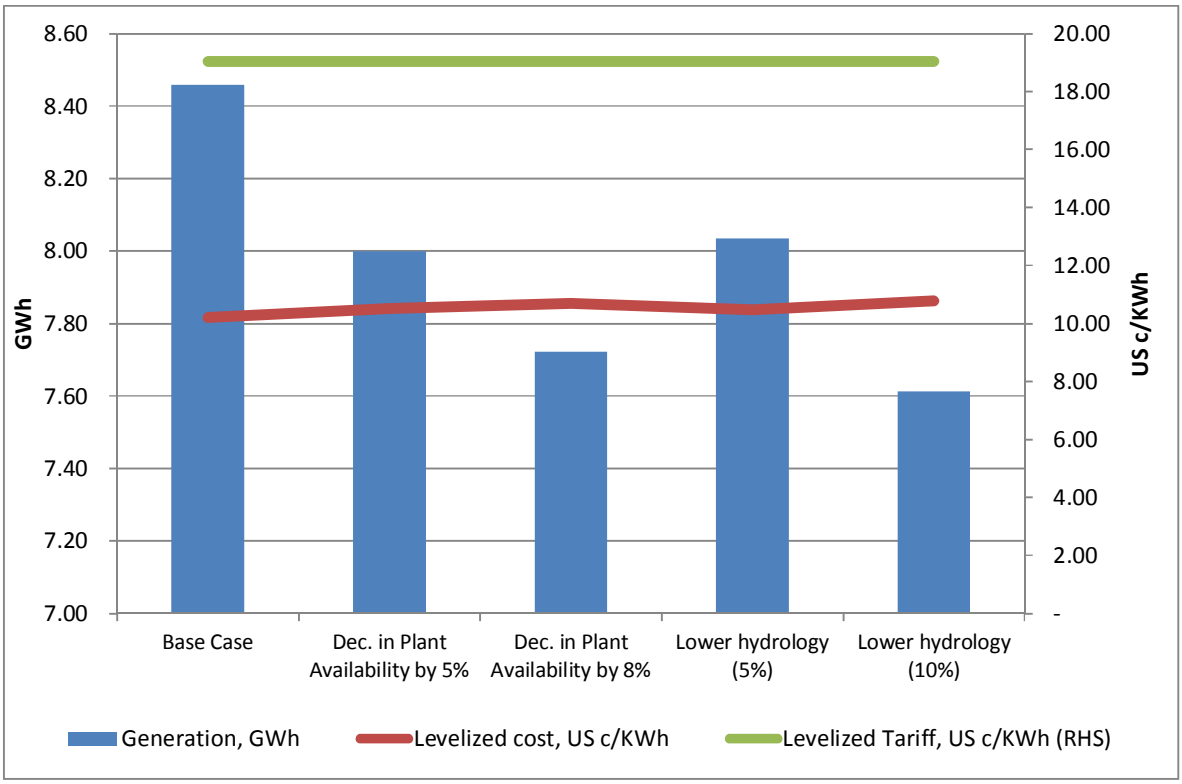


Chart. 16: Effect on generation and levelized cost

Three of the cases checked for in the sensitivity case runs are a combination of various factors, as described below:

Case 16 - Combined downside Case A

Sensitivity Criteria	**Parameters impacted by sensitivity criteria**
Increase in operational expenses by 5%	Cash available for debt service and dividends
Power potential lower by 5%	Decrease in power generation, negative impact on all investor return parameters
Construction time overrun by 12 months	Increase in the cost of the project, negative impact on investor returns

Case 17 - Combined downside Case B

Sensitivity Criteria	**Parameters impacted by sensitivity criteria**
Increase in capital cost by 5%	Increase in the cost of the project, negative impact of returns
Power potential lower by 10%	Decrease in power generation, negative impact on all investor return parameters

Case 18 - Combined downside Case C

Sensitivity Criteria	Parameters impacted by sensitivity criteria
Decrease in annual plant availability by 5%	Decrease in power generation, negative impact on all investor return parameters
Construction time overrun by 12 months	Increase in the cost of the project, negative impact on investor returns

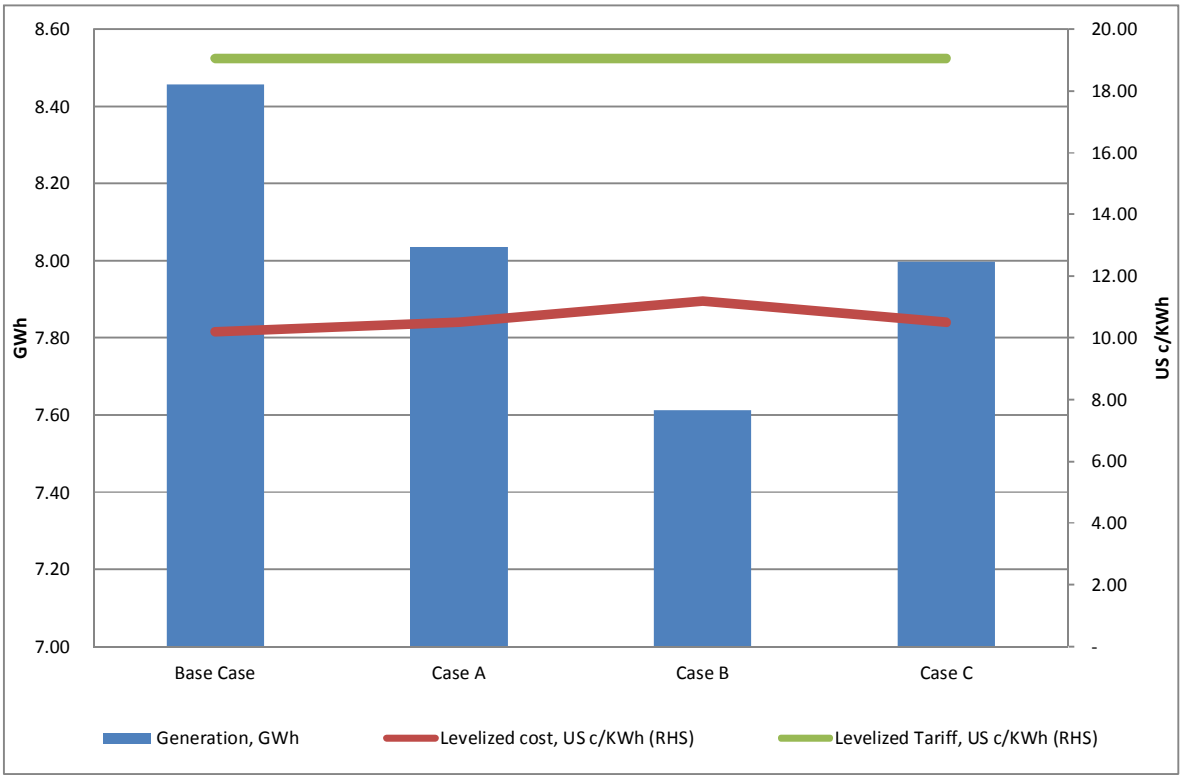


Chart. 17: Combined downside cases of sensitivity analysis

The table below shows a comparison of the results obtained in the combined downside cases in the sensitivity analysis in comparison with the base case results. It can be seen in that even in even the combined downside case B, the results are within the acceptable range. Thus, the project has the cushion to absorb the negative impacts of certain critical input variables such as capital cost.

Case Run	Project Cost Million USD	Equity Million USD	Generation GWh	Levelized cost, US c/KWh	Min. DSCR Debt	Avg. DSCR Debt	IRR Private Participant	NPV Public Participant Million USD
Base Case	3.95	1.18	8.46	10.21	1.62 x	2.33 x	24.4%	0.22
Combined downside Case A	3.95	1.18	8.03	10.51	1.55 x	2.22 x	23.1%	0.21
Combined downside Case B	4.14	1.35	7.61	11.20	1.49 x	2.11 x	20.7%	0.20
Combined downside Case C	3.95	1.18	8.00	10.51	1.55 x	2.21 x	23.1%	0.21

The graph below displays the variation in IRR for the private participant and the public participant.

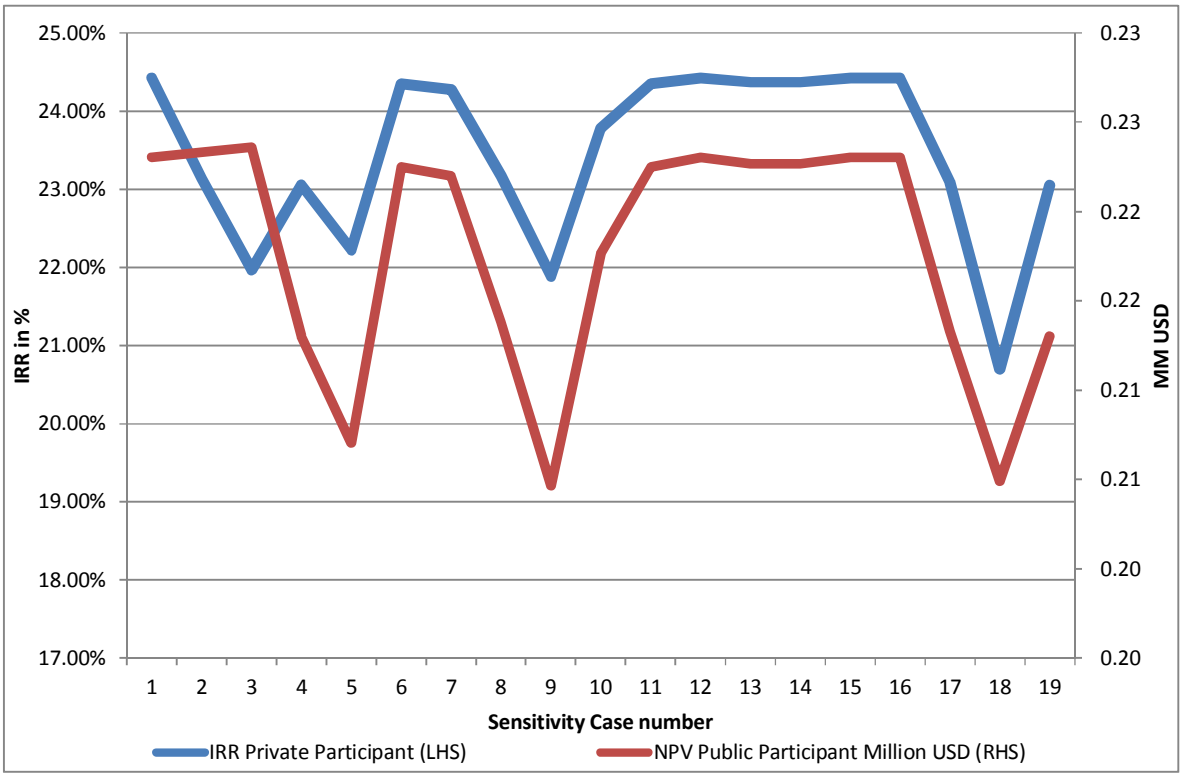


Chart. 18: Internal Rate of Return for the public participant and the private participant

13.9 Analysis of suggested bidding parameters for hydro power projects

Bidding and allotment of hydro power projects is a detailed & complicated transaction and substantial work is required in the preparatory stage of the project (Pre-Bid). After the type

of PPP arrangement is finalized (see Appendix 7 and Appendix 8), one of the critical decisions to be made by the authorities is the selection of an appropriate bidding parameter (the parameter based on which project is to be allotted). Across the world, the following generally accepted bidding parameters are used for allotment of hydro power projects:

- Highest Free power
- Highest Free equity
- Highest Upfront premium
- Lowest concession period
- Highest lease or rent payment for facility (lease payment may be fixed or variable)
- Lowest tariff for electricity (if tariff is not fixed by regulator or if discount to tariff is used as a measure for evaluating bids)
- Lowest cost of project (if the project ownership is to be with public participant & the investment is being financed by the public participant)
- Or a combination of two or more parameters (by keeping only one variable parameter and fixing the value of all others).

Selection of an appropriate bidding parameter depends on, among other things, project features such as cost, ease of execution, financial status of public participant, stage of project (operational or under development). Other factors affecting the bidding parameter selection are local conditions, financial position or strength of host country, investment sentiment, maturity of financial markets and private sector interest levels.

The following sections describe in detail the impact of selection of different bidding parameters on the financial indicators of the project.

13.9.1 Free power

As the name suggests, 'Free Power' refers to a certain percentage or a fixed quantum of electricity provided free of cost to the public participant from the total electricity generated by the project. It may be calculated as a percentage of the "Energy available at the interconnection point", net of losses and adjustments for plant availability, auxiliary consumption, and transmission & other losses.

13.9.1.1 Mechanism of bids based on free power

The public participant may set a base or a minimum value for the free power bid and the bidders are required to provide an additional free power number over and above the base value. Since the debt and interest expenses would be higher in the initial years, the concession period may be divided into two or three periods or tranches and the base value of free power may be set to increase from one period to the next. The first tranche covers the loan or project finance amortization period. The base value for the first tranche should

be kept at a lower level to enable the financial viability of the project in the early years. The base free power may increase progressively (or in steps) over the remaining life of the project.

13.9.1.2 Key benefits for the Public participant

A bid based on free power ensures a steady flow of free electricity to the public participants throughout the concession period. This helps in lowering the electricity procurement price for the government and may also help in fulfilling social obligations of the government, especially in the project vicinity.

13.9.1.3 Key benefits for the Private participant

A free power based bid has a number of benefits for the private participant. These include:

- Reduction in the initial expense burden for the developer as compared to an upfront premium based bid
- Phased cash outflow to the public participant over the entire concession period
- Payment (in kind) to the Public participant through electricity generated; No fixed or upfront obligation on the Private Participant

13.9.1.4 Demerits of a free power based bid

The principal demerit of a free power based bid is that any income to the public participant is contingent on completion of the project. Secondly, as there is no upfront or fixed payment obligation on the private participant, the bid may have participation from non-serious or financially weak bidders. The bid qualification requirements should be such that only qualified and financially sound bidders are allowed to participate in the bid process.

13.9.1.5 Financial analysis of a free power based bid for Omi Kampe dam

Base case assumptions:

- **Minimum free power:** Nil
- **Base Free Equity:** 5.0%
- **Upfront Premium:** US $ 50,000
- **Bidding Parameter tested:** Free power

In order to test the effect of variation of free power value over the financial results, we have kept the other three parameters constant and varied the free power value from 0% to 18%, with increments of 1% in each case. Thus, 19 cases with varying value of free power component were run in the financial model and the following results were obtained:

Table: 1 Financial Results after testing for variation in free power

Case number:	Bidding Parameter: Free Power	Min. DSCR Senior Debt	Avg. DSCR Senior Debt	IRR Private Participant	NPV Public Participant Million USD
Case No. 1	0.0%	1.83 x	2.32 x	24.38%	0.22
Case No. 2	1.0%	1.81 x	2.30 x	24.13%	0.30
Case No. 3	2.0%	1.80 x	2.28 x	23.88%	0.38
Case No. 4	3.0%	1.78 x	2.26 x	23.62%	0.45
Case No. 5	4.0%	1.77 x	2.24 x	23.37%	0.53
Case No. 6	5.0%	1.75 x	2.22 x	23.12%	0.60
Case No. 7	6.0%	1.74 x	2.19 x	22.86%	0.68
Case No. 8	7.0%	1.72 x	2.17 x	22.61%	0.76
Case No. 9	8.0%	1.71 x	2.15 x	22.35%	0.83
Case No. 10	9.0%	1.69 x	2.13 x	22.10%	0.91
Case No. 11	10.0%	1.68 x	2.11 x	21.84%	0.98
Case No. 12	**11.0%**	**1.66 x**	**2.09 x**	**21.58%**	**1.06**
Case No. 13	12.0%	1.65 x	2.07 x	21.32%	1.14
Case No. 14	13.0%	1.63 x	2.05 x	21.07%	1.21
Case No. 15	14.0%	1.62 x	2.03 x	20.80%	1.29
Case No. 16	15.0%	1.61 x	2.00 x	20.54%	1.36
Case No. 17	16.0%	1.59 x	1.98 x	20.28%	1.44
Case No. 18	17.0%	1.58 x	1.96 x	20.02%	1.51
Case No. 19	18.0%	1.56 x	1.94 x	19.77%	1.59

As expected, the internal rate of return (IRR) for the private participant decreases and the Net present value of the returns for the Public Participant increases with an increase in the free power component.

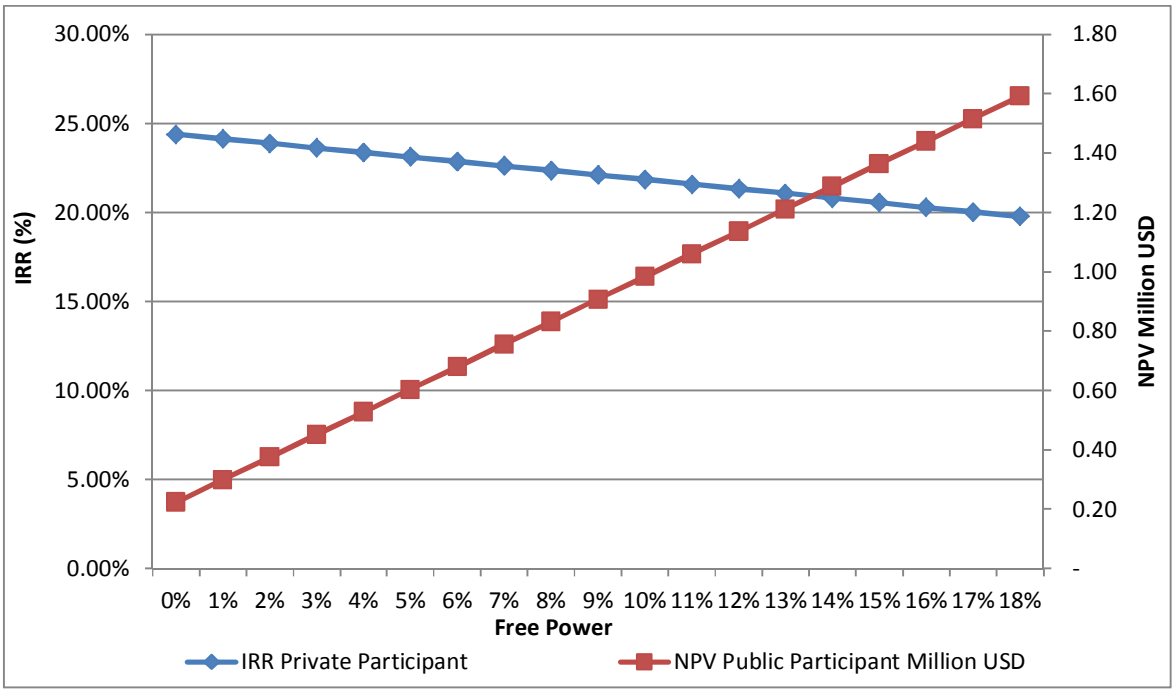


Chart: 4 **Impact of variation of Free Power on IRR (Private Participant) and the Net present Value (Public Participant)**

The Debt service coverage ratio also decreases with an increase in the free power component. However, the DSCR values are at acceptable levels even with the free power component value at 18%.

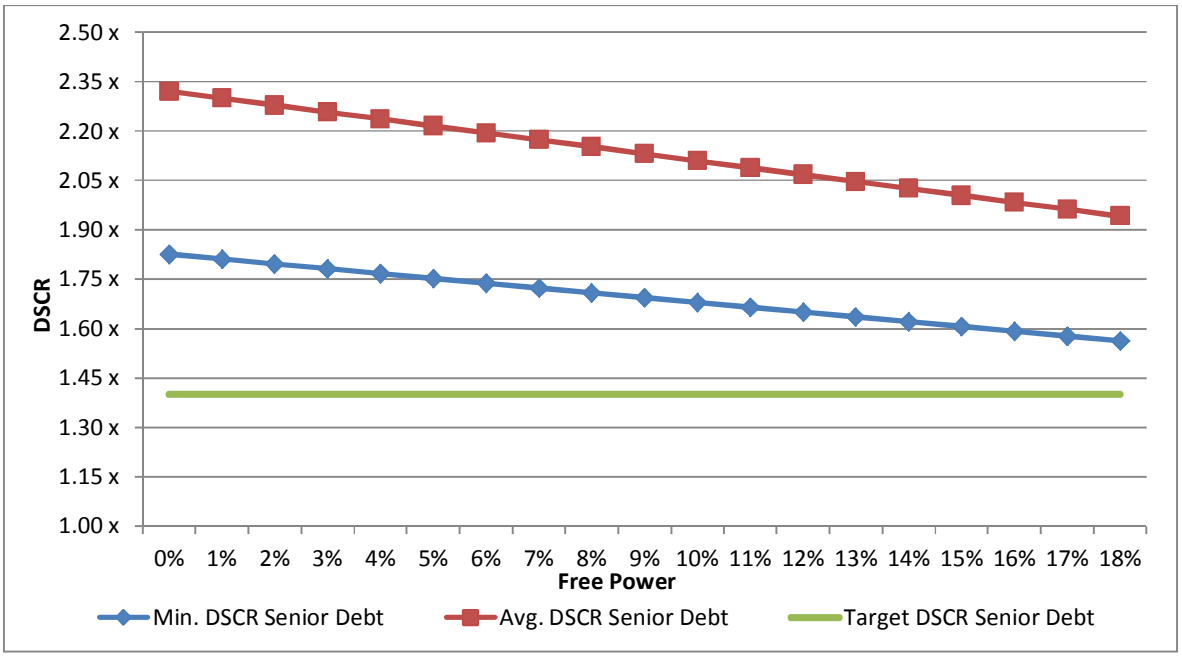


Chart: 5 **Impact of variation of Free Power on the Debt Service Coverage Ratio (DSCR)**

With free power being the only variable bidding parameter, it is observed that results in 'case 8' i.e. 11.0% free power results in in the IRR for the private participant to be above 21%, the NPV for the public participant to be above 1 million USD and the average DSCR at 2.09x. These are acceptable levels of financial indicators for both the public and private participant. Thus, it may seem that the free power component (if selected as the bidding parameter) may settle in the range of 10-12% for this project. The actual numbers may be different, as it is a competitive bid and various factors affect the outcome of the bid.

13.9.2 Free equity as bidding parameter

Free equity is the equity ownership in the project company and thus in the hydro project, awarded to the Public participant without the public participant investing capital in the project. Thus, the private participant invests 100% of the required equity capital in the project, but receives an ownership interest in the project which is less than 100%. Public participants may set a base or minimum free equity value in 'Free Equity' based bids. Unlike the free power bid, the free equity value generally remains constant and does not increase with time.

The Public participant may retain an option to invest capital for further equity interest in the project (an 'at par' investment, called 'paid equity') after the commissioning of the project. This helps them gain control of the project & its operations during the concession period.

13.9.2.1 Key benefits for the Public participant:

A free equity based bid provides the public participants with a steady source of dividend income all through the concession period. It also gives the public participant greater access into the functioning of the project company through the board of directors. As a shareholder, the Public Participants get the right to access documents pertaining to the project company, which may otherwise be unavailable to it.

13.9.2.2 Key benefits for the Private participant:

Like 'Free Power', free equity also spreads the payment to the Public Participant over the life of the concession agreement. The other key benefits to the Private participant in a free equity based bid, is that greater help and involvement from the government can be expected in obtaining the various clearances from government authorities or departments.

13.9.2.3 Demerits of a free equity based bid:

All cash flows to the public participant are contingent to the commissioning of the project. Being shareholders, the public participants may be seen as interfering in the functioning of the project company. This might be a deterrent to the prospective private participants in the bid.

13.9.2.4 Financial analysis of a Free Equity based bid for Omi Kampe dam

Base case assumptions:

- **Free Power:** Nil
- **Free Equity:** Varying from case to case
- **Upfront Premium:** US $ 50,000
- **Concession Period:** 30 Years
- **Bidding Parameter tested:** Free Equity

In order to test the effect of variation of free equity value over the financial results, we have kept the other parameters constant and varied the free equity value from 5% to 31.5%, with increments of 1.5% in each case. Thus, 19 cases with varying value of free equity component were run in the financial model and the following results were obtained:

Table: 2 Financial Results after testing for variation in Free Equity

Sr. No.	Free Equity	IRR Private Participant	NPV Public Participant Million USD
Case No. 1	5.00%	24.38%	0.22
Case No. 2	6.00%	24.21%	0.25
Case No. 3	7.50%	23.96%	0.29
Case No. 4	9.00%	23.71%	0.32
Case No. 5	10.50%	23.46%	0.36
Case No. 6	12.00%	23.21%	0.40
Case No. 7	13.50%	22.95%	0.43
Case No. 8	15.00%	22.69%	0.47
Case No. 9	16.50%	22.44%	0.51
Case No. 10	18.00%	22.18%	0.54
Case No. 11	19.50%	21.91%	0.58
Case No. 12	21.00%	21.65%	0.62
Case No. 13	22.50%	21.38%	0.65
Case No. 14	24.00%	21.11%	0.69
Case No. 15	25.50%	20.84%	0.73
Case No. 16	27.00%	20.57%	0.76
Case No. 17	28.50%	20.30%	0.80
Case No. 18	**30.00%**	**20.02%**	**0.84**
Case No. 19	31.50%	19.74%	0.87

It is observed that even at a level of 30% free equity, the IRR for the private participant is at 20% levels and the NPV for the Public Participant is around 0.84 Million USD.

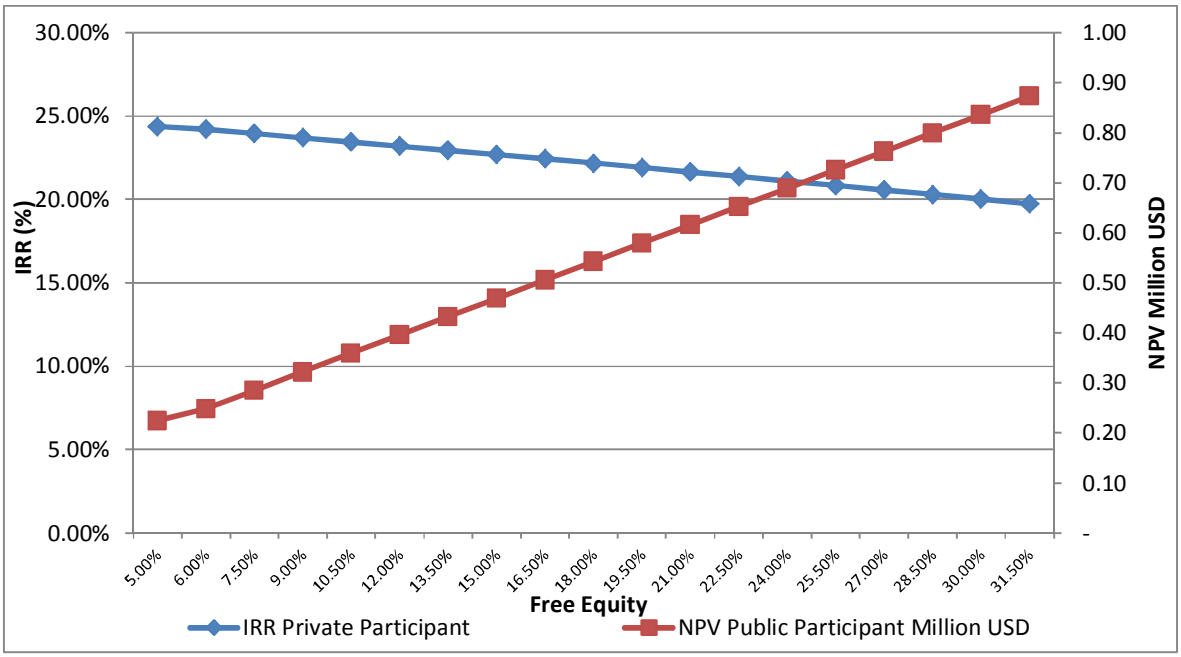


Chart: 6 Impact of variation on free equity on IRR (Private Participant) and the Net present Value (Public Participant)

Any change in free equity has no impact on the debt service coverage ratio or the levelized cost of generation. The returns to the Public Participants based on the free power obtained have been calculated using the MYTO II tariff. As the sale of power by the public participant / Government to the end consumer is expected to be above this rate, there exists a potential upside for the public participant, depending on the final price of sale of power. Based on the above assumptions, free equity in the range of 20% may be obtained by the public participant if the bid is conducted based on this parameter.

13.9.3 Upfront premium as bidding parameter

As the name suggests, upfront premium is a payment made by the successful bidder to the government as soon as the project is awarded to the bidder. The Public participant may set a base or a minimum upfront premium value and the bidders may be required to bid above that. It is a common practice for the bidders' security / Earnest money deposited at the beginning of the bid to be adjusted against the net upfront premium payable. Upfront premium is generally bid on a per MW basis and calculated for the project based on its proposed installed capacity.

13.9.3.1 Key benefits for the Public participant:

An upfront premium based bid ensures that only serious bidders / developers bid for the project as there is a major upfront expense involved. A bid of this nature also promises the public participants' cashflows right in the beginning of the project contrary to the free

power and free equity based bids. Also, the public participant's cash flow is not dependent on the execution and completion of the project.

13.9.3.2 Key benefits for the Private Participant:

An upfront premium based bid results in substantial cash outflows right in the beginning of the project lifecycle. This helps ward of competition and helps cash rich entities get an advantageous position in projects. Secondly, since there is no recurring long term benefit sharing, the private participant corners all potential benefits of efficient project execution and operation.

13.9.3.3 Demerits of an upfront premium based bid:

The principle demerit of an upfront premium based bid is that it may reduce competition as some bidders may be discouraged by the substantial upfront expense. Secondly, the public participant gives away all potential future benefits (windfall gains) from the operation of the project. This also leads to the interest of the public participant in the Project to dwindle as time progresses.

13.9.3.4 Financial analysis of a Upfront Premium based bid for Omi Kampe project

Base case assumptions:

- **Free Power:** Nil
- **Free Equity:** 5.0%
- **Minimum Base Upfront Premium:** US $ 50,000 per MW
- **Concession Period:** 30 Years
- **Bidding Parameter tested:** Upfront Premium

In an upfront premium based bid all risks pertaining to the development, implementation, execution and development of the project are alienated from the public participant. Accounting for the base assumptions stated above and testing for a various levels of upfront premium the following noteworthy results were obtained:

Table: 3 Financial Results after testing for variation in Upfront Premium

Case. No.	Upfront Premium USD / MW	Project cost Million USD	Levelized cost, US c/KWh	IRR Private Participant	NPV Public Participant Million USD
Case 1	50,000	3.95	10.28	24.38%	0.22
Case 2	65,000	3.99	10.33	24.10%	0.25
Case 3	80,000	4.02	10.41	23.78%	0.28
Case 4	95,000	4.06	10.48	23.47%	0.31
Case 5	110,000	4.09	10.56	23.17%	0.34

Case. No.	Upfront Premium USD / MW	Project cost Million USD	Levelized cost, US c/KWh	IRR Private Participant	NPV Public Participant Million USD
Case 6	125,000	4.13	10.63	22.87%	0.37
Case 7	140,000	4.17	10.71	22.59%	0.40
Case 8	155,000	4.20	10.78	22.31%	0.43
Case 9	170,000	4.24	10.84	22.08%	0.46
Case 10	185,000	4.28	10.91	21.82%	0.49
Case 11	200,000	4.31	10.99	21.56%	0.52
Case 12	215,000	4.35	11.06	21.30%	0.55
Case 13	230,000	4.38	11.14	21.05%	0.58
Case 14	245,000	4.42	11.21	20.81%	0.61
Case 15	260,000	4.46	11.26	20.55%	0.64
Case 16	**275,000**	**4.49**	**11.34**	**20.10%**	**0.67**
Case 17	290,000	4.53	11.41	19.66%	0.70
Case 18	305,000	4.57	11.49	19.25%	0.73
Case 19	320,000	4.60	11.56	18.85%	0.76

In the base case an upfront premium of US$ 50,000 is assumed and the value is increased by US$ 15,000 in each of the subsequent cases.

