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OPTIONS FOR THE OWNERSHIP AND MANAGEMENT OF TRANSMISSION COMPANY OF NIGERIA

POWER AFRICA TRANSACTIONS AND REFORMS PROGRAM (PATRP)

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OPTIONS FOR THE OWNERSHIP AND MANAGEMENT OF TRANSMISSION COMPANY OF NIGERIA

1 Purpose of Report

This report considers the various options available to the Government for the ownership and management of the power transmission business in Nigeria after the conclusion of the ongoing TCN management contract, which is held by Manitoba Hydro International (MHI). Although the management contract recently was extended to July 31, 2016, and there is an optional provision in the contract for one additional year after that, the question arises whether the current limited scope of private sector involvement in TCN is sufficient for a fit-for-purpose national transmission network for Nigeria, or whether something more is needed for the longer term.

In particular, a management contract in itself cannot overcome problems inherent in many state-owned entities, including TCN, such as:

- political interventions,
- drivers other than typical shareholder interests; political rather than commercial agendas;
- inherent inflexibility due to legislative constraints, eg organisational structuring, salary structures, approvals and funds required from other Government institutions;
- infrastructure funding constraints as a result of inadequate internal cash generation due to low tariffs and non-payment by distribution companies;
- lack of Government financial support due to budget constraints; and
- limitations on involving the private sector in on-going activities as partners or shareholders.

The main purpose of this report is to provide guidance on possible options for private sector participation in TCN, whether through an enhanced management contract for the company, one or more concessions for the Transmission Services Provider (TSP) Business Unit or outright sale of TSP to one or more private Transcos. This report is meant to lay out the pros and cons of the most promising options for TCN that are available to the Government. Further studies must be conducted before recommendations can be made on the best choice of option(s) for Nigeria. This paper does not address options for the ownership and management of ISO, which is slated to be spun off as a separate entity.

2 Overview of the Nigerian Transmission Sector

2.1 TCN's Role in the Transmission Sector

TCN emerged from PHCN as a product of the merger of the Transmission and System Operations Sectors on April 1, 2004. TCN was incorporated in 2005 as a government parastatal company. TCN is made up of three core Business Units: the Transmission Services Provider (TSP), System Operator (SO) and the Market Operator (MO). TSP is responsible for constructing and maintaining the transmission system infrastructure. SO manages the control function, including centralized dispatch at the National Control Center and field operations at the substations. MO is a relatively small Unit responsible for invoicing market participants and managing the flow of funds in the wholesale market, in coordination with NBET. The executive positions within TCN are staffed by management contractor Manitoba Hydro International (MHI).

TCN is responsible for the following network and system operation activities:

- Plan and develop the nationwide transmission network;
- Design transmission projects;
- Manage EPC contracts for construction of works;
- Maintain transmission facilities;
- Admit electricity market participants who satisfy the admission requirements of the Transitional Electricity Market, in accordance with the Market Rules;
- Dispatch generating units in accordance with the Grid Code and on basis of nominations by generators;
- Procure ancillary services and recover the costs;
- Handle power system emergencies;
- Perform demand forecasting;
- Coordinate transmission and generation outages;
- Evaluate and accept grid connections;
- Supervise and ensure compliance with the provisions of the Grid Code and Market Rules;
- Ensure proper metering at connection points;
- Carry out testing and monitoring of Users' equipment to ensure compliance with the Grid Code;
- Ensure integrated operation of the power system to deliver quality uninterrupted power;
- Maintain and improve on existing telemetry (SCADA) and grid communication facilities.

Nigeria's transmission system consists of 330kV and 132kV high voltage transmission lines, 330/132/33kV substations, and control facilities. The entire national grid is owned by the Federal Government of Nigeria and operated by TCN. The following summary statistics provide an indication of the current size of the system:

- 6,680 km of 330 kV transmission lines
- 9,160 km of 132kV transmission lines
- 38 substations with 330kV transformation capacity of 10,238 MVA
- 126 substations with 132kV transformation capacity of 11,721 MVA
- 92 330/132 kV transformers
- 292 132/33 kV transformers

TSP consists of centralized functions at the headquarters in Abuja and eight Transmission Regions, each headed by a General Manager (Transmission) who is responsible for day to day running and maintenance of transmission and transformation facilities in the Region. Figure 1 shows a map of the boundaries of the eight Regions.

