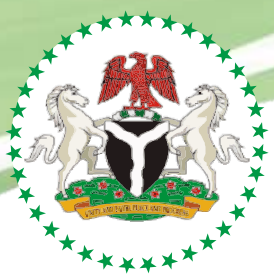

THE PRESIDENCY
FEDERAL REPUBLIC OF NIGERIA

ROADMAP
FOR
POWER SECTOR REFORM

(A CUSTOMER-DRIVEN SECTOR-WIDE PLAN
TO ACHIEVE STABLE POWER SUPPLY)

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Foreword

BY THE PRESIDENT & COMMANDER-IN-CHIEF
FEDERAL REPUBLIC OF NIGERIA

The availability of reliable Electric Power to the homes and businesses of our citizens has been one item in our national life that we have approached with so much hope and yet experienced so much frustration over the past decades. Various regimes, in the distant past, paid little attention to the sector but in the recent decades, subsequent regimes have put in billions of naira to reverse the neglect and mismanagement which has characterised the sector.

As President and Commander-in-Chief of the Armed Forces, I and my Vice President, Arc. Namadi Sambo, GCON, are conscious that what we do with the Nigerian electricity supply industry will go a long way in determining whether Nigeria remains in darkness or joins the rest of the world in the race for development. Our commitment is to bring an end to our nation's stunted growth and usher in the fresh air of prosperity by pursuing a new era of sector-wide reform which is driven by improved service delivery to every class of customers in the Nigerian electricity sector.

The full implementation of the Electric Power Sector Reform has been a key priority for this administration. We established the Presidential Action Committee on Power (PACP) with a view to eliminating red tape and the often over-bureaucratic and inefficient nature of decision-making in government. I commend all members of the PACP, including key stakeholders and heads of institutions.

The Presidential Task Force on Power is the engine room that drives the vision of the PACP. The Task Force has the mandate to develop the Roadmap and provide monitoring to ensure effective implementation of the plan. Their activities will introduce a greater degree of

transparency to the way in which we implement the reforms and greater accountability on the part of those responsible.

In developing this Roadmap we have built on the solid foundation laid down in 2001/2002 by the adoption of the National Electric Power Policy, and in 2005 with the promulgation of the Electric Power Sector Reform Act. This Roadmap heralds our advance to the final and very important stage in the reform process. This is the stage where we ensure that the fundamental changes to the ownership, control and regulation of the sector envisaged by the legislation are achieved and the downstream benefits are realised.

In the same way that the reforms in the telecommunications sector paved the way for the benefits we all enjoy today, we believe that with diligent implementation and meticulous application of what this Roadmap provides, we will see an end to the chronic electric power supply shortages we know too well, and witness the birth of a modern, efficient, customer focused, private sector driven electricity supply industry.

We have the will. This Roadmap shows the way.

Dr. Goodluck Ebele Jonathan, GCFR
President and Commander-in-Chief of the Armed Forces
Federal Republic of Nigeria

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The growth, prosperity and national security of any country is critically dependent upon the adequacy of its electricity supply industry. Indeed the link between electricity supply and economic development is such that the health of the industry is a matter of deep and personal concern to all citizens. Nigeria is no exception. Over the past two decades, the stalled expansion of Nigeria's grid capacity, combined with the high cost of diesel and petrol generation, has crippled the growth of the country's productive and commercial industries. It has stifled the creation of the jobs which are urgently needed in a country with a large and rapidly growing population; and the erratic and unpredictable nature of electricity supply has engendered a deep and bitter sense of frustration that is felt across the country as a whole and in its urban centres in particular.

Electricity consumers and the citizenry as a whole demand a fundamental reversal of the long and debilitating malaise which has blighted the industry and, in doing so, bridled the tremendous energy and creativity of this great and populous nation. More particularly they demand real and *immediate* improvements in service levels.

In response to this demand, the Federal Government will not pretend that the task ahead will be an easy one. But it is determined to root out the canker which lies at the very heart of the industry. More particularly, the Federal Government has stressed the need to return to the task of pursuing the fundamental changes to the ownership, control and regulation of the sector that have been outlined in the National Electric Power Policy (2002) and enshrined in the Electric Power Sector Reform (EPSR) Act of 2005.

To meet our Vision 20:2020 target of 40,000MW will require investments in power generating capacity alone of at least US$ 3.5 billion per annum for the next 10 years. Correspondingly large investments will also have to be made in the other parts of the supply chain (i.e. the fuel-to-power infrastructure and the power transmission and distribution networks). These sums cannot and will not be funded and directed by the Federal Government. Rather, central to the development of the sector will be the need to incentivise the private sector to partner with government in this endeavour. At the same time, however, the Federal Government is acutely aware that improvements in service levels cannot wait until the industry has been commercialised. The Government is, therefore, taking active steps to ensure modest but genuinely realisable improvements in the amount and quality of electricity supplied to customers in all regions of the country.

In summary, this Roadmap outlines our plan to accelerate the pace of activity with respect to reforms already mandated under the EPSR Act and, at the same time and in support of this, a renewed drive to improve on short term service delivery.

1.0 Fulfilling the Imperative of the Electric Power Sector Act

Fortunately, key early milestones have been achieved in the implementation of the EPSR Act. The creation and unbundling of the Power Holding Company of Nigeria (PHCN) have been important first steps. This now needs to be followed by the corporatisation, commercialisation, and eventual privatisation of the successor companies, the inflow of a large volume of private sector investment through the creation of new power generation and distribution entities and the subsequent development of a competitive electricity market. At the same time, a realistic, properly considered and sustainable plan for service delivery in the short and medium term that dovetails with the structural reform imperative must be pursued.

Over the coming year, the Federal Government will fast track these structural reforms by:

- removing obstacles to private sector investment;
- clarifying the government's strategy on the divestiture of the PHCN successor companies; and
- reforming the fuel-to-power sector.

1.1 Removing Obstacles to Private Sector Investment

The sections below outline the steps which the Government is taking to catalyse the inflow into the industry of private sector investment and accompanying managerial and technical expertise.

It is important to note, however, that the participation of the private sector is not an *end in itself*. On the contrary, it is only the *means* to the ultimate objective i.e. the urgently needed improvement in the service levels experienced by all electricity consumers.

The establishment of an appropriate pricing regime. For the sector to be financially viable throughout the value chain, the end-user tariff must at least be at a cost-reflective level. However, the tariff as it now stands is significantly below what is necessary for the sector. As a result, not only is PHCN continuously unable to meet recurrent expenditure requirements, it must continually beg government for additional monies for short term and long term capital expenditure. Further, and more importantly, without a pricing regime that supports financial viability in the sector, it simply makes no sense for a private sector operator to come into the market.

The Nigerian Electricity Regulatory Commission will, therefore, be undertaking a major review of the tariff regime which will be completed before the end of the first quarter of 2011 with a view to replacing the national uniform tariff with a new genuinely cost-reflective ceiling on end-user tariffs.

However, to protect against “rate shock” and to ensure that low-income consumers are provided with the “lifeline” tariff envisaged by the framers of the original power sector

reform policy, there will also be much greater price differentiation and the introduction of an inclining block tariff whereby the rate paid for electricity varies with a given level of consumption.

The establishment of a bulk purchaser. In accordance with the EPSR Act, the electricity industry needs to transition to a new model, where a government owned bulk buyer carries out contract management and bulk trading (on behalf of the distribution companies[1]) until such time as the industry has developed the settlement, accounting, managerial and governance systems required for successful bilateral contracting.

The Nigerian Bulk Electricity Trading Company PLC has now been incorporated and over the next two months this entity will be appropriately resourced and established, with the expectation that by October 2010 it will be ready and able to start negotiating appropriate power purchase agreements not just with successor generating companies and existing independent power producers (IPPs) but also with potential new entrants into the power generating market.

The provision of FGN Credit Enhancement. In entering into a power purchase agreement (PPA), independent power producers (IPPs) will also require that there is a creditworthy counterparty at the other side of the table. However, it could take up to four years before some of the distribution companies become commercially viable and are fully credit-worthy entities. Therefore, in order to accelerate private sector investments in power generation, the Ministry of Finance is reviewing a set of options through which the Federal Government may provide credit enhancement to the bulk purchaser that will enter into PPAs with the successor generation companies and IPPs.

As it will take a few years for IPP projects to be up and running, by which time the structural reform process will have gained significant traction, the liabilities to which the Federal Government may be exposed, were it to provide some form of backstop to the PPAs, will be negligible.