The increase in upfront premium increases the cost of the project, and its impact can be seen through:

- An increase in the levelized cost of generation
- A reduction in the Internal Rate of Return for the equity investor
- An increase in the Net Present Value of the public participant.

Case 16 in table number 3, shows the following results for the upfront premium of US$ 275,000 per MW:

- The levelized cost of generation to rise to 11.34 US c/ KWh, an increase of 1.06 US c/ KWh from the base case.
- The Internal Rate of Return for the equity investor reduces to 20.1%, a decrease of 428 BPS below the base case IRR,
- The Net Present Value of all receivables by the public participant increases to US$ 0.67 million as compared to US$ 0.22 Million in the base case

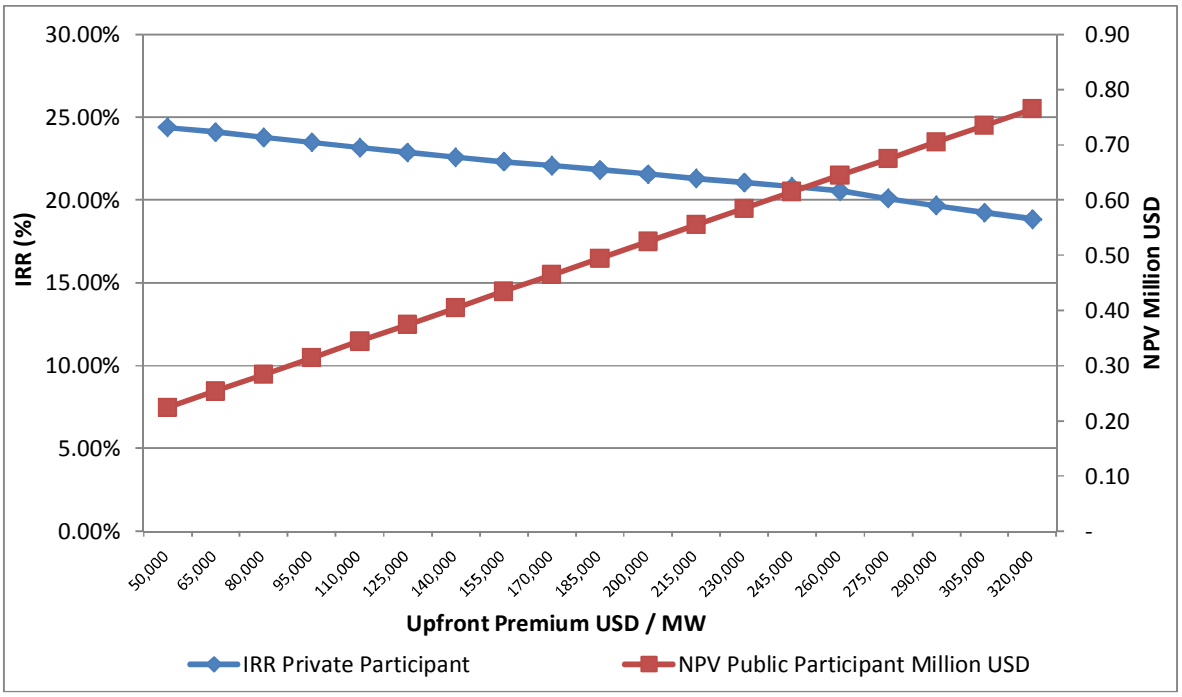


Chart: 7 Impact of variation in Upfront premium on the IRR (Private Participant) and the Net present Value (Public Participant)

The charts below show the effect of an increase in the upfront premium on the Levelized cost of generation and the total project cost.

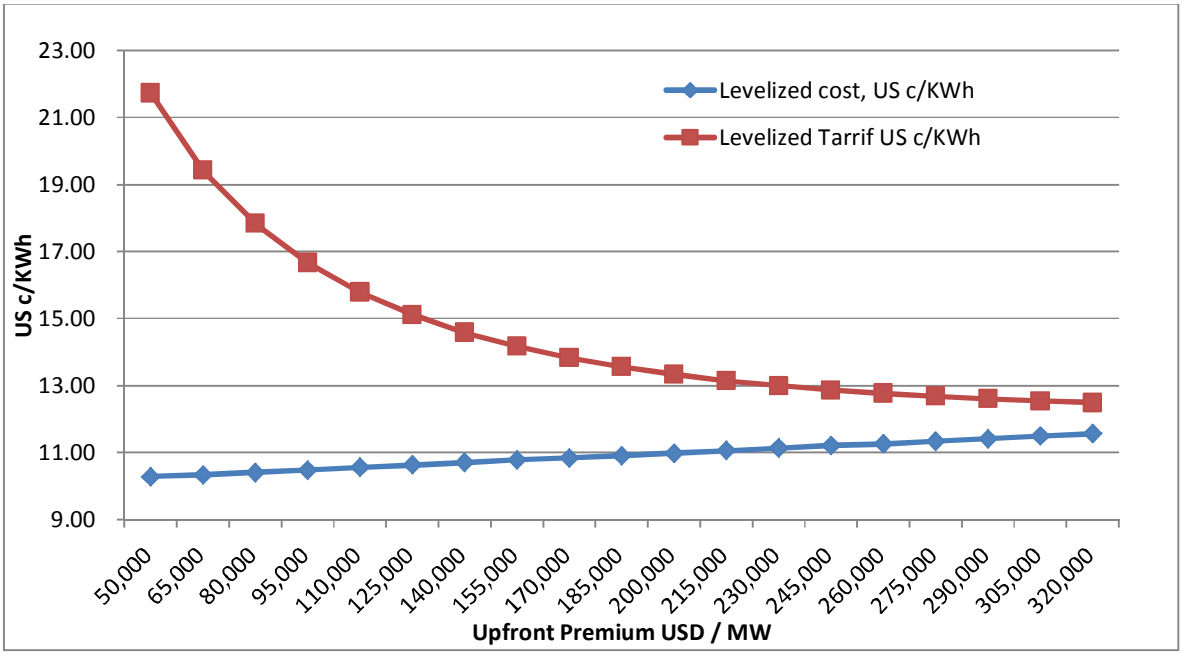


Chart: 8 Impact on variation on upfront premium on the Levelized cost of generation US c/KWh and the Levelized tariff US c/KWh (adjusted for Revenue shared With Hydroelectric Power Producing Areas)

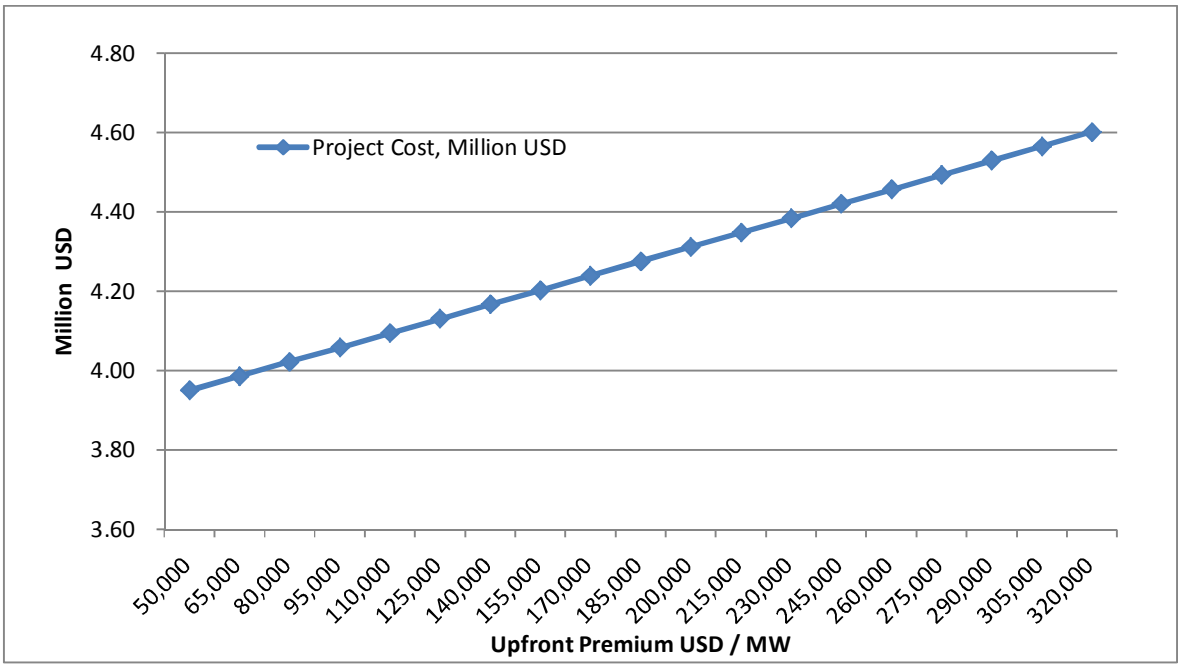


Chart: 9 Impact on variation on upfront premium on the Total Project Cost (USD Million)

13.9.4 Lowest concession period

A bid based on the length of the concession period entails bidders bidding below a threshold period set by the Public participant. The bidder proposing the lowest concession period is allotted the project.

The project ownership returns to the public participant at the end of the concession period. Hence earlier a project gets transferred to the Public Participant, lesser its depreciation and greater the Net Present Value of the asset for the public participant.

Hydro power projects in PPP mode are usually allotted over a span of 20 to 40 years in different parts of the world. Usually a period of 10 to 15 years post commissioning is necessary to repay the project debt. Revenues in hydro power projects are a direct function of the hydrology of the project. Project Hydrology usually has cyclical behavior with an average year preceded by a bad year and followed by a good year. A few years post the repayment of the project debt should be given to the private participant to benefit from the cyclical pattern of the project hydrology.

13.9.4.1 Key benefits for the Public participant

A concession period based bid will result in shortening the period after which the project will be returned to the Public participant. This will motivate the public participant to assist the private participant in developing the project in the plausible timeframe and quality. The

public participant will also insist that the project is maintained at optimal functional capability.

13.9.4.2 Key benefit for the Private participant

The principal benefit to the private participant in a concession period based bid is that, there are no substantial cash outflows right at the beginning of the bid. Also, as there are no future commitments based on the revenue generated (other than the statutory payments such as the 30% Revenue shared with the Hydroelectric Power Producing Areas Development Commission), the entire returns are for the project company's benefit. Secondly, as there is no equity or power sharing, the possibility of a dispute with the public participant is also minimized.

13.9.4.3 Demerit of a concession based bid

The primary demerit of concession based bid is that, as the length of the concession period decreases, the interest level and quality of maintenance of the hydro power project by the private participant may reduce. This may affect the project facility quality with time. Also the private participant may be motivated to install lower quality machinery to cater only to the concession period.

13.9.4.4 Financial analysis of a lowest concession period based bid

Base case assumptions:

- **Free Power:** Nil
- **Free Equity:** 5.0%
- **Upfront Premium:** US $ 50,000
- **Concession Period:** Range of 10 to 46 Years
- **Bidding Parameter tested:** Concession Period

The concession period is the time frame in which the private participant will repay the project debt, recover its investment and make returns on its investment. As the tenor of project finance is usually 10 to 12 years post commissioning, it is advisable that the concession period extends beyond the repayment tenor. The effects of variation in concession period on financial parameters are as follows:

Table: 4 Financial Results after testing for variation in Concession Period

Sr. No.	Bidding Parameter: Concession Period	Levelized cost, US c/KWh	IRR Private Participant (%)	NPV Public Participant Million USD
Case No. 1	10	11.55	19.64%	0.49
Case No. 2	12	11.05	21.76%	0.39

Sr. No.	Bidding Parameter: Concession Period	Levelized cost, US c/KWh	IRR Private Participant (%)	NPV Public Participant Million USD
Case No. 3	14	10.74	22.85%	0.32
Case No. 4	16	10.57	23.45%	0.28
Case No. 5	18	10.43	23.80%	0.25
Case No. 6	**20**	**10.34**	**24.01%**	**0.23**
Case No. 7	22	10.29	24.14%	0.23
Case No. 8	24	10.25	24.23%	0.23
Case No. 9	26	10.24	24.29%	0.22
Case No. 10	28	10.25	24.34%	0.22
Case No. 11	30	10.28	24.38%	0.22
Case No. 12	32	10.11	24.40%	0.22
Case No. 13	34	9.97	24.39%	0.22
Case No. 14	36	9.85	24.39%	0.22
Case No. 15	38	9.75	24.39%	0.22
Case No. 16	40	9.66	24.39%	0.22
Case No. 17	42	9.59	24.39%	0.22
Case No. 18	44	9.53	24.39%	0.22
Case No. 19	46	9.48	24.39%	0.22

If one bids for a concession period of 10 years, the following results were observed:

- The levelized cost of generation increased to 11.55 US c/ KWh, 1.27 US c/ KWh above the levelized cost of generation in the base case (concession period 30 years)
- The Internal rate of return for the equity investor reduces to 19.64%, 474 BPS below the base case results
- The Net Present Value of all receivables to the public participant increases to US$ 0.49 million.

At a concession period of 20 years, the following were observed:

- The levelized cost of generation increased to 10.34 US c/ KWh, 0.07 US c/ KWh above the levelized cost of generation in the base case
- The Internal rate of return to the equity investor reduced to 24.01%, 37 BPS below the base case results,
- The Net Present Value of all receivables to the public participant increases by USD 0.01 Million to USD 0.23 million.

As observed in the charts below, the IRR increases steadily from 19.64% (10 Years) to 24.01% (20 Years) after which the increase in IRR is not substantial. Over a range of concession periods (10 years to 46 years), the levelized cost of generation is always less than

the levelized tariff after factoring the "Revenue shared With Hydroelectric Power Producing Areas" (30% of total revenues), also shown in chart 8.

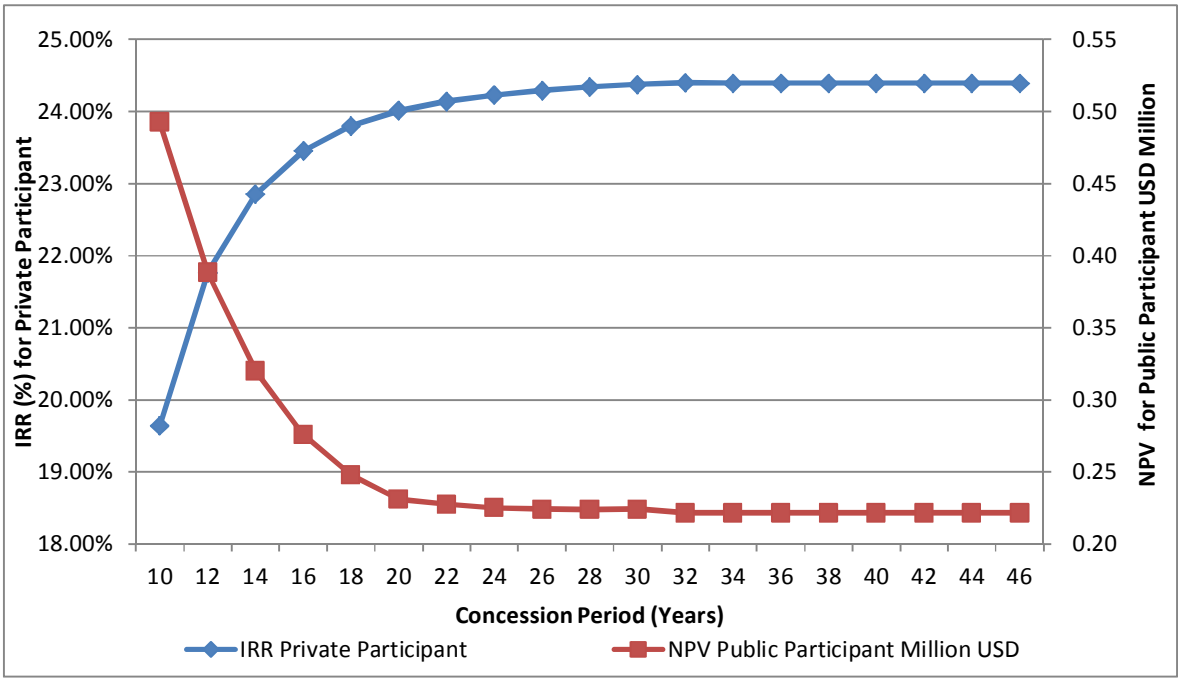


Chart: 10 Impact of variation of concession period on IRR (Private Participant) and the Net present Value (Public Participant)

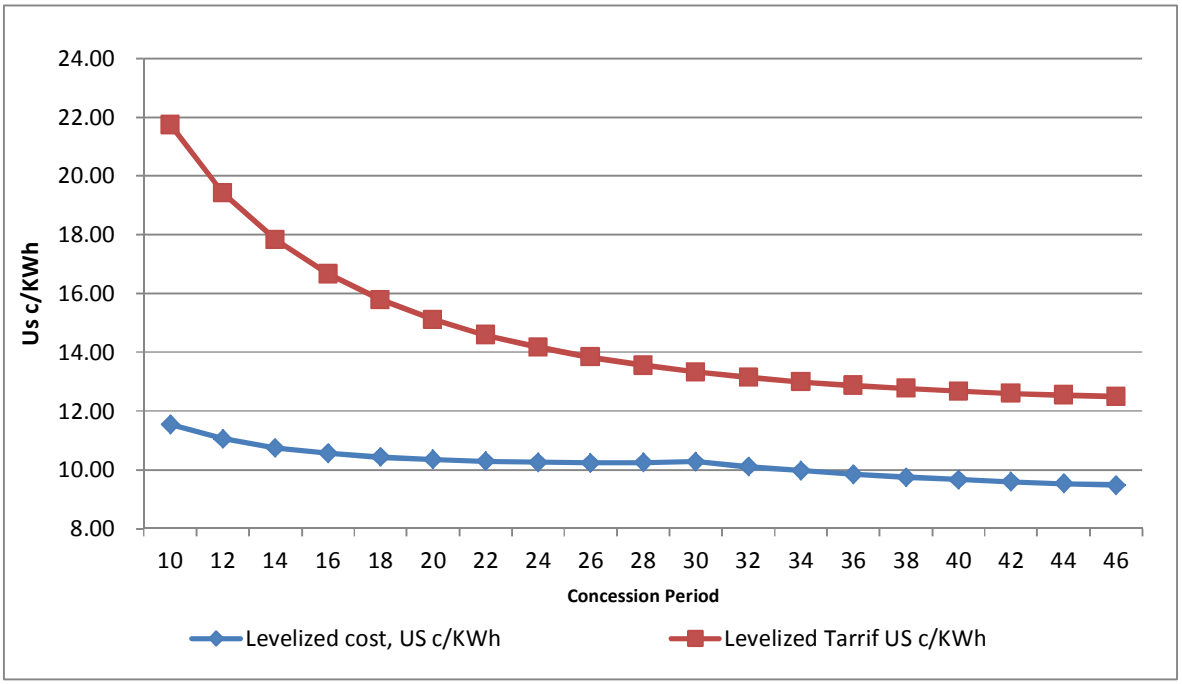


Chart: 11 Impact of variation of Concession period on the levelized cost and the Levelized tariff

13.9.5 Highest lease or rent payment for facility

Fixed annual lease or rent payments are usually used as bidding parameters for operating projects. In case of operating projects, the project finance and construction risks are over. Based on historical operating performance (if available), the private participants can evaluate the financial results of the project and provide competitive proposals for lease or rent. The public participant also has a fair idea of their expected rental payment. Fixed rental payments should be avoided if the project is still under development. In such a case, variable rental payments (as a proportion of the income generated) may be a more appropriate bidding parameter. Private participants are more likely to be interested in committing payments in proportion to the revenue generated. This also ensures a fair allocation of the revenue generation or hydrology variation risk of the project.

13.9.6 Lowest tariff for electricity

Electricity tariff as a bidding parameter is a common bidding parameter followed for medium and large hydro power projects (above 25 MW). The bid is usually structured as a discount to a specified tariff rate and the bidder with the lowest tariff is allotted the project. In case of the proposed Omi Kampe Hydro power project, the tariff for the project is scheduled to be governed by the MYTO II tariff mechanism outlined by the Nigerian Electricity Regulatory Commission (NERC). Although a bid based as a discount to the MYTO II tariff can be structured but that might put a question on the financial viability of the project.

Small hydro power project, globally are supported by the governments in the form of subsidies (India[37]), Feed in tariff (Kenya[38]), Technology support (China[39]) etc. Hence a tariff based bid is not recommended for the proposed Omi Kampe small hydro power project.

13.9.7 Lowest cost of project

In bids based on lowest cost of the project, the bidders bid for the minimum cost in which they will construct and commission the concerned project. The ownership of the project remains with the Public Participant, and the financing may also be arranged by the Public Participant. “Lowest cost of project” based bids are common in developing nations in government projects funded by grants and aid from the developed nations.

For the proposed Omi Kampe Hydro power project, the “Lowest cost of project” based bid is not feasible as the private participant is expected to invest the Equity finance and arrange for the Project finance. Also it will be imperative that the ownership of the project be transferred to the Project Company.

[37] Source: http://bit.ly/1fSrShq Retrieved on 29 September 2013
[38] Source: http://kerea.org/wp-content/uploads/2012/12/Feed-in-Tariff-Policy-2010.pdf Retrieved on 29 September 2013
[39] Source: http://bit.ly/1657RRc Retrieved on 29 September 2013

13.9.8 Combination of two or more parameters

PPP bids for hydro power project are usually structured around two or more parameters. Parameters should be chosen so as to cancel out their individual demerits. Only one parameter is variable (value to be bid by the Bidders) and all the other parameters are kept fixed at pre-determined levels.

13.9.9 Proposed bid structure (Combined Case)

While a bid can be structured with a single parameter, usually two or more parameters are used to structure bids in PPPs for small hydro power projects. Only one parameter is variable, while all the other parameters are kept constant. One way for procurement could also be 'lowest concession period' bid while all other parameters can be kept constant.

While each individual bidding parameter has its pros and cons, when used together they tend to mitigate the risks the other bidding parameters pose. E.g. while free power provides a long term revenue stream (along with an upside potential) and free equity provides a steady stream of long term revenues, they do not provide any short term gains. This can be made up by including the upfront premium parameter in the bid. Also a bid based on lowest concession period may help in returning the project in a shorter span to the Public Participants.

In this section we test for the following variables:

- Free power
- Free equity
- Upfront premium
- Lowest concession period

A base / floor level could be fixed for the selected parameters, and the bidders may bid over and above the base level. The basic assumptions used in the financial analysis are provided below. It should be noted that for this hypothetical situation analysis, we have varied all the parameters simultaneously to arrive at a hypothetical best case bid scenario. In the actual bid, only one parameter will be variable and others will be held constant.

Base case assumptions:

- **Minimum Free Power:** Nil
- **Minimum Free Equity:** 5.0%
- **Base Upfront Premium:** US $ 50,000
- **Base Concession Period:** 30 Years

The results obtained on testing all the parameters together are as follows:

Table: 5 Financial Results after testing for variation in free power

	Bidding Covenants				Financial Impact	
Case Number	**Free Power**	**Free Equity**	**Upfront Premium USD/ MW**	**Concession Period**	**IRR Private Participant**	**NPV Public Participant Million USD**
Case No. 1	0%	5.00%	50,000	10.00	19.64%	0.49
Case No. 2	1%	6.00%	60,000	12.00	21.06%	0.49
Case No. 3	2%	7.00%	70,000	14.00	21.48%	0.52
Case No. 4	3%	8.00%	80,000	16.00	21.46%	0.59
Case No. 5	4%	9.00%	90,000	18.00	21.23%	0.69
Case No. 6	5%	10.00%	100,000	20.00	20.87%	0.79
Case No. 7	6%	11.00%	110,000	22.00	20.46%	0.91
Case No. 8	**7%**	**12.00%**	**120,000**	**24.00**	**20.02%**	**1.03**
Case No. 9	8%	13.00%	130,000	26.00	19.57%	1.15
Case No. 10	9%	14.00%	140,000	28.00	19.12%	1.27
Case No. 11	10%	15.00%	150,000	30.00	18.68%	1.39
Case No. 12	11%	16.00%	160,000	32.00	18.23%	1.50
Case No. 13	12%	17.00%	170,000	34.00	17.74%	1.61
Case No. 14	13%	18.00%	180,000	36.00	17.26%	1.73
Case No. 15	14%	19.00%	190,000	38.00	16.79%	1.84
Case No. 16	15%	20.00%	200,000	40.00	16.32%	1.95
Case No. 17	16%	21.00%	210,000	42.00	15.87%	2.06
Case No. 18	17%	22.00%	220,000	44.00	15.42%	2.17
Case No. 19	18%	23.00%	230,000	46.00	14.98%	2.27

The best case results are obtained in “Case No. 8”: The Public Participants receive the following:

- Free Power: 7%
- Free Equity: 12.0%
- Upfront Premium: 120,000 USD/MW
- Concession Period: 24 Years (6 Years below the base concession period)

The results obtained in case 8 are: 20.02% IRR for the Private Participant and a Net present value of USD 1.03 Million for the public participant. The change in the IRR and NPV with respect to each case as shown in table number 5 is displayed below in chart 9.

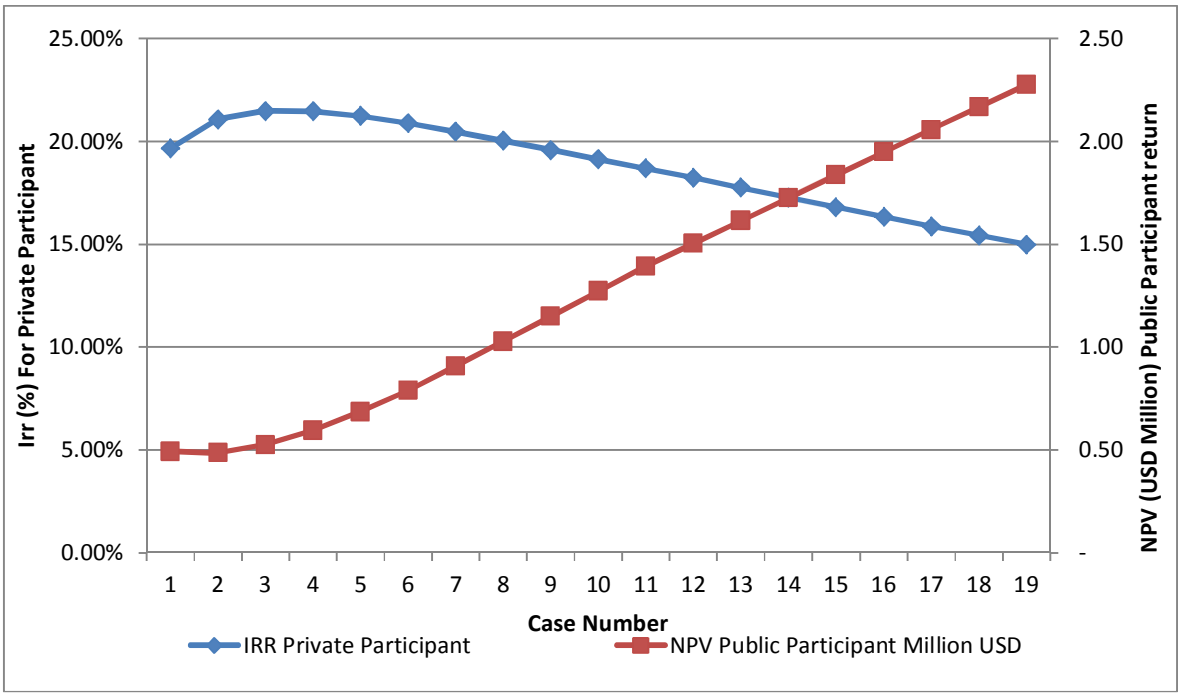


Chart: 12 Impact of change in all variables (described in table 5) on IRR (Private Participant) and the Net present Value (Public Participant)

13.9.10 Analysis of the financial parameters and choice of bid type

The following are the key observations and the implication of the choice of bidding pattern:

13.9.10.1 Project Funding:

Observation: The entire finance (Equity and Debt) will be arranged by the Private participant

Inference: This observation rules out the following

- BOT
- DBO
- Management contract

Reasoning: In all the above mentioned bidding patterns the Government / public participant invests in the project

13.9.10.2 Concession period

Observation: The optimal concession period is around 24 years while factoring the assumptions in point 10.9

Inference: Usually the bid type which extends over a period of 20 to 30 years is BOOT.

Reasoning: In a BOOT the private participant designs, finances, builds and operates the project over a span of 20 to 30 years.

13.9.10.3 Project Ownership

Observation: The project ownership is likely to be transferred to the Project Company over the concession period as it is expected to arrange for the equity and debt finance.

Inference: Under this observation a DBFO (Design, Build, Finance and Operate) is ruled out, as in a DBFO the project ownership lies with the Public Participant.

Reasoning: The equity investment in developing the OMI Kampe hydro power project is around 1.2 million USD and can be considered substantial. Also to raise the project finance, the bank will require a first charge on the assets of the Project Company. For the above two reasons it is imperative that the ownership the project be transferred to the Project Company.

13.9.10.4 Risk of hydrology and Generation related risks

Observation: Variation in Revenues can be expected due to variation in hydrology, plant availability, grid availability etc.

Inference: The concession period for the project should be in the range of 20 to 30 years.

Reasoning: Hydrology usually depicts a cyclical pattern. To harness the complete potential of the hydro power project the Private participant should be able to cover a few hydrological cycles.

Keeping in view the above mentioned observations, inferences and reasoning, a BOOT, i.e. Build Own Operate Transfer, based PPP is advised for OMI Kampe Hydro power project.

13.9.11 Hydro power assets of Project Company

Under a BOOT type of PPP agreement, the Private Participant will be expected to design, finance, build, own and operate the power plant. For construction of the power plant, financing in the form of equity and debt capital will be raised by the project company. A typical project finance structure will require the assets being created to be pledged to the debt providers. The Lenders will require a first charge on the assets being created including the machinery, land, buildings and other civil works of the project company.

A distinction may have to be made between the already existing assets and the newly created assets financed through the project finance structure. The already existing assets such as the dam and existing appurtenant structures are owned by the Government. Ownership of these existing structures is unlikely to be transferred to the project company. The government may lease these assets to the project company for a fixed (or variable/ escalating) annual lease payment. The lease agreement would define the rights and obligations of the project company with respect to the assets owned by the Government (e.g. maintenance of the dam, procedures for operating, etc.).