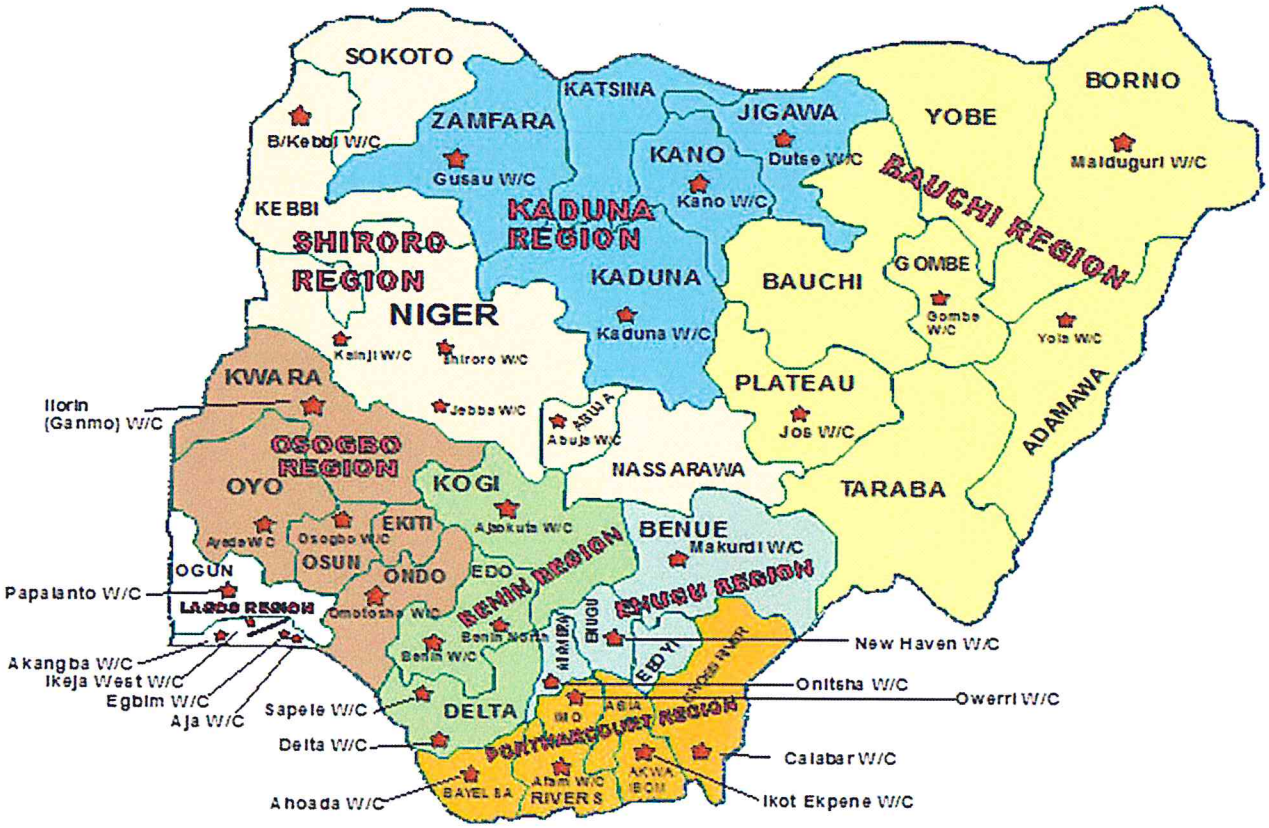

Figure 1: Map of TCN Transmission Regions

2.2 Need to Improve Transmission Infrastructure

The growth in demand for electricity in Nigeria has brought with it many significant challenges in the form of capacity constraints. Many segments of the transmission network are overloaded, leading either to load shedding or stranded generation. The transmission lines and the substations are in urgent need of repair and expansion just to keep up with the current load, let alone anticipated future demand. The upgrades are also necessary to improve the efficiency and reduce the system losses.

Strengthening of the grid network is an essential part of the government's policy to increase access to electricity. TCN wants to upgrade the network by rehabilitating and reinforcing existing facilities and adding new transmission lines and substations, with an end goal to connect a much higher percentage of the population to reliable power supply.

Out of three hundred and seventy transformers (330 and 132kV), ninety-three are critically loaded; seventy-nine above 80% and fourteen above 100%. These transformers will need to be relieved as soon as practicable through substation expansion and other reinforcement programs.

Many of the transmission lines are overloaded and require urgent upgrade while some others cannot be optimally loaded due to lack of n-1 contingency provision thus leading to stranded generation capacity.

The current SCADA system, which covers only a part of the grid, is mostly dysfunctional with its current status sustained with reactivation contracts. A lot more facilities – including new power plants and transmission substations – have since been added onto the grid and are not covered by SCADA. A total upgrade of the SCADA is required, as functional elements therein have virtually approached the end of their life spans, while newly added plants onto the grid have to be integrated. TCN intends to upgrade and modernize its SCADA system with funding provided by World Bank.

Demand for electric power has been on a steady increase over the years. The new Distribution asset owners are therefore expanding and reinforcing their facilities in order to accommodate expected increase in generation.

In the generation sector, all formerly government-owned generation plants have been sold or concessioned to core investors who are busy rehabilitating unavailable units and also embarking on capacity expansion. Licenses have also been issued to new entrants into the generating sector. These Independent

Power Producers (IPPs) have plants scattered all over the country. In some cases, new transmission lines will have to be built in order to evacuate their products. By the nature of its license and provisions of the Grid Code, TCN is obliged to provide IPPs with access to the grid it operates without discrimination.

TCN now faces a pressing need to improve the reliability of the power system and expand its capacity to deliver energy from generation to load. TCN's near term capital program has been developed to address urgent requirements, like the need to rehabilitate and replace outdated and broken down equipment and complete multiple critical path projects already underway. Near term efforts are focused on addressing the following deficiencies:

- The system has limited redundancy. Although performance has improved recently, there is still an unacceptable number of total system collapses annually. These blackouts impact customers, particularly commercial and industrial users very negatively.
- Existing substations and lines are in desperate need of refurbishment. As a matter of fact, a lot of substation equipment is currently unavailable, thus limiting operational flexibility and compromising reliability.
- A lot of interface gaps exist between the generating plants and TCN on one part and TCN and distribution networks on the other. These gaps have got to be addressed so the generated power can be evacuated and delivered efficiently to the end users.

Currently TCN can deliver to distributors a maximum of about 5,700 MW. However, with the completion of a number of ongoing NIPP transmission projects, the transmission system should be capable of transferring about 6,500 MW by 2016. Assuming an ambitious target of 14% per annum growth in supply/demand, TCN would need to expand the transmission system to deliver 8,500 MW of power supply to the discos by 2020. This will require large scale investment in new transmission infrastructure.

2.3 Sources of Funding for Transmission Projects

Until the recent unbundling and privatization of the gencos and discos, the electricity power sector in Nigeria has always been under total Federal Government control. Throughout its existence, PHCN and its predecessor NEPA continued sustaining very high Average Technical, Commercial and Collection (ATC&C) losses in the distribution business and, due to this, were not able to meet costs, forcing the Federal Government to absorb the losses.