Creating an efficient and motivated workforce. Progress with the reforms has, hitherto, been frustrated by the operational and financial risks to potential acquirers of successor companies posed by the government's failure to reach an agreement with the labour unions on the settlement of outstanding arrears (of salaries, pensions and other benefits) and on severance pay.

Recognising that the faithful implementation of the reforms will result in a much larger, more dynamic sector with industry participants enjoying significant profits, consumers enjoying better service delivery and, most importantly, workers enjoying better conditions of service; the Federal Government has recently engaged in active dialogue with the leaders of the

1 N.B. The establishment of the bulk trader will not impose a "single buyer" model upon the industry because the distribution companies, to the extent that they are able to, will be allowed to procure power bilaterally alongside the bulk trader.

labour unions. This dialogue is finally bearing fruit. Indeed, the Government's expectation is that a comprehensive agreement on all outstanding issues will have been negotiated by the year end.

Operationalising the Nigerian Electricity Liability Management Company (NELMCO). NELMCO was established as a government Special Purpose Vehicle to assume and manage extant assets, liabilities and other obligations that could not be easily transferred from PHCN to any of the Successor Companies. The Federal Government is working to ensure that NELMCO is made fully operational without further delay and that any uncertainties with regard to the transfer of residual liabilities are removed. In the process thereof, the Federal Government will also make clear to investors the complementary roles to be played (in the management of legacy liabilities) of both NELMCO and the Bulk Purchaser.

Contracting out the management of the Transmission Company of Nigeria (TCN). Investors will be reluctant to make large-scale investments in the upstream and downstream sectors of the electricity industry unless they are confident that commensurate investments in the midstream sector will also take place. As such, the management of TCN will be contracted out to a private company which has both the requisite project management and technical expertise. The tender process for this has commenced.

Clarifying and strengthening the licensing regime. Electricity asset investments involve high fixed costs with a long duration and investors expect the life of the licence to be more or less in line with the period required to recover their investments, typically 20 – 25 years. However, the EPSR Act provides for licenses that shall not exceed ten years duration although NERC may extend, on a rolling basis, the validity of the licenses for additional five year periods. To provide greater comfort to investors, mechanisms are being developed that will assure them of renewal/extensions of their license provided they meet the necessary conditions.

Strengthening the Nigerian Electricity Regulatory Commission. NERC plays a critical role in issuing operating licences and regulating the sector. More importantly, it provides confidence that a level playing field will subsist and that rules will be followed and enforced. In recognition thereof, the Government has taken decisive action to resolve the leadership vacuum at NERC and establish a credible leadership therein.

1.2 Clarifying the Government's Strategy on the Divestiture of the PHCN Successor Companies

Whilst the government is committed to resolving each of the specific obstacles to private sector investment outlined above, it is also conscious that potential investors in the sector are looking for a clear indication of the government's overall strategy or “philosophy” in respect of the divestiture of the 18 successor companies. Accordingly, the divestiture approach set out in this Roadmap can be summarised as follows:

The hydro power generating plants. The strategy adopted by the BPE is to grant concessions for the operation of Kainji, Jebba and Shiroro. This approach is principally predicated on the magnitude of the capital requirements and water rights issues associated with these plants; but it also reflects the link between the sustainable management of hydro power and the development of the country's agricultural resources.

The thermal generating plants. The PHCN successor thermal generating plants will be privatised via the sale of a minimum of 51% equity to core investors that clearly demonstrate the technical and financial ability to operate and expand each plant. Care will be taken, by working closely with NERC, to ensure that a monopoly or oligopoly of market power in the generation sector is not acquired through these divestitures. The NIPP plants will be managed under Operation and Maintenance (O & M) contracts now being prepared by the Niger Delta Power Holding Company (NDPHC), the parent company of these plants. The mode and strategy for their subsequent divestiture will then be communicated once these plants have been commissioned.

The Transmission Company of Nigeria. The Transmission Company of Nigeria will be handed over to a credible private sector company under a five year management contract. The key, therefore, to the successful commercialisation of the national grid is the appointment of a contractor with the skills required to manage the huge and complex programme of construction and rehabilitation that will be required over the coming decade.

The Distribution Companies. All the distribution companies are expected to be privatised, based on a core investor sale of a minimum of fifty-one (51) percent of the government's equity in the companies. The sale methodology will emphasize the reduction of technical and commercial losses and increased efficiency of collections. Accordingly, in addition to their offers for ownership of a minimum of fifty-one percent of the companies, bidders will be expected to submit proposals that reflect information on their strategy for meeting the efficiency targets that will be specified in the Request for Proposals.

1.3 Reforming the Fuel-to-Power Sector

Finally, the Federal Government is also conscious of the need for complementary reforms in the upstream fuel-to-power sector and in the gas industry in particular. Significant reforms of the gas industry have already taken place over the past 12 months and these reforms should have a direct and positive impact on the electricity industry in the years to come. Nevertheless, during the course of the coming year, the Government will introduce additional incentives to attract the tens of billions of dollars of private sector capital which the industry will require over the coming decade.

2.0 Improving Service Delivery Throughout the Transition

Whilst it is the Government's intention that the Nigerian Electricity Supply Industry should be principally owned and controlled by the private sector, this transition cannot happen overnight. Thus, *for an interim period*, the Federal Government of Nigeria – through its parastatals – will continue to retain direct accountability for service delivery across large parts of the electricity value chain. In view of the above, consumers (and the citizenry as a whole) have a right to know what level of service delivery is expected of these parastatals during the transition period.

Moreover, the Federal Government recognises that electricity customers are keen to see *immediate* improvements in service levels and will not be satisfied with the mere promise that these improvements will materialise *after* the sector has been reformed. Thus, throughout the reform period, the Government is determined to apply its energies with equal and commensurate force to the service delivery imperative. More particularly, our focus is on service delivery that is sustainable; service delivery that is carried out in a well-managed and monitored manner and for which outputs can be properly evaluated; and service delivery for which those directly responsible can be held truly accountable. In addition, as a radical departure to the established way of doing things, we are committed to adopting a more participatory and inclusive approach to the reforms. This will mean carrying the general public along every step of the way by ensuring that progress against objectives will be made clear and transparent.

In the short term, we must clearly ensure a substantial increase in the total quantum of power delivered to electricity consumers across the country. In this regard, we are committed to ensuring that the average number of hours of electricity supplied to consumers increases noticeably over the coming year.

The second and equally important objective is to ensure that the supply of power will not only be significantly greater than ever before but that it will also be much less *erratic and unpredictable*. To that end, the targeted increases in generation, transmission and distribution capacity will be combined with a deliberate change in the practices of the System Operator. This change will mean that instead of despatching all the available generating capacity all of the time, the System Operator will aim to keep power generation and distribution *steady* and relatively *predictable.* In addition, the Government is also urging the System Operator and the various distribution companies to undertake more strategic and more predictable load-shedding practices.

In the medium term (by December 2013), even though there will by then be a substantial reduction in the Government's funding and managerial direction of significant elements in the electricity value chain, our expectation is that the total quantum of power delivered to electricity consumers across the country should be at least *twice the current level*. This ambition reflects expected outputs from the planned completion of projects *which have*

already been budgeted and for which the government will retain direct accountability, namely:

- the completion of all the overdue NIPP projects (for generation, transmission and distribution);
- the completion of the outstanding (and already budgeted) PHCN projects; and
- the completion of the outstanding (and already budgeted) NGC investments in the gas supply and transportation industry.

Our specific objectives and associated activities are spelt out in detail in this Roadmap and encompass goals in the four key areas of fuel-to-power, generation, transmission and distribution. In addition, there are auxiliary objectives which cut across all four sectors and these, include in particular: the compilation, processing and disclosure of industry statistics which are essential for strategic planning; and the development, training and incentivisation of the human capital upon which the success of the whole industry depends.

2.1 Fuel-to-Power

In view of the high capital costs and long lead times required to develop commercial power generation through solar, wind, nuclear and biomass, the Federal Government will focus its development efforts on hydro, coal and natural gas. The potential of natural gas, in particular, will be prioritised and incentives will be provided to investors to exploit this resource to its fullest potential.

In the short term, work to implement the National Gas Masterplan will be accelerated. In the period up to April 2011, it is expected that there will be enough gas supplied to power producers (circa 1,636 mmscfd) to support the targeted increase in actual generation capacity of circa 7,000 MW.