For the sake of clarity, it is important to define the assets that will be owned by the Project Company and therefore would be pledged to the lenders. Simply put, the Project Company will own all assets that are created using the finances it has raised through debt and equity. This will include all new structures such as powerhouse, machinery, switchyard, transmission line among others. The project company would also like to own the land on which the new structures of the power plant would be built. Since the lenders are financing the power plant, they would require a first charge on all assets created through the money lent by them.

Also, to establish the Project Company's rights to construct and operate the power plant, a few agreements may have to be executed with regards to the following rights of the Project Company:

I. Right to abstract a specified amount of water from the Omi Kampe Dam for power generation purpose
II. Right to modify the existing structures to suit the construction and operation of the hydro power plant (e.g. modifications to the outlet of the dam to abstract water)
III. Right to make alternative arrangements to divert or modify the flow of water for a specified time during execution of project works
IV. Right to control the operation of outlet gates of the dam to regulate the flow of the water

The lenders would also require step-in rights (rights to enter the contracts and take the place of the project company in case of default) and assignment of the project contracts (including concession agreement, land lease, PPA among others).

14. Environment Impact

An Environment and social impact assessment study should be conducted to assess the social and environmental impact of the project. The ESIA should also study the consideration of alternatives, outline and plan the mitigation or offset measures and define the environmental and social management and monitoring plans.

The ESIA process should be conducted by involving a range of stakeholders with different roles and responsibilities not limiting to

- the developer of the project
- independent consultants
- Relevant authorities and government departments
- External reviewers
- Financial institutions
- Local residents and communities
- NGOs etc.

The Environment and social impact assessment should study the impact of all the phases of the project development, namely:

- Greenfield site assessment
- The Construction phase
- Project Operations phase

The points to be noted at each phase are as follows:

At the Greenfield site assessment phase of the hydro power project, the ESIA will need to cover:

- Details of the nature and roles of relevant stakeholders
- Existing and potential land uses and forms of land tenure, appropriate governance systems to ensure accountability and social justice
- Social analysis, including the size and social structure of the local population, their needs, wishes, skills and capacity, and an assessment of the population's health status
- Biodiversity resources and cultural heritage assets, especially protected areas and species, and the geology, hydrology, soil quality, water resources, climatology and meteorology of the region.

For the construction phase the ESIA should encompass the following:

- Impacts on air, soil and water quality, and health and safety.

- Wastes from construction and overburden, soils and other materials.
- Transitory population increase, especially any potential conflicts.
- Temporary and permanent infrastructure developments.
- The use and storage of explosives if needed for excavation works.
- Noise, dust and vibration from construction.

During the operations phase, the ESIA will need to cover:

- The social impacts, focusing on community well-being, to include
    - Public health and safety,
    - the living environment,
    - Satisfaction of basic needs (e.g. housing, sanitation, water supply),
    - Access to public services (e.g. health, education, training and recreation)
    - Landscape aesthetics.
- Occupational health and safety of workers and contractors
- Rehabilitation works if any
- Environmental impacts, emissions, noise and vibration, liquid effluents and storm water, and traffic. The ESIA should also describe the environmental management system to be implemented.

15. Legal Framework

Policy and Legal Basis for The Development Of Small & Medium Hydro-Electric Power Plants Through Public Private Partnerships (PPPs)

The NEPP and the EPSRA form the basis of the legal and regulatory environment for the NESI. In addition, and for the purpose of achieving government's goal of involving the private sector in the development and management of infrastructure in the industry, the NPPPP and other laws such as ICRC Act, the Privatization and Commercialization Act and the Public Procurement Act amongst others are of particular relevance.

15.1 The National Electric Power Policy ("NEPP")

The NEPP was predicated on the need to reform the NESI to meet the needs of Nigerians in the 21st century. The government's priority is to create efficient market structures within clear regulatory frameworks to encourage competitive markets through the unbundling of the power generation and the sale/marketing elements of the electricity industry.

To support this reform, the government sought, amongst other things, to:

- update the roles of the Federal, State and Local Governments and that of the relevant ministry of the FGN, the Ministry of Power[40];
- ***liberalise the NESI and provide a wide range of incentives in order to attract private participation;***
- establish a sector regulator, the Nigerian Electricity Regulatory Commission ("NERC") to act as an independent regulatory agency with the responsibility for issuing licenses to companies operating in the NESI, devising quality standards for generation, transmission, distribution and supply of energy and tariff regulation; and
- ***increase access to electricity and rural electrification projects at an affordable and cost effective manner.***
  (emphasis added).

Thus, the critical policy goal of the NEPP is to ensure that the NESI meets current and future electricity demand in an efficient and economically viable manner. Amongst other things, the NEPP envisaged a restructuring of the NESI from monopoly, vertically integrated service provision by the National Electric Power Authority ("NEPA"), the erstwhile national electric power utility, through a transition involving unbundling of NEPA, and ultimately, to a competition driven market.

To date, the NEPP remains the most definitive sector wide statement of FGN's policies regarding the NESI.

In order to provide the appropriate legal framework for the reforms envisaged by the NEPP, the FGN enacted the EPSRA in March 2005.

15.2 The EPSRA and the Structure of the NESI

The EPSRA was enacted with a view to, in the words of the NEPP, "create efficient market structures, within clear regulatory frameworks, that encourage more competitive markets for electricity generation and sales (marketing), which, at the same time, are able to attract private investors and ensure economically sound development of the system."[41]

In March 2005, the FGN enacted the EPSR Act to provide a legal framework for the reforms envisaged by the NEPP. Key provisions of the EPSR Act include the following:

[40] At the time, the Ministry was known as the Ministry of Power and Steel.
[41] NEPP document – page 5.

- transfer of the employees, assets, liabilities, rights and obligations of NEPA to an initial holding company, prior to the establishment of successor generation, transmission and distribution companies and the unbundling of NEPA (Part I);
- development of a competitive electricity market (Part II);
- establishment, functions and powers of an independent sector regulator, the NERC (Part III);
- establishment of a Power Consumer Assistance Fund to subsidise underprivileged electricity consumers (Part VIII); and
- establishment of the Rural Electrification Agency ("REA") and fund to increase rural access to electricity (Part IX).
- In preparation for the unbundling of NEPA, the initial holding company was incorporated at the CAC as the Power Holding Company of Nigeria Plc ("PHCN"). The successor companies (six generation, one transmission and eleven distribution) were subsequently incorporated at the CAC in November 2005.

15.3 The EPSRA and NERC as Industry Regulator

In line with the NPPPP, the EPSRA was enacted pursuant to the powers granted to the NA under the CFRN, 1999 to make laws regarding the generation, transmission and distribution of electricity, and the establishment of power stations. Particularly, the power to make laws for the Federation or any part thereof with respect, amongst other, to:

(a) electricity and the establishment of electric power stations;

(b) the generation and transmission of electricity in or to any part of the Federation and from one State to another State;

(c) the regulation of the right of any person or authority to dam up or otherwise interfere with the flow of water from sources in any part of the Federation;

(d) the participation of the Federation in any arrangement with another country for the generation, transmission and distribution of electricity for any area partly within and partly outside the Federation;

(e) ***the regulation of the right of any person or authority to use, work or operate any plant, apparatus, equipment or work designed for the supply or use of electrical energy.***

(emphasis added).

Pursuant to the above, the EPSRA sought to amongst other things, "establish the Nigeria Electricity Regulatory Commission, provide for the licensing and regulation of the generation, transmission, distribution and supply of electricity; enforce such matters as performance standards, consumer rights and obligation; and provide for the determination of tariffs"[42].

NERC was therefore established and inaugurated in October 2005 under section 31 of the EPSRA to make regulations for, and otherwise regulate sector activities. By section 32(1) of the EPSRA, the functions and powers of NERC are, amongst others, to:

- create, promote and preserve efficient industry and market structures, and to ensure the optimal utilization of resources for the provision of electricity services;
- maximize access to electricity services, by promoting and facilitating consumer connections to distribution systems in both rural and urban areas;
- ensure that an adequate supply of electricity is available to consumers;
- ensure that the prices charged by licensees are fair to consumers and are sufficient to allow the licensees to finance their activities and to allow for reasonable earnings for efficient operations;
- ensure the safety, security, reliability, and quality of service in the production and delivery of electricity to consumers;
- ensure that regulation is fair and balanced for licensees, consumers, investors, and other stakeholders; and
- present quarterly reports to the President and National Assembly on its activities.

To actualize the policy objectives of the government as stated above, NERC is empowered by the EPSRA to do the following:

- promote competition and private sector participation, when and where feasible;

[42] EPSRA, Explanatory Memorandum in the head note.

- establish or, as the case may be, approve appropriate operating codes and safety, security, reliability, and quality standards;
- establish appropriate consumer rights and obligations regarding the provision and use of electric services;
- ***license and regulate persons engaged in the generation, transmission, system operation, distribution and trading of electricity***;
- approve amendments to the market rules;
- monitor the operation of the electricity market; and
- undertake such other activities which are necessary or convenient for the better carrying out of or giving effect to the objects of the Commission.

  (emphasis added).

Furthermore, pursuant to section 96 of the Act, NERC is empowered to make regulations necessary to carry out or give effect to the provisions of the EPSRA[43]. The Act empowers NERC to make regulations with respect to:

- the duties, powers, rights and obligations of a licensee;
- the determination of the standards of performance that will be required from licensees;
- the information that will be required from licensees and the manner and form by which it shall be provided;
- fees, levies, and other charges that may be payable by licensees, eligible customers or customers;
- the regulatory treatment of rural electric schemes and investments; and
- the terms and conditions for the provision of system access by transmission and distribution licensees to other entities.

[43] EPSR Act, s. 96 (1).

Some of the explicit provisions in relation to NERC's regulatory powers which may impact the Project shall be further discussed below.

15.4 The NPPPP

The NPPPP articulates FGN's policy on private sector participation in the provision of infrastructure. One of government's key policy statements in this regard is "to improve the availability, quality, and efficiency of ***power,*** water, transport and other public services in order to increase economic growth, productivity, competitiveness, and access to markets".

The scope of FGN's programme for PPP in the creation of new infrastructure, and the expansion and refurbishment of existing assets include:

- ***power generation plants*** and transmission/distribution networks;
- roads and bridges;
- ports;
- airports;
- railways;
- inland container depots and logistics hubs;
- gas and petroleum infrastructure, such as storage depots and distribution pipelines etc;
- water supply, treatment and distribution systems;
- solid waste management;
- educational facilities (e.g. schools, universities);
- urban transport systems;
- housing;
- healthcare facilities, etc[44]

  (emphasis added).

Government's legal framework for achieving this goal is to where necessary propose amendment of existing legislation or the enactment of new legislation which would amongst other things:

- ensure that public authorities are empowered to enter into agreements for the implementation of privately financed infrastructure projects and can delegate their statutory functions to private companies;
- ensure that the regulation and licensing of public service operators and operations is transparent, timely, and effective;

[44] See generally, pages 8-9 of the National PP Policy.

- create a centre of PPP expertise within ICRC (the PPP Resource Centre) to issue guidance to all public authorities on the procurement of PPP projects and drafting of PPP contracts;
- provide for transparent, efficient, and competitive procurement procedures for PPP-type contracts that encourage innovation from bidders, and allow dialogue to optimise the allocation of risks between the contracting parties.[45]
  (emphasis added).

According to the NPPPP, the FGN is to ensure that Federal projects go through a rigorous appraisal as to their economic and financial viability before the project begins a competitive and transparent procurement process, and the project business case is approved FGN's Economic Management Team or other relevant authority. The Federal Executive Council is required to formally approve all PPP projects prior to the award of a contract. Whilst the ICRC is to issue regulations that specify a value threshold below which these requirements will not apply. It is not clear whether such regulations have been issued by the ICRC.

The NPPPP Institutional Framework

Government's institutional framework for implementing its policy for PPP allocates specific roles and responsibilities to various Ministries, Departments and Agencies ("MDAs") within the Federal Government for PPP project identification, planning, approval, procurement, and implementation. In addition, various other institutions are involved in the process. These include aside from the ICRC; the National Planning Commission ("NPC") which has a mandate to develop a rolling fifteen (15) year investment strategy for all infrastructure services provided by the FGN (National Development Plan) and incorporating the MDAs' long-term plan for infrastructure investment and maintenance; the Federal Ministry of Finance ("FMOF"), which is vested with the role of public financial management of PPP projects, and of evaluating and managing fiscal risks that may result from the terms of the agreements; and the Debt Management Office (("DMO"), which in conjunction with the FMOF is required to ensure that probable contingent liabilities arising from a project are manageable within FGN's economic and fiscal forecasts; the Bureau of Public Procurement ("BPP") may also be utilized to ensure due process in the procurement of public works and services.[46]

[45] See generally, pages 5-6 of the National PP Policy.
[46] See generally, pages 12-13of the National PP Policy.

It is expected under the NPPPP that PPP process will adhere to the following outline[47]:

Project development

- identification of need;
- a systematic appraisal of technical solutions to the identified need;
- preparation of economic, social and environmental cost benefit analysis, and an Environmental Impact Assessment, if required;
- value for money (VfM) and affordability testing of different procurement options;
- preparation of financial analysis – the pre-feasibility study;
- budget allocation within the National Development Plan and, subsequently, the Medium Term Expenditure Framework (MTEF);
- approval of Outline Business Case (OBC) prior to the commencement of procurement.

Procurement

- creation of a project team and management structure;
- preparation of an Information Memorandum and bid documentation;
- market consultation, if appropriate;
- a competitive and transparent procurement process, with a clear audit trail for the selection of bidders and the evaluation of bids;
- approval of Full Business Case (FBC) before the decision to award a contract.

Implementation

- monitoring of design and construction, and subsequently operation and maintenance to ensure compliance with the required service standards;
- monitoring of payments against services delivered and any contingent liabilities.

Maturity

- inspection and preparation for the handover of any public assets in accordance with the specified requirements, if appropriate;

[47] See pages 19-21of the National PP Policy.

- analysis of future service delivery options and further procurement, if appropriate;
- contract close and recording of lessons learned.

15.5 The ICRC

The ICRC Act was enacted in 2005 and the ICRC was inaugurated[48] in line with the NPPPP to develop the guidelines, policies, and procurement processes for PPP. All contracts completed in compliance with the ICRC Act are guaranteed by the FGN to be legal and enforceable. The Act applies to investment and development projects ***relating to any infrastructure of any Federal Government ministry, agency, corporation or body***.[49]

According to the Act, any MDA, such as the FMOP involved in the financing, construction, operation or maintenance of infrastructure, is permitted to enter into a contract with, or grant concession to any ***duly pre-qualified*** private sector investor for the financing, construction, operation or maintenance of any infrastructure that is financially viable or any development facility of the FGN.[50] The ICRC is vested with powers to take custody of concession agreements entered into by any MDA and ensure compliance with such concession terms and conditions. Such infrastructure projects so earmarked for concession must be submitted to the Federal Executive Council for approval on the recommendation of the relevant MDA ***prior to concessioning*** same to a private entity. The ICRC is responsible for publishing in the Federal Gazette and at least three national newspapers having wide circulation in Nigeria, and other similar means of circulation, the list of projects eligible for contract for the financing, construction, operation or maintenance of any infrastructure as applicable under the Act[51] whilst the relevant MDA, in this case the FMOP, is responsible for making similar publications for the purpose of inviting open, competitive public bid for such approved contract.[52]

The NPPPP also requires the FGN to provide further guidance through the ICRC on the effective management of each phase of a PPP project. These include:

[48] See section 14 of the ICRC Act.
[49] Emphasis added. See section 1(2) of the ICRC Act.
[50] Section 1(1) of the ICRC Act.
[51] Section 2(4) of the ICRC Act.
[52] Section 4(1) of the ICRC Act.

- ***project development:*** guidance on options appraisal, business case analysis, the definition and scope of the requirement, and value for money and affordability assessment;
- ***project procurement:*** guidance on creating structured and competitive procurement processes, maintaining commercial confidentiality, allowing due diligence by third party investors, preparing a Full Business Case;
- ***project implementation:*** guidance on achieving contractual and financial close, contract supervision and management, performance monitoring and change management;
- ***contract compliance monitoring:*** guidance and procedures for the regular review of contractual obligations, tracking the performance of all parties to the contract, and the resolution of any disputes;
- ***project maturity:*** guidance on project close and handover of any public assets (if appropriate), reviews of future service needs, and delivery options analysis.[53]

In view of the major role played by the ICRC in the management of eligible PPP projects executed by MDAs, the FMOP is required to work closely with the ICRC for the proper implementation of this Project.

15.6 The Public Procurement Act

Public Procurement is the acquisition by any means of goods, works or services by the government.[54] In Nigeria, the National Council on Public Procurement (the "Council") and the Bureau of Public Procurement (the Bureau") are the Authorities responsible for the monitoring and oversight of Public Procurement, harmonizing existing government policies and regulating and establishing legal and regulatory guidelines relating to public sector procurement.[55] The procedures for award of contract for public entities are to be adhered to by all public officers involved in public procurement in accordance with the provisions of the Public Procurement Act, 2007 (the "PP Act") which also makes provision for the Public Procurement Manual (the "Manual") as a guide for Procuring Officers in the exercise of their duties.

[53] See page 21 of the National PP Policy.

[54] See section 60 of the PP Act. The NPPPP also defines Public procurement as the process by which government buys goods, works, or services from the private sector.

[55] See generally, the recital to the PP Act.

The scope of application of the PP Act includes amongst others, all procurement of goods, works, and services carried out by the FGN and all ***procurement entities***.[56]

Specific role and functions of the Bureau include amongst others[57]:

- ensuring the application of fair, competitive, transparent and value-for money standards and practices for the procurement and disposal of public assets and services;
- subject to thresholds as may be set by the Council, certifying Federal procurement prior to the award of contract;
- supervising the implementation of established procurement policies; and
- reviewing the procurement and award of contract procedures of every relevant entity.

In the performance of its duties, the Bureau is empowered to amongst others things[58]:

- enforce the monetary and prior review thresholds set by the Council for the application of the provisions of the PP Act by the procuring entities;
- issue certificate of "No Objection" for Contract Award" within the prior review threshold for all procurements within the purview of the PP Act;
- cause to be inspected or reviewed any procurement transaction to ensure compliance with the provisions of the PP Act;
- review and determine whether any procuring entity has violated any provision of the PP Act;
- call for such information, documents, records and reports in respect of any aspect of any procurement proceeding where a breach, wrongdoing, default, mismanagement and or collusion has been alleged, reported or proved against a procuring entity or service provider.
- recommend to the Council, where there are persistent or serious breaches of the PP Act or regulations or guidelines made thereunder - for the suspension of officers concerned with the

[56] The Act defines procurement entities as any public body engaged in procurement and includes a Ministry, Extra-Ministerial office, government agency, parastatal and corporation.

[57] See generally, sections 4 and 5 of the PP Act.
[58] See generally, section 6 of the PP Act.

procurement or disposal proceeding in issue, or the temporary transfer of the procuring and disposal function of a procuring and disposing entity to a third party procurement agency or consultant;
- nullify the whole or any part of any procurement proceeding or award which is in contravention of the PP Act; and
- request for and obtain from any procurement entity information including reports, memoranda and audited accounts, and other information relevant to its functions under the PP Act.

General Principles Governing Public Procurement

Sections 16 to 52 of the PP Act lay down a detailed procedure for public procurement. These provisions are to be applied by MDAs in conjunction with the Manual. These are in line with the NPPPP which clearly requires PPP projects to comply with the provisions of the PP Act and the Manual. According to the NPPPP, the general principles governing public procurement for PPP projects should incorporate the following criteria[59]:

- value for money;
- transparency;
- fairness;
- efficiency; and
- Accountability and governance;

The Manual, in line with the above principles also stipulates the principal hallmarks of proficient Public Procurement to include:

- Economy;
- Efficiency;
- Fairness;
- Reliability;
- Transparency; and
- Accountability and Ethical Standards.

Consequently, government procurement should aim to:

- ensure that goods and services needed are procured with due attention to economy and efficiency;
- ensure that public fund is used to buy only those goods and services needed for national development;

[59] See generally, pages 27-32 of the National PP Policy.

- give all qualified bidders an equal opportunity to compete for contracts;
- encourage development of local contractors and manufacturers; and
- ensure that the procurement process is transparent.

These principles amongst others are therefore required to be followed by the FMOP as a procuring entity for the procurement of works through PPP in respect of the Project.

15.7 The Water Resources Act

The Water Resources Act CAP W2 LFN 2004 ("the Act") is an Act to promote the optimum planning, development and use of Nigeria's water resources and other matters connected therewith.

Control of Water Resources

The Act confers the Federal Government with the right to utilize and control all surface and groundwater and any water course ***affecting more than one State*** for the purpose of planning and developing Nigeria's water resources; coordinating activities that affect the quality, quantity, distribution, use and management of water; applying techniques and standards for investigating, controlling, protecting, managing and administering water resources; and facilitating technical assistance and rehabilitation for water supply.

Right to Use Water

Any individual or MDA that wishes to acquire a right to use or take water from any watercourse or any specified groundwater for any purpose must do so in accordance with the provisions of Water Resources Act. As prescribed by the Act, the Federal Ministry of Water Resources, headed by the Minister of Water Resources ("the Minister") is the main government agency responsible for the management and control of water resources in Nigeria.

Licensing

The Minister under the Act is empowered to issue a license for the diversion, storage, pumping or use on a commercial scale of any water; construction, maintenance, operation or repair of any hydraulic works. The Act further empowers the Minister to impose fees on such licenses granted

to individuals or MDA's seeking to construct, operate, maintain, repair or alter any hydraulic works in or adjacent to any water source[60].

Limitations to Rights and Licenses

The right to utilize water may be revoked by the Minister when such right is likely to override public interest[61]. Furthermore, the Minister upon considering the allocation of usable water in the watercourse or groundwater in the particular area may:

- refuse to issue a license if the licensee's activities are likely to interfere with the quantity or quality of water;
- cancel or modify an existing license to accommodate the needs of another licensee; and
- modify, suspend or cancel a license on account of non-use of such license.[62]

Imposition of fees, rates and charges

The Minister under the Act may by regulation or otherwise prescribe charges to any MDA in connection with its provision of service. This shall include any charge by way of contribution to the cost of any works associated with the provision of such services paid for from public funds[63].

Therefore, the Water License will be required to be obtained from the Federal Minister of Water Resources for the project.

15.8 The NESREA Act

The National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, 2007 (the "Act") is to provide for the establishment of the National Environmental Standard and Regulations Agency ("the "Agency") under the Federal Ministry of Environment, charged with the responsibility of protecting and developing the Nigerian environment and other related matters.

Functions of the Agency

The Agency is empowered under section 7(d) to enforce compliance with policies, standards, legislation and guidelines on ***water quality,***

[60] See generally sections 9 – 13 Water Resources Act
[61] Section 4 (d) Water Resources Act
[62] Section 11 Water Resources Act
[63] Section 14 Water Resources Act

environmental health and sanitation, including pollution[64] abatement. The Agency is also permitted to prohibit processes and use of equipment or technology that undermines environmental quality.

Power to make Guidelines on Dams and Reservoirs

Pursuant to section 26(1) of the Act, the Agency is empowered to make regulations, guidelines and standards for the protection and enhancement of water quality, dams and reservoirs and for watershed management.

The operations of the Dams and its adjoining facilities may therefore be subject to such regulations, guidelines and standards as the Agency may from time to time make for the protection and enhancement of the quality of the environment. We are not aware of any such guidelines or regulations issued by NESREA.

15.9 Environmental Impact Assessment Act

The EIA Act sets out the general principles, procedure and methods to enable the prior consideration of environmental impact assessment on certain public or private projects. According to the Act, an EIA is required by any individual, body corporate or an authority (MDAs inclusive), in arriving at a decision to undertake certain activities (including power generation), in order to establish matters that may significantly affect the environment.

The Act mandates that no project is to be embarked upon without prior consideration for environment and in the event the extent, nature or location of a project is likely to significantly affect the environment, an EIA shall be undertaken in accordance with the provisions of the Act.

Section 13 (d) of the EIA Act stipulates that an EIA is required where a Federal authority established by the Federal Government under the provisions of any law and enactment, issues a permit or license or ***grants an approval or takes any action for the purpose of enabling a project to be carried out***.

All institutions (private and public alike) that intend to carry out projects are to apply in writing to the Nigerian Environmental Protection Agency (the "Agency") who in turn will identify the relevant environmental issues. The Act stipulates that no government authority shall permit any project described in the mandatory study list in the Schedule to the Act to be

[64] Pollution according to the NESREA Act means man made or man-aided alteration of chemical, physical or biological quality of the environment beyond acceptable limits and "pollutants" shall be construed accordingly. It is our view that oil or LNG will be a pollutant for the purpose of this provision.

carried out until the Agency has taken a cause of action conducive to its power under the Act or has taken a decision that a project be carried out.[65]

It is important to note that paragraph 13 of the Schedule makes particular reference to Power generation and transmission projects and in addition, dams and hydro-electric power schemes are stipulated as part of the mandatory study list.

Upon the Agency determining that there is a need for an environmental assessment to be carried out, a screening or mandatory study report of the project is to be prepared. The report shall consider the following amongst others:

- Environmental effects of the project;
- Significance of the project;
- Comments on the project received from the public;
- Measures that would mitigate the effects of the project;
- Alternative means of carrying out the project and their environmental effects thereof;
- Follow up requirements in respect of the project; and
- Short or long term capacity for regeneration of renewal resources that are to be affected by the project.

The Agency shall use all information available to conduct a screen of the project and upon completion, if in the opinion of the Agency the project is not likely to cause any adverse significant environmental effect or if such effects can be mitigated, the Agency may permit such project to be carried out. However, if in the opinion of the Agency the project poses adverse environmental effects that may not be mitigable or if public concerns as regards the environmental effects of the project warrants it, the Agency may refer the project to the Federal Environmental Protection Council ("the Council") for a referral to mediation or a review by a panel created by the Council in conjunction with the Agency.

Therefore, the FMOP in embarking on its concession of dams for the purpose of generating Hydro-electric power will be required to comply with the provisions of the Act by conducting an Environmental Impact Assessment of the Project and obtaining the relevant Agency permit in accordance with the EIA Procedure and sectoral guidelines established by the Federal Ministry of Environment.

[65] See section 12 of the EIA Act.

15.10 The River Basins Development Authorities Act

The River Basins Development Authorities Act ("the Act") is an Act to establish River Basins Development Authorities in Nigeria.

The Act establishes the following River Basin Development Authorities:

Authority	Area of Operation[66]	Head-Quarters
Anambra-Imo River Basin Development Authority.	The whole of Anambra and Imo states.	Owerri.
Benin-Owena River Basin Development Authority.	The whole of Bendel and Ondo States excluding those parts of Bendel State drained by the Benin, Escravos, Forcados and Ramos Rivers creek systems.	Benin.
Chad Basin Development Authority.	The whole of Borno State excluding those parts drained by the Jama'are and Misau Rivers system but including those parts of Gongola State drained by the Yedseram and Goma River systems.	Maiduguri.
Cross River Basin development Authority.	The whole of Cross-River State.	Calabar.
Hadejia-Jama'are Tiver Basin Development Authority.	The whole of Kano state and those parts of Bauchi and Borno States drained by the Jama'are and misau Rivers systems.	Kano.
Lower Benue River Basin Development Authority.	The whole of Benue and Plateau State.	Makurdi.
Niger Delta Basin Development Authority.	The whole of Rivers state and those parts of Bendel State drained by Benin, Escravos, Forcardos and Ramos Rivers	Port Harcourt.

[66] Please note that the Area of Operations mentioned in the Act depicts the States of the federation in existence as at 1986

Authority	Area of Operation[66]	Head-Quarters
	creek systems.	
Niger River Basin Development Authority.	The whole of Kwara and Niger States; the Federal Capital Territory; whole of Kaduna State excluding Katsina State.	Minna.
Ogun-Oshun River Basin Development Authority.	The whole of Oyo, Ogun and Lagos States.	Abeokuta.
Upper Benue River Basin development Authority.	Those parts of Bauchi State drained by the Gongola State drained by the Gongola River system; the whole of Gongola State excluding those parts drained by the Yedeseram River system.	Yola
Sokoto-Rima River Basin Development Authority.	The whole of Sokoto State and Katsina State.	Sokoto.

Functions of each Authority

The Act stipulates that each of the Authorities shall:

- Undertake development of all water resources for the provision of irrigation infrastructure and control of floods and erosion and for water-shed management;
- Construct, operate and maintain dams, dykes, polders, wells, boreholes, irrigation and drainage systems, and necessary functions and hand over all lands to be cultivated under the irrigation scheme to the farmers;
- Supply water from completed storage schemes to all users for a fee as it may determine with the approval of the Minister of Water resources;
- Construct, operate and maintain infrastructure that form an integral part of the Authority's approved project; and
- Develop a water resource Master Plan by collating data relevant from its respective river Basin.

The Authorities are also empowered to make bye-laws for the management of irrigation schemes and regulating the use of water resources with respect to the functions listed above. Such bye-laws are subject to presidential confirmation.

The Request for Proposal issued by the FMOP describes the location of each dam to be concessioned. It is our observation that the Doma Dam in Nasarawa State is under the control of the Lower Benue River Basin Development Authority, the Sokoto-Rima River Basin Development Authority is in charge of the Bakolori Dam in Zamfara State and the Kampe Dam in Kogi State is run by the Niger River Basin Development Authority.

In order for the FMOP to utilize the dams for the purpose of generating hydro-electric energy, it will need to enter into necessary arrangements with the relevant River Basin Development Authorities created under this Act ***prior*** to concessioning the dams. It should be noted however that under the Privatisation and Commercialisation Act[67], the above mentioned River Basin Development Authorities are to be partially commercialised. It may therefore be necessary in obtaining relevant permits from these Authorities to also consult with the Bureau of Public Enterprises which in consultation with the National Council on Privatisation can determine the proper mode of the permit to be issued by each Authority in line with its function of preparing public enterprises approved for commercialisation. It would be necessary for the FMOP to ensure that any permit so obtained would be valid and subsisting notwithstanding the subsequent partial commercialization of these Authorities and the resultant change of each Authority's Management.

15.11 Hydroelectric Power Producing Areas Development Commission (Establishment) Act

The Hydroelectric Power Producing Areas Development Commission (Establishment) Act (the "Act") establishes the Hydroelectric Power Producing Areas Development Commission (the "Commission") which is charged with the responsibility of managing the ecological menace due to operations of dams and other related matters.

According to the Act, the hydroelectric power producing areas are made up of the following Member States:

- Kebbi;

[67] See Part I of the Second Schedule to the Act

- Kogi;
- Kwara;
- Niger;
- Plateau; and any other State where hydroelectric power is produced.

Functions of the Commission

The functions of the Commission are to:

- Formulate policies and guidelines for the development of hydroelectric power producing areas;
- Implement programmes for the development of power producing areas;
- Prepare schemes to promote the development of power producing areas;
- Identify factors inhibiting the development of hydroelectric power producing areas;
- Provide reports on projects being funded in hydroelectric power producing areas;
- Tackle ecological problems resulting from overloading of dams and advising the government on the prevention and control of floods in hydroelectric power producing areas; and
- Carry out any other function the president may direct.