The Internally Generated Revenue (IGR) of TCN has never been adequate enough to address operational issues, even more so for capital expenses. There remains a gap that until now could only be met by additional government investment in transmission. Therefore, the Federal Government of Nigeria has all along been financing capital projects through:

- Annual budgets, which in recent years have been relatively paltry;
- Special financial interventions, such as the NIPP project;
- Grants from donor agencies; and
- Concessionary loans from bilateral and multi-lateral agencies, which make up the great majority of the available capital funding.

3 Possible Options for Private Sector Participation in TCN

This report considers the following main options for private sector participation in TCN:

- Enhanced management contract
- Concession for:
  - Operations Service Agreement
  - Conventional lease
  - Traditional concession with private investment
- Privatization

The following sections describe the main features of each option.

3.1 Enhanced Management Contract

An enhanced management contract would perpetuate the existing model of independent management of Government-owned TCN, but with enhancements for a deeper engagement in the business, more accountability and results driven rewards to the contractor.

If an enhanced management contract approach is selected for TCN moving forward, the bidding agent should conduct an assessment of what has/has not worked with the MHI contract, and make recommendations on any needed improvements and any required increase in the staff strength of the contractor beyond the eleven executive positions provided under the one-year extension of

the MHI contract. In addition, there may be a need for new rules to curb external pressures on what should be the management prerogatives of the contractor, and to define more clearly the executive decision making powers of the Board of TCN.

3.2 Concession

Under a concession, the Government defines and grants specific rights to an entity (usually a private company) to build and/or operate the transmission grid for a fixed period of time. The Government may retain the ultimate ownership of the grid and/or right to supply the services. The concessionaire is typically subject to specific performance targets and incentives and can incur penalties and liabilities if not achieved. Typical concession periods range between 10 to 50 years.

The concessionaire's revenue could be tariff-based or fee based, depending on the form of concession. If the concessionaire's revenue is tariff-based, the tariff must be high enough to guarantee cost recovery and a reasonable return on capital invested by the concessionaire.

Payment for the rights to the concession could be either concessionaire pays, or the government could pay the concessionaire. Usually such payments by the government may be necessary to make projects commercially viable and/or reduce the level of commercial risk taken by the private sector, particularly in the initial years of a PPP program in a country when the private sector may not have enough confidence in undertaking such a commercial venture. If the tariff is set too low for full cost recovery, or if the regulator is not able to ensure full cost recovery, the government would have to pay the concessionaire through some sort of subsidy. If the tariff is set at cost reflective levels, and investors trust the market, normally the concessionaire would be required to pay the government for concession rights. In the case of the hydro concessions for Kainji/Jebba Hydro Power and Shiroro Hydro Power there is provision for payment from the concessionaires to the Government.

3.2.1 Alternative Forms of Concession

There are three main types of concessions which depend on the nature and extent of risk transferred from the government to the concessionaire:

Operations Concession

Under an operations concession, an independent and suitably qualified private company with proven experience to operate and manage a fast growing

transmission business is retained to handle essentially all of the core functions of the company aside from financing and cost recovery, which are handled by the Government. The service provider provides the prescribed services under the terms of the contract in exchange for either a fee from the employer or tariff revenues, and there is no obligation for the contractor to make investments. However, the concessionaire must manage the development of the grid including the development and construction of new projects under government funding.

The operations concession arrangement is similar to a management contract, but the span of control extends throughout the company and the workers become employees of or contractors to the concessionaire. Because all workers are with the concessionaire, there is a much greater likelihood of transforming the company and addressing performance issues such as indiscipline compared to having a management contractor overseeing staff who are not employees of the contractor, which too often creates an "us versus them" syndrome.

The risk of the contractor not recovering its costs from the employer is higher than for a management contract, but still lower than other forms of concession or privatization. It should be noted that many potential bidders for an OSA may require the government to backstop their fee or tariff revenues, as the case may be, either by serving as the employer (rather than TCN) or by providing a sovereign guarantee of TCN's payment obligation to the contractor.

The OSA contract would need to be for a much longer period of time than a management contract because the concessionaire needs to set up a new company and absorb the existing workforce. From a commercial standpoint, this only appeals to the private sector if the Government provides a relatively long contract duration. Incentives and penalties can be built into the contract to motivate the concessionaire to improve the performance of the company over time. This transfers some risk from the government to the concessionaire, since the concessionaire's profits vary with the operating performance of the company.

The annex provides two case studies of operations concessions:

- Operations concession agreement between the Power Sector Assets and Liabilities Corp. of the Philippines (owner), and National Grid Corp. of the Philippines (concessionaire); and
- Operations Service Agreement between the Long Island Power Authority (employer) and Public Service Gas and Electric of New Jersey, USA (OSA contractor).

Conventional Lease

Under a lease concession agreement, the Government leases the transmission facilities to a private investor to operate and maintain. The lease agreement is typically for the long term, between 20 to 30 years. The concessionaire's revenues are based on use of infrastructure and not on management fee. This provides a real incentive for the concessionaire to keep the assets in service. The concessionaire's profits depend on the operating profits of the company. The concessionaire is held responsible for maintaining and upgrading the leased facilities, and may or may not be held responsible for financing new investments in the leased facilities.

Traditional Concession with Private Investment

Traditional concessions are structured as long term contracts, between 20 and 50 years, in the form of build-own-operate-transfer and rehabilitate-operate-transfer contracts. The concessionaire takes responsibility for O&M and rehabilitation of the existing facilities, as well as for the development and construction of new facilities by the concessionaire using its own financing. Accordingly substantial risks are transferred to the concessionaire. The rights and obligations of the concessionaire must be completely and clearly specified with respect to all aspects of the concession requirements. The concession agreement may be structured with certain requirements for investments to be undertaken in the future by the concessionaire.