In the medium term, available generation capacity is projected to outstrip the available gas supply to power producers. As such, additional support and incentives will be required to attract private sector investment into the gas sector so as to enable international oil companies and other investors to produce stranded gas locked up in various fields especially in the eastern axis.

2.2 Generation

In the short term, the Federal Government is committed to rehabilitating circa 1,000 MW of generating capacity at existing PHCN power stations and adding an additional 1,266 MW of generating capacity from new NIPP power stations.

The strategy from the beginning of next year will be to maintain for every part of the country, the current allocation of power, and then begin to allocate a significant portion of the *additional* power that will come from the NIPP and other IPP projects to key industrial cities in the country. Where possible, additional power from other IPPs will be domiciled in the local domain where the power is produced.

In the medium term (up to December 2013), we can expect: a modest increase in the total power generation capacity of the existing PHCN power stations (which would bring the total to just under 4,500 MW); the addition of 4,775 MW from the NIPP plants; and a substantial (3,300 MW) increase in power generation capacity from IPPs, all by December 2013. As such, the medium term expectation is that 14,000 MW of power generation capacity will be available by December 2013.

Although the Government is determined that the vast majority of all new power plants should be financed and built by the private sector, it also acknowledges that there is a case for some limited involvement by the FGN in the financing of renewable forms of power generation e.g. hydro (or other renewables) and in stimulating production of power from coal.

2.3 Transmission

To ensure that this increase in generating capacity is not left stranded for lack of evacuation capacity, there would be a need for a 30% increase in the "true deliverable" transformation capacity of the country's 330kV network between July 2010 and April 2011 above its current limit of circa 4,500 MW equivalent.

In practice, however, it is highly unlikely that an increase of this magnitude will be realisable by April 2011. On the contrary, the Government's projected targets for April 2011 are that the "true deliverable" transformation capacity will rise by just over 10% to about 5,000 MW equivalent (even though the total nominal 330kV transformation capacity is projected to rise to 5,995 MW equivalent).

These figures reflect the fact that the transmission network is still a weak link in the electricity supply chain. Moreover, even with the completion of the extant PHCN and NIPP transmission projects (for which funds have already been provided), the gap between generation capacity and the capacity of the grid is expected to widen considerably over the coming three years.

It is all the more imperative, therefore, that new investments are pushed forward as rapidly as possible. To that end, the TCN management contractor will be responsible for significant investments in the expansion, reliability and stability of the network infrastructure. In addition, the Federal Government plans to build a new super transmission network, which

amongst other things will help to evacuate power from the proposed Mambilla hydro power plant.

Given the Government's commitment to the introduction of a genuinely cost-reflective tariff, a substantial portion of these capital investments will be recovered through the revenues generated by the electricity market itself i.e. by the transmission use of system charges paid to the Transmission Company of Nigerian (TCN).

2.4 Distribution

In the run-up to the privatisation of the distribution companies, the Government will be working hard to enhance the operational and commercial performance of the distribution companies. Not only will these efforts improve the quality of service experienced by electricity customers but they will also enhance the value of the distribution companies and the prices which the government is able to realise upon their divestiture.

More particularly, the Government's short term targets are to:

- increase the capability of the distribution network by circa 20%;
- reduce aggregate distribution losses (technical and non-technical) by at least 5% by April 2011; and
- secure a noticeable increase in the average number of hours of electricity supplied to consumers by April 2011.

To a large extent, the achievement of these targets will be made possible through the completion of the on-going NIPP and PHCN projects, the budgets for which have already been provided. Nevertheless, there are a number of new projects which need to be funded in order to secure the delivery of the Government's short term targets and these are currently being identified by the Presidential Task Force on Power.

The Federal Government is also targeting an increase in the average monthly revenue collection capability of the Nigerian Electricity Market from the current N10bn to N17.6bn by April 2011. The keys to this improvement are the targeted increases in power generation; the targeted reductions in technical and non-technical losses; the introduction of better customer care service programmes; and improvements in collection efficiency. With regard to the latter, the Government's target is to increase the total collection efficiency of the industry by at least 5% by April 2011.

To ensure that the performance targets (both operational and commercial) are reached within the time periods outlined above, the Presidential Task Force on Power has also developed an incentive scheme for the staff of the distribution companies which will offer rewards for good performance and sanctions for poor performance.

With regard to the medium to long term horizon, the Government intends that full responsibility for the operational effectiveness of the distribution companies should shift from the Federal Government to the private sector no later than 2011. Nevertheless, the actions and decisions of the Federal Government will continue to exert a significant impact on their commercial effectiveness. More specifically, the Government acknowledges that its policy decisions on electricity tariffs will have a direct and critical effect on the financial viability of the privatised distribution companies and (as noted earlier) it is committed to the introduction of a genuinely cost-reflective tariff which will secure the financial viability not just of the distribution companies but of the sector as a whole.

2.5 Industry-wide Data Compilation and Dissemination

Good strategic planning in the power industry, whether by the private sector or the public sector, is critically dependent upon the provision of system-wide industry information. But it is not just a matter of compiling and publishing reams of data. On the contrary, all participants in the industry need access to data that has been properly validated, analysed, processed and "joined up".

To that end, the Federal Government will ensure that NERC develops and maintains a dedicated industry-wide data centre which will help promote sound policymaking, efficient markets, and the public understanding of the health of the industry.

2.6 Human Capital Development

A robust Nigerian electricity supply industry requires a well-trained and properly motivated workforce. As with all other aspects of the sector, investments in human capital development have been inadequate and there has been no significant investment in focused training in the last 15 years. Indeed, much of the trained workforce is aging and nearing retirement.

The Federal Government is mindful of this fact and is working on a clear strategy to improve the competence of the existing workforce through skill enhancement and professional development programmes. This strategy will ensure the recruiting, training and retention of an effective workforce that will drive government's vision for the electricity industry.

This high premium that the government has placed on human capital development guides its attitude to dialogue with the labour unions. The Federal Government is committed to respect the rights of the industry's workers, prompt fulfilment of its commitment on any confirmed benefits, and maximisation of the full potentials of all workers.

Part of this strategy ensures that government pays close attention to the training infrastructure in the sector by making fully operational the National Power Training Institute of Nigeria (NAPTIN). NAPTIN, under the direction of the Federal Ministry of Power, has begun the process of developing a National Power Training Policy to ensure that the human capital needs of the sector are met.

2.7 Cross-Sector Discipline

There are many institutions that play a role in the delivery of power in Nigeria. Some of these enterprises are outside the formal boundaries of the Nigerian electricity supply industry but their activities significantly impact the sector. It is imperative that these agencies understand the role they play and streamline their cross-sectoral interfaces to ensure efficient power delivery. For instance, the Central Bank of Nigeria and the Nigerian Customs and Ports Authorities, though not formally in the power sector, play a key role in the delivery of power sector equipment and spares.

The Federal Government is committed to ensuring increased accountability and transparency in all the processes within the power sector. Most importantly, government must be an exemplary customer and pay its bills on time. To that end, the Federal Government is determined to "lead by example" and institute rigorous discipline in the payment of electricity bills by all ministries, departments and agencies. Last, but not least, the population as a whole can play an important part in the rejuvenation of the industry. Retail and wholesale customers alike should treat their obligation to pay their bills and protect the country's power assets as a matter of sacred national duty.

2.8 Energy Consumption Efficiency

Over the past decade, many countries have made significant progress towards greater energy efficiency in mass transportation; in building construction and design; and in domestic energy consumption habits. There are many good lessons to be learned from these best practices. Thus, over the coming months, the Presidential Task Force on Power will be contributing to on-going work towards the adoption of a national policy on energy efficiency and conservation.

CHAPTER ONE

The Reform Imperative

1.0 Introduction

Since 2001, when the Federal Government adopted the National Electric Power Policy, the comprehensive reform and re-engineering of the electricity supply industry has been central to the thinking of government. That policy outlined the following key objectives:

- to ensure a system of generation, transmission, distribution and marketing that is efficient, safe, affordable and cost-reflective throughout the country;
- to ensure that the power sector attracts private investment both from Nigeria and from overseas;
- to develop a transparent and effective regulatory framework for the power sector;
- to develop and enhance indigenous capacity in electric power sector technology;
- to participate effectively in international power sector activities in order to promote electric power development in Nigeria, meet the country's international obligations and derive maximum benefit from international cooperation in these areas;
- to ensure that the Government divests its interest in the state-owned entities and entrenches the key principles of restructuring and privatization in the electric power sector;
- to promote competition to meet growing demand through the full liberalization of the electricity market; and
- to review and update electricity laws in conformity with the need to introduce private sector operation and competition into the sector.