Funds the Commission

The Commission is to maintain a fund which shall be derived from:

- 30% of total revenue generated by any company or authority from the operation of any hydroelectric dam in any Member State of the commission;
- 50% of money due to member states of the Commission from Ecological Funds;
- Gifts, loans, grant-in-aid, testamentary disposition or otherwise;
- Proceeds from the Commission's assets; and
- The annual budget.

The activities of the FMOP (or its concessionaires) in relation to the operation of the concessioned dams in hydroelectric power producing areas would be subject to the policies and programmes of the Commission.

It should also be noted that by virtue of section 14(1) of the act, 30% of the total revenue generated by hydroelectric dams is to be paid and credited to the funds of the Commission.

This means that 30% of the gross income (and not the profits) generated by each of the concessioned dams are to be remitted as funds of the Commission.

15.12 NERC's Regulations and Codes of Practice

Of particular relevance to the Project are regulations dealing with the following:

- Procedures relating to License application, modification and cancellation;
- Duties, powers, rights and obligations of a Licensee;
- Licensee's standards of performance;
- Determination of Tariffs and procedures;
- Fees, levies and other charges payable by Licensees; and
- Connection to the grid.

15.12.1. Generation Licensing Regulations/Requirements

Pursuant to section 64 of the EPSRA, NERC is empowered to issue generation licences, hydro or otherwise, based on terms and conditions as it may fix in the licence. A generation licence shall, as the circumstances may require, authorise the licensee to construct, own, operate and maintain a generation station for purposes of generation and supply of electricity in accordance with the provisions of the EPSRA. Such generation licences may be issued to:

(a) One or more of the successor companies formed under section 8 of the EPSRA, i.e., "successor generation company";
(b) One or more entities that are not successor companies formed under section 8 of the EPSRA, ***i.e., "Independent Power Producers"[68];*** or
(c) Prospective embedded generators[69].

Section 62(1) & (2) of the EPSRA also provides that except in accordance with a license issued in compliance with its provisions, no person (except for

[68] The Independent Power Producers ("IPPs") are either privately owned or are government sponsored initiatives which provide competition to the successor generation companies. This generation licence permits the licensee to carry on the business of electricity generation and sale of power through the national grid and provision of ancillary services.

[69] Embedded Generation is the generation of electricity directly connected to and evacuated through a distribution system which is connected to a transmission network operated by a Systems Operations Licensee.

the purpose of generating captive power[70] and electricity not exceeding 1 megawatt (MW) in aggregate at a site or an undertaking for distribution for electricity with a capacity not exceeding 100 kilowatts (kW) in aggregate at a site), may construct, own or operate an electricity undertaking or in any way engage in the business of:

a) electricity generation;
b) electricity transmission;
c) system operation;
d) electricity distribution; or
e) trading in electricity.

Thus, amongst the categories of licences which can be issued by NERC is the generation licence which enables the holder to construct, own, operate and maintain a generation station for purposes of generation and supply of electricity - a generation licensee may be a Genco as specified under section 8 of the EPSR Act, or a public or private sector IPP participant[71].

In addition to the terms outlined specifically in the EPSRA, NERC is empowered to fix terms and conditions to generating licences. The terms and conditions of the license may be amended at the behest of the licensee, or on the direct initiative of NERC. Thus, a generation licence issued by NERC is usually accompanied by a ***Generation License – Terms & Conditions*** which licensees are compelled to abide by.

NERC has issued three regulations which impact on licences. These are:

- The Regulations for Application for Licence (Generation, Transmission, System Operations, Distribution & Trading) 2010 (the "Licence Application Regulations");
- The Regulations for Licence and Operating Fees Regulation 2010 (the "Licence Fees Regulations"); and
- The Reporting Compliance Regulation, 2009.

Application for License Procedure

The relevant provisions of the Licence Application Regulations include those related to licence amendment, renewal, extension of tenure, suspension and cancellation. Under the EPSRA, upon application a licence may be issued for

[70] Captive Generation is defined as generation of electricity for the purpose of consumption by the generator and which is consumed by the generator itself, and not sold to a third-party. Where the capacity exceeds 1 MW, a permit must be obtained from NERC.

[71] EPSR Act, s. 64.

not more than 10 years initially, the term of which may be extended for an additional maximum of 5 years. The Regulations provide that any application for extension of tenure must be done within the first 5 years of the initial term of the licence and an application for extension of tenure may only be granted once during the initial term of the licence.

An Application for a licence is required to be made in writing addressed to the Chairman of NERC and all such applications shall be accompanied with all the information specified in the Application Form.

Mandatory Submissions for Applications for Generation Licences

An application for a generation licence shall be accompanied by the following:

1. Completed Application Form;
2. Certificate of Incorporation and Memorandum and Articles of Association, **or** Deed of Partnership, **or** Deed of Trust;
3. Registered Title Deed to Site, **or** Sale Agreement, **or** Deed of Assignment/Gift, **or** evidence of submission of a title deed to a relevant land processing agency (as applicable);
4. Tax Clearance Certificate for immediate past three (3) years;
5. Ten-year Business Plan;
6. Off-take Agreement or Arrangement;
7. Environmental Impact Assessment (EIA) Approval Certificate, **or** Proof of submission and acceptance for processing of the Report on EIA to the Ministry of Environment, **or** Details on how effluents and discharges will be managed (if proposed capacity is less than 10MW);
8. Fuel Supply Agreement, or a letter from a fuel supplier and transporter indicating the inclusion of the fuel needs of the applicant in the supply plans of the fuel supplier and transporter;
9. MoU with or Letter of intent from Engineering Procurement Contract (EPC) Contractor (if applicable);
10. MoU with or Letter of Intent from the technical partner (if applicable);
11. Financing Agreements **or** Letter to fund the project from financial institution(s);
12. Timelines for commissioning of the power plant and on the date when different capacities of the plant will come into operation.

General Requirements for Generation Licences

1. Site Map: Showing fuel delivery and storage locations, transmission evacuation site, water pipelines, gaseous, liquid and solid waste disposal areas etc.;
2. Location Map: Showing Roads, Rail Lines, Transmission Lines, Rivers, Reservoirs, etc.;
3. A principal single-line diagram of the project site;
4. Fuel Sourcing, Transportation and Supply Arrangements;
5. Water supply and availability analysis for plant and staff use;
6. Plant Design;
7. Power Station Information:

    a. Total capacity (MW)
    b. Number of Generating Units
    c. Size of Generating Units (MW)
    d. Expected Annual Generation (MWh)
    e. Proposed Running Regime
    f. Station Load/Load Factor
8. Generator Unit Information:

    a. Generator Type
    b. Rating (MVA, MW)
    c. Terminal Voltage (KV)
    d. Rated Frequency
    e. Rated speed (RPM)
    f. Automatic Frequency Control Facility
    g. Rated Power Factor
    h. Unit Efficiency
    i. Short Circuit Ratio
    j. Direct Axis Transient Reactance
    k. Direct Axis Sub-transient Reactance
    l. Quadrature Axis transient reactance
    m. Generator Cooling (Air-cooled, Hydrogen etc)
    n. Auxiliary Power Requirements
    o. Type of Exciter (Static or Rotating, Self or Separately Excited)
    p. AVR type
    q. Generator Protection (Relays)
    r. Type and Characteristics of Governor Control System
    s. Generator Unit Transformer Data
    t. Manufacturer's name / Year of Manufacture / Warranty
9. Engineering, Procurement and Construction (EPC) Contract. (Please refer to the report on the Guide to the Development of Independent Power Plants);
10. Details of Phasing of Project, if applicable;
11. Auxiliary Systems: Please refer to the report on the Guide to the Development of IPPs.

12. Ancillary Services:
    a. Black Start facilities
    b. Reactive Power Generation capabilities
    c. Frequency Response Capability
    d. Maximum Generation (MAXGEN) capability
    e. Fast Start capability
13. Report of evacuation studies (For Grid Connection):
    a. Load Flow Studies
    b. Stability Studies
    c. Short Circuit Studies
14. Station Safety Arrangements:
    a. Emergency Response Plan
    b. Fire Fighting Facilities
    c. First Aid
    d. Safety Awareness and Staff Training Plans
    e. Personal Protective Equipment (PPE)
    f. Health & Safety Policy
15. Environmental Impact Assessment (EIA) and Waste Management Plan.
16. Expected date of Commissioning
17. Evidence of approval from Transmission Company of Nigeria (TCN) confirming that proposed connection point has capacity to take load which will be fed to it Connection.

Specific Requirements for Generation Licences - Hydro Plants:

1. Agreement/Approval with Ministry of Water Resources
2. Map showing proposed Dam Reservoir Area, Water conductor system, fore bay, power house etc.
3. Information on area of village, forestland, agricultural land, etc submerged.

Turbine Unit Information (Hydro Turbines):

1. Turbine Type (Francis, Kaplan, Pelton)
2. Nominal Head (Metres)
3. Nominal Water Flow (M3/S)
4. Turbine Capacity (MW)
5. Turbine Efficiency
6. Hydro Governor Type
7. Block diagram for the speed governor
8. Noise Level

9. Manufacturer's name / Year of Manufacture / Warranty

Specific Requirements for EMBEDDED Generation/ Off-Grid Generation Licence:

1. Total Capacity per site
2. Number of Generating Units per site
3. Fuel Type
4. Size of Generating Units (MW & MVA)
5. Terminal Voltage
6. Rated Power Factor
7. Reactive Power Capacity (if any)
8. Noise Level
9. System Protection
10. Waste management plan or EIA (If required)
11. Agreement or Arrangement with Distribution Company for Network use.
12. Manufacturer's name / Year of Manufacture /

Right of Access to Land

Where the concessionaire's generated power is to be sold to the grid, it will require a connection to the transmission network which would be carried out by TCN. However, in the event that the power generated is to be sold to a third party off-grid and the concessionaire is required under any agreement with a third party to make the necessary connections to the transmission network for onward delivery of the power generated, it would require a right of access to land. Where this is the case, an application would need to be made to NERC for an access right over land, buildings and streets for the purpose of discharging its obligations under the license.[72]

15.12.2. Tariff Regulation[73]

NERC is empowered under the EPSRA to regulate prices of electricity with regard to generation and trading[74], transmission, distribution and system operation activities, in respect of which a licence is required under the EPSRA.

[72] Section 77 (1) and (10) of the EPSRA
[73] EPSR Act, s. 76.
[74] To the extent that NERC deems it necessary to do so in order to prevent abuse of market power.

Section 32(d) and (f) of the EPSRA mandates NERC to ensure a fair pricing and regulatory regime to consumers, licensees, investors and stakeholders in the industry. By virtue of sections 76, 80 and 81 of the Act, NERC has a duty to regulate tariffs, set consumer protection and performance standards in respect of electricity services for which licenses are required under the Act. Pursuant to the above provisions, NERC has issued the Multi Year Tariff Order ("MYTO") amended from time to time, which is designed to ensure, over a number of years, gradual increase in the End-User Tariff for electricity consumers in Nigeria.

15.12.3. The Grid Code

The Grid Code contains the day to day operating procedures and principles governing the development, maintenance and operation of an effective, well coordinated and economic transmission system for the NESI. Thus where the project envisages the provision of power to the main grid at any stage in its operations, its use of the transmission system shall be governed by the provisions of this Code. The Code serves to regulate the use of the transmission system by all users and the users' relationship with the Transmission Company of Nigeria ("TCN") as the Transmission Service Provider ("TSP") and System Operator. The Code also specifies the technical requirements for the relevant plant.

15.12.4. The Market Rules

The Market Rules (the "Rules") complement and supplement the Grid Code and together the two documents constitute the rules for the planning, dispatch and operation of the system and the administration of the wholesale electricity market in Nigeria. The Rules serve to establish and govern an efficient, competitive, transparent and reliable market for the sale and purchase of wholesale electricity and ancillary services in Nigeria and ensure that the Grid Code and the Market Rules work together to secure efficient co-ordination and adequate participation. It aims to:

- Provide a framework for an efficient, competitive, transparent and reliable wholesale electricity market;
- Set out the responsibilities of Participants, the TSP, the System Operator and the Market Operator in relation to trading, co-ordination, dispatch and contract nomination, pricing of imbalances and Ancillary Services, metering, settlement and payments;
- Provide for the operation and pricing system of the Balancing Market;

- Ensure an efficient, transparent and predictable settlement system and
- Set out the payment obligations;
- Establish a governance mechanism and a market monitoring system;
- Provide a framework for resolution of disputes amongst Participants[75] or between Participants on one hand and the System Operator or the Market Operator on the other, on matters relating to the Market Rules and the Grid Code; and
- Provide an efficient and transparent process for amending the Market Rules and the Grid Code.

To be regarded as a Participant in the wholesale electricity market, a licensee must fulfill the following requirements amongst others:

- must hold a license authorizing the conduct of Generation or Distribution business or is otherwise authorized by NERC to carry on business as a Generator or Distributor; or
- must own small Generation or Self-Generation and is authorized by NERC as a Generator;
- must have installed a Commercial Metering System at each Connection Point;
- must have submitted an Application to the Market Operator for admission into the Market and has obtained registration as a Participant pursuant to fulfilling all registration requirements as stipulated by the Commission.

Other parties to the Market Rules are:

The System Operator who is responsible for planning, dispatch and operation of the power system and implementation of open access and new connections of equipment or loads to the System Operator Controlled Grid in line with the functions established in the Grid Code, and in accordance to its license; and

The Market Operator, responsible for implementing and operating the Market in a manner designed to guarantee an efficient, transparent and non-discriminatory market administration service to all Participants, facilitate the development of a sustainable competitive Market, and adapt to regional Markets or regional electricity trading agreements.

[75] "Participants" is defined in the Rules as any person who is a party to a Market Participation Agreement, in addition to the Market Operator. A Market Participation Agreement is the Agreement pursuant to which the Rules and the Grid Code are made binding on a Participant.

15.12.5. NERC Model Agreements

In operating as an IPP, a licensee needs to enter into various agreements, some of the key agreements aside from the Operations and Maintenance Agreement, include NERC regulated agreements related to grid connected transmission:

Connection and the use of Electricity Transmission Network Agreement

This agreement regulates the relations between the user of the transmission network and the TCN. It would cover issues such as the conditions for right to use and connect to the electricity transmission network, the relevant charges to be paid and the mode of payment, the metering system to be employed, obligations of the parties, right of access to the network, safety rules, security and compliance with applicable laws, new connect site requirements, etc. A proper grasp of such issues will be required by an IPP to effectively perform its obligations;

Interface Agreement

The Interface Agreement deals with the interaction of personnel and operation of equipment and facilities at a connection site between the network operator and its user. The Agreement spells out the terms involved in the connection of equipment to the grid and covers issues such as right of access, dispute resolution, right to install and retain assets, relocations and removals, services and use of assets etc.;

Ancillary Services Agreement

This Agreement deals with ancillary services to the network for the purpose of ensuring a safe, stable and reliable operation of the network and other externally connected networks. As a result of some of the provisions of the Grid Code, a generating plant connected to the grid will have to provide ancillary services such as voltage control, black start capability, operating reserves and a host of others. Issues such as the aforementioned ones would need to be agreed upon by both the network operator and the IPP. As previously indicated, for the purposes of the Market Rules, all power sales agreements would be required to include provisions that impose an obligation on the seller to provide ancillary services.

15.12.6. The Nigerian Electricity Regulatory Commission Regulations for Embedded Generation, 2011

The Nigerian Electricity Regulatory Commission Regulations for Embedded Generation, 2011 (the "Regulations") seeks to regulate the operations of embedded generators, prospective embedded generators and applications for embedded generation[76] Licenses. It also makes several provisions to regulate the interaction between embedded generators and distribution licensees.

Where the Project envisages that the IPP would provide power to a Disco as an Embedded Generator, the following shall be applicable.

Application

An application by a prospective embedded generator is governed by the provisions of the Application for Licenses Regulations and the License and Operation Fees Regulations[77]. However, as stipulated by the Regulations, such an application will not be granted unless there is compliance with Rules 22.4.1 and 22.4.2 of the Market Rules. Rules 22.4.1 of the Market Rules provide that a Disco may purchase embedded generation to provide for local reliability reserves due to transmission constraints; however, to justify such purchase, NERC may request an evaluation by the System Operator to verify that the need for such local reserve is necessary. Subject to the above mentioned provision, Rule 22.4.2 provides that a Disco is prohibited from entering into a bilateral contract with an embedded generator unless one or both of the following conditions have been satisfied:

- A Disco is acting alone or in conjunction with other Discos, and upon receipt of a proposal for power procurement by the Bulk Trader proposes an alternative bilateral contract at lower prices than the prices of the new power procurement proposed by the Bulk Trader and the Disco(s)'s proposal is approved by NERC; or
- Where there are transmission constraints that cause shortages in the Discos(s) coverage area and it is expected that such constraints will remain for at least five (5) years, and the Disco follows a competitive process, within the guidelines established by NERC to procure generation installed or connected in its region.

[76] Embedded Generation is defined as the "generation of electricity directly connected to and evacuated through a distribution system which is connected to a transmission network operated by a Systems Operations Licensee" See Regulation 3

[77] See Rule 1, Chapter VII of the Regulations.

The Regulations also provide that an affiliate of an embedded generator may be licensed to engage in the business of distribution, transmission, trading and system operations provided that NERC is satisfied that the applicant will not abuse its market power to the detriment of consumers or that appropriate safeguards exist to prevent such abuse. Separate accounts are also required to be kept by the embedded generator and its licensed affiliate.[78]

Connection of Embedded Generation

The Regulations provide that the maximum embedded generation capacity allowable for a given distribution system except for an isolated Independent Electricity Distribution Network ("IEDN"), shall be a percentage of the peak system load of the Disco's distribution system to be determined by NERC. Embedded generations units above 5MW are required to comply with applicable provisions of the Grid Code except those connected to an isolated IEDN. However, embedded generation units with capacity of 20 MW and above are required to be dispatched centrally by the System Operator in accordance with the provisions of NEPP. In addition, the Regulations mandate a Disco to make access to the distribution systems available to the embedded generator in so far as there is capacity and after reaching an agreement with the generator on the acceptable connection conditions and fees. The Regulations also prescribe that the procurement of power should be competitive and in accordance with the provisions of the Bulk Generation and Procurement Guidelines and Codes approved by NERC.[79]

The embedded generator and the Disco are required to enter into a host of agreements to govern their relationship. The Disco is required to develop and publish a template of the Power Purchase Agreement, Connection Agreement/Interface Agreement, Use of Networks Agreement and Ancillary Services Agreement along with the standard terms and conditions approved by NERC. Such agreements would form the basis of negotiations between the embedded generator and the Disco. The Disco and the embedded generator may in their PPA determine the charges, and any relevant security for such charges, that may be paid by the Disco to the embedded generator for such capacity and energy that is made available to the Disco. However, such charges must be in accordance with the tariff methodology in force as approved by NERC.

[78] See Rule 1 of Chapter VIII of the Regulations.
[79] See Rule 7 Chapter III of the Regulations.

15.13 Conclusion of the Legal and regulatory framework

Our review of the legal and regulatory framework clearly indicates that the FMOP is empowered under the NPPPP and the ICRC Act to carry out the Project in line with the provisions of the ICRC Act, the Public procurement Act and its accompanying Manual. Consistent compliance with the provisions of these Acts is a required for the Project to be validly executed.

As already stated above, in execution this Project, the FMOP would need to interface with the following government agencies amongst others:

The ICRC

As the authority vested with the powers to take custody of concession agreements entered into by any MDA, the FMOP is required to work closely with the ICRC in the implementation of the Project. It is our understanding that the FMOP is already in collaboration with the ICRC on the Project. This collaboration is required to subsist throughout the Project cycle *viz,* from Project inception to completion and hand-over of Project at the contractually stipulated end of the concession;

The Federal Ministry of Environment

The FMOP should aim to ensure proper compliance with the EIA Procedure and sectoral guidelines established by the Federal Ministry of Environment regarding EIA. This in particular would require ***prior*** submission of an EIA report and consultations with the Ministry on the impact of the Project on the environment and mitigation measures required if any.

The River Basins Development Authorities

Interested private investors in considering participation in the Project would need to be assured that relevant permits and licences required for Project execution has been granted or would be granted in a timely manner without any impediment. To that extent, the FMOP would need to engage with the River Basins Authorities and the BPE for the purpose of obtaining the relevant permits required for the legal concessioning of the dams. As owner, the River Basin Authorities will be required to be a party to the concession agreement.

The Ministry Of Water Resources

For the FMOP (through its concessionaires) to construct, operate and maintain hydro-electric dams and harness hydro-electric energy from such

dams, it needs to obtain the relevant licences from the Federal Minister of Water Resources. For any of the Dams which have not initially received such licence, the FMOP would need to initiate discussions with the Minister of Water Resources for the grant of such licences. The timing of the licence application is also important i.e., whether to obtain the licences on behalf of the concessionaires ***prior*** to the procurement process or whether to allocate this responsibility to individual concessionaires with commitment to facilitate the speedy and unencumbered grant of the licences by the Minister.

The Nigerian Electricity Regulatory Commission

As previously stated, no electricity undertaking including commercial power generation may be embarked upon without obtaining the relevant licence from NERC. The FMOP would need to consider at what stage of the Project it would initiate discussions with NERC for the grant of generation licence to the investors. It may be preferable for the purpose of certainty to initiate this process concurrently with the application of permit from the River Basins Authorities. This would give investors more confidence in the Project. It would also aid in negotiating at an early stage, relevant licence terms and conditions such as the duration of the licence and renewal period and other licensing requirements. The type of generation licence to be obtained would also need to be properly considered i.e., whether the investors should operate as embedded generators, whether the generated power would be supplied to eligible customers as provided for in the EPSRA or other pre-determined electricity consumers.

16. Conclusion and Recommendations on Feasibility Assessment

On the basis of the technical and financial feasibility assessment the following conclusions and recommendations can be drawn:

1) The Omi dam appeared to be sound structurally; nevertheless it called for better maintenance of the various structures of the dam in general.

2) The hydrology of the reservoir needs to be studied thoroughly using daily inflow data.

3) The dam was initially constructed to primarily cater to the irrigation demands for irrigating 8000 Ha of land. However it was noted that no substantial cultivation was being carried out in the irrigated area. Also the discharge from the dam was not being controlled or monitored. This clearly indicates that the waters stored in the Omi dam can be put to better use such as that of power generation. To utilize the

potential energy in the stored waters of the OMI dam, detailed hydrological and topographical studies should be conducted for the sizing of the project and the placement of the appurtenant structures of the project. In addition, The need for the irrigation, domestic household purpose, ecological release should be monitored and estimated to calculate the power generation potential of the dam more accurately.

4) Based on the assumptions made and the data shared in the reports, the dam can support either hydro power plant or irrigation demand, domestic/industrial demmand and other associated works. The elevation difference of ~16m between the irrigation canal and the tail water level of the proposed Hydro power project make the two schemes mutually exclusive.

5) If hydro power plant is considered then based on the assumptions stated above the optimum capacity will be of 2 MW with 48.55% plant load factor. The annual energy generation is approximately 8.51 GWh with 4,687 hours of operation annually. However a thorough study with detailed flow / discharge analysis needs to be conducted to firm up these numbers.

6) A wing wall is recommended for safe guarding the powerhouse civil structures and E&M equipment in case of flood. The elevation of the powerhouse elevation is ~218 m whereas the Tail water level is 209 m. The highest flood discharge is 3550 cumecs. In order to block this discharge of 3550 m^3/sec, a suitably designed wing wall has been proposed to be contructed. The reach of the flood discharge needs to be ascertained to analyse the effectiveness of the wingwall.

Conclusion from the financial sensitivity analysis results

7) The sensitivity analysis confirms the fact that the project has a certain cushion to absorb the negative impact of critical input variables such as higher capital cost, lower generation, higher operating costs etc.

8) Even if the capital cost increases by 10%, the levelized cost of generation of power at 10.96 US c/KWh is well below the levelized tariff (19.04 US c/KWh). Even when the project power generation is reduced by 10%, the minimum DSCR at 1.49x is higher than the target DSCR of 1.40x. The lowest IRR value for private participant is observed in combined case B (Case 17) at 20.70%.

Thus it can be concluded that the project is financially viable and has enough room to absorb variations in assumptions.

Part B: Structuring of the Project

17. Risk Assessment and Allocation[80]

The structuring of project risk is an important part of any PPP project. The identification, analysis, mitigation and allocation of risk are crucial to the planning and success of every project. After critical risk areas are identified, their impact on different project parameters can be analysed. This helps in prioritizing and structuring the mitigation process and increasing the probability of success of the project.

The primary principles of risk allocation are as follows:

a. Risk should be allocated, by contract or otherwise, to the party best able to mitigate or control such risk.
b. Economic benefits should be adjusted in relation to the risks assumed.
c. The return on investment to the private investor should be in consonance with the risk assumed by them.
d. Financial responsibility for project risks should be allocated to the project parties based on their credit worthiness and the willingness to assume the risk.
e. Certain risks which cannot be controlled or mitigated may not be attributable to any party. Such risks can cause a loss to the private party's investment.

Example in line with the above mentioned principles are:

I. Contractors to the project should be expected to accept risks which are linked to the construction of the project facilities.
II. The operator should be expected to accept risks which are linked to the operation of the project.
III. Government or Public participants should be expected to accept risks related to regulatory environment and local laws.

Generally project risks are shared between the lenders and the Equity investors in the proportion of their respective investment / exposure. Project sponsors are expected to bear performance risks (which are in part transferred to contractors, suppliers and/ or operators).

Typically, host governments / the Public Participant are willing to accept political risks in the host country, which include, for example,

- Legislative changes
- Failures and interference of host government authorities
- Currency inconvertibility
- General strikes and other non-project-specific labor related interferences
- Political unrest
- War and similar events involving the host country

[80] Source: http://bit.ly/1dGB6yI Retrieved on 02 September 2013

Host governments do not normally accept the financial risks of a project unless this is a requisite to a defined extent. This is done usually to make the project viable from the perspective of the lenders and the equity investors or to address other public policy objectives of the host government. Financial risks burden the economy and finances of the host country and also create contingent liabilities for the future. Governments therefore steer clear of assuming financial risks or providing financial/ sovereign guarantees to back the investments.

To some extent, risks can be covered by having adequate insurance available at a reasonable cost. Insurance is a commonly used instrument for covering the insurable risks, with the cost of insurance being included in the project's pricing.

The individual perspective on risk allocation varies from participant to participant depending upon their technical and financial position and their ability to evaluate, understand and mitigate the posed risk. Hence different parties in a PPP often negotiate differently on the allocation and incidence of identified risks. Negotiations are settled based on a risk vs. reward trade off.

PPP documentation often involves a Risk Matrix - a common tool in a tabular format, which compares the degree of incidence of various risks for all the PPP participants. The Risk Matrix allows the participants to understand various risks and their effect on the project. Mitigation measures for each risk and the allocation of risks to specific participants is also dealt with in the Risk Matrix. Another important factor analyzed in the risk matrix is the impact and consequences of the risk for parties to whom the risks have been assigned and to those who do not bear the particular risk.

A typical risk matrix for a PPP transaction is shared in the forthcoming section[81]. The risks are also described in detail in the next section.

Categorization of risks

One of the founding pillars of the concession agreement is the categorization of the identified project risks. Once risks are categorized, they can be evaluated and their impacts can be estimated. Project financing also depends heavily on highly structured assumptions and the allocation of risks to the entities involved in the project.

Some of the common categories of commercial risks involved in a PPP project are described below.

17.1. Construction and completion risks:

[81] Source: http://bit.ly/1dGB6yI Retrieved on 2 September 2013

Cost overruns and delays in performance are the most important and common risks associated with the construction period. The responsibility of project engineering design often lies with the private participant (Project Company), which in turn transfers the responsibility and risk to the contractor, under an EPC agreement containing back-to-back obligations, usually for a fixed price. Most of the construction risk (if not all) lies with the project company and not with the government. The project company may abstain from assuming the risks that relate to political uncertainty or country level risks. The private participant will also be averse to assuming any kind of risk where it does not have the opportunity to conduct a thorough due diligence of the project. As the private participant has the responsibility to execute the design and construction of the project, it is in the best position to assume the risk for the same as well.

17.2. Developer Risk

This is important from the point of view of the FGN, especially when the project is being planned on Public Private Partnership (PPP) Basis. FGN would like to ensure that the Private Participant selected as Developer for the project is financially & technically capable of successfully executing the project. If the Developer is not qualified or capable, the project may fail to get commissioned on time or within budget. This can adversely impact the financial return of the public participant (FGN) and/or result in sub-optimal results from the project.

Developer risk can be mitigated through the following measures:

- Devise a concession process that weeds out weak Developers
- Identify selection criteria based on technical and financial capabilities of project developers that result in selection of capable project developer/ investor
- Robust concession agreement having equitable distribution of responsibilities
- Checks & Balances incorporated into the process; Reporting requirements all through the project development, construction and concession periods

17.3. Operating risks:

The concession period for the proposed hydro power project at OMI dam is likely to be a long term contract. The operating costs for the project over the term of the concession period may be difficult to estimate without thorough understanding of the project components, their wear and tear, maintenance requirements and general levels of inflation in Nigeria. In general there are two ways of dealing with this issue:

- The Public Participant could allow the project company to pass the increased input costs on to the consumers of the electricity generated. The escalation

could be pre-determined based on local inflation rate (CPI or WPI) for local expenses and foreign inflation (US CPI) for costs denominated in foreign currency.

- The project company could mitigate the input risks by entering into long-term supply agreements with reliable suppliers (although this means the project would not benefit from downward trends in costs).

Example: Volatility of input costs (labor costs) and technology changes.

17.4. Demand, Power off-take and price risks:

Hydroelectric Projects are highly dependent on the revenue paid by the public utility. Usually the private participant would bear this risk, but would insist on some measures from the government to mitigate the risks.
Power off-take risk is the risk that the project is not able to sell the entire quantum of power that it generates or could potentially generate in any given period of time. Power off-take risk is a revenue risk – if the project is not able to sell power, it loses out on the revenue associated with it, unless there are provisions in the PPA to take care of such situations.

The inability to sell power could be because of various reasons. One of the reasons could be the lack of demand from the customers of the power purchaser. E.g. there could be particular periods of the day during which power demand is lower and hence the power purchaser gives back-down instructions to the power plant. Another reason is the unavailability of the transmission or distribution network due to faults or maintenance works. If the transmission/ distribution network is down, purchaser will not be able to off-take power even though the power plant is available. In some cases, the off-taker may not have funds to pay for the power and hence may decide to reduce power off-take from the power plant. Thus, the financial strength of the power purchaser is one of the important indicators for the mitigation of this risk.

Power off-take risk would result in reduced revenues for the project, and hence reduce the financial returns to the project promoters. This may also result in lower debt coverage ratios and in extreme cases, the project may have problems in making the interest and principal payment as per schedule.