The Kainji/Jebba Hydro Power and Shiroro Hydro Power gencos are examples of this form of concession. Under the hydro concessions, the concessionaire is responsible for O&M and rehabilitation of the existing facilities using its own financial resources. The concessionaire pays to Government a bulk payment spread over five years, an annual payment from year six onward, and a one-time entry fee. The concessionaire receives its revenues in the form of payments from NBET with the price for power set according to the tariff used for large hydro licensees, as set by NERC. The selected bidder was chosen on the basis of highest proposed payments to the Government.

3.2.2 Structuring the Concession

In setting the boundaries for the transmission concession, the bidding agency will need to consider the following dimensions, among others:

- Scope of services – The concession could cover some or all of the core functions of TCN. Considering that there is a longstanding plan to split up

TCN into two autonomous companies, i.e. Transmission Services Provider (TSP) and Independent System Operator (ISO), it is likely that there would be one or more concession strictly for TSP functions separate from the ISO. It should be noted that at present the System Operator Business Unit's current span of control extends beyond centralized dispatch and planning to field operations, whereas it is more typical in other countries for the System Operator to encompass mainly only centralized power system operations, such as generation and transmission dispatch. If TSP is to be concessioned or privatized on a nationwide or regional basis, it may be advisable to include regional field operations of SO in the scope for the concession or private company. The SO functions that remain with the ISO could be limited to those functions which necessarily are centralized at ISO headquarters and the control centers.

- Geographical region or project-by-project – The concession(s) could cover all of the TSP facilities, both existing and planned, within a particular geographical region, or concessions could be granted on a project-by-project basis for new construction projects. For example, World Bank has been working with TCN and BPE to plan two pilot transmission PPP projects, which presumably would have their own project companies separate from TCN.
- Regional versus nationwide – TSP as it stands today covers all of Nigeria. TSP consists of centralized functions at the headquarters in Abuja and eight Transmission Regions, each headed by a General Manager (Transmission) who is responsible for day to day running and maintenance of transmission and transformation facilities in the Region. TSP management is now taking steps to provide greater autonomy to the Regions. This suggests that there may be reasons to split TSP into multiple regional concessions, and, if so, then further steps should be taken to unbundle TSP on a regional basis during the lead up to bidding for concessions. However, it should be noted that having multiple Transcos adds complexity for coordinated planning, project development and operations.
- Boundaries between T&D – TCN currently manages all 330kV and 132kV high voltage transmission lines, 330/132/33kV substations, and control facilities. There may be opportunities to redraw the boundaries between those facilities that are better managed by the concessionaire versus those that could be better managed by the discos, if there is a compelling reason. If there is interest on the part of the discos to manage facilities that are currently under TCN, such facilities could be sold off or

concessioned to the discos prior to concessioning TSP.

3.3 Privatization

Privatization involves sale of the entire transmission grid or portions of the grid to private investor(s). The private investor sets up a Transco and obtains a license to operate under applicable laws and regulations of Nigeria. In this form of participation, the private Transco is responsible for design, construction and operation and management of the transmission grid and in some cases the public sector may relinquish the right of ownership of these assets to the Transco. Government may retain some equity in the Transco, as it did in the privatization of other PHCN successor companies.

It can be argued that by aggregating design, construction, operation and management of the transmission grid into one contract, important benefits could be achieved through creation of synergies. As the same entity builds and operates the services, and is only paid for the successful supply of services at a pre-defined standard, it has no incentive to reduce the quality or quantity of services. Compared with the traditional public sector procurement model, where design, construction and operation aspects are usually separated, this form of contractual agreement reduces the risks of cost overruns during the design and construction phases or of choosing an inefficient technology, since the operator's future earnings depend on controlling costs. The public sector's main advantages lie in the relief from bearing the costs of design and construction, the transfer of certain risks to the private sector and the promise of better project design, construction and operation.

There are three main types of PPP models with private ownership of assets:

- Build-Own-Operate (BOO) type of arrangement
- Private Finance Initiative (PFI)
- Divestiture by license or sale

3.4 Comparison of Options

Table 1provides a summary comparison of the four main options for TCN:

Table 1: Comparison of Main Options for TCN

Item	Enhanced Management Contract	Operations Concession	Concession with Private Investment	Privatization
Ownership of facilities	Government	Government	Government owns existing assets; concessionaire owns new investments until transferred to Government	Transco
Governance	Board appointed by Government	Board of Govt Agency Responsible for Overseeing Concessionaire appointed by Government	Board of Govt Agency Responsible for Overseeing Concessionaire appointed by Government	Board of Transco appointed by its owners and accountable to same for performance of company
Employer of Executive Management	Management Contractor	Concessionaire (private sector)	Concessionaire (private sector)	Transco (private sector)
Employer of transmission company staff	Government	Concessionaire	Concessionaire	Transco
Term of Contract	3-5 years	10+ years	20+ years	Permanent
Basis for Income	Fee based	Fee based or tariff based	Tariff or contract based	Tariff based
Government and/or donor backstopping	Probably not needed	May require sovereign guarantee or donor PRG etc.	May require sovereign guarantee or donor PRG etc.	May require sovereign guarantee or donor PRG etc.
Party Responsible for Paying Contractor	TCN	Could be TCN or NBET or market participants (through tariff)	Could be TCN or NBET or market participants (through TUOS charge)	Market Participants through TUOS charge
Use of Best Utility Practices	Lowest	High	High	Highest
Government Involvement	High	Government role limited to financing and cost recovery	Low	Low to none

Item	Enhanced Management Contract	Operations Concession	Concession with Private Investment	Privatization
Responsibility for financing operations and new projects	Government (to cover cash flow shortfalls)	Government	Concessionaire	Transco
Responsibility for cost recovery	Government	Government	Government and/or Concessionaire	Transco
Responsibility for legacy costs, e.g. pensions	Government	Government	Government	Government
Opportunity to Improve Performance	Limited	High	High	High
Opportunity to Mobilize Investment	Low	Low	High	Highest
Potential Bidder Interest at present time	Only a few applicants bid for the original MHI contract	Some mgmt. contractors likely to bid, and may attract cos. with sights on ownership	TBD, but at present there may be less interest than for operations concession	Lowest

The application of the various options discussed above depends on the nature of the business requiring private sector participation and market dynamics. Enhanced Management Contract and Operations Service Agreement may not be suitable if the Government is trying to attract private investment in transmission, because the concessionaire is not required to provide financing under these two options. BOOT concession can be suitable where the Government wants to own the existing assets, but needs to mobilize private investment for rehabilitation and expansion projects. Privatization can be suitable where the market and regulatory regime are stable and investors have a strong appetite to purchase the assets.