The Electric Power Sector Reform (EPSR) Act, which was passed into law in March 2005, gives effect to these principles and now serves as the platform for the enabling legal and regulatory framework for power sector operations in Nigeria.

Whilst previous administrations have approached these reforms with varying degrees of vigour over the last decade, the Federal Government is determined to not only implement them faithfully but to also ensure that this is done: methodically; efficiently; in a manner that ensures that the results are sustainable; and with a clear focus on value for money. More particularly, the Government acknowledges that the chronic debilitation of the industry can only be reversed through fundamental changes to the ownership, control and regulation of the sector.

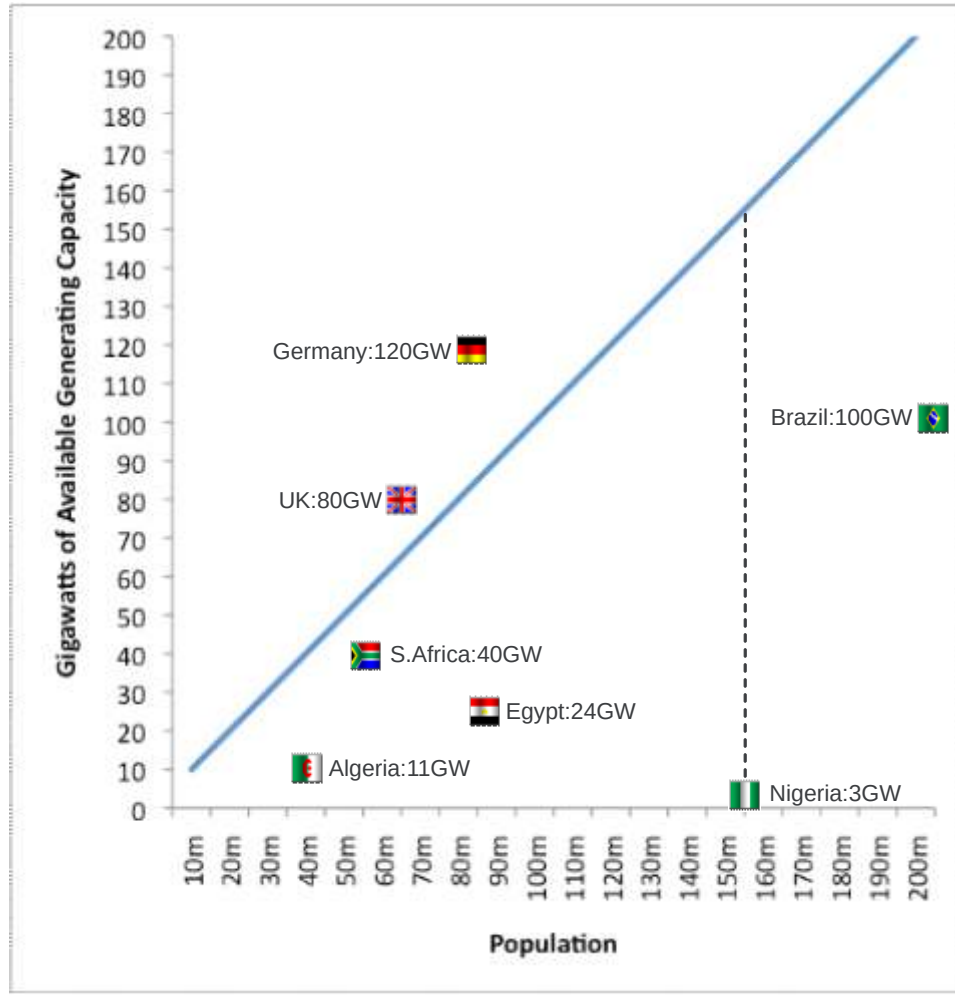
Thus, the focus of this chapter is on the reform imperative – which is the most important of all the challenges faced by the Presidential Action Committee on Power and the Presidential Task Force on Power. The sections below outline the steps which the Federal Government will be taking over the coming year to fast-track the full implementation of the initiatives outlined in the EPSR Act so that private sector investment, innovation and dynamism can

catalyse the urgently needed rehabilitation and expansion of the Nigerian Electricity Supply Industry.

1.1 Demographics and Power Consumption

Nigeria is the most populous country in Africa. Its population currently stands at 150 million people and is expected to grow to 230 million by 2030.

The rule of thumb for any developed industrial nation is that at least 1 gigawatt (i.e. 1,000 megawatts) of electricity generation and consumption is required for every 1 million head of population. This rule provides a useful indicator as to the scale of the investments that will need to be made in the Nigerian Electricity Supply Industry over the coming decades.



As shown in the figure above:

- Nigeria's per capita electricity consumption is amongst the lowest in the world and far lower than many other African countries.

- Nigeria's per capita electricity consumption is just 7% of Brazil's and just 3% of South Africa's.
- Brazil has 100,000 MW of grid-based generating capacity for a population of 201 million people.
- South Africa has 40,000 MW of grid-based generating capacity for a population of 50 million people.
- As at August 2010, the peak generation supplied by Nigeria's PHCN was just 3,804 MW for a population of 150 million people.

1.2 The Immediate "Out of Pocket" Cost of the Supply-Demand Gap

Self-generation of electricity (from diesel and petrol generators) is conservatively estimated at a minimum of 6,000 MW i.e. more than twice the average output from the grid during 2009. Moreover, half the population (and the vast bulk of the country's poor) have no connection whatsoever to the grid.

The consequence of this yawning gap between demand and supply is that, although the current regulated (average and levelised) tariff is just N8.5/kWh:

- the poor currently pay more than N80/kWh burning candles and kerosene;
- manufacturers pay in excess of N60/kWh on diesel or LPFO generation;
- everyone else pays around N50-70/kWh on self-generation (diesel or petrol).

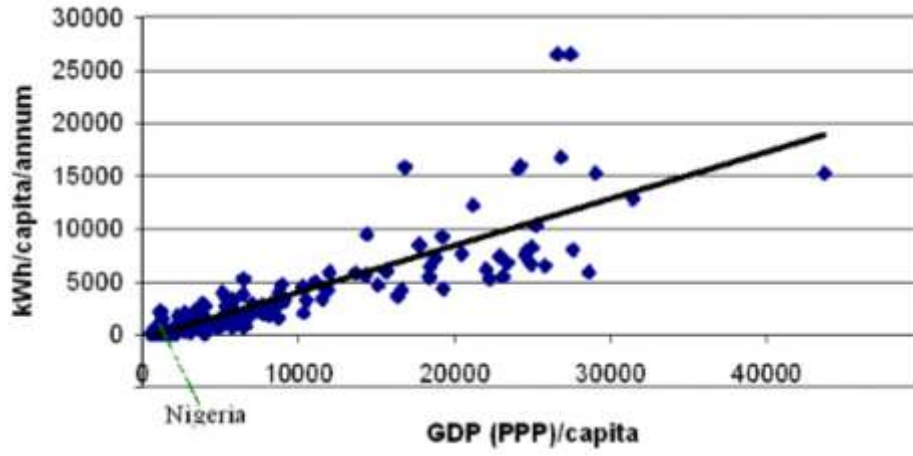
The result is that Nigerians as a whole spend between 5 and 10 times as much on self-generated light and power[2] as they do on grid-generated electricity.

1.3 The Cost, in Terms of Lost GDP, of the Supply Demand Gap

Despite annual capital injections averaging $2 billion per annum, the available capacity of Nigeria's state-owned electricity utility has been stuck at about 3,000 MW for the past two decades. However, the cost – in terms of lost GDP – is many times greater than all the waste and leakage which have attended these capital budgets (large though these have been). This is because of the strong and inescapable link between electricity supply and economic development (as shown in the figure on the next page).

2 Cf various studies by the Manufacturers Association of Nigeria; the World Bank and other development finance institutions; and independent and captive power producers.