A typical mitigation measure would be inclusion of ‘take or pay’ or ‘deemed generation’ clauses in the PPA. Deemed energy generation means that the project would be deemed (or assumed) to have produced and sold electricity in case the power plant is required to reduce or stop generation for a reason beyond its control – such as lack of demand or fault in the transmission/ distribution network. The PPA obligation of the utility could also be supported by a federal government support

letter. The price risk is taken care of by a fair and pre-determined tariff structure, in this case the MYTO II tariff mechanism.

The off-taker payment risk can be reduced by signing the PPA with a financially sound off-taker. Finally, the transmission and distribution networks should be maintained in good condition and downtime should be reduced with preventive maintenance. The loss of revenue can in some cases be protected through insurance.

17.5. Technology risks:

There are two main types of risks associated with technology.

- Latent defects in the technology used in the project would affect the performance of the project in the long run.
- Developments in technology may make the technology used in the project obsolete. This might also result in services delivered from projects based on old technology becoming inefficient or uncompetitive.

In case of the mini hydro power project, this risk is low as the technology for electricity generation is very mature and well understood. No major innovations are expected as the efficiencies of the current technology are quite high.

17.6. Change of law risks:

Changes in the governments' laws over the course of time may adversely affect the project company. As the changes of laws are within the control of the government, the Public Participant should accept to bear the risk of adverse circumstances for the project. The project company would be expected to be compensated for any discriminatory changes in laws. However, it would be expected to bear the risk of changes of law if these changes affect the project company's competitors equally.

17.7. Environmental risks:

Generally, the Public participant is liable for pre-existing conditions of the land where the Public participant has the obligation to provide the land to the project company, and is often achieved through including warranties and indemnities.

After the transfer of possession of the facility / land to the project company, the project company should be obliged to conduct the project in compliance with the applicable environmental regulations. Noncompliance with applicable environmental law and regulations lead to penalties as applicable under the Nigerian law, along with the cost of the clean-up required.

17.8. Casualty risks:

Casualties and mishaps are always a possibility on infrastructure construction sites. They should be insured against.

17.9. Ownership and Borrower risks:

The sponsors / share holders of the project would not want the creditors and lenders to the project to have recourse to their assets outside the project company. It is therefore prudent to ring-fence the project company and its assets that are pledged as security for supporting the borrowing.

17.10. Property and contingent liabilities:

This refers to protection of property ownership, risk of expropriation by the government or a public authority and compensation in case of expropriation to the private participant.

17.11. Country and political risk:

The project is affected by the civil and political stability of a country e.g. strikes, civil strife, coup etc.

17.12. Counterparty credit risk:

To minimize the counterparty credit risk the Public Participant needs to ensure that only reputed and the credit-worthy private participants are selected for the PPP project. If the counterparty is a newly incorporated special purpose vehicle, undertakings or guarantees from the parent organizations/ shareholders should be taken and their credit-worthiness should be assessed.

17.13. Exchange rate risks:

Generally the revenues earned in providing infrastructure services are in the local currency. As most overseas sponsors / equity investors report their earnings in a different currency, the earnings of the project company may get distorted due to the exchange rate fluctuations.

The principal and interest payment obligations for project finance may be in a different currency. Depreciation in the value of the local currency may make it difficult to repay the loan and may lead to default on the loan repayment obligations.

Exchange risks can be managed through hedging by purchasing forward contracts equivalent to the estimated outgo of foreign exchange. At times, the payment for services or a part thereof can be denominated in the foreign currency of choice for the lenders/ private participant.

17.14. Interest rate risks:

Usually, international lenders provide finance on the basis of the cost of risk free capital (usually LIBOR) plus a mark-up margin (lender's perception of the market risks). As a result, the project company may be exposed to the risk of a general rise in interest rates. The Public Participant needs to consider whether this rise in interest rate could indirectly be passed on to the customers (for example, as an adjustment to tariffs due to increase in debt servicing expenses). Generally, interest rate swaps are available at a price and allow the borrower to fix the interest rate for the entire loan repayment period.

17.15. Hydrology Risk

The most important factor to be considered while developing a hydro power project is the availability of fuel i.e. water. Hydrology risk is the risk that the actual quantum of water available for power generation is less than what was assumed during planning stages. This means that the power generation would be lower as compared to that estimated during planning. This risk thus directly impacts the power generation and hence the revenue generation of the project.

Hydrology i.e. availability of water in a hydro power project varies as per the season of the year (dry vs. wet or rainy season). Availability of water may also vary from year to year, depending on the precipitation (rains) in that particular year (e.g. flood vs. drought year). Thus, accurate prediction of exact amount of water available in any hydro power project at any point of time is not possible. This introduces an inherent uncertainty in the hydrology analysis of a planned project as it involves prediction of water availability in the future years. This problem is tackled by conducting a statistical analysis of existing water flow and rainfall data to arrive at a confidence interval. The accuracy of this prediction is improved if there a number of data points are available and the data is reliable.

Another important thing to note is the project sizing. As the project size increases, the project becomes more dependent on the hydrology data and the hydrology risk increases. So project's installed capacity (MW) should be carefully finalized so that the power generation is optimum and there is a margin of safety in the project's financial returns.

The optimum installed capacity for the project has been arrived at as 2.0 MW, with an annual plant load factor of 48.55%. The annual energy generation will be 8.51 GWh equivalent to 4,687 hours of annual operation.

However, it should be noted that the above calculation is based on very limited hydrology data for the Omi dam. Water flow in and out of the dam should be gauged

and data so collected should be subjected to hydrology analysis. Such data can provide a more robust and accurate picture of the power potential for the Omi dam.

To obtain water flow and rain fall data, gauge stations need to be established on the river (close to the intake point of the project) and the catchment area of the river upstream of the intake. Though long term data is preferable, continuous data for at least 18 months (covering dry seasons of two consecutive years) is a must.

17.16. Geological Risks & Surprises

Geological risks and surprises are not uncommon while constructing hydro power projects due to the extensive civil works involved in construction of dams, powerhouses & associated structures. For a dam based project, the geological risks become critical due to safety considerations & the costs involved in overcoming those risks.

Comprehensive geological investigations should be carried out before commencing construction of the project. Sub-Surface geological investigations and tests should be carried out to determine soil characteristics, rock foundation, load bearing capacity, compressibility etc. at 2/3 different powerhouse locations. The final location for the powerhouse should be selected based on the results of the geological investigations.

Since the dam is already constructed and is in good condition, the geological risks are reduced for this project. Investigations are required only for the powerhouse and tailrace locations.

If geological conditions at the selected powerhouse locations are not found to be good, the construction costs may increase as deeper excavation may be required (e.g. if rock is not present) or foundation works may be more expensive.

17.17. Financing Risk

Financing risk is the risk that the developer is not able to arrange the required funds, i.e. equity and debt, for the construction of the project. Arrangement of adequate project finance is critical for the project as construction of the project requires timely payments to contractors and suppliers. At times, due to certain unforeseen events, cost overruns are encountered which may require additional funding sources.

Financing risk can be mitigated through the following measures:

- Selection of financially sound project developer through rigorous concession process
- Use of robust Project Finance structures & documentation (e.g. Contractual agreements such as Power Purchase Agreement (PPA) & Concession Agreement; Project Finance documents such as loan facility agreement with Banks; Watertight EPC contract with Contractor)

- Reliable estimates for project cost based on technical studies & negotiations with Suppliers and Contractor
- Inclusion of adequate Contingency funds and standby lines of funding at the time of Financial Closure.

17.18. Force Majeure conditions / Risks

Force Majeure conditions or risks are events that are beyond the control of the project participants. Such events can be classified as a) Act of God – such as floods, earthquakes, hurricanes etc. and b) Other events – such as war, arson, regime change, policy change, etc.

Maintaining adequate and proper Insurance against such events is the only mitigation possible.

RISK MITIGATION ANALYSIS				
RISK	**REASON**	**REMEDY**	**CONSEQUENCES FOR LENDERS**	**CONSEQUENCES FOR INVESTORS**
Development period & Construction Period Risks				
Cost Overrun	*Within Construction Consortium Control*	Included in Fixed Price Lump Sum EPC Contract	No Effect	No Effect
	Outside Construction Consortium Control:			
	- Insured event	Proceeds of insurance policy including business interruption insurance	Draw on standby finance if insurance policy exhausted; Debt coverage ratios reduced if standby debt used	Return eroded by servicing of standby finance
	-Uninsured force majeure	Draw on standby finance	Debt coverage ratios reduced if standby debt used	Return eroded by servicing of standby finance
	- Ground conditions	Draw on standby finance	Debt coverage ratios reduced if standby debt used	Return eroded by servicing of standby finance

RISK MITIGATION ANALYSIS				
RISK	**REASON**	**REMEDY**	**CONSEQUENCES FOR LENDERS**	**CONSEQUENCES FOR INVESTORS**
	- Owner variation orders	Draw on standby finance and limit scope of variations by Owner	Debt cover factors reduced if standby debt used	Return eroded by servicing of standby finance
	- Changes of law, delays in obtaining approvals or permits, increased taxes	Standby finance drawn pending tariff adjustment	Debt covers factors reduced if standby debt used	Return might be reduced because of timing effects
Delay in Completion	Within Construction Consortium Control	Liquidated Damages/ Penalties imposed on the contractor as per the EPC contract terms. (Sufficient to cover interest due to Lenders and fixed operating costs)	Debt cover factors reduced, if standby debt drawn	No effect (except loss of opportunity to earn bonuses) unless penalties fully spent. Use of standby finance for further costs will erode return

RISK MITIGATION ANALYSIS				
RISK	**REASON**	**REMEDY**	**CONSEQUENCES FOR LENDERS**	**CONSEQUENCES FOR INVESTORS**
	Insured Force Majeure	Proceeds from business interruption insurance policy	Standby finance drawn if insurance policy exhausted; Debt cover factors reduced if standby debt finance used	To the extent that the ability to pay dividends is postponed, return may be eroded
	Ground Conditions	Draw on standby finances	Debt cover factors reduced if standby debt finance used	Return eroded by servicing of standby finance
Failure of Plant to meet Performance Specifications at Completion Tests as a result of fault by Construction Consortium	Capacity shortfall	Penalties payable by Construction Consortium supplemented by insurance	If capacity shortfall is significant, Debt coverage ratios may be reduced from base case levels. Otherwise, no effect.	Return reduced if penalties from Construction Consortium exhausted. Also, if capacity shortfall is significant, revenue generation from the project may be reduced.

RISK MITIGATION ANALYSIS				
RISK	**REASON**	**REMEDY**	**CONSEQUENCES FOR LENDERS**	**CONSEQUENCES FOR INVESTORS**
Operating Costs Overrun	Costs exceed original estimates, Not an insurance or Force Majeure event	Standby finance drawn	Debt cover factors reduced if standby debt used	Return reduced by servicing of standby finance
	Insurance costs exceed original estimates	Standby finance drawn pending Tariff adjustment	Debt cover factors slightly reduced depending on timing effect	Return may be reduced. Investors may be forced to invest higher equity amounts to compensate for higher costs.
Increased Financing Costs	Interest rate increase	Standby finance drawn pending Tariff reopener	Debt cover factors slightly reduced depending on timing effect	Return may be reduced. Investors may be forced to invest higher equity amounts to compensate for higher costs.

RISK MITIGATION ANALYSIS				
RISK	**REASON**	**REMEDY**	**CONSEQUENCES FOR LENDERS**	**CONSEQUENCES FOR INVESTORS**
	Adverse exchange rate fluctuations	Standby finance drawn pending tariff reopener	Debt cover factors slightly reduced depending on timing effect	Return may be reduced, if the tariff is not denominated in the foreign currency of choice, or if hedging does not cover entire foreign currency component of revenue.
	Adverse changes in terms of finance	Standby finance drawn pending tariff reopener	Debt cover factors slightly reduced depending on timing effect	Return may be reduced. Investors may be forced to invest higher equity amounts to compensate for higher costs.

RISK MITIGATION ANALYSIS				
RISK	**REASON**	**REMEDY**	**CONSEQUENCES FOR LENDERS**	**CONSEQUENCES FOR INVESTORS**
Government	Minor changes in tax, law, customs, legal requirements, environmental standards	Tariff adjustment (if during construction period, standby finance drawn)	Standby finance could be required. No effect on Debt Service Cover Factor	No effect, as long as the changes are pass-through in the concession agreement.
	Expropriation, nationalization, consents withdrawn, interference causing severe prejudice	Owner entitled to terminate as Government default	If owner terminates, loan repaid or assumed as compensation	If Government defaults and owner terminates, compensation paid for termination
	Fundamental breach by the Government, under agreements	Owner entitled to terminate as Government default	If owner terminates, loan repaid or assumed as Compensation	If Government defaults and owner terminates, compensation paid for termination
OPERATION PERIOD				
Operating Costs Overrun	As a result of changes in regulations	Tariff adjustment	No effect	No effect
	At Owner's request	No adjustment to Tariff	Debt cover factors reduced	Return reduced

RISK MITIGATION ANALYSIS				
RISK	**REASON**	**REMEDY**	**CONSEQUENCES FOR LENDERS**	**CONSEQUENCES FOR INVESTORS**
	As a result of failure by the operator	No adjustment to Tariff. Penalties payable by the operator	Debt cover factors reduced if penalties exhausted	Return reduced if penalties exhausted
Inflation, Adverse Changes in Cost of Finance, Exchange or Interest Rate Rates	Macroeconomic factors in the local and global economies	Tariff adjusted by indices. Small possibility that movements in indices do not exactly match changes in actual costs	Debt cover factors could be reduced	Possibility of erosion in return
Foreign Exchange Non-Availability/Non-Convertibility	Due to lack of liquidity in local currency markets or due to Government restriction on currency convertibility	Government guarantees availability of foreign exchange. If Government defaults, Owner can terminate	Loan repaid or assumed as Compensation	No effect (except loss of opportunity to earn bonuses) if Government pays under guarantee. If Government defaults under guarantee and Owner terminates Compensation paid for termination
Failure to Make Available Sufficient Foreign Exchange	Government default	Owner can terminate	If Owner terminates, loan is repaid through Compensation	Compensation paid for termination

RISK MITIGATION ANALYSIS				
RISK	**REASON**	**REMEDY**	**CONSEQUENCES FOR LENDERS**	**CONSEQUENCES FOR INVESTORS**
Failure of purchaser of power (State owned utility) to Perform Obligations	Due to bad financial condition of the public utility or due to lack of demand in the grid	Government guarantees performance. If Government defaults under guarantee, Owner can terminate	No effect if Government pays under guarantee. If Government defaults under guarantee and Owner terminates, loan repaid or assumed as Compensation	No effect (except loss of opportunity to earn bonuses) if Government pays under guarantee. if Government defaults under guarantee and Owner terminates, Compensation paid for termination
Forced Outage or Temporary Shortfall in Capacity	Owner's fault	Penalties payable by Owner	If penalties completely erode shareholders returns, possibility of insufficient cash. Debt service Escrow Account to be drawn down	Any penalty paid will erode return for investors

RISK MITIGATION ANALYSIS				
RISK	**REASON**	**REMEDY**	**CONSEQUENCES FOR LENDERS**	**CONSEQUENCES FOR INVESTORS**
Forced Outage or Temporary Shortfall in Capacity	Purchaser or electricity utility fault	Capacity Purchase Price payable anyway	No effect	No effect
	Force majeure event	Capacity Purchase Price paid anyway	Government guarantees default by Purchaser. If Government defaults, Owner terminates and loan repaid or assumed as Compensation	Loss of opportunities to earn bonuses. If Government defaults, Owner can terminate. Compensation for termination paid by Government
Failure of the Operator to Perform Obligations	The Operator's breach of Operations and Maintenance Agreement	Penalties payable by the Operator	Debt cover factors reduced if the Operator's penalties exhausted and standby debt finance used	Return reduced
Environmental Incidents Caused by the Operator	The Operator's breach of Operations and Maintenance Agreement	Indemnity from the Operator	Debt cover factors reduced if the Operator's penalties exhausted and standby debt finance used	Return reduced

18. Key Commercial Principles and Payment Mechanisms

The PPP arrangement will be based on a number of contractual agreements between the concerned parties such as Public participant, Private participant, financing institutions, EPC contractors, & Operators among others. The following chart contains an overview of the contractual structure of a typical PPP project. Each of the boxes represents participating entities & the arrows represent transactional relationships among these entities.

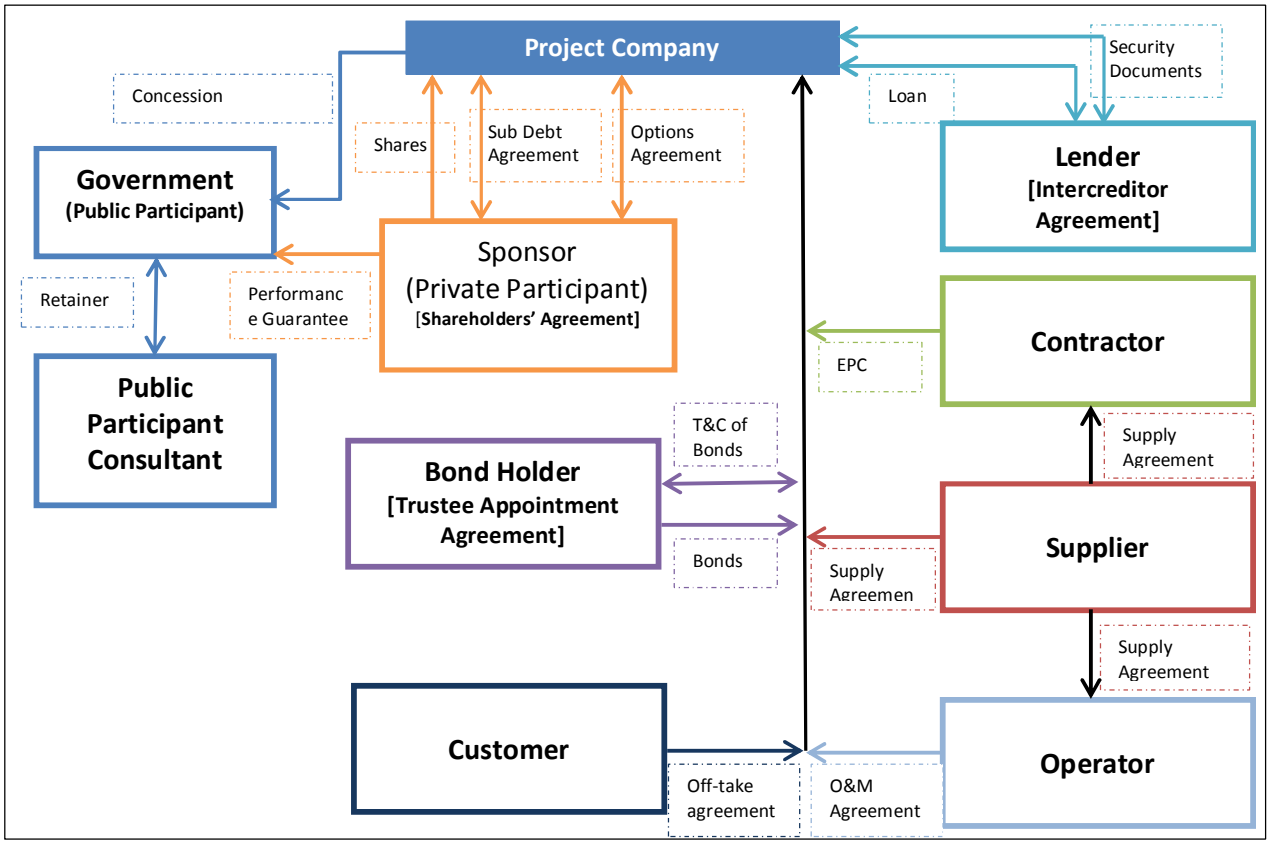


Image 1: Overview of project agreements

The various agreements have been categorized as follows:

I. Agreements Between the Government and their consultants: **Retainer**
II. Agreement Between the Government and the Project Company for granting the right to operate the power project: **Concession Agreement**
III. Agreement Between the Sponsors and the Project Company to provide equity finance to the project: **Equity Finance/ Share Subscription Agreement/ Share Holders Agreement**
IV. Agreements Between the Lenders and the Project Company to provide debt finance to the project: **Financing documents/ Facilities agreement**

V. Agreements Between the Bond-Holder and the Project Company provide quasi-equity finance to the project through issuing securities such as bonds: **Quasi-equity Finance**

VI. Agreements to design, construct, operate and maintain the Hydro power Project: **Design, Construct, Operate and Maintain / EPC contract/ O&M contract**

VII. The agreements with customers of the power project (Power Purchase Agreement): **Off-take agreements/ PPA**

Each of the above mentioned agreements are described in detail in the following sections. A subsection titled "**Points to be noted by the Public Participant**" describes the critical factors to be addressed by the Government/ Public Participant to ensure that the primary objectives and concerns of the government/ public participant with respect to the PPP project are addressed adequately.

Another subsection titled "**Key pointers for the Private Participant**" includes issues of critical importance for the Private Participant. These critical issues are often heavily negotiated. It is important to consider all project agreements as a whole because all agreements are interdependent & need to be drafted in a holistic manner.

18.1. Retainer

This section deals with the agreement between the government and its consultants[82]. The Public Participant usually needs to retain consultants to conduct a PPP project. The consultants design the PPP structure, help in drafting the PPP contractual documents and conduct the PPP award process from start to finish. Typically, a number of consultants from different domains such as technical, legal, financial may be involved.

18.1.1. Points to be noted by the Public Participant

The Public participant's main objectives for their contractual agreement with consultants are:

a. **Quality.** The Public Participants must hire consultants of repute, who have the experience & qualifications of having delivered similar projects in the past. A number of qualifying factors need to be addressed in the retainer that could contribute to better quality advice.

b. **Terms of Reference or ToR.** A retainer agreement should contain clearly defined "Terms of Reference" (TOR) which outline the scope of work and the process of delivery of the work by the consultants. The TOR should also contain the timelines for delivery of various milestones for the work.

[82] Source: http://rru.worldbank.org/Documents/Toolkits/hiringadvisors_fulltoolkit.pdf , http://www.unescap.org/ttdw/ppp/trainingmaterials/PPPs_Legal_Perspective.pdf, Retrieved on 26 August 2013

c. **Incentives.** To align the mutual interest of the consultants with that of the client, mechanisms or incentives such as "Success Fee" based compensation should be devised.

d. **Assessment**. A mechanism for continually / periodically assessing the consultants' performance should be incorporated in the retainer agreement. Steps for resolving all disputes arising on the basis of the review and assessment should be outlined. The Public participant should refrain from terminating the contracts in haste as it may lead to delays, litigation, additional costs and loss of trust in the private sector.

e. **Cost.** The public participant should look for value for money instead of absolute cost. Although the fees charged by the Consultants add to the overall costs, a properly designed and well-conducted PPP process will result in much larger gains for the Public Participant. The public participant should steer clear of the following:

- Conflicting instructions
- Lack of commitment and
- Lack of leadership support

These factors can cause delays and ultimately add to the cost of the PPP project. The public participant should retain experienced and reputable consultants at market prices instead of going for the least cost option.

f. **Trust.** The consultant and the public participant should share a relationship of trust. Generally in most common law jurisdictions, fiduciary obligations extend even beyond the express terms of the contract. However, a retainer must clearly impose contractual obligations of confidentiality and provide for ways to resolve conflict of interest situations.

18.1.2. Key takes for the Retainer agreement:

The first agreement entered into by the government in relation to a PPP project is a retainer. It is the agreement between the Public Participant and their consultants governing the terms & conditions under which the Public Participant's consultants will deliver their services.

Steps in executing a retainer document:

Step I: The document in the form of a letter is drafted by the Public Participant Consultants containing the agreed upon terms and conditions and shared with the Public Participant in duplicate.

Step II: The Public Participant reviews the draft agreement and suggests modifications where necessary. The two parties negotiate and agree to the final draft of the agreement.

Step III: The Public Participant & the Consultants execute the agreement in at least two counterparts, and keep a copy of the executed agreement.

18.1.3. Major Concerns

A retainer should address the following concerns:

a. Fees:

The consultants' fees may be of the following types:

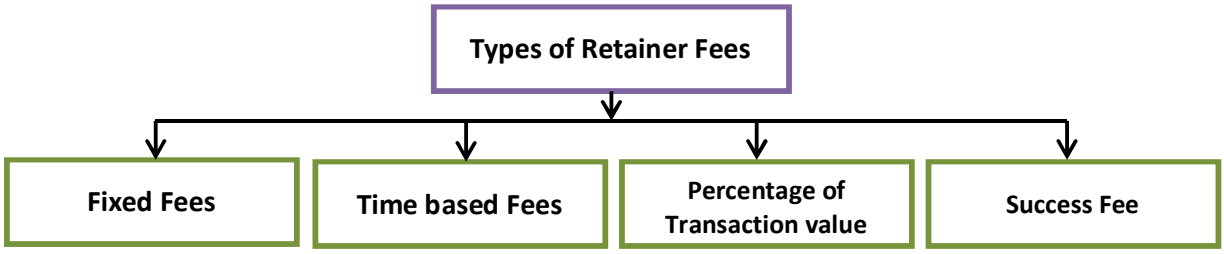


Image 2: Types of Retainer Fees

- **Fixed fee.** As the name suggests, a fixed fee is a lump sum amount. Although it has clarity in definition of the amount payable, it suffers from the following limitations:
  - *Time factor*: It may be difficult to estimate the time required for the transaction in advance. Also, the transaction may be prolonged because of certain external or internal issues and thus, the time input of the consultants may be unpredictable at the start.
  - *Resource Allocation*: As the job progresses, the resources needed by the consultant to complete the project may change.

Usually a fixed fee component is in addition to other variable costs, for example, cost-plus-fixed-fee basis.

- **Time based:** Time based fees are the most common type of retainer fees. It entails the payment of a "recurring fixed amount" or an "out of pocket expenses" + "profit element" on an agreed time schedule; on the basis of hours, days or months.
  Time based fees may have a collar i.e. a minimum amount payable (if the allocated work is completed earlier) or a cap (if the allocated work takes more than the expected time). Many a times the time based fee payable is "staggered", varying over the time frame. This is a midway approach between imposing a cap (usually not accepted by the consultants) and paying retainer fees without a time limit (usually not accepted by the Public participants).
  Right at the beginning of the negotiations for the Retainer agreement, a "ballpark" or an "estimate" for the cost of works should be calculated based on the scope of work and nature of the project. The estimate should be agreed upon by both the parties. This exercise gives the government an understanding of the consultants' fees and helps in negotiating a reduction of the actual fees. The parties may be able to change their practices for greater efficiency in the future.

- **Percentage of Transaction value.** This type of fees are payable as percentage of the total transaction value. While this is common in financial advisory in mergers and acquisitions, initial public offerings transactions and bonds issues, it is unusual in a typical PPP project.
- **Success fee.** This is an incentive based fee. It aligns the interest of the Public participant's consultant with its own, towards the successful completion of the project. The "success fees" payable on the "completion" of the project is incorporated into the contract by clearly defining success and completion. This type of fee arrangement is common with legal and financial consultants "completion" means a financial close of a transaction (in contrast to the completion of the infrastructure asset).

In any case, the fee structure and the amount of fees can be negotiated based on a competitive process, wherein proposals from multiple qualified consulting organizations are called and compared. Negotiations can then be conducted on the basis of the proposals to arrive at the preferred consultant along with their fee structures.

b. Scope of work:

The Retainer agreement should clearly outline the scope of work. The Public participant should ensure that the scope of work is consistent with the government's understanding of the consultant's role in the project and the public participant's expectations from the PPP process.

c. Confidentiality:

Strict confidentiality should be maintained by the consultants with regards to all the data, documents and information shared by the Pubic Participants. The following should be ensured:

- That confidential information is appropriately defined.
- That the consultant does not use the confidential information for any purpose other than to advise the government.
- That the obligation extends to all sub-contractors, employees and agents of the consultants. And,
- That the government be notified if there is any breach of confidence.

d. Conflict of interest:

The Public Participant Consultants should not have clients whose interest's conflict with those of the Public participant. The market for PPP project consultants is highly specialized and only a handful of suitably experienced and qualified consultants may be available. Thus, there often arises a probability of conflicting interest which may be detrimental to the fair conduct of the PPP process. It should be mentioned in the contract that the government

should be informed of any conflict of interest as soon as the consultant becomes aware of the same.

e. Professional liability:

In the event of any negligence in advice or impartment of wrong advice on the part of the consultants, the consultants are liable to compensate the public participants. The consultants may attempt to limit the extent of their potential liability. The public Participant should review the scope and the exceptions (or "carve outs") to the consultant's liability.

The rationality of the exemptions from liabilities should be reasoned. A generic disclaimer of liabilities for any advice or conduct of the consultant should not be acceptable, e.g., a consultant should be liable for any fraudulent act of it, its employees or its agents. Also, a specific exclusion of liability against, for example, losses in profits that failed to be realized, usually referred to as "expectation losses", is arguably acceptable.

f. Termination:

The Public participant should ensure that it is able to terminate the services of the consultant if it is dissatisfied with the consultant's services. Ideally, the government should be able to terminate the consultant's services at its discretion.

Either party could be allowed to terminate the retainer with notice to the other party (though there may be a period of notice). However the level of termination rights may not be the same for both the parties. E.g. in case of a success fee, the public participant should not be able to terminate the retainer immediately prior to the completion of the project to avoid paying the success fee.

g. Procedures:

The Public participant and the consultant should outline a process by which the Public participant and its consultants would conduct the project and the procedures by which the Public participant would review and asses the progress of the consultant's work.

18.2. The Concession agreement:

The concession arrangement between the public and the private participants is the most important & central agreement / document of the Public Private Partnership arrangement. In PPP projects, a concession agreement supports the whole structure of the PPP transaction. The key purposes of concession agreement are:

- To define the working relationship between the public and the private sectors.
- To identify and allocate vital responsibilities & risks in the project.
- To act as the central core of the security documentation for lenders.

It is a guideline agreement between a project company and the relevant Public Participant authority whereby the project company undertakes to construct and operate the particular infrastructure or service. It also deals with the performance guarantee to the government provided by the private participant. This is in effect a guarantee by a sponsor (usually from the private sector) of the performance by the project company.

'Concession agreement' for all further discussions in the present context will refer to contractual arrangements that give the private participant a right to operate the concerned Hydro power project. Depending on what PPP structure is adopted, such agreement may also be called a BOT agreement, BOOT agreement, a lease or a license.

On the basis of a bid, the government grants the project company the right to use and receive the economic benefits arising from provision of the infrastructure services. The ownership of the Hydro power project may be transferred to the government on completion of a certain specified term, also known as the concession period.

18.2.1. Nature of the concession agreement:

It is generally assumed that the Public Participant in the PPP has entered into a concession agreement in its commercial capacity, and contractual rights and obligations under the concession agreement apply to the Public Participant no differently than to other contracting persons.

Under the event of this assumption not being true, the parties will need to consider the extent to which this changes the commercial rights of the project company. The project company, its sponsors and its lenders, may have concerns about irrevocability, certainty and enforceability of their rights that need to be addressed. An enabling legislation may need to be enacted to overcome these concerns.[83]

The concession agreement cannot be considered in isolation from the regulatory and legislative environment of the project area.