4 Pros and Cons of the Options

4.1 Enhanced Management Contract

The main pros and cons of an enhanced management contract include the

following:

Pros:

- Easiest and quickest to implement of all the options for TCN
- Mobilizes technical, financial & managerial expertise of international experienced consultants
- A strong management contractor team can achieve positive results instituting best practices within the state owned company
- Ownership remains in public hands, if this is preferred by the Government
- May require lower tariffs as investor returns would not apply, assuming that cost savings and revenue enhancements through efficiency improvements will be similar to the other two options
- Helps create a more professional, streamlined organisation
- Can work well as a temporary solution that can easily give way to a longer term solution
- Attractive to the greatest number of bidders, who may be leery of incurring obligations and expectation that would apply under a concession or outright purchase of the company
- Provides a bridge to longer term solutions if needed

Cons:

- Provides a short to medium term solution and not a permanent one
- Less opportunity to transform the company compared to concession or privatization
- More difficult to root out employee indiscipline among civil servants, because in the end their employer is TCN, not the contractor
- Since the contractor is mainly concerned with the letter of its own contract and has a short term outlook, and is not necessarily focused on the broader issues facing the transmission sector, there may be a misalignment between where the contractor focuses its resources compared to what is really needed to address the long run well-being and development of the sector

- Limited opportunity for the contractor to transform functions outside of its span of control, eg board constitution and mandate, political drivers, entity legal constraints, scope constraints

- Financing obligation remains with Government
- Existing transmission debt remains with Government
- Not good at addressing constraints inherent in the industry structure or organisational structure, ie tariff regime not conducive to TCN viability, pressure on TCN balance sheet/Government finances as new developments are funded by the organisation or Government and not by private sector, requirements imposed on Government owned entities
- If history is a guide, an enhanced management contract may still suffer from the ills of the current management contract, such as: confrontations between the contractor, TCN civil servants, TCN Board and Government officials; and unwarranted interference from Ministry and elected officials.

4.2 Operations Concession

The main pros and cons of the operations concession model include the following:

Pros:

- If done right, can be nearly as transformative as BOT concession or privatization, with the caveat that it does not address the very important issue of shortage of Government funding for capital projects
- Provides technical, financial and managerial expertise of the concessionaire over a longer period of time and a deeper engagement than under the enhanced management contract
- Well trained and experienced local senior staff could fill managerial positions after end of concession period
- Ownership of transmission assets remain in public hands, if that is what government wants
- Provides the possibility of lower tariffs, as investor returns would not apply (this assumes that cost savings and revenue enhancements through efficiency improvements will be similar to the other two options)
- Because all of the workers of TCN become employees of the contractor, it solves the "us-versus-them" syndrome inherent in the management contract model, where executive management and workers report to different employers.

Cons:

- May improve conditions for investment, but financing obligation remains with Government

- Little or no incentive to invest own funds
- Existing transmission debt remains with Government
- Since an Operations Service Agreement has a relatively long duration, there is a potential for lawsuits if Government decides to move to BOT concession or privatization prior to the termination of the OSA
- Can create contentious HR and union issues that come with having to hire existing employees and deal with existing contracts
- Will take longer to implement than a management contract but shorter than other forms of concession or privatization

4.3 Traditional Concession with Private Investment

The main pros and cons of the traditional infrastructure concession, in which the concessionaire is expected to provide financing for rehabilitation and expansion of the transmission system, include the following:

Pros:

- Private sector, as opposed to Government, bears a significant share of the technical and financial risks facing the company
- Provides a long term solution that will ease financial burdens on public finances
- Provides improved operational and technical management of the grid
- Provides potential for efficiency gains in all phases of project development and implementation and technological innovation is high
- Creates a more efficiently managed business without political interference, compared to government ownership; faster adoption of efficiency improvements, modernization and new technology
- Institutes private sector discipline in terms of governance, management, accounting (including proper ring-fencing of activities, cost centres, subsidiaries, tax optimisation), procurement etc
- Existing transmission debt in Government's books could be paid off or reduced from proceeds of sale
- Provides for highest level of private investment compared to other options (if investment is part of the terms of agreement)
- Going forward, Government would no longer need to borrow and incur debt to finance transmission
- Clear definition of roles and responsibilities (eg Government sets policy, but not involved in engine room); possibility to design to particular concession requirements (eg social requirements)
- Because the government continues to own the assets, concession keeps

the transmission network still largely under Government control and key services in the "national interest" continue

- Government can insist on having seats on the Board
- Limited impact on existing TCN staffing, functions etc., as most employees are picked up by the concessionaire
- Can provide a bridge to privatization, if that is the Government's ultimate goal

Cons:

- Trying to do traditional infrastructure concessions in the current environment in which NERC has been unable to ensure cost recovery for regulated license holders may risk failure and stigmatization of the bidding process. It is advisable to gather market intelligence from the private sector before launching procurement activities.
- More complex to initially implement than management contract or operations concession
- May have underlying fiscal or support costs to the government
- Contingent liabilities to the government in the medium and long term
- Existing transmission debt remains with Government; concessionaire only responsible for debt service on new investments
- Labour Unions may resist this option
- Need properly designed industry market structure to ensure concession is viable (eg sound tariff regimes, ability to collect revenues, adequate returns to compensate investors)
- Careful design needed to avoid "cherry-picking", i.e. where good customers all belong to concessionaires and Government owned transmission entity acts as last resort service provider
- Needs strong political will and a clear vision or where the electricity supply industry should be headed

4.4 Privatization

The main pros and cons of the private ownership model are summarized as follows:

Pros:

- Private sector may bear a significant share of the risks
- Privatization is likely to result in the highest level of investment compared to the other options
- Potential for efficiency gains and innovation is very high

- Privatization could be the best model to ensure that the company institutes utility best practices and modernizes its business processes
- Provides a permanent solution that will ease financial burdens on public finances
- Almost entirely eliminates potential for unwarranted government intervention and politicization of the transmission sector compared to the government owned models
- Existing transmission debt in Government's books could be paid off or reduced from proceeds of sale
- Going forward, Government would no longer need to borrow and incur debt to finance transmission
- Institutes private sector disciplines in terms of governance, management, accounting (including proper ring-fencing of activities, cost centres, subsidiaries, tax optimisation), procurement etc
- For profit discipline, tax paying entity
- Clear definition of roles and responsibilities (eg Government sets policy, but not involved in engine room)
- Provides opportunities for increased bank lending, with positive impact on economic growth

Cons:

- Under the current MYTO tariff regime, TCN is financially insolvent. If the current outlook for market revenues continues, bidders for a privatized TCN will bid very low purchase prices, or simply decline to bid on a perpetually loss-making enterprise. Other options reviewed in this report are likely to attract more bidder interest at the present time.
- There may be a limited pool of investors with the requisite technical capabilities, access to the quantum of funding required to both purchase the company and invest in rehabilitation and expansion, and the appetite to take on the challenges inherent in taking over TSP in its current state, with the Transitional Electricity Market still experiencing growing pains
- Complex to implement and manage the contractual regimes
- May have underlying fiscal and support costs to the government
- Contingent liabilities to the government in the medium and long term
- Negotiation between parties and finally making a project deal may require a long time, if the history of the privatization of the discos and gencos is a guide
- Potentially prolonged legal battles and difficulties unwinding the arrangement if things do not work out and the terms of the privatization

are not designed properly

- Labour Unions may resist this option
- Short term labour issues as organisation positions itself as a private sector player (eg lay-offs, internal restructuring)
- Loss of control over a perceived asset in the "national interest" – this requires clear acceptance of Government's roles and responsibilities in the Electricity Supply Industry and up-front clarification of social responsibilities and future expectations of the Company

5 Concluding Observations

5.1 Options for the Next 1-3 Years

The Government recently extended the existing management contract held by Manitoba Hydro International (MHI) by one year ending on July 31, 2016 (the "year four extension"). The underlying contract extends for five years. If the parties were to agree to a year five extension, the contract would terminate on July 31, 2017.

The options that would take the least amount of time to put in place are either 1) an enhanced management contract, or 2) a concession for an Operations Service Agreement. If the process were to start immediately, an OSA concession potentially could be put in place within a three-year window. Other forms of concessions or privatization most likely would take more than two years to develop and put up for bid.

5.2 Options for the Longer Term

Whilst an enhanced management contract or an Operations Service Agreement would be helpful in the nearer term, neither of them addresses all problems inherent in TCN as a state-owned organisation, and particularly the severe funding constraints that the upgrading and maintenance of existing and new transmission infrastructure requires from TCN and the Nigerian Government. At the present time, the funds are simply not there or available for TCN to ensure a viable transmission infrastructure that will meet the needs of Nigeria's rapidly developing economy.

Accordingly, unless the Government is able to establish a more realistic, sustainable and effective funding structure for public financing of transmission infrastructure, traditional infrastructure concession with private investment or privatisation of TCN may be the more suitable options in the longer. These

options are the route that has been taken by various countries in the last number of years, and where this has been done with due consideration of the associated challenges (market design, roles and responsibilities of different players in the market, conducive tariff regimes offering a fair return, transmission planning and procurement) it has been very successful. There is no reason to think that Nigeria would be any different.

In view of the Government's precarious financial situation, the transmission business will have to be financially viable and able to secure funding for its significant investment needs over the coming years through internally generated revenues and debt but without Government financial support. Both investors and lenders (donors and private) would have to be confident that there is a fair tariff regime in place and that tariffs across the whole sector are set at levels that will enable all market participants to operate profitably and generate adequate cash flows for operations, investment, debt service and returns to investors.

Table 2 provides a listing of the necessary pre-requisites for traditional infrastructure concession and privatization.

Table 2: Necessary Prerequisites for Concession with Private Investment and Privatization

	Issue	Concession with Private Investment	Privatization
1	NERC Credibility	Potential investors would want to see NERC building a track record for fair play in the market	Same as for Concession
2	Retail & Transmission tariffs: Full cost recovery Realistic assumptions regarding energy, losses and non-collection Fixed capacity (MW grid availability) based transmission use-of-system charges and not volume based that are outside of TCN control Fair play for all market participants	Potential investors would want to see that tariffs are cost reflective and discos are on a proper financial footing to meet their bulk supply charges, including transmission	Same as for Concession but with even greater emphasis