Electricity consumption and GDP in 134 countries of the world



The stalled expansion of Nigeria's grid capacity combined with the high cost of diesel and petrol generation has crippled the growth of the country's productive and commercial industries. If this situation were to persist, the cost by 2020 in terms of lost GDP would be in the order of 20 Trillion Naira (USD$ 130 billion) every year (see Appendix A).

These comparisons and trends indicate not merely what has not been invested in the Nigerian electricity industry; more positively, they indicate the massive amount of human energy, entrepreneurial spirit, socio-economic development and the accompanying accretion to the national GDP waiting to be released by the availability of electricity. The Federal Government is acutely aware of these facts and is committed to fast-tracking the reforms that will attract the vast and urgently needed investments in the electricity sector.

1.4 The Scale of the Required Investments

Investments are urgently needed all the way along the electricity supply chain, viz:

- Fuel-to-power
- Power generation
- Transmission
- Distribution

In 2005, the government launched an ambitious capital investment programme under the title of the National Integrated Power Project (NIPP). The NIPP projects comprise both gas-fired power plants and transmission lines. When completed, the NIPP projects should add nearly 5,000 MW to the country's generating capacity within the next 3 years.

However, the NIPP's contribution is a drop in the ocean compared to the investments that will be required for the country to meet the generating target which it has set itself for 2020, namely 40,000 MW.

Moreover, if this target of 40,000 MW were to be met, Nigeria's power capacity per head of population in 2020 would still be less than a quarter of what South Africa currently enjoys.

Nevertheless, to reach this relatively modest ambition (of 40,000 MW) will require investments in power generating capacity alone of at least USD$ 3.5 billion per annum for the next 10 years. Correspondingly large investments will also have to be made in the other parts of the supply chain (i.e. the fuel-to-power infrastructure and the power transmission and distribution networks).

In summary, a total USD$10 billion per annum would represent a *conservative* estimate of the sums that will need to be spent on the whole supply chain over the next 10 years in order to reach the modest target of 40,000 MW by 2020.

The Federal Government is convinced that it would not be *desirable* for such enormous investments to be funded and directed by the Federal Government (in light of the erratic and inefficient management of capital expenditures by the State-owned power company over the past two decades). More importantly, the Government recognises that it would not be *possible* for investments on this scale (in a single industry sector) to be made by the Federal Government.

Hence, this Administration has stressed, repeatedly, that the requisite investments in the power sector will only be achievable if the private sector is incentivised to make these investments.

2.0 Removing Obstacles to Private Sector Investment

The EPSR Act has already provided some of the enabling regulatory framework for private participation in the electricity industry. The EPSR Act gives legal authority and support to the restructuring of the single vertically-integrated, government owned, power sector utility. Some of the key changes provided for in the Act have already been effected, including the following:

- the creation of the Initial Holding Company (PHCN) to assume the assets, liabilities and employees of NEPA;
- the subsequent initial unbundling of PHCN into 18 successor companies and the partial transfer thereto of the assets, liabilities and staff of PHCN; and
- the establishment of the Nigerian Electricity Regulatory Commission (NERC).

But the ultimate objectives of the EPSR Act have not materialised. These goals were as follows:

- The divestiture of the successor companies (through privatisation in some cases and through concessions in others);

- The inflow of a large volume of private sector investment through the creation of new power generation and power distribution companies; and
- The subsequent development of a competitive electricity market.

These objectives have been frustrated, *inter alia*, by eight obstacles:

- the maintenance of an inappropriate pricing regime;
- the failure to establish a bulk purchaser in line with the provisions of the EPSR Act;
- the failure to address investors' concerns about the creditworthiness of the distribution companies/bulk purchaser during their eventual transition to financial viability;
- the operational and financial risks to potential acquirers of successor companies posed by the failure to reach an agreement with the labour unions on the settlement of outstanding arrears (of salaries, pensions and other benefits) and on severance pay;
- the uncertainties generated by the delay in operationalising the Nigerian Electricity Liability Management Company (NELMCO);
- the delay in contracting out the management of the Transmission Company of Nigeria (TCN);
- concerns about the licensing regime for power generation and power distribution companies; and
- the lack of continuity and consistency in pursuing the enactment and commencement of the Electric Power Sector Reform Act and subsequently, after the Act was eventually passed, in following the timelines established therein.

As described in the subsections below, the Federal Government is determined that all eight of these obstacles are removed immediately.

2.1 The Establishment of an Appropriate Pricing Regime

A foundation principle of the power sector reforms, as enunciated in the EPSR Act, is that for the sector to be financial viable throughout the value chain, the end-user tariff must at least be at a cost-reflective level. However, the tariff as it now stands is significantly below what is necessary for the sector. As a result, not only is PHCN continuously unable to meet recurrent expenditure requirements, it must continually beg government for additional monies for short term and long term capital expenditure. Further, and more importantly, without a pricing regime that supports financial viability in the sector, it simply makes no sense for a private sector operator to come into the market.

To set this in context, Nigeria's regulated end-user tariff is far below the prices paid in most West African countries (as shown in the table below) and is even much lower than the prices paid in more efficient markets, where demand is fully satisfied and the costs to produce electricity are considerably less (e.g. the US and the UK).

	Triphase domestic usage	
Country	**US cents/kWh**	**N/kWh**
LIBERIA	34.00	51.00
MALI	29.57	44.36
BURKINA FASO	25.48	38.22
SENEGAL	17.74	26.61
GAMBIA	16.68	25.02
COTE D'IVOIRE	16.51	24.77
MEDIAN	16.43	24.64
BENIN	16.34	24.51
TOGO	15.55	23.33
NIGER	11.23	16.85
GHANA	10.32	15.48
GUINEA	8.70	13.05

	Commercial usage	
Country	**US cents/kWh**	**N/kWh**
LIBERIA	34.00	51.00
MALI	30.57	45.86
BURKINA FASO	25.30	37.95
SENEGAL	24.91	37.37
GAMBIA	24.17	36.26
COTE D'IVOIRE	19.10	28.65
MEDIAN	18.73	28.10
TOGO	18.36	27.54
BENIN	16.00	24.00
GHANA	14.61	21.92
NIGER	13.54	20.31
GUINEA	12.40	18.60

Source: "Comparative study of electricity tariffs used in Africa – December 2009", conducted by the General Secretariat of UPDEA (Union of Producers, Transporters and Distributors of Electric Power in Africa)

As noted earlier, the average unsubsidised tariff in Nigeria in 2009 was 7 Naira per kWh and the government was required to pay an additional average subsidy of less than 4 Naira per kWh. However, analysis conducted by the Presidential Task Force on Power indicates that even on the most optimistic of assumptions, the true "cost-reflective" average end-user tariff, for at least the next four years, is not less than 22 Naira per kWh, i.e. the average of tariffs set for all the different classes of customers across the three customer categories (residential, commercial and industrial).

The Federal Government is mindful of these figures and it recognises that the cost of setting prices too low is several orders of magnitude higher than the cost of setting them too high.

2.2 The Establishment of a Bulk Purchaser

As shown in the table below, there are four basic ways to structure a grid-based electricity market (although there are many possible variations on each).

	Model 1	Model 2	Model 3	Model 4
Characteristic	Vertically Integrated Monopoly	Principal Buyer	Multiple Buyer	Full Retail Competition
Definition	Monopoly at all levels	Competition in generation	Competition in generation (with imbalances settled at a contract or spot market rates)	Competition in generation and choice for final consumers
Competing Generators?	NO	YES	YES	YES
Choice for Discos?	NO	NO	YES	YES
Choice for consumers?	NO	NO	NO	YES

In most developing countries which have attempted to commercialise their State-owned electricity industries, the natural expectation is that the industry will transition to a principal buyer model (Model 2) until such time as the industry has developed the settlement, accounting, managerial and governance systems required for the more sophisticated multiple buyer model (Model 3).

This trajectory was clearly envisaged and articulated in the Electric Power Sector Reform Act (EPSRA) of 2005. The EPSRA makes clear that, during the Transition Stage, a special trading entity will carry out bulk purchase of electricity and ancillary services and resell these to licensed distribution companies. This is on the understanding that all contracts entered into by this bulk buyer would be capable of being novated to the successor distribution companies when the latter attain commercial viability.