18.2.2. Main objectives of the Public Participant in the concession agreement

The main objectives of the Public Participants in a concession agreement are as follows:

18.2.2.1. Successful construction of the Hydro power project:

Under the PPP arrangement, the design, financing and construction of the Hydro power project may be undertaken by the private participant. One of the main objectives of the concession agreement is to ensure correct and optimum design as well as construction of the hydro power project, achieving the objective set out by the Public Participant in a timely manner. The Private participant alone should be responsible for any fault in the design and

[83] Source: United Nations Commission on International Trade Law (UNCITRAL), Model Legislative Provisions on Privately Financed Infrastructure Projects, 2004.

construction of the Hydro power project (except in the limited circumstances that the defect or delays were caused by the Public Participant).

18.2.2.2. Quality of construction of the hydro power project

The concession agreement should outline the basic standards and guidelines of quality that should followed and achieved in the construction of the hydro power project. The responsibilities of the private participant should be clearly defined as well.

18.2.2.3. Electricity generation:

The Public Participant should articulate its needs and expectations of the private participant in clear and quantifiable terms with regards to the expected generation. The project company should provide the minimum or expected generation throughout the period of the concession. Properly defining the responsibilities of the private sector is the key to successful implementation of the project.

18.2.2.4. Revenue and electricity sharing with various related entities (e.g. Hydroelectric Power Producing Areas Development Commission):

The concession agreement should clearly mention the services or the revenue / electricity sharing that the project company will have to provide to the local area; for example:

- Revenue shared With Hydroelectric Power Producing Areas Development Commission
- Free power to be given for electrification of the local area.
- Revenue sharing with the State/ Federal Government.
- Revenue sharing for development of social amenities such as school, bus shelter, parks, medical facilities, town hall, or any other public infrastructure in the local area.

18.2.2.5. Regulatory compliance:

Relevant safety and environmental protection standards to be followed by the project company should be outlined in the concession agreement. Even if statutory safety monitoring departments or laws are in place, the same should be outlined in the concession agreement.[84]

18.2.2.6. Return on investment and Tariff:

The primary rational for any investment by a private participant in a venture is to earn a return on their investment. Thus it is of prime importance that adequate returns to the

[84] Source: Christopher Clement-Davies, *Public/Private Partnerships in Emerging Markets: Structuring the Concession Agreement*, 4

private participant are ensured in the concession agreement. The primary area of focus would be tariff determination and should address the following:

I. From a **lenders** perspective, there should be sufficient revenues to cover the project's debt service with a safety margin.
II. The equity investors should be assured that they will recover their investment within a reasonable time frame and earn a reasonable return on their investment.
III. Provisions for sharing of windfall gains to ensure reasonable profit to accrue to the Public participant if the project is more successful than anticipated.

The third point mentioned above is debatable, nonetheless it should be explored.

In the present case, MYTO II tariff regime will be applicable for the revenues of the hydro power project. A reference of the same should be included in the concession agreement.

18.2.2.7. Adequate maintenance:

Provisions for proper repair and maintenance should be included to ensure:

- That the project company generates electricity with minimized down time and
- That the Hydro power project is in a good condition when it is transferred to the government at the end of the concession period.

It is prudent for the Public Participant to require that the sponsors guarantee certain (if not all) obligations under the concession agreement.

18.2.2.8. Key pointers for the Private Participant

The issues discussed below are aspects to be provided for in the concession agreement. The underlying concern of all of these issues is risk allocation, which is discussed separately.

18.2.2.9. Concession period

The concession period is usually the time period for which the private sector is granted the right to operate the infrastructure facility commercially and profit from it. Usually the concession period is specified in terms of duration of time. However, an alternative method is to calculate the concession period on the basis of a fixed return on investment to the project company (that is, concession period is defined as the period of time necessary for the private sector to achieve a specified financial return). On expiry of the concession, it is appropriate to terminate rights and obligations rather than terminate the concession agreement entirely.

Appropriate duration of a concession period would depend on:

- **The cost of constructing the facility**

The concession period is directly proportional to the cost of constructing the facility. The concession period should be long enough for the private participant to repay the loans and make the required return on its investments.

- **The cost of the process for selecting the private sector.**

There is a direct correlation between the length of the process and the expense of selecting a private participant and the tenure of the concession agreement. It may not be cost effective to put the concession up for tender frequently.

18.2.2.10. Construction of the facility.

The primary obligation of the project company under the concession agreement is likely to be the construction of the small hydro power project at the OMI Dam. According to convention, it is common to confer on the private participant the obligation to design and construct the small hydro power project.

Following issues relating to the design and construction of the small hydro power project need to be dealt with in the concession agreement:

a. Time and price.

The cost of design and construction are usually not specified in the concession agreement, as the project company relies on futuristic revenues from the operation of the facility to recover its construction costs. The time limit for completion of construction of the hydro power project should be specified in the agreement.

On failure to complete the design and construction of the facility within a specified time, the project company should be required to pay liquidated damages. At the same time certain rewards / bonus may be provided to incentivize the project company to complete the construction of the facility within a specified time.

b. Government input.

The private participant would have to get the approval of the Public Participant on the designs and other construction parameters of the facility. The concession agreement will provide an opportunity for the government to review the design, suggest changes where required and supervise the construction of the hydro power project facility. There should, however, be no express obligation for the government to approve or provide input, because this may lead to contributory fault by the government if something is wrong in the design or construction of the infrastructure.

c. Completion.

The completion of the construction of the hydro power project is the key milestone in the project. Mechanisms for the public participant to test whether completion of

the power project facility has occurred, e.g. demonstrate assured electricity generation, etc. needs to be built into the agreement.

d. Consequences of delayed completion.

Penalties to be levied if the target dates for completion of the project are not met should be explicitly mentioned in the contract. Adequate measures to determine the reason for the delay, i.e. failure to complete is caused by the government, the project company (or its sponsors), or something that is outside the control of either the government or the project company should also be determined.

e. Consequences of early completion.

The project company may be given an incentive for early completion, as that will also mean an early commencement & availability of hydro power project. The reward for early completion, however, may already be inbuilt if the period for termination of the concession period is a fixed date. That is, the project company would benefit from longer revenue generation period where the infrastructure asset is operational.

18.2.2.11. Standards

The minimum standards that the project company should comply with should be stated in the concession agreement. The mechanisms to monitor compliance of these standards and the consequences in the event of a failure in compliance should be in place.

The concession agreement should specify, the minimum applicable standards, the Public Participant's monitoring rights and the consequences of noncompliance with these standards for each of these stages:

- The design and construction phase: technical specifications for design and construction of the facility;
- On commissioning of the hydro power project: standard procedures for operation and maintenance of the power project; and
- On transfer of the hydro power project to the government: the condition of that power project, including any warranties in relation to the components of the facility.

18.2.2.12. Tariff:

The tariff structure is the most important issue in developing a hydro power project. It governs the economic viability of the project. The tariff for the proposed Omi Kampe Hydroelectric power project will be in compliance with the MYTO II tariff order of the Nigerian Electricity Regulatory Commission (NERC).[85]

[85] Source: http://www.nercng.org/index.php/myto-2 Retrieved on 29 August 2013

18.2.2.13. Termination:

The concession agreement in its termination provisions should specify:

- The events when the project company or the public participant can exercise the right to terminate the concession agreement, e.g. on insolvency or liquidation events of the other party, and for material breach;
- The mechanisms outlining the process of termination. Usually it is a required to provide a notice of termination, except for termination on insolvency or cases where breaches of the agreements are not capable of being remedied, this may give lenders time and opportunities to exercise any step-in rights;
- The compensation payments to the project company on termination. The public participant may have to compensate the project company for the investments already made in infrastructure facility;
- Other rights and obligations of the parties after termination, such as surviving confidentially obligations should ratified;
- The lenders' step-in rights should be reconciled with the termination provision. Termination of the concession would not be in the interest of the lenders until they have been paid out.

18.2.2.14. Force majeure:

Related to the issue of termination is the issue of force majeure. In general force majeure relates to the ability of a party to excuse itself from performance of the party's contractual obligations where performance has become difficult or impossible due to abnormal or unforeseeable circumstances or events that are not the fault of either party, and which the party pleading force majeure could not avoid despite the exercise of due care.

The example of events that constitute force majeure includes

- Acts of God,
- War including civil war,
- Revolution, coup or regime change
- Riot,
- Civil disturbance,
- Cyclone,
- Flood,
- Earthquake, Tsunami
- Volcanic eruption,
- Tidal wave
- Nuclear accident etc.

18.2.2.15. Stabilization

The long-term nature of the concession agreement results in a risk that events would occur that significantly change the nature of the agreement, or the assumptions that underlie the Public Participants' or the project company's risks, rights and obligations under the agreement. To address the same, the concession agreement should contain a "stabilization" provision to deal with what happens if "exceptional events" occur. The exceptional events may be

- Changes in law or taxation,
- Modifications to licenses or permits,
- Economic disruption or
- Loss of basic investment protection rights (however they are defined).

18.2.2.16. Dispute resolution:

The parties in the PPP should agree upon a court or an arbitral body, in whom the parties have confidence and which can resolve any conflict or disputes in relation to the agreement fairly. The parties also need to ensure that the final determination of the court or arbitral body concerned is enforceable against the other party. The parties should be able to enforce any decision in the jurisdiction in which the hydro power project is located.

18.2.2.17. Choice of law:

All disputes and arbitrations will be resolved based on the choice of law stated in the concession agreement. It should be explicitly mentioned in the agreement that all disputes will be subject to the Nigerian law unless otherwise agreed upon.

18.2.2.18. Performance Guarantee to Government:

In the PPP concession agreement, the sponsors guarantee to the Public Participant (and also probably to the lenders) the performance obligations that are expected of the project company. The actual performance guaranteed is usually limited to the obligation under the concession agreement to complete the construction of the Hydro power project on time and in budget.

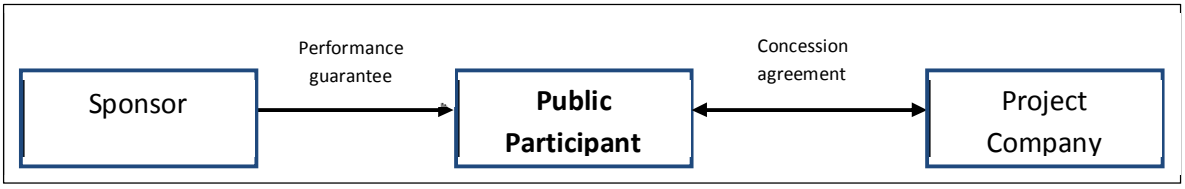


Image 3: Performance Guarantee

Key pointers for the performance guarantee:

- **Trigger event:**

  The event / breach of certain obligations that will trigger a breach of the performance guarantee should be clearly defined.

- **Consequences of default:**

  An event that triggers the performance guarantee usually triggers a default of another financial agreement with lenders. Hence, the interrelationship between the project company's (and the sponsors') obligations to the Public Participants with the project company's (and the sponsors') obligations to the lenders should be addressed jointly.

- **Expiry**

  The time frame of a performance guarantee should be outlined. It could be a specified number of months / years or it could be linked to the completion of construction of the hydro power project.

18.2.2.19. Indemnity:

The performance guarantee should act as an indemnity to pay for loss if completion is not achieved regardless of fault. Exceptions should be made for *force majeure* events.

18.3. Equity Finance

This segment deals with the agreements pertaining to the sponsors, or the equity holders of the project company.

The agreements discussed here are:

- The shareholders' agreement (or SHA; includes constitutional documents of the project company stating the rights and interests in shares, for example, the constitution or articles of association of the project company)
- The shareholders' loan agreement; and
- The options agreement.

Following a description of these agreements, the key issues from the Public Participant's perspective are considered.

Points to be noted by the Public Participant

The involvement of the Public Participant in the equity share holders' agreement will be depend upon the Public participants' direct interest in the project company. They might

invest in the project company for an equity share at par investment. Or depending on the PPP parameters, the Public participant may be allotted a certain amount of free equity.

This subsection will deal with issues for the Public Participant in relation to the shareholders' agreement, shareholders' loan agreement and the options agreement on account of two cases:

Case I: if the government does not have an equity interest in the project company; and

Case II: Additional issues if the Public Participant does have equity interest in the project company:

18.3.1. Issues whether or not the Public Participant is an equity investor:

In case the Public Participant has no direct interest in the project company, the issues that directly impact the Public Participant are limited. It should be ensured that the shareholders' agreement is consistent with the terms of the concession agreement that the Public Participant has entered into with the company. Barring this the Public participant should not intervene in the internal management of the project company.

Some of the issues that the Public Participant may consider are:

a. Change of control:

The ownership of the project company or its control should not be allowed to freely change hands after the concession agreement has been signed. The Public Participant would have selected the private consortium on the basis of the reputation and experience of the sponsors. Hence a change of control in the project company should not occur without the government's permission. Provisions dealing with change of control should be provided for in the concession agreement.

The Public participant should also watch up for options agreement and shareholders' loan agreements that are convertible into shares. It should be ensured that the exercise of these options do not constitute a change of control that is unacceptable.

b. Capacity.

The Public Participant should verify if the company laws in Nigeria and the constitutional documents of the project company permit the project company to enter into the concession agreement and to perform its obligations under the concession agreement.

c. Authority:

It should be ensured that the person entering into agreements on behalf of the project company should be authorized to do so by the law and the constitutional documents of the project company so as to ensure the validity of the executed documents.

d. Information:

The Public Participant should outline the disclosure norms of the audited financial reports of the project company and that it is informed if specified significant events occur in relation to the project company. This will ensure transparency and accountability of the project company with special relevance of the hydro power project that public participant provides.

e. Control:

If the Public Participant is not a shareholder, it will have negligible influence on the internal management of the project company. Under usual circumstances, the project company should be entitled to conduct its business without unwarranted interference from the public participant. Nevertheless, the public participant government should insist on having some control of the internal management of the project company, if:

- The public participant / the government has provided financial guarantees to lenders or made other financial commitments in relation to the project.
- The construction of the facility has national and security significance.

In such circumstances the public participant may request for a right to nominate a director to the board of the project company. Alternatively, it may request a right of veto for any changes in the board of directors or senior management of the project company.

f. Priority of Payments:

With reference to the shareholders' loan agreement, the Public Participant should ensure that any payment due to the Public Participant by the project company, e.g. compensation for default of the project company under the concession agreement, is higher in the Pecking order of payments over the subordinated debt.

g. Solvency:

It is of prime importance to the public Participant that the project company is solvent. The project company may technically be regarded as "insolvent" if subordinated debt payable on demand of the sponsor is greater than the current assets of the project company. If needed the optimum level of subordinate debt in the project company's capital should be mentioned in the concession agreement.

18.3.2. Additional issues if the government is an equity investor

The Public Participants may invest equity capital in the project company with a view to exercise some control on the company or get a representation on the board of directors or management of the project company. This method of gaining access or participation in the control of the project company can be used if other forms of control through the concession

agreement, and regulations are insufficient. In particular, it is important that the Public Participants consider the following issues:

a. Control at the board of directors (management) level.

The Public Participant as a shareholder may have the right to appoint a director or directors to the board of the project company. The key purpose of this will be a protection to disallow the board to pass certain resolutions without the consent of the director at the board.

If the Public Participants hold a substantial stake in the project company, it is reasonable to request that the minority protection issues to be decided with the affirmative vote of a director nominated by the Public Participants. The Public Participants, however, should consider the duties of the director nominated by them and ensure that they act in the benefit of the company at large while ensuring that the law of the land and the principles outlined in the concession agreement are adhered to.

b. Control at the shareholders' level.

As a minority shareholder, the Public Participants should be entitled to certain minority protection. This will insure that the project company would not take certain actions unless it has the support of the public participant/ government. The public participant, as minority shareholder, should insist on the right to veto any new issue of shares because this would have an impact of diluting the value of the existing shareholders' shares.

c. Dilution.

If the Public Participant has an equity interest in the project company, exercise of options would effectively dilute this interest. This possible scenario should be reflected in the investment price of the Public Participant equity.

d. Access to information.

If the Public Participants are shareholders, they will have access to certain information. Even if they are not equity investors, the Public Participants should have access to periodic financial & operational reports, as well as audited accounts/ annual financial results of the project company.

e. Restrictions on share transfer.

The concession agreement and the financing agreements should govern the share transfer process. Consistency should be maintained in provisions such as drag along, tag along, transfers on default and transfers in cases of disputes across documents. The Public Participant may also prohibit the project company from transferring shares during the construction period of the project. Besides the statutory restrictions on share transfer imposed by the public participant the shares in Project Company are usually transferable subject to a right of first refusal by the other shareholders of the company.

f. Drag along / Tag along rights.

- **Drag along rights.**
  A drag along right is the right of one shareholder to compel the other shareholders to sell their shares to a third party along with the first shareholder. This ensures that the shareholder with the drag along right is able to realize the investment by enabling the shareholder with the drag along rights to deliver to a potential buyer the whole of the project company. The details of these rights should be mentioned in detail in the shareholders' agreement.
- **Tag along rights.**
  This right enables one shareholder to compel the other shareholder(s) not to sell its shares to a third party unless the second shareholders purchases, or compels the third party to purchase also, the shares of the first shareholders. This ensures that the shareholder with the tag along rights is entitled to the benefits of any realization of its investment in the project company.

The concession agreement may mention its restriction or views on the Tag along and Drag along rights of the shareholders in the project company.

g. Dispute resolution:

The disputes among shareholders in a company can be generally classified into two types:

I. A dispute relating to the interpretation or the performance of a project agreement.
II. A dispute of commercial or strategic nature about the direction of the project company.

The first dispute can be resolved by going for arbitration under an arbitral body or through courts.

The second is called a "dead lock" and can be resolved in a number of ways, e.g.

- By escalation the dispute to senior members of the shareholders,
- Forced sale to another shareholder
- Forced sale to a third party or liquidation of the project company.

The major issue with dealing with a deadlock through forced transfer mechanisms is that such mechanisms tend to favor the party that is financially stronger.

From the Pubic Participant's point of view, there may be legal or pragmatic restrictions on the Pubic Participant acquiring further shares in the project company. It is generally agreed that Silence is sometimes a way to deal with deadlocks, under the assumption that the parties will discuss and come to a mutual compromise as it is not in any shareholders' interest to leave the project company at a deadlock.

18.4. Shareholders' Agreement

The shareholders' agreement governs the relationship between the different sponsors of the project company. This is of importance for the Pubic Participant if it subscribes for equity in the project company. It is also relevant for the Pubic Participant, if shares in the project company are assignable to it by means of free equity in the bid or in the event of default or at the end of the concession period.

A general agreement as to the individual contribution to the project and the rights and interests of the various stakeholders in the project should be arrived at and ratified. The agreed responsibilities and involvement of the sponsors is usually compiled in a preliminary memorandum of understanding (MOU) or a term sheet. This MOU or term sheet should be submitted along with the bid.

A brief on the shareholders' agreement:

The following should be looked out for in a shareholders agreement:

18.4.1. Share capital and shareholders' contribution.

The project company's capital structure should be described in the shareholders' agreement. A specific provision for the subscription of equity (and mechanics to deal with the closing) should be present in the shareholders' agreement. The agreement may specify any further equity or capital commitment (in terms of the amount and form) from the shareholders, or specifically provide that there is no further equity or capital commitment.

18.4.2. Board of directors:

With regards to the Board of Directors, the shareholders' agreement should deal with the following issues:

a. Appointment and removal.

Each shareholder is entitled to nominate a specified number of directors to the board of directors the project company. The shareholders may also agree to appoint an agreed number of "independent" directors who are not nominated by either one of the shareholders.

b. Chairperson:

The shareholders agreement should define the procedure for appointment of the chairperson, their tenure, whether the chairperson post will be rotated, who shall chair the meeting if the chairperson is not present, and whether the chairperson will have the casting vote.

c. Executive and non-executive directors:

Depending upon the responsibilities assigned to the directors and their involvement in the day-to-day management of the project company, the director appointed may be executive directors (actively involved in the day-to-day management of the project company) or non-executive directors. The shareholders agreement should have the procedure for appointment and categorization and their compensation.

d. Meetings.

Under this the mechanism and the number of times a year the directors' meetings are scheduled to be held are mentioned. The procedure for calling a meeting, the required notice of a meeting, whether electronic meetings are allowed, the rules and requisites for the same and whether a resolution signed by all the directors is an acceptable alternative to a meeting.

e. Quorum:

This deals with the number of directors that must attend a directors' meeting in order for a resolution to be validly passed. It may provide that a certain type of director (for example a director nominated by a particular shareholder) need to attend for a meeting to be duly convened. The shareholders' agreement should also provide for what happens if a quorum is not met, and quorums for subsequent adjourned meetings.

f. Duties:

This deals with the directors' duties and provisions to deal with conflicts of interests. These should be synchronized with the company / corporate law of Nigeria.

18.4.3. Shareholders agreement components:

A shareholders' agreement would deal with:

c. Meetings.

The mechanism of the general meeting, the number of times a year a meeting is held, required notice for a meeting and the procedure for calling a meeting should be described in the shareholders' agreement.

d. Quorum:

In order for a shareholders' resolution to be validly passed, the minimum number of shareholders (in absolute numbers or in percentage of shareholding terms) that must attend a shareholders' meeting is called a Quorum.

The shareholders' agreement should define the quorum and provide that a certain class of shareholder need to attend a meeting for it to be duly convened. The

shareholders' agreement may also provide what happens if a quorum is not met, and quorums for subsequent meetings.

e. Reserved matters:

Certain matters of importance need a special majority a shareholders' meeting or a board of directors meeting in order to be approved. Such reserved matters should be specifically mentioned in the shareholders' agreement.

f. Protective covenants.

The shareholders should not be able to engage in, or hold interests, that compete with or conflict with the interest or the business of the project company. This will apply for as long as the shareholder hold shares in the company but may apply for a specified period of time after the shareholder ceases to hold any shares. The period that is indefinite or unreasonably long, however, may not be enforceable because the courts could view it as an unreasonable restraint of trade.

g. Transfers:

As there will a general restriction on the transfer of shares (at least for a period until the completion of the construction of the facility or for longer). Transfer provisions usually provide for:

- **Permitted transfers.**

  For example,

  - Transfers to subsidiaries,
  - Transfers subject to rights of first refusal by the other shareholders.

  It is important to ensure that this exception is drafted carefully as it could be used as a vehicle to circumvent transfer restrictions.

- **Compulsory transfers.**

  The shareholders' agreement should state the events that trigger the compulsory transfer of shares. This is usually the change of control of the shareholder or default or insolvency of a shareholder. The events that trigger the transaction should be outlined in the shareholders' agreement.

  For example,

  - In the case of default or deadlock resolutions as required under the shareholders' agreement,
  - In the case of a drag along rights (Please refer 9.3.2 point f.)

h. Deadlock:

Repeated failure to meet a quorum or a repeated failure to pass a resolution at the board or shareholders' meeting level causes a deadlock. The usual options for resolving a deadlock are:

- The chairperson's casting vote;
- An outsider's swing vote;
- Escalation to the chairperson or chief executive of the shareholders; and
- Reference to an expert or arbitration.

The choice of methods agreed upon to resolve deadlock(s) in the project company should be mentioned in the shareholders' agreement.

i. Exit mechanisms:

The shareholders' agreement can provide for the permissible exit mechanism options for the shareholders, for example; a transfer of shares, put/call option, public offering, liquidation and sealed bids.

18.5. Shareholders' Loan Agreement

Investors in the project company may invest by way of providing subordinated loans rather than investing in the project as equity. The advantages of investing as subordinated loans instead of equity are:

a. **Priority:**
   If the subordinated loan are secured (subject to the senior debts' priority), it would enable the capital contribution to be ranked ahead of unsecured creditors.

b. Tax:
   Payment of interest by the project company is tax deductible whereas payment of dividends is not.

c. Flexibility:
   Subordinated loans are often more flexible that share capital. It is easier to repay the capital than the share capital. In most jurisdictions, it is also easier to pay interest than it is to declare dividends.

Key issues:

The public participant should ensure that the shareholders' agreement should address the following with regards to the shareholders' loan agreement:

a. Disallow payment of subordinate debt (other than interest until a default or after the minimum debt service cover ratio is met)
b. Prevent acceleration and enforcement of junior debt and security
c. Allow bank to advance prior ranking new money
d. Disallow any covenants, as they would hamper a restructuring

e. Subordinate the debt as well as the security (If the senior security fails or is inadequate)
f. Permit the lenders to change their loan agreements or security documents
g. Compel junior creditors to co-operate in a private sale, and
h. Prevent junior creditors from instituting insolvency proceedings.

18.6. Options Agreement

The availability of options enables the sponsors to structure the project company in ways that would achieve the objectives of the various parties associated with the project company.

Key issues concerning the options agreement

An options agreement is an agreement between the project company and the options holder that provides:

a. The agreement should specify the number of options provided
b. Consideration payable for the options
c. The exercise price of the option
d. The exercise period of the option, i.e. a predetermined date, or contingent to certain events occurring
e. Lapse of options
f. The mechanism to exercise the option - the form of notice, to whom the notice should be addressed, when the notice is deemed to have been received, etc.
g. The methodology of closing
h. Covenants prior to the exercise of the option
i. Assignment of the option

18.7. Debt Finance

The following documents in relation to providing debt finance are discussed below:

1. The loan agreement between the project company and the lenders
2. The security documents that provide security for the loan agreement, and
3. The intercreditor agreement amongst the lenders

Points of importance for the public participant:

It is the responsibility of the private participant to obtain finance for the construction of the project and to make available working capital requirements for the smooth operation of the project. The process for obtaining finance is likely to be of lower concern to the government.

The lender and donors to the project, however, are likely to be very interested in the terms of the project company's concession agreement with the Public Participant. Almost invariably, lenders would require a step-in right in relation to the hydro power project facility. This is something that needs to be discussed between the Public Participant and the lender, despite the fact that the two parties rarely deal directly with each other but negotiate through the project company. A direct agreement between the lenders and the Public Participant / Government, may thus also be a part of the lending documents.

Unless the Public Participant is a party to an intercreditor agreement, it need not be concerned with the terms of the intercreditor agreement. The Public Participant should resist becoming a party to such an intercreditor agreement because the Public Participant's interests in the project company tend to be different from that of the lenders to the project. If the same is required, then it should ensure that any undertakings do not unjustifiably limit the ability of the Public Participant's to exercise its rights.

18.7.1. Loan Agreement

The loan agreement between the lenders and the project company generally governs a major part of the financing for the project company.

Key issues to be addressed in the loan agreement:

The following issues need to be considered for a loan agreement.

a. Facility:

This means information about the terms of the loan facility, including:

- **Commitment or Facility amount** i.e. the amount of the loan.
- **Availability:** The drawdown period of the loan and related conditions. The project company would usually provide a draw down notice with documents as required by the lenders to show that the conditions for draw down have been met.
- **Interest rate:** This is usually expressed as a formula for a quoted risk free interest rate (e.g. LIBOR plus a fixed or variable margin).
- **Repayment: The repay**m**e**nt dates and the last day for repayment.

b. Application of funds:

The mechanism of disbursement of the loan by the project company should be stated in the agreement.

c. Conditions precedent:

There are two types of conditions precedent to consider.

I. First, conditions to the effectiveness of the loan agreement.
II. Second, conditions to drawdown.

Most loan agreements provide for the borrower (the Project Company) to draw down by providing notice to the Lender, together with confirmation and documentary evidence that the Project Company has completed its conditions of draw down.

d. Representations and warranties:

Representations and warranties are statements about the status of the project company made by the project company. These are usually made at the date of the agreement and repeated on each date of the draw down notice.

e. Covenants:

Covenants are undertakings by the project company to do (positive covenants) or not do (negative covenants) certain specified things. The negative covenants are usually extensive as it is the lenders who draft the documents.

f. Security Documents:

The security documents need to be in the required order before the draw down and is mostly a condition precedent for the validity of the loan agreement.

g. Information rights:

The lenders would normally insist on being provided with certain information. The lenders would have to be notified with the developments in the construction and the adherence or deviation from the finalized construction schedule.

The lenders may request:

- operating results and plans such as audited financial reports and annual budget for the project,
- Notification of delays or cost overruns in the construction process,
- Monitoring rights in relation to completion tests and regulatory and environmental compliance, and
- Notification in case of any breach of the covenants.

h. Insurance:

The lenders normally require the project company to take adequate insurance cover and to name or assign the lenders under the policies as nominees.

i. Default:

Types of default and consequences of in the event of a default should be understood in advance by the public participant. A distinction should be made between a serious default that would affect all outstanding principal and interest to be payable, and a minor breach of a covenant.

18.7.2. Security Documents:

The assets or rights given by the project company to its lenders to ensure repayment of principal and interest of the loan can be collectively called security documents.

A characteristic of a PPP project is that physical assets in a PPP projects generally require substantial investments to build and are extremely valuable to the project company and the Public participant, but they may have little or no value to third parties. So lenders need to look to a range other assets as to cover their exposure.

There is a distinction between security in favor of the lenders, which is the security to be provided by the project company as the borrower for the loan, and security for the performance of, e.g., a party's obligation under the concession agreement or the EPC.

The local laws will determine for a large part what interests in the project are capable of being used as security. The ability of the lenders to enforce its security will be highly significant to the lender's decision to finance a particular PPP project. From the perspective of the lender, the important issues to consider with security are:

a. Priority:

The pecking order of payments, from the liquidation proceedings, in the event of the liquidation of the project company should be considered.

b. Perfection of security:

Steps that need to be taken to ensure that the security interest the lender holds is capable of being enforced in the event of default. This should be in consonance with the Nigerian legal system.

A 'security package' for a typical project finance deal includes:

I. Bank accounts:

This may include an assignment of bank account, creation of a new (usually offshore) account for revenue, arrangement to put revenues in escrow. The loan agreement may require that the project company sets aside some of its revenues to a debt service reserve account (DSRA) until the account balance reaches a certain point.

II. Pledges in the shares or equity of the project company:

This can be defined as the ability to take control of the project company in the event of certain specified defaults under the credit agreement. A "change of control" clause is present in the concession agreement and the other project agreements to which the project company is a party to. This is a right for the specified party to terminate the agreement if there is a change of control as outlined in the particular agreement.

III. Pledges in other assets:

The various other assets of the project company that may be capable of being pledged are ancillary equipment, vehicles, land and buildings etc.

IV. Mortgage or lien:

The project company may have real estate assets that are capable of being pledged.

V. Contract assignments:

Project agreements such as the construction contracts, off-take agreements, the concession agreement and the O&M agreements may be assigned to the lenders.

VI. Insurance:

The financing agreements will require that the project company take adequate insurance cover. The lender will also require that they be named as a "Loss Payee" or "Additional Insured" under the relevant insurance policy.

VII. Sponsors guarantee or undertaking:

The government may give a financial guarantee or a performance undertaking to the project.

VIII. Public Participant / Government guarantee or undertaking:

The Public Participant may give a financial guarantee or a performance undertaking to the project. A guarantee by the Public Participant will attract investors to the project. At the same time it exposes the public participant to large liability whereas the benefits of that risk would go to the private sector.[86]

18.7.3. Intercreditor Agreement[87]

An intercreditor agreement is an agreement amongst the lenders of a project company on priority of repayment, priority on liquidation and interests in security.