	Issue	Concession with Private Investment	Privatization
3	Tariff Reviews Need for more frequent major tariff reviews by NERC every 3 years instead of 5 years until the market is fully developed Quarterly or six monthly interim tariff adjustments to account for changes in inflation, exchange rates, energy, generation mix and fuel prices	Potential investors would want to see a proper process for resetting tariffs on a timely basis to ensure full cost recovery and avoid losses due to regulatory lag	Same as for Concession
4	Roles of MO/NBET Respective roles of Market Operations (MO) and NBET need to be clarified	Investors would want in place a proper billing and revenue cycle; pmt should be by a creditworthy counter-party, which at present is NBET, not MO	Same as for Concession
5	Market Fund Need for transparency and audit Oversight over billing collection accounts of DisCos	Investors would want full transparency	Same as for Concession
6	TCN Structure Separation of TSP and ISO (SO and MO) into two legal entities TCN management has no effective control over the operations of MO	ISO functions should not be part of the concession; ISO should be fully functional	Same as for Concession
7	Management Management need full authority and no political interference	Investors would want to ensure the concession company reports only to NERC and to the Govt agency responsible for monitoring the concession	Investors would want to ensure Transco is regulated only by NERC; no Govt involvement in Board or company operations

6 Next Steps

It is important to begin planning now for the transition to a new model of ownership and management of TCN to allow greater private sector involvement. The following steps are recommended to help expedite the process:

- Retain a qualified consultant to conduct a thorough assessment of the options for the ownership and management of TCN, make

recommendations on the preferred option, and recommend the structure of the contract lots for bidding purposes, in terms of scope of services, geographic reach etc.

- Conduct a review of information that TCN has received to date from contractors that are interested to provide private financing for new projects. Such information includes the applications that contractors submitted to TCN in response to a recent RFQ for contractor financed transmission projects.
- If advisable, issue a request for expressions of interest from the private sector, in order to gather feedback that may be useful for deciding which option to pursue and to provide input for designing the preferred approach to bidding.
- Conduct outreach with FGN and donors to assess the potential for credit security enhancement for private sector participants in transmission.
- If Government wants to further explore the possibility of enhanced management contract, it is advisable to conduct a diagnostic study to identify gaps in TCN's current performance and the performance of the existing management contractor, and recommend solutions that can be built into an enhanced contract.

Annex 1 Case Studies

Philippines Transmission Concession

The Philippines provides one example of the use of a concession for the transmission grid. The big push for privatization and restructuring in the Philippine power sector came in the wake of a 1994 World Bank study proposing radical reforms in the industry. Pursuant to the Electric Power Reform Act 2001 (EPIRA), Power Sector Assets and Liabilities Management Corporation (PSALM) was mandated to reform and restructure the sector.

Under EIPRA the transmission and distribution entities remained natural monopolies and public service organizations or public utilities, subject to the regulation of the ERC. Transmission was the sole responsibility of the National Transmission Company (TRANSCO), which would provide to all electricity users open and nondiscriminatory access to its transmission system. The TRANSCO was created in 2001 and commenced operations in 2003 as a state agency. However, EPIRA mandates the privatization of the government's transmission (and generation) facilities to promote competition and investments in the power industry.

Since its formation, PSALM has successfully privatized 26 generating plants and the National Grid Corporation of the Philippines (NGCP) through a 25-year concession while it appointed IPP administrators for five generating plants. Thus, by liquidating all of the financial obligations of the National Power Corporation (NPC), the stage was set for the introduction of a competitive power market. Subsequently the wholesale power market was established

The Wholesale Electricity Spot Market (WESM), commenced its initial operations in Luzon in 2006 (or five years from the EPIRA effective 2001 date) and was integrated with the Visayas WESM in early 2011. By October 2012, the integrated WESM had a total of 124 participants comprised of 54 generating companies and 47 customer trading participants comprised of six Private Distribution Utilities (PDUs), 26 Electric Cooperatives (ECs), 13 bulk end-users and seven wholesale aggregators. Approximately 9.2 percent of the total energy consumed in the Luzon and Visayas regions, were traded in the WESM from October 2011 to April 2012, while the remaining 90.8 percent of the total volume was transacted and settled outside the market.

In 2005 the Joint Congressional Power Commission (JCPC) approved the grant of concessions as the privatization mode for the National Transmission Corp. (Transco). The TOR for the concession required the winning concessionaire to have technical and financial capabilities in running a transmission company and should conform with the 60-40 Filipino-foreign ownership limit. The objective of the concession was for the management and operation of the grid including the construction of new projects and thus was not in the form of a BOT since it excluded investment provisions. The owner of the assets is the Transco. The regulatory asset value for the transmission assets was set at US$3.2 Billion making the concession one of the largest privatization endeavors for a power transmission entity in any developing country.

The concession process required four rounds of tenders before it was successful. This was due to the following issues:

- Regulatory framework for the transmission sector had not been finalized
- Lack of a transferrable franchise which required changes to the law
- Inadequacy of draft transaction documents in addressing investor concerns

In January 2009, the power grid was formally privatized, with the government providing a 25-year concession to a consortium. The transaction documents were signed by the Power Sector Assets and Liabilities Corp., the state-owned firm mandated to privatize the government's power assets, and National Grid Corp. of the Philippines (NGCP). The consortium was made up of Monte Oro Grid Resources Corp., Calaca High Power Corp. and the State Grid Corp. of Hongkong Ltd. The Chinese firm is a subsidiary of State Grid Corp. of China.

NGCP paid an initial $987.5 million as part of a $3.95 billion deal. It was named the winning bidder in December 2007 but handover was delayed until a required franchise bill was signed into law, which occurred in 2009. Under the concession, NGCP had to pay 25% of the total bid price to obtain the contract, with the remaining 75% to be issued over a period of 20 years. The approved franchise was for 50 years but the concession contract only covers half. NGCP has the option to renegotiate a new deal before its contract expires.

NGCP revenues come from tariff charges. NGCP is the sole regulated entity, not the TRANSCO. Under the Philippines Energy Regulatory Commission's tariff framework, NGCP is regulated using a performance-based ratemaking (PBR) process. There are periodic reviews and the timeframe for resetting the tariff is

five years.