> "Immediately following the issuance of the interim licenses to the successor companies...and prior to the declaration by the Minister....that a more competitive market is to be initiated....*the trading licensee holding a bulk purchase and resale license*...and to which the function of bulk purchase and resale of power and ancillary services has been transferred...*shall engage in the purchase and resale of electrical power* and ancillary services *from independent power producers* and from the successor generating companies...."
>
> – EPSR ACT SECTION 25A

To this end, a new entity called Nigerian Bulk Electricity Trading Plc (NBET) was incorporated on 29th July 2010 with the specific purpose of carrying out, under license from NERC, the bulk purchase and resale function expected by the EPSRA. This entity is now being appropriately resourced with financial and human resources; a payment (or credit) support package is now being set up; and, simultaneously, the first set of power purchase agreements (PPAs) with existing IPPs to take up their current stranded generation capacities are already been negotiated. As soon as these PPAs are negotiated and signed off, the bulk trader will proceed to procure further PPAs not just from successor generating companies and existing IPPs but also from potential new entrants into the power generating market.

It should be noted that the bulk trader, by policy and statute, is required to be a transitional entity that will last only for as long as it takes the distribution companies in a private sector-driven market to establish their individual credit-worthiness. In addition, the Bulk Trader's obligations under the PPA will be supported by a payment support package that ensures that any liability contingent upon default by a distribution company will be immediately made good. The establishment of the bulk trader and backing it with a credible payment support package, taken together with a MYTO that allows the full pass-through of allowable costs, therefore removes the single biggest risk element – lack of credit-worthiness at distribution level – that has militated against the growth of the market.

It is also important to note that the establishment of the bulk trader will not impose a "single buyer" model upon the industry because the distribution companies, to the extent that they are able to, will be allowed to procure power bilaterally alongside the bulk trader

2.3 The Provision of FGN Credit Enhancement

The preceding discussion makes it clear that although the establishment of a bulk purchaser is a *necessary* precondition for large-scale private sector investment in new power generating capacity, it is not a *sufficient* condition. For even if an IPP succeeds in signing a PPA on commercial terms with the bulk purchaser, this PPA (in the short to medium term) is unlikely to be bankable if the bulk purchaser is not credit-worthy.

In the absence of this credit-worthy procurer of power, *all* of the following conditions would have to be met before an IPP may be in a position to secure the funding required to commence investment.

	Likely Timeline
1. A significant tariff increase Without which the bulk purchaser would be unable to honour its payment obligations	2010 – early 2011
2. The successful privatisation of the distribution companies Without which the technical and non-technical losses currently incurred by the distribution companies would preclude the bulk purchaser from honouring its payment obligations even with a significant tariff increase	2011 – mid 2012
3. The successful commercialisation of the Transmission Company of Nigeria In the absence of which the ability of the bulk purchaser to honour its payment obligations would be put at risk by the impact of mid-stream transmission constraints or downstream revenue collection	2011 – early 2012

Given the timelines outlined above, there are at least two options available to the Federal Government and to prospective IPP developers.

Option 1: *Wait (three or four years) before making large-scale IPP investments*

The first option is simply to wait until the conditions outlined above have come into effect and the bulk purchaser and/or the individual distribution companies have become commercially viable and credit-worthy.

This option is likely to delay the urgently needed private sector investment in power generation by at least four years with new generation coming on stream 2 to 3 years later.

The cumulative cost of this option – in terms of the GDP growth that would be lost as a result of this delay – would (on conservative estimates) be at least USD$200 billion (cf. Appendix A).

Option 2: *Provide FGN credit enhancement to facilitate immediate investments by IPPs*

The second option is to support the more immediate investment by IPP developers in power generation by ensuring that the bulk purchaser is credit-worthy. To do this, the Federal Government will look to provide some form of credit enhancement to the bulk purchaser along with the instalment of an appropriate payment mechanism to ensure the liquidity of such credit support arrangement. Legal and financial advisers are currently being retained to aid the Federal Government in considering the variety of mechanisms that may be used to provide such credit enhancement. Some potential options are:

a. An FGN-backed Letter of Credit (LC), to provide liquidity to the bulk purchaser;
b. A Rolling Guarantee of the obligations of the bulk purchaser, issued by a multilateral institution or domestic and/or international banks, with a counter-guarantee issued by the FGN;
c. A World Bank Partial Risk Guarantee backed by a FGN indemnity;
d. An FGN treasury bond issue; or
e. A combination of two or more of these options.

Whatever form of credit support enhancement is decided upon, it must be understood that it will only create a *contingent* liability, which in turn will only become an *actual* liability for the Federal Government if:

a. The power plant is actually financed and built by the IPP developer;
b. The power plant's generating units are actually working and available;
c. The power plant has secured itself the requisite feedstock; and
d. A distribution company, and in turn, the bulk purchaser are unable to honour a portion of their payment obligations to the relevant IPP.

Given that it will take a minimum of 12 months to 3 years from the execution of a PPA before new contracted capacities are available for dispatch through the grid, this provides the Federal Government with ample time to implement its reform agenda; and in particular to undertake the privatisation of the electricity distribution companies. In turn, this privatisation process, especially considering the requirement that core investors commit to specific investments aimed at reducing aggregate commercial and technical losses, will reduce the likelihood that an IPP will ever need to call upon any government guarantee.

Moreover, the very fact that the Federal Government is willing to support the bulk purchaser entering into the PPAs should aid the *acceleration* of these reforms – which in turn will rapidly decrease the value of any potential liability.

The preferred option

The principal risk of providing the FGN credit enhancement required to kickstart investments by the IPP developers is that the distribution companies do not have the immediate capacity to pay for all the power that is being procured on their behalf by bulk purchaser and the Federal Government is then obligated to step in.

However, the Federal Government recognises that the maximum cost to the country posed by this risk is likely to be a small fraction of the much larger cost to the country (in terms of lost GDP) of the alternative policy option, namely failing to provide the necessary FGN credit enhancement and delaying the financing of large-scale investment in IPPs by several years.

Therefore it is necessary to ensure that the right form of credit enhancement is provided to the bulk purchaser to make it credit-worthy and to avoid a much larger cost to Nigeria in terms of GDP.

2.4 Creating an Efficient and Motivated Workforce

The attempted commercialisation of the successor companies (through divestiture, management contracts or concessions) has, hitherto, been frustrated by the operational and financial risks to potential acquirers of successor companies posed by the government's failure to reach an agreement with the labour unions on the settlement of outstanding arrears (of salaries, pensions and other benefits) and on severance pay.

These risks were succinctly captured by the National Council on Privatisation in its July 2009 "Update on the Electric Power Sector Reform and Privatisation", wherein it was noted that:

> *"There is no doubt that labour is a major obstacle to the successful implementation of the electricity sector reform. Labour union officials have made it clear that they will not willingly cooperate with government in reforming the electric power sector. On several occasions they have prevented investors and consultants from having physical access to power plants, offices, equipments etc. If the electric power sector reform programme is to be successfully implemented, the government must take urgent steps to resolve labour issues."*

In an effort to resolve these concerns, the Federal Government has engaged in active dialogue and engagement with the leaders of the labour unions. The Presidency, throughout these discussions, has stressed that:

- investors in the power sector need experienced workers in various aspects of the business and that it makes business sense to re-absorb existing workers who know the job and understand the territory;
- the intention in resolving labour issues is not to promote job loss but rather to improve the sector as well as the labour workforce; and
- faithful implementation of the reforms will result in a much larger, more dynamic sector with industry players enjoying significant profits, consumers enjoying better service delivery and, most importantly, workers enjoying better conditions of service. In this environment, we will certainly see a net gain in employment and we all stand to benefit.

Since its establishment, the Labour Technical Committee of the Presidential Action Committee on Power has been successful in building the confidence of the Labour Unions leadership in the Government's commitment to resolve all outstanding labour issues. During this period, the Labour Technical Committee has reviewed all past agreements between Labour and the government and has shown commitment in words and action to resolve all outstanding issues. The Labour Unions – National Union of Electricity Employees (NUEE) and the Senior Staff Association of Electricity and Allied Companies (SSAEAC) – have reciprocated. The noticeable improvement in power availability we currently experience must be credited to the renewed commitment of the sector workers. We commend them.

Moving forward, the Government has decided to fast track the resolution of all issues where there is agreement between all parties and isolate areas of dissent for later discussion. To make sure that Government can respond faster to her commitments, a total sum of ₦200 billion has been appropriated in the 2010 budget for the sector labour issues. Out of this budgeted amount, ₦57.6 billion has been made available to pay arrears of monetisation benefits due since 2003. This amount has been made available to PHCN for the settlement of the arrears.