The terms may include:

[86] Source: http://bit.ly/1332bp0 Retrieved on 2 September 2013
[87] Source: http://www.unescap.org/ttdw/ppp/otherpublications.html#energy Retrieved on 2 September 2013

a. Appointment of a single trustee to hold debt and security for the benefit of all creditors
b. Common terms that apply to all creditors
c. Pro rata drawdowns
d. Disbursement of payments pro rata or in agreed pecking order out of proceeds account
e. Management and monitoring by a single agent
f. Limitation of creditor powers to vary their credit agreements
g. Voting powers for waivers and consents
h. Voting powers for default acceleration and security enforcement
i. Notification of defaults known to agents of groups of creditors
j. No action without specified creditor approvals, and
k. Sharing of recoveries pro rata or in prescribed hierarchy

18.8. Quasi-Equity Finance

Issuance of securities through the capital markets is an alternative to traditional debt finance obtained from the banks.

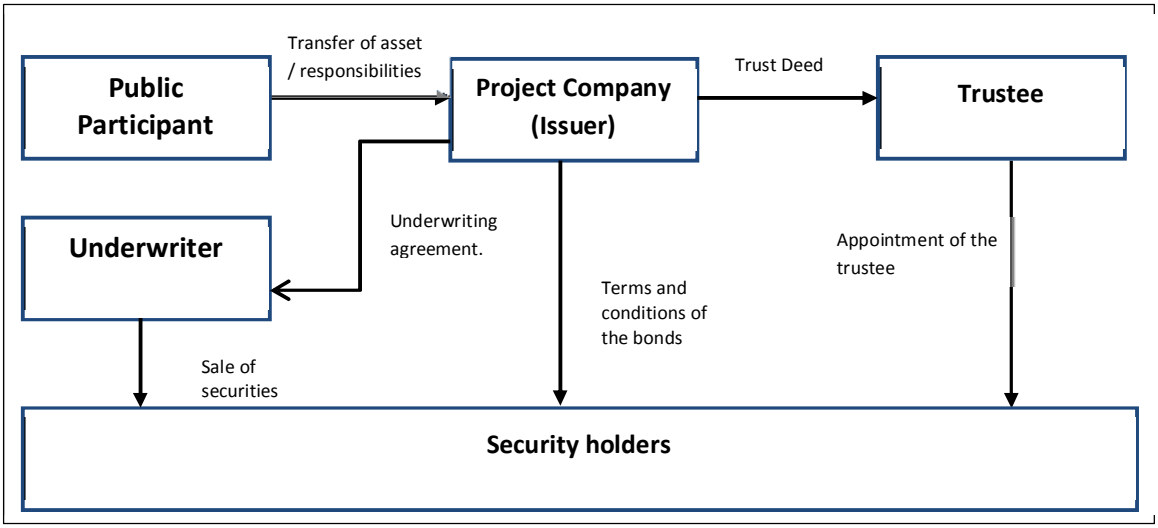


Image 4: Diagrammatic representation of the Securities Issue

Points to be noted by the Public Participant

The negotiations for the issue of bonds are a very different process from negotiations for a concession contract or even to negotiations for divesture. The terms and conditions of the bonds are not very negotiable, and the availability of funding from the capital markets is usually provided on a take it or leave it basis.

Some important issues from the point of view of the government as an issuer are:

18.8.1. Issuer:

The principal question is - 'Who is the issuer?' The Public Participant itself maybe an issuer and in that case; it would be liable for the repayment of the interest and principal amount for the bonds.

Alternatively, the Public Participant may transfer for the facility or infrastructure to a special purpose vehicle (SPV), which then proceeds to issue bonds. Or, the government may be obliged to guarantee the performance of the special purpose vehicle.

18.8.2. Liability

The issuer and often the directors of the issuer are responsible for certain statements made in relation to the issuer. The liability applies to offering documents and may extend to communications e.g. research reports, press releases, or other correspondence made by the issuer during the course of the offering.

The issuer can limit its liability by:

- Not deviating from the facts.
- Not sharing additional information.
- Not making futuristic projections or statements of intention.

18.8.3. Providing no indemnities:

No indemnity should be provided to the financial advisers or the underwriter by the issuer.

18.8.4. Lock-up:

After the subscription of an issue, the financial advisers are prohibited on the issue of new securities and a restriction on transfer of securities by existing shareholders is in order. Although this being a usual practice, the time frame for the prohibition should be limited. Usually lock-up period is around 6 to 9 months, and it should not exceed one year.

18.8.5. Covenants and events of default:

These are covenants and undertakings by the issuer and are usually less extensive than under loan agreements. Consistent between with the issuer's plans and business operations should be carefully reviewed.

18.9. Design, construct, Operate and Maintain[88]

The design, construction, operation and maintenance of the project facility entail agreements between the project company and its various sub-contractors, consultants and service providers.

[88] Source: http://www.unescap.org/ttdw/ppp/otherpublications.html#energy Retrieved on 2 September 2013

These agreements include the EPC agreement, Supply agreements, O&M agreement and Insurance policies.

Key issues pertaining to the same are described below:

The Public Participant is usually not a party to any of the contracts between the project company and its various sub-contractors. As the project company has assumed the responsibility for the construction and operation of the facility, the Public Participant need not concern itself with the dealings between the project companies and its various sub-contractors. Nevertheless, it needs to ensure that the obligations imposed on the project company under the concession agreement are being met.

The Public Participant needs to assume a monitoring role in relation to the project while abstaining from unnecessary and unwarranted interference. The Public Participant should request copies of the various contracts, such as the EPC agreement, the O&M agreement, any supply agreement and insurance policies inclusive of any notices and amendments.

The cause of concerns with reference to the above mentioned documents for the Public Participant are:

- **a.** In the case of BOTs, or BOOTs the infrastructure to be constructed will transfer to the government at the end of the concession period,
- **b.** The public will pay for the project through tariffs and thus good value needs to be ensured.
- **c.** The contractor often has an equity interest in the project company, so the Public Participant needs to ensure that the EPC agreement is provided on an arm's length basis
- **d.** The Public Participant may be guaranteeing, directly or indirectly the performance or construction of the infrastructure facility to the project company's lenders
- **e.** The contractor, the operator or the supplier may be a sponsor to the project and the terms of providing services to the project company may not be at arms' length.

The Public Participant should ensure that the EPC agreement, the O&M agreement and any supply agreement and insurance policies:

a. Are at arm's length commercial terms
b. Comply with Nigerian laws and regulations
c. Are consistent with and reflect the terms of the concession agreement
d. Require the operator to maintain the facility to an acceptable standard
e. Ensure that the infrastructure facility is in an operational condition on the transfer of the facility to the government at the end of the concession period and that the assets transferred include the necessary licenses.

18.10. EPC Agreement

An EPC (engineering, procurement and construction) agreement usually caters to the largest capital expenditure of the project company. It is an agreement between the project company and the EPC contractor to design, construct and deliver to the project company the infrastructure of the project. Usually BOT project are delivered on a turnkey basis.

The EPC agreement imposes on the contractor, obligations the project company has in relation to the design and construction of the project under the concession contract. Lenders need to be assured that the facility provided is sufficient to complete the construction of power project within the fixed monetary limit (facility). As most EPC agreements are provided on a fixed price and fixed time basis, it gives the Lenders the required comfort.

EPC agreements normally contain back-to-back obligations matching those of the Project Company under its concession agreement with the Public Participant. The project company in effect is sub-contracting its obligations to design and construct the facility to the contractor although the design and construction risks are not fully transferred. The Project Company is fully liable to the Public participant for any claim against the project company under the concession agreement, if the design and construction of the facility are not properly executed.

The key issues to consider in an EPC agreement:

18.10.1. Project design and responsibility:

The responsibilities for the project design usually lies with the contractor. It should be mentioned in the concession agreement that any fault in the project design remains the responsibility of the project company. The Public Participant, through the concession agreement, should have a right to review and approve the project design.

18.10.2. Scope of work:

Usually a contractor is engaged to construct the infrastructure on a turn-key basis, although the responsibility of completing the same in the designated time and budget is the concern of the project company.

18.10.3. Contract price, payment & completion schedule

This would need to be consistent with the financing agreements.

18.10.4. Key dates

The EPC agreement would set out key milestones in the project design and construction. They usually include dates for design completion, mechanical completion and final acceptance.

18.10.5. Performance tests

The government should be involved in the acceptance tests to ensure that the project performs in accordance with the standards mentioned in the concession agreement.

18.10.6. Guarantees, warranties and indemnities

The EPC would provide certain indemnities, warranties and guarantees in relation to the facility. These indemnities, warranties and guarantees are usually limited in time, and by the time of transfer of the facility to the government these indemnities, warranties and guarantees. Nevertheless the benefits of any indemnities, warranties and guarantees applying once the facility is transferred to the government should also be assigned to the Public Participant.

18.10.7. Limitation on liability

This in affect deals with the allocation of risks between the contractor and the project company.

18.10.8. Liquidated damages

If the contractor fails to complete the project in time, it is likely to be liable to pay liquidated damages (LD) to the project company for this failure. The liquidated damages are a pre-determined estimate of costs as a result of delay in completion, rather than a penalty.

18.10.9. Change orders

This will need to reflect the right of the government to change orders under the concession agreement.

18.10.10. Defaults and remedies

What events constitute default, and what are the consequences of default.

18.10.11. Force majeure

This deals with circumstances in which the contractor would be excused from performing its obligations under the EPC agreement. They should be in consonance with the concession agreement.

18.10.12. Termination

The events that lead to termination, and the consequences of termination needs to be dealt with.

18.10.13. The FIDIC "rainbow":

The "Red Book", "Yellow Book", "Orange Book" and "Silver Book" are widely used jargons to refer to standard forms of EPC agreements developed by the FIDIC (Federation Interriationale des Ingenieurs-Conseils or the International Federation of Consulting Engineers). The contractors engaged in construction work commonly use these FIDIC standard forms documents. Following is a brief description of the same:

a. **Silver Book:** This is a recent standard form EPC agreement which has been developed specifically for BOT projects.
b. **Red Book:** The most commonly used FIDIC standard form which can be adapted to civil engineering works.
c. **Yellow Book:** This is more suitable for supply of mechanical and electrical work,
d. **Orange Book:** This is for design-build and turnkey contracts.

18.11. Supply Agreement

These are agreements between the project company and other suppliers of the project. An existence of a long-term supply contract at a fixed cost from a reliable supplier may substantially reduce the risk profile of the project.

18.12. O&M Agreement

An O&M agreement (Services Agreement) is an agreement between the project company and the operator of the hydro power plant once the project facility is completed. The operator of the infrastructure facility may also be one of the sponsors of the project company.

The O&M agreement will define parameters for operating efficiency and maintenance. It usually includes penalties for failure to meet base case efficiency levels and bonuses for exceeding them.

The terms of the O&M agreement should reflect the project company's obligations under the concession agreement. They should be consistent with the EPC agreement and any supply agreement to be entered into by the project company.

The main concerns for the operation or a facility are:

- the supply of inputs, e.g. utilities and other materials;
- the demand for the infrastructure services; and

- the delivery of infrastructure services.

Key Terms

An O&M agreement should address the following issues:

18.12.1. Scope of the operator's services:

This usually mirrors the operation and maintenance provisions in the concession agreement.

18.12.2. Term:

The term of this agreement should be no longer than that of the concession agreement.

18.12.3. Warranties & Performance Guarantees:

This usually mirrors the operation and maintenance provisions in the concession agreement.

18.12.4. Payment:

The calculation, timing, method and currency of payment to the operator need to be specified.

18.12.5. Access to books and records:

The project company should have access to the books and records of operator pertaining to the power project, particularly if the calculation of revenues or fees, and amounts to be remitted to the project company depends on cash flow within the control of the operator.

18.12.6. Indemnification

This relates to the allocation of risks between the project company and the operator.

18.12.7. Defaults and remedies:

The consequences of a default and the remedies to the aggrieved party in case of default should be identified clearly.

18.12.8. Force majeure:

This deals with circumstances in which the contractor would be excused from performing its obligations under the O&M agreement. They should reflect the concession agreement.

18.12.9. Termination

The events that lead to termination, and the consequences of termination needs to be dealt with.

18.13. Insurance

Insurance is an instrument through which the private and public parties transfer or shift some of the unacceptable risks of the project to insurance companies. There are many types of insurance coverage, including casualty, third-party liability and business interruption insurance. Insurance coverage is often limited in scope and contains wide ranging conditions & exceptions. A cost and benefit analysis of obtaining certain insurance covers should be considered, given that the premium for PPP related insurance policies are considerable. The lenders usually insist that insurance policies are obtained, but the other parties may more sensibly or cheaply cover the risks covered by the insurance policies. Some insurance cover would be mandatory and is desirable to cap the risks involved.

18.14. Power Purchase Agreement[89]

A Power Purchase Agreement (PPA) ensures a steady and pre-determined payment stream for the hydro power project. The PPA is signed between the purchaser (often a state-owned electricity utility) and a privately owned power producer or the project company. This agreement is the central commercial agreement for the project, setting forth the critical revenue provisions and performance obligations. If the purchaser is obligated to pay for the capacity and electricity, regardless of actual withdrawal of electricity, this may also be regarded as a "take-or-pay" arrangement.

Depending on the off-takers' credit worthiness, the presence of a long-term PPA would significantly increase the bankability of a project because it represents a contractual entitlement to a revenue stream.

The key elements addressed in a PPA are as follows:

a. Sale of capacity and energy - the power producer agrees to make available to the Purchaser the contracted capacity of energy and deliver the energy in accordance with the PPA
b. Charges for Available Capacity and Electrical Output
c. Permission for Third party sales/ Exclusivity provisions
d. Force majeure or purchaser breach of contract
e. Testing regime
f. Termination
g. Provision for change of law, taxation and its implications

18.15. Implementation Agreement (IA)[90]

Implementation agreements outline the contractual obligations and undertakings between the Government and the supplier or project company. The government may not usually be a

[89] Source: http://bit.ly/11Tms1r Referred on 21 August 2013
[90] Source: http://bit.ly/16MfbCC Retrieved on 21 August 2013

direct party to the power purchase agreement. Installing a power plant often requires assistance from the government in various capacities such as:

a. Obtaining required consents & licenses
b. Undertaking to ensure that the utility performs its obligations (sometimes in the form of a guarantee) where there is a concern on the part of the supplier that the utility might not or may not have the financial standing to fulfill its obligations.
c. Undertakings from the government on export and import duties and taxation of the supplier.

The implementation agreement usually includes undertakings by the supplier to the government regarding Compliance with environmental laws.

18.16. Connection to Grid / Power Pooling Arrangements[91]

Interconnection, Grid Connection or Power Pooling Agreement is mandatory in Public private partnerships concerning power projects. These contracts outline the responsibilities and fees for connecting the power generated by an independent power producer (IPP) to the owner of grid system, generally a public entity.

18.17. Land Lease Agreements[92]

These agreements have come into play when the power projects are to be constructed on land not owned by the project owning company. The land owners, private or the government, lease or sell the land to the operating company or concessionaire for the period of the concession contract. In an independent power project, the Land Lease Agreement could be a stand-alone agreement, or its main provisions can also be included in the Power Purchase Agreement or Implementation Agreement (in case of government owned land).

18.18. Government support agreement

Often, the host government will be required to provide financial or other support to a project. The terms and conditions will be set forth in some type of government support agreement, such as a payment guaranty or an implementation agreement.

18.19. Other Agreements

Other ancillary agreements are also customarily entered into, such as a land lease agreement (or land purchase agreement), sponsor support agreements, security agreements, an escrow agreement and warranties and warranty bonds. The particular facts

[91] Source: http://bit.ly/16wsWCz Retrieved on 21 August 2013
[92] Source: http://bit.ly/19xxQk7 Retrieved on 21 August 2013

and circumstances of each transaction may additionally require further ancillary agreements between the relevant parties.

19. Option analysis

Option 5: Maintain Status quo.

Option Explanation: This simply means that the Omi Dam should be left in its current condition as it is. This option calls for no further investment or any development of the available infrastructure.

Impact on Public Participant

Economic Impact: The proposed Omi Kampe Hydroelectric power project has a potential to deliver earning with an NPV of around 1.03 million USD (see section 13.9). If the project is not developed, the Public participants lose out on a potential revenue stream.

Social Impact: The primary objective of Public Participants is considered to work towards the development of the society at large. Nigeria at present faces severe electricity outages and shortages (see section 6) and the area around the Omi Dam is not an exception. The proposed 2.0 MW Hydro power project at the Omi Dam if developed will help the public participants in bringing much needed electricity to the region around the Omi Dam.

Impact on potential Private Participants:

The proposed Hydro power project at the Omi Dam is a viable project and has a potential to deliver an IRR of around 20.0% to its investors after factoring for all the payables to the Public participant. If the *Status Quo* is maintained, the investors will lose an opportunity to invest in a profitable and viable project.

Impact on General Public:

According information shared by the staff at the OMI Dam during the site visit, the Omi Dam is not being used to its optimum for irrigation works. A few of the gates of the dam are not functional and the flow of waters from the dam into the canal network is not being regulated or gauged. If the proposed hydroelectric power project is not developed, the public will not get any electricity that can be harnessed from the dam. Hence, maintaining the status quo will result in losses to the public on both fronts; first from the non-functioning irrigation and secondly from the loss of potential power generation form the dam.

Option 6: Government / Public Participants Develop, Construct and operate the project:

Option Explanation: This option entails that the proposed hydro power project at the Omi dam is built using public funds and resources.

Impact on Public Participant

Economic Impact: Investing scarce public funds for the developing the project as opposed to gaining from the upfront premium and receivables from the private participant is not advisable. Also the public participants may not have the required technical resources to develop the hydro power project. Secondly the management of the project during development, construction and operation by the public authorities when compared with the private participants may not be considered efficient.

Impact on potential Private Participants:

If the project is developed by the government using public funds, the private participants will be devoid of an investment opportunity.

Impact on the General Public:

In developing countries around the world there have been many a cases of mismanagement of infrastructure assets by public utility companies. This results in a loss to the public exchequer on one side, and a general discomfort and lack of services to the general public.

It is difficult to impose a penalty on a public body executing the project for any discrepancies, malfunctioning or delays in project execution as opposed to imposing them on a private participant.

Keeping in view the above mentioned, it may not be advisable for the project to be executed by the Government / the Public participants.

Option 7: Privatization of the proposed project including the ownership of the Omi dam.

Option Explanation: This option entails the lump sum sale of the Omi Dam and the right to construct a hydro power project on the dam. This will give the private participant absolute water abstraction rights, and control over the dams' operation and maintenance.

Impact on Public Participant

Economic Impact: This option may result in substantial upfront monetary benefits for the Public participant, but they lose ownership of the assets and also lose out on long term benefits from the project.

Social Impact: The government/ public participant will lose its ownership and subsequently the right to monitor the maintenance and upkeep of the dam.

Impact on potential Private Participants:

Purchasing the OMI dam for a 2.0 MW hydro power project will render the project financially non-viable and will not be a preferred option by any investor / project developer.

Impact on General Public:

Besides a profit motive, private participants have little incentive for the upkeep and maintenance of an asset. Any malfunction in the dam can have disastrous consequences for the people residing downstream of the dam.

Option 8: Development of the hydro power project via the PPP mode.

Option Explanation: Under this option the private participant is granted the option to develop the small hydro power project at the OMI dam. The ownership of the existing structures pertaining to the dam remain with the government and only the ownership of the new structures constructed for the hydro power project are transferred to the project company.

Impact on Public Participant

Economic Impact: The project shall be allotted on the basis of a bid (see section 13.9). The private participant will invest all the monies required to develop and construct the project. The public participant will gain from the project depending upon the bid type; upfront premium, free power, free equity, least concession period or a combination. This results in the Public participant gaining one from the bid (monetary benefits) and secondly the larger gain is in getting the project developed through a competent and experienced power project developer.

Social Impact: Developing a project via the PPP mode will help the Public participants in achieving their objective of development of infrastructure assets for the general upliftment of living standards of the people in a cost effective and efficient manner.

Impact on Private Participant:

The Omi dam is a viable project capable of rewarding its investors with substantial returns.

A PPP mode of development will provide both the public and the private participants with enough incentives to assist each other to develop the project.

Impact on General Public:

The development of the proposed Omi hydro power project will result in the upliftment in the quality of life of the people residing in and around the area. The benefit that will accrue will be three pronged:

a. During construction the Project will provide employment to the people in the vicinity.
b. Post commissioning 30% of the revenue generated by the project will be shared with the Hydroelectric Power Producing Area Development Commission, thus providing a long term stream of funds for the development of the area.
c. The construction of the power project will lead to the optimum utilization of the precocious natural resource and utilize the energy generation potential created by the Omi dam currently facing a state of neglect.

Three primary criteria of evaluation are identified for choosing the best possible option:

4. Electricity being made available for the public
5. The government should invest the least possible resource (financial and manpower)
6. The option should be lucrative financially for Private Sector investments

Assigning weights for each of the above mentioned three criteria the following chart is developed:

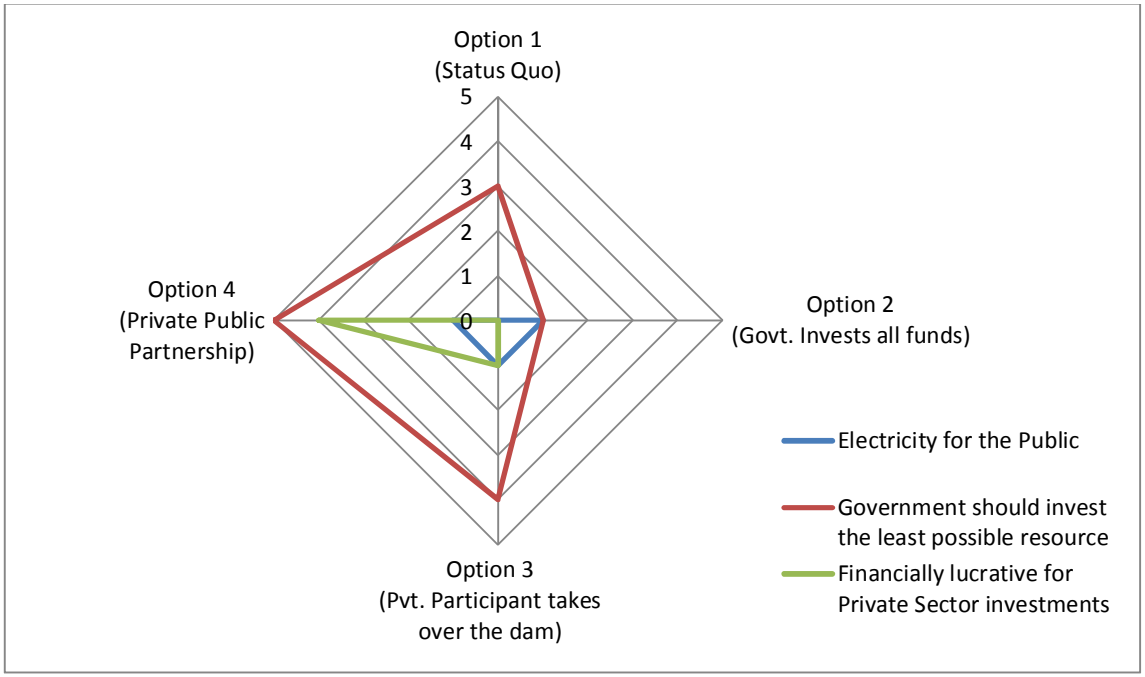


Image 5: Diagrammatic representation of results of the various options analyzed

Keeping the above mentioned observations of the various options, and the chart shown above, option 4, i.e. development of the proposed hydro power project at the Omi dam via a PPP methodology is the most favorable method of developing the hydro power project.

20. Project Implementation Arrangements[93] and Evaluation Criteria for selection of Private Sector

A number of steps are involved in the project implementation process from conception of a project to allotment of a PPP concession to the selected bidder. Each step requires careful planning and a dedicated team of experienced professionals for flawless implementation. The various stages envisaged in executing a PPP are summarized in the flow chart below:

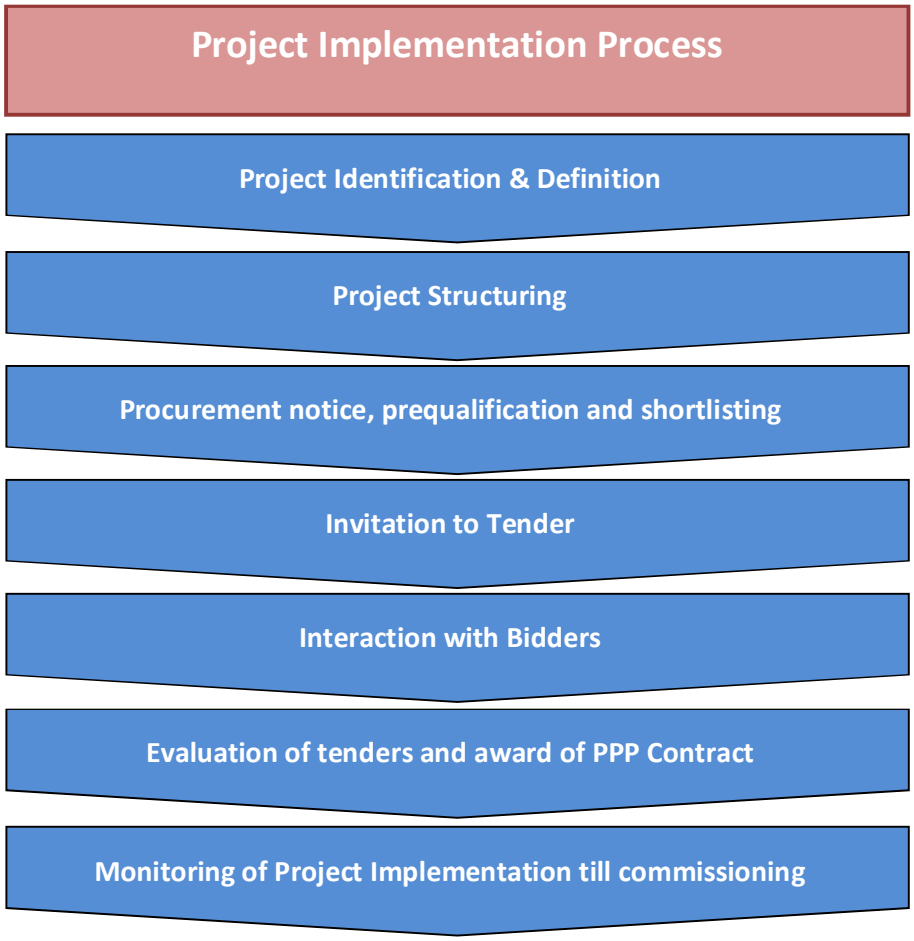


Image 6: Stages in Project Implementation for PPP of a Small Hydro power project

Develop the project for the bid[94]

After identifying any project for a PPP, the Public Participants need to define all aspects of the Project before it can be advertised to potential investors. The following steps give a comprehensive outline of the project definition process:

I. Assess the requirement and assemble the requisite project management team and external advisers.

[93] Source: http://www.eib.org/epec/g2g/iii-procurement/31/index.htm Retrieved on 15 September 2013
[94] Source: http://bit.ly/a9IowR Retrieved on 17 September 2013

II. Define the extent of Public participation & Identify the various parties comprising the Public Participant
III. Outline individual roles and responsibilities of public participants
IV. Establish communication protocol among the public participants.
V. Establish the Public Participant's requirements from the hydro power project and outline the contractual documents governing the same
VI. Develop confidence among potential private participants on the terms envisaged
VII. Internally assess and determine type of public sector support that will be provided to the private participant pre and post – commissioning e.g. support for land acquisition, regulatory clearances such as Environmental clearance.
VIII. Outline and draft a comprehensive and credible PPP / concession contract
IX. Identify potential areas of dispute and establish the basis for dispute management
X. Develop the project information for bidders and establish a data room
XI. Identify and list all the relevant statutory processes and clearances required
XII. Develop a strategy for raising awareness of the project among potential investors e.g. a road show, pre-bid meeting, call for expression of interest (EOI)
XIII. Prepare for the procurement phase (strategy, budgets, timetable, and people)
XIV. Complete the value-for-money assessments
XV. Establish the basis on which a project's success will be evaluated

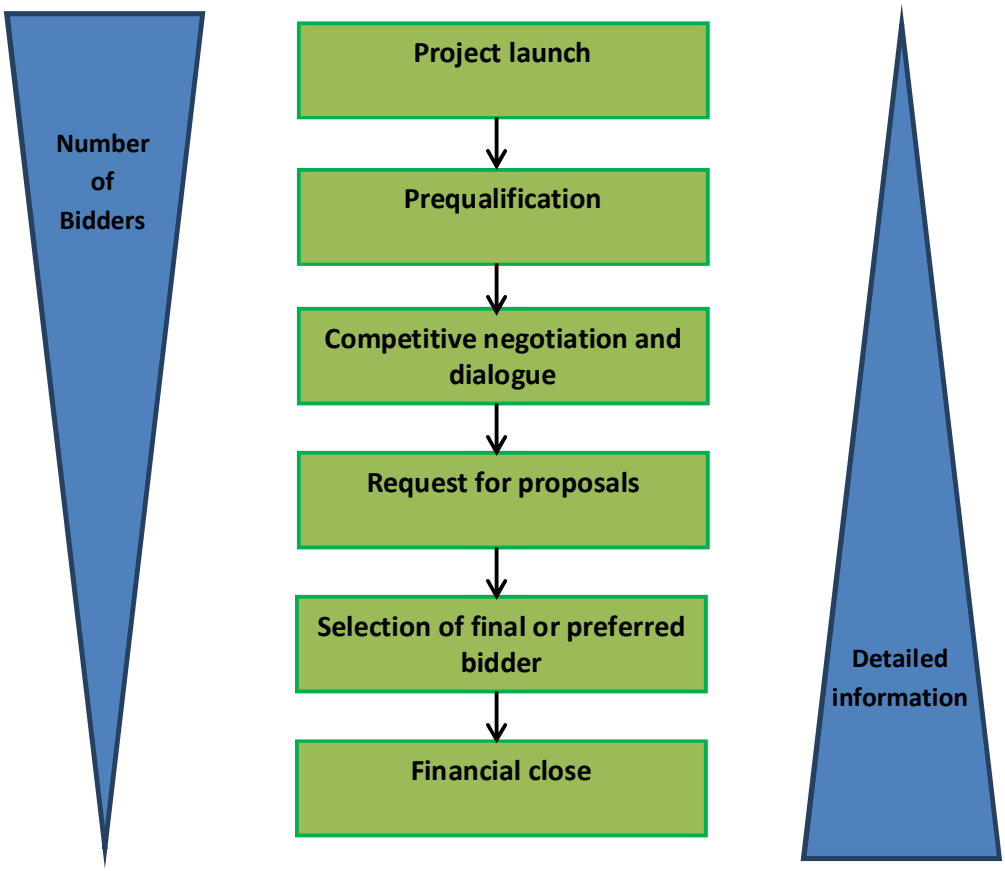


Image 7: Flow of Information & number of Bidders

20.1. Communication with bidders

Communication with bidders is a continuous process and needs to be strategized, planned and implemented at various stages of the project. The common points of communication are:

- Market soundings during project development
- Market briefing held to inform the potential participants at the time of the release of the EOI.
- Communication during the RfQ and RfP phase that comprise of written Question and answer procedures
- Communication during the bid phase that involves an interactive tender process;
- Debriefing of unsuccessful parties once contract execution or financial close is achieved.
- Release of bid security of unsuccessful bidders once negotiations with preferred bidder are concluded successfully

PPP projects may require a greater window of opportunity for bidders to seek clarification and advice in comparison to other projects.