Subsequent to the concession, Transco reorganized and adopted a smaller organizational structure following the turnover of its transmission business to the NGCP. The new TRANSCO organization is composed of three functional groups, namely: 1) Concession Contract Management Group (CCMG), 2) Legal, ROW and Land Management Services Group (LRLMSG), and 3) Corporate Services Group. One department, the Utility Management Department, is placed under the Office of the President. The reorganization was driven by the fact that the TRANSCO's role, as owner of the transmission assets, is to monitor and audit NGCP (the concessionaire) under the terms of the concession. To date NGCP has been in compliances with the concession terms and obligations.

Long Island Power Authority Operations Service Agreement

The Long Island Power Authority (LIPA) provides an example of the use of a concession for the transmission grid in the form of an Operations Service Agreement.

LIPA is an agency of the State of New York responsible for the state-owned transmission and distribution systems on Long Island in southeast New York. LIPA's mission is to ensure the provision of reliable, economical and responsive electric service to 1.1 million customers on Long Island and in the Rockaways. In 2013, LIPA conducted competitive bidding for a 12-year Operations Service Agreement (OSA), which was awarded to PSEG-Long Island, a subsidiary of the large investor owned electric utility company that owns the franchise for T&D utility services in northern New Jersey, among other business operations.

The PSEG-Long Island subsidiary was formed in order to bid for the LIPA OSA. The bidding resulted from an investigation launched by the Governor of the State of New York in the aftermath of Superstorm Sandy, which found that the incumbent Service Provider had performed poorly, especially in the provision of customer restorations following the storm. PSEG was able to win the award in part because it demonstrated superior performance in its own service territory in New Jersey, which was also hard hit by the same storm.

Under the arrangement between LIPA and PSEG, the State of New York retains ownership of the T&D systems. The OSA between LIPA and PSEG, which can be downloaded at http://www.lipower.org/papers/agreements.html, sets up the following relationship between the two parties:

- PSEG is responsible for day-to-day operation of the T&D systems, including: executive management and supervision; O&M; expansions, replacements and other capital improvements; engineering activities; operational reporting; load forecasting and planning; preparation and monitoring of capital plans; Customer Services; billing and revenue cycle; revenue requirements studies and rate case preparation; budgeting and accounting; and other core activities.
- LIPA is responsible for arranging New York State bond financing of new projects, preparing financial forecasts and reports, prosecuting rate cases to seek cost recovery for the transmission system at the state and federal regulatory agencies, overseeing the performance of PSEG and paying PSEG out of tariff revenues. LIPA must pay PSEG according to the terms of the OSA regardless of the amount of revenue LIPA is allowed to collect from Long Island electricity customers. Payments from LIPA to PSEG are based on a fee schedule, and there are also provisions for performance incentives.

One of the delicate issues for PSEG was job security for the existing electrical workers on Long Island. Initially, the Union opposed the takeover by PSEG. The parties were able to reach an acceptable solution that allowed the contract to go forward.

Tanzania: TANESCO Management Contract

- Management contract with NETGroup of South Africa 2002-2006
- Current Status of Utility – Power supply: 1,400MW, No. of Customers: 1.4 million, T&D losses: 22%

The initial management contract in 2002 was for a period of two years and extended by a further two and a half years in 2004. The first contract was designed to turnaround the utility financially, ensure technical performance and safety of the systems, and prepare for the unbundling and privatization of TANESCO. The Government shifted the emphasis mid-way through the contract away from privatization to achieving technical and commercialization objectives. The management contract brought about significant changes in TANESCO's

operations and increase in revenues in two years. However, meaningful improvements in technical performance were not achieved despite optimism on the part of the Government and donors at the start of the contract's second phase.

The management contractor succeeded in gaining support of TANESCO workers and were able to work closely and intensively within the company throughout the contract.

External conditions such as drought and consequent drop in hydro output, increasing IPP thermal generation costs and delays in TANESCO's debt restructuring made it financially difficult to achieve improvements in technical performance. Shifts in sector reform policies led to uncertainties and expectations of outcomes of the management contract. The end result was that consumers faced higher tariffs with few tangible results.

In 2006, the Tanzanian government decided not to renew the contract. According to media announcements "Tanzania was dissatisfied with the quality of management provided by NETGroup Solutions and added that the government was obliged to listen to the views of the public following complaints about the quality of service being offered by TANESCO". Notably, the contract's ending occurred during a period when load shedding became extensive and TANESCO faced difficult conditions for operations and cash flow.

Uganda Distribution Concession

- Concessionaire: Umeme Limited (private company listed on the Uganda Security Exchange & Nairobi Stock Exchange)
- Distribution concession covering the entire country for a period of 20 years from 2005
- Current Status of Utility - Power supply: 650MW, No. of Customers: 650,000, Distribution losses: 21%, Billing collections: 99%

The Uganda power supply is relatively small in relation to the Nigeria system. However, the issues during the unbundling of the Uganda Electricity Board (UEB) in 2001 and the subsequent concession of the distribution network in 2005 had to go through the normal hurdles and complexities. There were a number of issues relating to the true levels of distribution losses and collection rates that had to be resolved after Umeme took over the business and Government had to step in and provide tariff subsidies through the publicly

owned transmission company (UETCL). Since then, Umeme has made significant improvements in operations with considerable efficiency improvements and expansion of the customer base. The concession has been a success.

Uganda Generation Concession

- Concessionaire: Eskom Uganda Ltd
- Generation concession for the Nalubaale & Kiira hydro power plants (installed capacity of 380MW) for a period of 20 years from 2003

The company has made investments in the rehabilitation and refurbishment of the Nalubaale hydro plant which was built in the 1950's. Eskom's performance has been good and the concession has been a success.