The payment of these arrears of monetisation benefits is an important indication from the Federal Government of its commitment to resolve all outstanding labour issues and its recognition that this resolution is integral to the successful reform of the sector.

The next step in the Labour Resolution Strategy is to brief the Labour Unions on the activities of the Presidential Task Force on Power (PTFP), the Power Reform Roadmap and the critical role of the Labour Unions in the process.

Resolution of the outstanding labour issues will require a change in the mindset of all parties from a negotiations perspective to a problem solving partnership. The Labour Technical Committee understands that all parties involved in these discussions are committed to an effective resolution of the issues. As a result, a Joint Problem Solving Team (JPST) will be created, as a partnership between government, Labour and credible third parties to resolve all the outstanding issues.

The JPST will set the agenda, principles, and mechanisms for solving all the outstanding labour issues and will develop and manage the consultation agenda and discussion schedules.

The Labour Technical Committee, in its efforts to develop an agreed Issues Register, requested the Labour Unions to submit Position Papers on the labour issues that are to be resolved. In addition, the Committee also requested government agencies involved in the sector to submit Position Papers on their understanding of government's position on the issues. Position Papers were received from the Labour Unions (NUEE and SSAEAC), Ministry of Power, Ministry of Labour, and Bureau of Public Enterprises (BPE). Based on the submissions, JPST will draw up a stakeholder map for resolving the issues identified in the Position Papers.

There are a number of issues that are yet to be agreed between the Labour Unions and the government. However, the expectation is that by the end of the year a comprehensive agreement on all outstanding issues will have been negotiated with the labour unions.

2.5 Operationalising NELMCO

The Nigerian Electricity Liability Management Company (NELMCO) was established as a government Special Purpose Vehicle (SPV) on the understanding that it would assume and manage extant assets, liabilities and other obligations that could not be easily transferred from PHCN to any of the Successor Companies.

However, although the legal entity was duly incorporated, the institution has yet to be properly resourced and operationalised. There is a danger that a delay in operationalising NELMCO could act as a drag on private investment in the sector, in so far as it leaves potential acquirers of successor companies with an unwelcome degree of uncertainty as to the size of the legacy PHCN liabilities which they might eventually find themselves landed with.

In light of these concerns, the Federal Government is working to ensure that NELMCO is made fully operational without further delay and that any uncertainties with regard to the transfer of residual liabilities are removed. In the process thereof, the Federal Government will also make clear to investors the complementary roles to be played (in the management of legacy liabilities) of both NELMCO and the Bulk Purchaser. The envisioned roles, respectively, are that NELMCO inherits all of the legacy PHCN liabilities, as well as any liabilities associated with the existing PPA agreements, and the Bulk Trader assumes ownership of the existing PPAs and executes new buy and sell agreements with the successor generation/distribution companies and IPPs. With regard to timelines, the Government expects the full operationalisation of NELMCO to take place as soon as NERC and the BPE have completed their due diligence on the PHCN successor companies and the Government is able to assess the precise extent and nature of the liabilities to be transferred to NELMCO.

2.6 Contracting out the Management of the Transmission Company of Nigeria

The management of the Transmission Company of Nigeria (TCN) is a key concern for potential investors in the power generation and power distribution sectors. These investors will be reluctant to make large-scale investors in the upstream and downstream sectors of the electricity industry unless they are confident that commensurate investments in the midstream sector will also take place.

In light of these facts, it is essential that the management of TCN be contracted out to a private company which has both the requisite project management expertise and technical expertise.

To that end, the BPE tendered a management contract for TCN, which resulted in a shortlist of four interested bidders and bid (technical and financial) submissions by three of the bidders. However, this contract was never concluded. And, given the time that has subsequently elapsed, the National Council on Privatisation (NCP) have now recommended that a new call for expressions of interest be issued to all of the preferred bidders from the previous exercise.

Accordingly, the Bureau of Public Enterprises (BPE) has now initiated the process necessary to re-engage the advisers for the completion of the management contract process. Upon completion of this process, it is expected that the adviser will re-start the procurement exercise for the management contract consistent with the NCP's recommendation (by extending invitations to the three original bid submitters to resubmit their offers and evaluating these offers prior to the ultimate award of the contract). The process is expected to be completed by February 2011.

2.7 Clarifying and Strengthening the Licensing Regime

The EPSR Act provides for licenses that shall not exceed ten years duration although NERC may extend, on a rolling basis, the validity of the licenses for additional five year periods. But electricity asset investments involve high fixed costs with a long duration and investors expect the life of the licence to be more or less in line with the period required to recover their investments. In most cases, this period is between 20 and 25 years not 10 to 15 years.

The Presidential Task Force on Power has, therefore, been working with NERC to develop a comfort mechanism for investors that will assure them of renewal/extensions of their license provided they meet the necessary conditions. This comfort mechanism will involve the issuance of regulations by NERC setting out the process by which an extension will be

considered and given, who can initiate the process and when, the criteria that will be applied, the requirements to be met and timetables for decision-making, and the process of appeals by the licence holders against decisions made by NERC. Accordingly, NERC is currently reviewing various regulatory options, as necessary to address the issues addressed above.

2.8 Ending the Trend of Inconsistent Policy Implementation

The reform of the policy and statutory foundations of the NESI started in early 2000 when a formal gathering of stakeholders started the work of a full-scale review of the sector. The result of this review process was the drafting of a National Electric Power Policy approved by the Federal Executive Council in 2000 and published in March 2001; and an Electric Power Sector Reform Bill that was approved also by the Federal Executive Council and presented by the President to the National Assembly in September 2000 for legislative action.

After further intensive stakeholder review, the Bill was passed by the National Assembly in Q2 2003 but could not be assented to by the President before the end of that legislative session on 29th May 2003. Accordingly, the Bill had to go through the full legislative process all over again and was not passed and assented to until March 2005. The first formal steps of reform under the Act started with the commencement of the termination of NEPA, creating PHCN, unbundling it and then constituting NERC with the first set of Commissioners and subsequently having NERC issue the first licenses in the industry to the PHCN successor companies.

Unfortunately, progress through the various stages of development anticipated by the 2001 Electric Power Policy has been substantially delayed. Meanwhile the policy imperatives have become all the more acute. This Administration recognises: firstly, that the status quo is absolutely unacceptable; secondly that the foundation of sustainable sector reform rests on the establishment of commercial viability and regulatory certainty across the entire electricity value chain; and thirdly, that the confidence-sapping and morale-destroying gap between official rhetoric and market growth and development must be avoided and must be filled by firm and timely policy implementation.

It is in recognition of these imperatives that Mr. President has taken personal oversight over the implementation of the various reform actions mandated by the Electric Power Sector Reform Act, 2005. To this end, the Presidential Action Committee on Power (PACP) and its implementation arm, the Presidential Task Force on Power (PTFP) have been set up and have swiftly taken action to restart the sector reform process and restore confidence and regulatory certainty to the market. In addition, and most importantly, the leadership vacuum at NERC has been resolved and action is being taken to establish a credible leadership therein.

3.0 Clarifying the Government's Strategy on the Divestiture of the PHCN Successor Companies

Whilst the government is committed to resolving each of the specific obstacles to private sector investment outlined above, it is also conscious that potential investors in the sector are looking for a clear indication of the government's overall strategy or "philosophy" in respect of the divestiture of the 18 successor companies.

With a view to meeting this demand, the following sections set out (in brief) the approach to the divestiture of each of the 18 successor companies adopted by the National Council on Privatisation (NCP) which is required by the Public Enterprises (Privatisation and Commercialisation) Act to design and supervise all privatisation transactions.

3.1 Hydro Power Generating Plants

In regard to the hydro power generating plants, the strategy adopted by the BPE is to grant concessions for the operation of Kainji, Jebba and Shiroro. This approach is principally predicated on the magnitude of the capital requirements and water rights issues associated with these plants; but it also reflects the link between the sustainable management of hydro power and the development of the country's agricultural resources. The concession of the hydro plants is expected to be done through open tender managed by the BPE-engaged Transaction Advisers.