It should be ensured that:

- Confidentiality of information shared by all bidders is maintained.
- No bidder receives an unfair advantage as a result of elaboration given in response to a question (responses to clarifications are therefore to be shared equally with all bidders irrespective of who asked for the clarification)
- Relevant transparency measures are sufficiently followed in letter and spirit

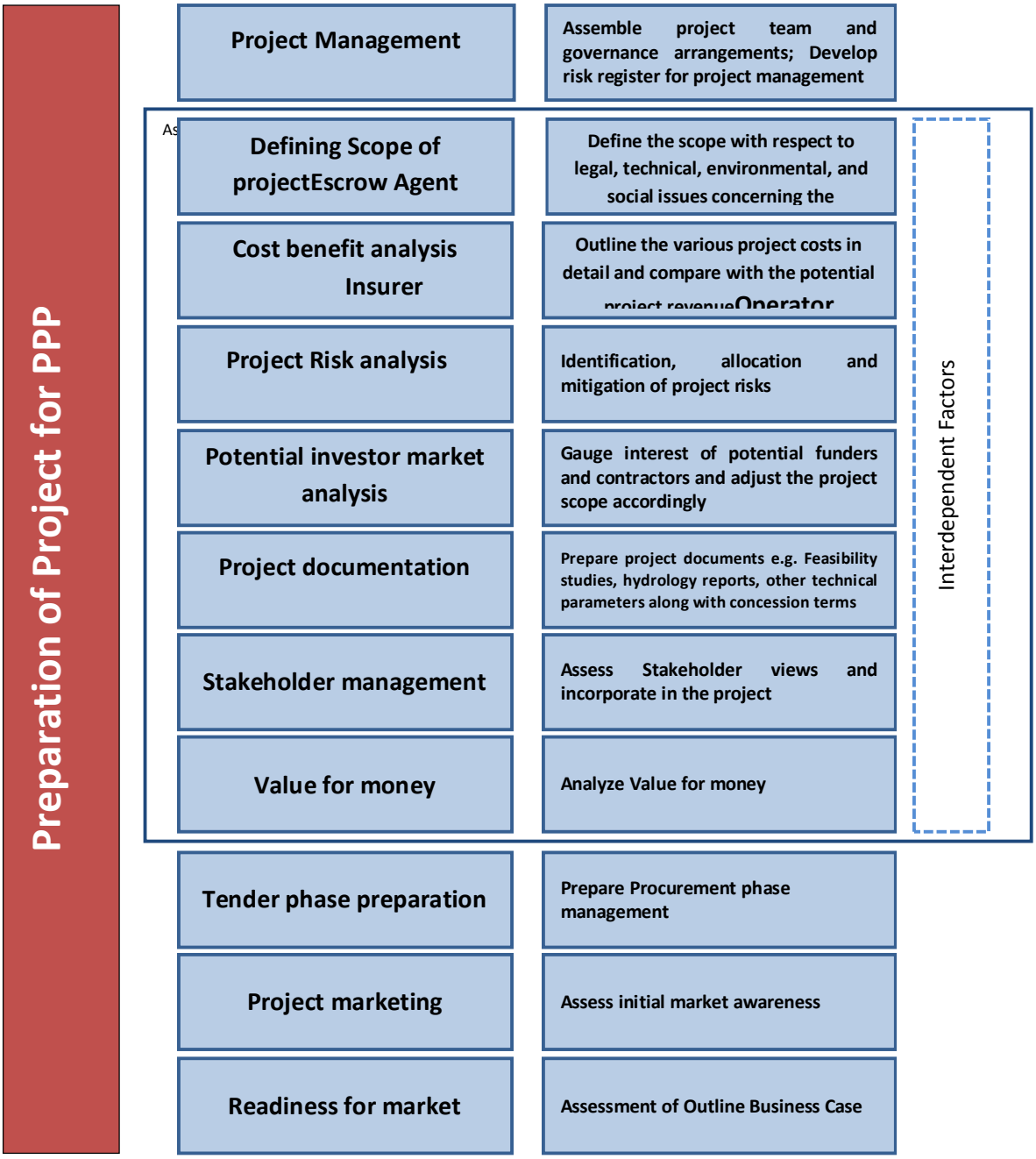


Image 8: Preparation of a Project for a PPP[95]

[95]Source: http://bit.ly/1erjpCM Retrieved on 18 September 2013

20.2. Procurement notice (expression of interest)

The formal procurement process starts with a publication of the public procurement notice. This marks the start of the formal procurement process. It is a good practice to publish the procurement notice in one or more of the local and international periodicals, as well as on reputed websites. Also known as an Expression of Interest (EOI), this is a multi-staged process used to shortlist potential suppliers/contractors/ private participants for the requisite works. The shortlisted parties later submit a detailed bid in the tendering stage. The purpose of the procurement phase is to develop and conduct a process that accomplishes the following:

- Selects a bid
- Maximizes the benefits of competitive tension between bidders
- Delivers the best bid from the most competent bidder
- Minimizes time and cost
- Stands up to scrutiny from citizens and both the public and private sectors.

An EOI should usually comprise of the following[96]:

- Name and full address of the Organization:
- Management Structure:
- Contact Person with designation:
- Contact details (telephone numbers, fax number, email):
- Current operational areas of work of the investor group:
- Audited financial statements / Turnover for the most recent three years:
- Approval/registration with any Govt. or international agency:
- Details of expertise available in the design, construction and operation and maintenance of hydro power projects
- Regular manpower available on roll for proposed work along with their age, qualification and experience
- Description of similar projects executed till date in different geographical areas
- Any other credentials in the field of hydropower
- Acceptance of terms and conditions

20.3. Pre-Qualification and Request for qualification (RfQ)

The primary purpose of a prequalification is to include bidders that appear to be capable of conducting the PPP project in the requisite manner. The description of the project mentioned in the notice to the private participants should be broad and generic so that, it need not be altered subsequently, as that may lead to the procurement process being required to start all over again. At the same time, the description should not be so broad as to confound the bidders regarding the specific scope of the project.

[96] Source: http://bis.org.in/cert/FORMAT-EOI.pdf Retrieved on 18 September 2013

Usually, interested parties that respond to the initial notice are intimated with a statement of information about the project along with a questionnaire. The responses form the basis of a qualification criterion that demonstrates the parties' ability to implement the project.

The prequalification questionnaire should address the following:

- A description of the dam facility and an outline and overview of the proposed hydro power project;
- The upfront fee (refundable and non-refundable) to be submitted (e.g. tender document charges, processing fee, security deposits);
- The intended allocation of major risks and envisaged responsibilities of each party;
- A summarized list of the studies and data (such as feasibility studies, hydrology reports & data, structural report & drawings for the dam, historical readings from various monitoring devices on the dam) that will be made available to bidders concerning the project;
- the intended procurement process;
- A description of the minimum qualification criteria for financial threshold (net worth and turnover) and technical competence/ qualification in terms of hydro power projects executed;
- The tie-up / Joint ventures / consortium allowed (if any) (e.g. parent or subsidiary companies' qualifications);
- The historical business activities of the consortium and legal information about their constituents;
- The qualifications of personnel involved in the project;
- The criteria and mechanisms that will be used to evaluate the prequalification statement
- A time table covering various events of the bid.

Usually the public participant's legal advisers draft both the PPP procurement notice and the prequalification questionnaire (also called the RfQ).

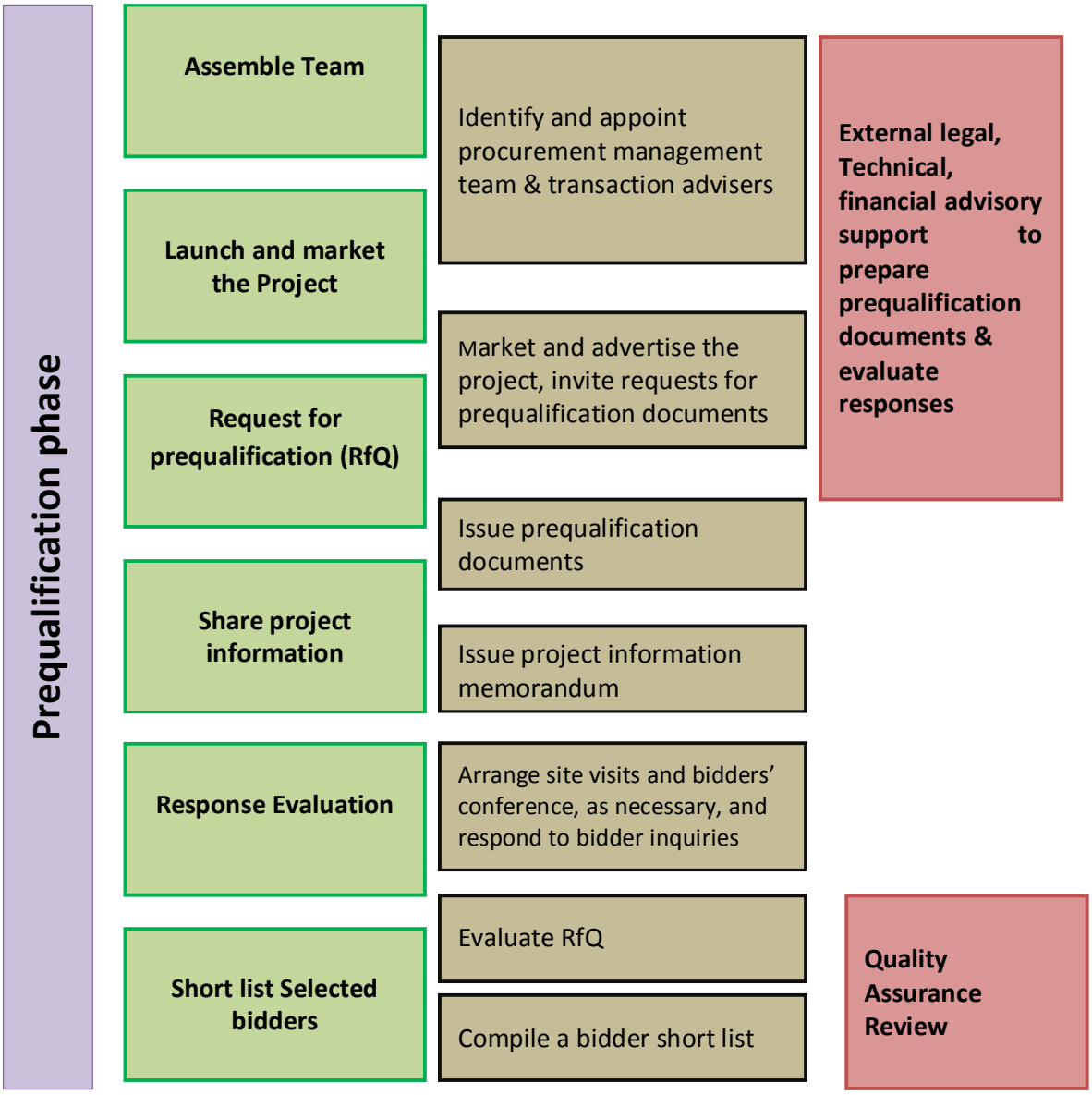


Image 9: Outline of the Prequalification Phase[97]

20.4. Shortlisting

The objective of shortlisting is to reduce the number of bidders. While the actual reduced number of bidders varies from project to project, the usual number of bidders left after the shortlisting is generally between three and five. Evaluating bids is a time-consuming exercise for the public participants and its consultants. The aim of the bidding process is to maximize competition and not the number of bidders.

[97] Source: http://bit.ly/1erjpCM Retrieved on 19 September 2013

The short listing procedure will focus on the technical capability, business capability and financial net worth of the potential bidders. These capacities must be, in principle, demonstrated jointly, rather than individually, by the members of a consortium.

The various stages of the prequalification and shortlisting process can be summarized as below:

Stage I: Determine which consortia have passed the thresholds in all the relevant aspects

Stage II: Rank and assign scores to the parties clearing stage I on the basis of a systematic and predetermined process.

Stage III: On the basis of ranks obtained in stage II narrow down the list to arrive at a shortlist.

A well-substantiated prequalification report should be prepared to provide a good audit trail. Unsuccessful bidders should be debriefed.

20.5. Invitation to tender/bid or Request for Proposal (RfP)[98]

20.5.1. The Request for Proposal

The tender documents are usually prepared during the last stages of the project preparation phase. However, finalization of various documents often takes place during the prequalification period.

It should be ensured that the various consultants (finance, technical, legal) provide their individual inputs in detail and then re-examine the final documents as a whole to ensure that the various components of the tender documents are in sync with each other. It should be ensured that the bids should be comparable and there is no ambiguity or room for debate on any of the inputs by any bidder.

The tender documentation should address the following issues:

- A detailed information memorandum about the project should be provided;
- A summary of the obligations of each party and the risk allocation;
- Detailed output specifications
- The minimum required technical design, technical features and the international or local design specifications / codes to be adhered to
- The level of commitment required from the lenders and equity investors
- The full draft PPP contract
- The Instructions to Bidders (ITB) concerning all the information they must submit and the detailed procedures for submission including formats, number of copies, deadlines;
- The evaluation criteria; and

[98] Source: http://www.eib.org/epec/g2g/iii-procurement/31/312/index.htm Retrieved on 19 September 2013

- The requirements for bid bonds or security (amount, form).

The information shared in the tender document shall be detailed to assist the bidder and to minimize the bidding costs for the private candidates, however it shall not:

- Prevent bidders from offering cost-efficient alternatives based on their expertise and capacity for innovation,
- Transfer unnecessary risks to the public entity.

20.5.2. Data Room

Following release of the RFP to the shortlisted bidders, a key aspect involves the communication protocols, and in particular, sharing of the data. For this a Data room is proposed to be created. The process can be made more efficient by providing the shortlisted bidders all relevant information that may aid in the preparation of the response to the RFP.

Such information may include:

- Any analysis of legislative and regulatory impacts;
- Feasibility studies & other technical data;
- Land use considerations;
- Geological information;
- Demand estimates etc.

Information in the data room should be made available with appropriate disclaimers. This data room may be a physical room or an electronic equivalent (e.g. online repository with access control and printing permissions/ restrictions. The information could be shared with the bidders as part of the RFP documentation as well.

20.5.3. Interaction with the bidders

The RfP stage involves a submission of bids from prequalified bidders within a notified timetable. The submission of documents may be preceded by a round of the prequalified bidders seeking clarifications about the bid requirements. Written clarifications should be provided to all bidders. Clarification meetings may also be held with representatives of all bidders being invited to attend. Written communication should be issued detailing minutes of such meetings and the resultant clarifications.

The terms and conditions for the interactive process outlining the procedures, protocols and rules should be pre-determined in the set of conditions, rights and obligations to which bidders agree to. The objective of developing this iterative process is to improve the quality of the proposals by:

- Promoting and encouraging innovative solutions from different bidders;
- Clarifying any technical, financial and commercial issues; and

- Providing timely, direct and specific feedback to all bidders on key aspects of their bids.

The end objective of sharing adequate data and the interaction process for providing clarifications is to improve the quality of bid submissions from the shortlisted bidders and ultimately deliver better outcomes for the public.

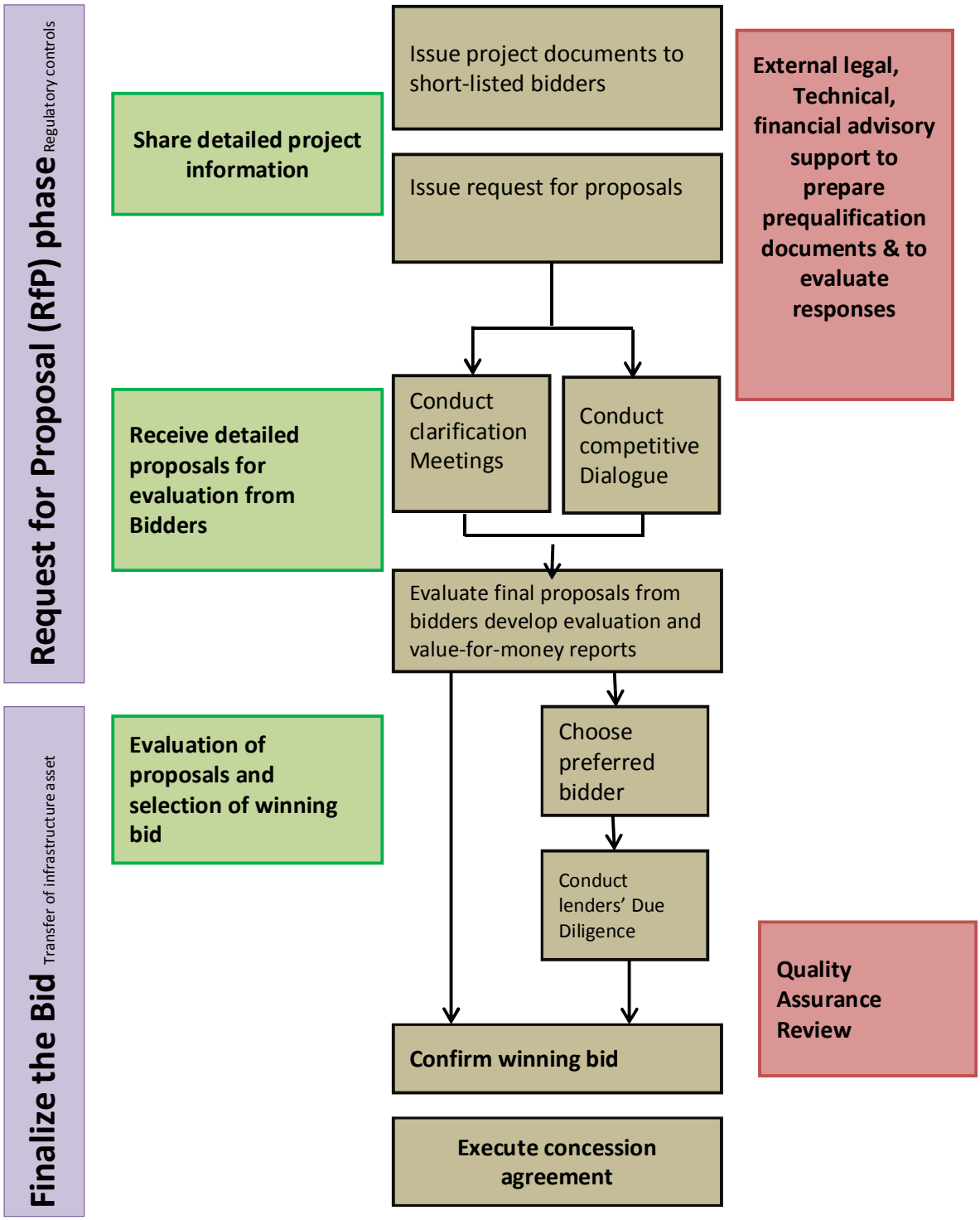


Image 10: Outline of the Request-for-Proposals and Financial Close Phases99

20.6. Documents to be submitted by bidders[100]

The documents to be submitted by the bidder can be divided into four parts, namely: the Technical bid proposal, the Financial Proposal, the Legal Proposal and the draft contracts.

20.6.1 Technical bid proposal

The finalizing of contractors, sub-contractors and suppliers prior to the bid is an additional and unnecessary burden on bidders and should not be compulsory. These can be identified once the concession has been awarded. The technical bid should comprise of the following:

- Relevant technical experience (individual or consortium) in designing and constructing dams, irrigation schemes and hydro power projects
- Environmental protection plan
- Operating program and costs
- Maintenance program and costs

20.6.2 Financial proposal

The commercial / financial proposal should address the following issues:

- The financial net worth of the bidder
- The turnover of the bidder or the parent company(s) of the proposed project company
- The free cash flows of the bidder or the parent company(s) of the proposed project company.
- Residual value/debt amortization profile.

20.6.3 Legal proposal

The bidder should submit the following along with the bid:

- Acceptance of terms of the contract,
- Draft shareholders' agreement/ consortium agreement/ joint venture agreement
- Letter of conveyance signed by the authorized representatives of the company or consortium submitting the bid.
- Term sheets of other main contracts could also be requested (power purchase agreement, construction contract (EPC), operation & maintenance contract, minimum insurance requirements).

20.6.4 Draft Contract

[99] Source: http://bit.ly/1erjpCM Retrieved on 19 September 2013
[100] Source: http://bit.ly/1a66K31 Retrieved on 19 September 2013

The bidders should be expected to submit a draft copy of the contract along with the bid. This will affirm their compliance with the terms of the contract and limit post selection negotiation to a reasonable minimum. Draft contracts could be provided as formats along with the Tender Documents and bidders may be required to provide their mark-up of the contracts. E.g. Draft PPA could be provided along with the Bid to be marked up and submitted by the bidders with the response. Bidders may be encouraged to accept most of the terms and submit a non-marked up or least marked up bid. Markups of different bidders then can be compared to see who has submitted the most responsive (least marked up) bid.

20.7. Bid Evaluation and Negotiations:

20.7.1 Bid Evaluation

After the tenders (responses to RfP) are submitted, the bids are scrutinized and evaluated to select the preferred bidder. Bids should be evaluated in line with the evaluation criteria detailed in the RFP and in accordance with the details of the evaluation plan. An evaluation plan should be developed and approved by the Project Steering Committee before the release of the RFP responses.

Once the RfP responses are received, the decision is made on the appropriate structure of the evaluation team. Different teams are established to assess the service delivery, design solution and commercial elements of proposals. A matrix is usually created to rank the various bidders in the order of the inputs in the bid and arrive at the 'L1', 'L2' and 'L3'.

It is imperative that any bidding consortium must come across as a well-integrated entity rather than just a collection of individuals together solely for fulfilling the bidding purposes requirements.

20.7.2 Low Bid response

The method to proceed in case there is only a single applicant for the bid should be pre decided and outlined. If the bidder interest is low because of lack of information in the tender documents, it should be analyzed if these can realistically be remedied. The best solution might be to repeat the tender procedure after addressing the deficiencies.

20.7.3 Negotiations[101]

If the circumstances allow, instead of taking a "best and final offer" (BAFO) from the bidders, it may be beneficial to undertake negotiations simultaneously with two or more bidders before the evaluation process and selecting a preferred bidder.

If the 'Bid Evaluation Panel' concludes that the bidders need to develop their proposals to standards that justify their appointment as preferred bidders, pre-selection negotiations

[101] Source: http://bit.ly/18BzaVj Retrieved on 19 September 2013

should be conducted. A higher level of interaction may be required to resolves issues as the assessment (e.g. design, commercial or otherwise) will require interactive discussions. Such pre-selection negotiations should be undertaken within a tightly defined timeframe to maintain the competitive spirit of the process and to minimize bid costs.

The pre-selection negotiations, if conducted, should address all areas of deficiency in the bidder's proposals e.g. design, construction, services, financial, contractual among other things. The bid evaluation panel may choose to negotiate different risk allocations and contractual terms with each bidder, provided that the process is conducted in a fair and equitable manner, under the eyes of an independent watchdog or regulator.

20.8. Evaluation reports

The evaluation process and methodology used for assessing the submitted bids or proposals should be included in the form of an evaluation report. The format for the same should be specified in the evaluation plan and should be agreed by the steering committee before proposals are received. If the evaluation committee is assisted by a range of specialized sub-committees, separate evaluation reports should normally be compiled by each sub-committee.

Each of the reports should be combined into a combined evaluation panel report for the Project Steering Committee. The report should rank the bids from in a decreasing order of preference based on clearly identified & pre-decided parameters such as cost, value for money, technical efficiency or qualification of the proposal. The report should specifically address the evaluation criteria mentioned in the EOI/RFP. It should make an objective and analytical analysis of the bids, based on the identified evaluation criteria (e.g. service delivery) and make an unambiguous recommendation of the preferred party to the Government.

The report should discuss the rankings within each area of evaluation and the basis for the procurement team's agreement on the preferred bidder. The evaluation process and report should also include a confirmation from an independent process watchdog or regulator that the evaluation process was undertaken in accordance with the evaluation plan and has been conducted in a fair & transparent manner.

20.9. Award

The Steering Committee should ensure that a single preferred bidder is nominated within the stipulated timeframe. If it is not possible to identify a single preferred bidder after the evaluation phase, the Project Steering Committee should evaluate if a value for money solution can be achieved. Only then the Project Steering Committee may agree to an alternative approach to identify a bidder as preferred through:

- Shortlisting two bidders and undertaking a best and final offer ("BAFO") negotiation; or
- Shortlisting two bidders to undertake a structured negotiation process where a greater level of interaction is involved to address the outstanding issues.

It should be ensured that a minimum 'standstill period' (say 15 days) is maintained between the PPP contract award decision and the actual conclusion of the contract. This will allow the rejected bidders time to conduct their assessment and decide if they want to challenge the award. The Public participant should structure a mechanism to address all grievances of any aggrieved bidder. Otherwise, they may take steps to hinder/delay the execution of the project or in worst case have the PPP contract rendered ineffective.

20.10. Bidding timelines:

Indicative timelines for all stages of the bid have to be planned well in advance and communicated to the bidders at the start of the bid process. The man-hours required in the analysis of the proposals received should be correctly estimated and appropriate allocation of manpower should be done. While it should be ensured that there is enough time to complete the assessment procedure, the time lag between two events should not be so long as to dampen the interest of the bidders or give them time to indulge in unfair practices.

The following table gives an indicative time schedule for the various events in the bid:

	Day -->	0	30	60	75	90	120	180	210
RfQ	Request for Qualification (RfQ)								
	Submission and opening of Response to EOI / RfQ								
	Evaluation of RfQ for Short-listing potential bidders								
RfP	Invitation to tender/bid (ITB) or Request for Proposal								
	Pre-bid meeting / Interaction with the bidders								
	Submission of Response to RfP								
	Evaluation of responses to RfP								
	Award of PPP contract								
	Standstill Period								
	Execution of the contract								

21. Implementation Plan

A Project Implementation Plan is prepared to outline the activities required to be completed during the implementation of the project. This is a detailed list of the pending studies, procurement milestones, documentation and other tasks required to bring the project to completion. The proposed project implementation plan for the proposed hydro power power project at the Omi dam starting from Day '0' is shown in the table below:

Sr. No.	Information to be covered in the implementation schedule	Timeline (Months)	Start Date	End Date	Responsibility
1	Additional studies required before commencing procurement				
	List of study to be performed				
	a) Triaxial test: b) Consolidation (Oedometer) test: c) Permeability test d) Angle of Repose Test e) Stability Analysis Factor of Safety check f) Sedimentation in the dam	5 - 6	0	150 - 180	Public Participant
	g) Hydrology data collection (Discharge into and out of the Omi dam)	12 - 18	0	360 - 540	Public Participant
2	Timeline for Preparing the Tender Documents				
	First draft of tender documents and other key project documents	6	0	180	Public Participant
	Timetable for approval of the OBC	6	0	180	Public Participant
3	Pre-qualification RfQ				
	Issue Request for Qualification	1	180	210	Public Participant
	Submission and opening of Response to EOI / RfQ		230		Private Participant
	Evaluation of RfQ for Short-listing potential bidders	0.5	260	275	Public Participant
4	Invitation to tender/bid (ITB) or Request for Proposal		275		Public Participant
	Pre-bid meeting / Interaction with the bidders		290		Public Participant

Sr. No.	Information to be covered in the implementation schedule	Timeline (Months)	Start Date	End Date	Responsibility
	Submission of Response to RfP		320		Private Participant
	Evaluation of responses to RfP		320	380	Public Participant
5	Award of PPP contract		380		Public Participant
	Standstill Period	1	380	410	
6	Execution of the contract		410		Public Participant
7	Obtaining clearances	12	410	770	Private Participant
	Arranging and finalizing finance	6	590	770	Private Participant
8	Construction timeline (for projects that involve a capital expenditure component)	24	770	1,490	Private Participant
9	Testing and commissioning	3	1,490	1,580	Private Participant
10	Expected day for commencement of commercial operations		1,580		Private Participant

22. Project resource requirement

The project development will entail substantial interaction of the Public authorities and the Private participants. The key responsibilities of the Public participant through the various stages of the project development can be classified as follows:

a. Project implementation process
- Conducting the various pending technical studies and test
- Collection of hydrological data
- Preparation of the various bid documents

b. Bidding stage
- Make available a data room with all information needed by the bidders
- Sale of tender / bid documents at various stages
- Bid evaluation at various stages
- Finalizing the winning bid
- Negotiating the contract
- Awarding the contract

c. Post Project allotment: Project development phase
- Monitor the developments of the project developer

- Provided assistance where ever needed or committed
- Ensure timely completion of project milestones

d. Post Project allotment: Construction phase
   - Monitor the quality and various milestones of construction
   - Ensure fair and best practices are followed in construction methodology

e. Post commissioning
   - Check project performance parameters
   - Ensure best Operation and Maintenance practices are followed

The above mentioned activities are not exhaustive, and government will have to commit resource in the form of

a. Financial resources
b. Dedicated skilled manpower to attend and address the communication with the Private participants
c. Liaison personal
d. Specialists and Consultants
   - Lawyers
   - Financial Consultants
   - PPP Expert
   - Technical consultants etc.

In addition to this the Public participant will have to establish a robust and effective communication system between the various concerned government departments by establishing nodal officers in each department to facilitate smooth and efficient flow of information between the various departments.

23. Conclusion and Recommendations on Structuring

Based on the reasoning stated in the above sections, a Public Private Partnership is estimated to be the most efficient method of developing the proposed hydro power project. Among the various PPP structures available the BOOT (Build – Own – Operate – Transfer) has been envisaged to be the most effective PPP structure.

The Public participant will have to establish a competent and efficient team to complete the pending data collection, formulate the various bid documents required, conduct the bid and choose the most efficient and capable bidder for the project. Nodal officers will have to be established in each of the concerned departments to ensure a seamless and effective communication network.

The key to success to executing the proposed hydro power project at the OMI dam lies not only in formulating profitable bidding strategies and selecting a capable developer, but monitoring efficiently all the stages of from project development, construction and post commissioning.

24. List of appendices

Appendix A1	List Of Collated Documents Used As Sources Of Information.
Appendix A2	Review & Comments on the Omi Dam and its appurtenant Structures
Appendix A3	Review of the current status of the dam and its appurtenant structures
Appendix A4	Detailed cost estimates of the proposed Omi Hydro power project:
Appendix A5	Financial model: Assumptions
Appendix A6	Financial model: Financial Results
Appendix A7	Types of Public Private Partnerships (PPP)
Appendix A8	Participants in the Public Private Partnership