3.2 Thermal Generating Plants

The PHCN successor thermal generating plants will be privatised via a sale of a minimum of 51% equity to core investors that clearly demonstrate the technical and financial ability to operate and expand each plant. Care will be taken, by working closely with NERC, to ensure that a monopoly or oligopoly of market power in the generation sector is not acquired through these divestitures. Rather, unrestricted market entry of competent operators not only via privatisation but directly through licensing new IPPs; the competitive bulk procurement of electricity by the Bulk Trader; and the bilateral contracting of electricity between generating and distributing companies – all overseen by a fully-empowered independent sector regulator through the Multi Year Tariff Order (MYTO) mechanism – are the key guarantors that electricity will be generated into the grid on a competitive, commercial and consumer-oriented basis.

The NIPP plants will be managed under Operation and Maintenance (O & M) contracts now being prepared by the Niger Delta Power Holding Company (NDPHC), the parent company of these plants. The mode and strategy for their subsequent divestiture will then be communicated once these plants have been commissioned.

3.3 The Transmission Company of Nigeria

As already indicated earlier on in this chapter, the Government believes that the management of TCN should be handed over to a credible private sector company under a five year management contract. Unlike the power generation and power distribution sectors, the national grid maintained by TCN is not one that can be readily opened up to competition. On the contrary it forms a natural monopoly and one, moreover, which is of critical importance to the country's national security.

The key, therefore, to the successful commercialisation of the national grid is the appointment of a management contractor with the skills required to manage the huge and complex programme of construction and rehabilitation that will be required over the coming decade.

Considering that the timely provision of long-term and cost-effective financing for grid stability and expansion is critical, the PACP has approved the establishment of a Transmission Network Development Fund. This Fund is now being established as a regulated (by the Securities and Exchange Commission) infrastructure fund that will gather long-term financing from the private and public sectors solely for the purpose of investing in TCN's high voltage transmission grid construction projects and repaid directly from the Transmission Use of System (TUOS) charges that are levied at economic rates by TCN for wheeling electricity between generators and distributors, eligible customers and other licensed end users.

3.4 The Distribution Companies

As part of the larger reform effort of the electricity sector, the eleven distribution successor companies are expected to be privatised, based on a core investor sale of a minimum of fifty-one (51) percent of the government's equity in the companies. The Federal Government recognises that the commercial viability of the distribution sector, being the provider of an overwhelming proportion of industry revenues, is the foundation of market stability and growth.

Thus, the NCP has decided that the preferred distribution sale methodology is to be modelled along the lines of the approach that emphasizes the reduction of technical and commercial losses and increased efficiency of collections. This is the Aggregate Technical, Commercial and Collection (ATC&C) loss reduction model. Accordingly, in addition to their offers for ownership of a minimum of fifty-one (51) percent equity in the distribution companies, bidders are expected to submit investment proposals on their strategy for meeting the efficiency targets that will be specified in the Requests for Proposals to be put out by NCP during the sale process.

4.0 Reforming the Fuel-to-Power Sector

Although this chapter has focused on the reforms that need to be undertaken within the electricity industry per se (i.e. the power generation, transmission and distribution sectors); the Federal Government is also conscious of the need for complementary reforms in the upstream fuel-to-power sector.

Significant reforms of the gas industry have already taken place over the past 12 months and these reforms will have a direct and positive impact on the electricity industry in the years to come. Nevertheless, the Government is conscious of the need to put in place additional incentives to attract the tens of billions of dollars of private sector capital which the industry will require over the coming decade.

A summary description of the policy actions which need to be taken to effect this change can be found in the Fuel-to-Power Chapter of this Roadmap.

5.0 The Reform Timetable

In addition to the "headline" tasks outlined in this chapter, there are a host of supplementary tasks that are now being or will be effected during the coming months in order to accelerate the reform process. These tasks include, amongst other things:

- The corporatisation of PHCN successor companies and the institution of proper business planning and performance contracts through which the successor companies will be held responsible and accountable;
- The finalisation and execution of vesting contracts between power generating companies and the distribution companies/Bulk Purchaser;
- Operationalising the Market Rules and the concomitant resourcing of the System and Market Operators;
- The establishment of eligibility parameters for the declaration of eligible customers by the Ministry of Power;
- The engagement of transaction advisers and the development of transaction options and successor company valuation reports;
- Critical pre-transaction documentation/corporate actions e.g. asset/staff transfer orders, board resolutions for the appointment of directors, employment contracts, technical boundary delineation orders, etc; and
- The complete wind-down and liquidation of PHCN.

The full list of tasks and milestone dates which is currently being monitored by the Presidential Task Force on Power is reproduced on the pages overleaf. It is important to note, however, that this list of tasks is restricted to the reforms which need to take place in the Electricity Industry per se and does not include the list of reforms which need to take place in the gas supply industry. These latter reforms are treated separately in the Fuel to Power Chapter of this Roadmap.

Action Plan for Reform of the Nigerian Electricity Supply Industry: Key Tasks and Milestone Dates

Ref No	PRESIDENTIAL TASK FORCE on POWER	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11
	Regulatory and Transactions Timelines													
1	Obtain NCP Approval for respective Privatization Strategies and Execution of Fresh and Outstanding transactions													
2	Engagement of Transaction Advisers for approved transactions													
3	Other Pre-transaction actions - Settlement of outstanding labour issues, Employment contracts, technical boundary delineation e.t.c.													
4	Investors Fora													
5	Privatization of GenCos, DisCos and other Gen Assests (New Transactions with Core Investors/Concessionaires)													
5.1	Preparation of Bidding Documents													
5.2	Pre-Qualification of Bidders													
5.21	Approval of EOI Evaluation Report													
5.3	Bidding and Selection of Preferred Bidders													
5.4	Negotiation and signing of Final Agreement													
5.5	Payment of Purchase Price Balance													
5.6	Handover and commencement of operations													
6	Privatization of GenCos Asset Sale													
6.1	Advisers Due Diligence													
6.2	Finalise and Sign vesting contract													
6.3	Finalise and sign Gas supply Agreement													
6.4	Conclusion of Negotiation and payment of Purchase price													
6.5	Handover													
7	Conclude TCN Management Contract													
7.1	Re-Engage BPI as advisers													
7.2	Issue a new EOI to the 3 preferred bidders from previous exercise													
7.3	Selection of new Management Contractor													
7.4	Negotiation and signing of Final Agreement													
7.5	Handover													

Action Plan for Reform of the Nigerian Electricity Supply Industry: Key Tasks and Milestone Dates (Cont'd)

Ref No	PRESIDENTIAL TASK FORCE on POWER	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-1
	Regulatory and Transactions Timelines													
8	Conclude Outstanding GenCo Transactions (Egbin, Sapele and					■	■	■	■	■	■			
8.1	Finalise and Sign vesting contract							■	■					
8.2	Finalise and sign Gas supply Agreement					■	■							
8.3	Conclusion of Negotiation and payment of balance of Purchase price								■	■				
8.4	Handover										■			
9	Conclude on the Major review of the MYTO	■	■	■	■	■	■	■						
9.1	Successor Company Valuation Reports		■	■	■									
9.2	Stakeholder workshops and Inputs				■	■	■							
9.3	Conclusion and Necessary Approval							■						
10	Establish the Special Trader per EPSRA 2005 with the attendant executable PPAs and FGN-backed credit support in place		■	■	■	■	■	■						
10.1	Incorporation of Bulk Trader Corporate Entity		■											
10.2	Finalize and execute Vesting Contracts and PPAs				■	■	■	■						
10.3	Provide Credit Support			■	■	■								
10.4	Staffing and operation structure				■	■								
11	Corporatize PHCN successor companies with management performance contracts				■	■	■							
12	Complete Winding down of PHCN					■	■	■						
13	Fully establish NELMCO and tranfer of Liabilities					■	■	■						
14	Satisfy outstanding conditions precedent for the commencement of the Transition Market		■	■	■	■	■	■						
15	Establish parameters for the determination of Eligible Customers by MOP					■	■	■						

CHAPTER TWO

Improving Service Delivery Throughout the Transition

1.0 Introduction

As described in the preceding chapter, it is the Government's intention that the Nigerian Electricity Supply Industry should be principally owned and controlled by the private sector. However, this transition cannot happen overnight and, *for an interim period*, the Federal Government of Nigeria – through its parastatals – will continue to retain direct accountability for service delivery across large parts of the electricity value chain. In light of the above, consumers (and the electorate as a whole) have a right to know what level of service delivery is expected of these parastatals during the transition period.

As described below, in the very short term (i.e. in the period up to April 2011), the service delivery targets for which the government will bear direct managerial accountability encompass all four components of the value chain, viz. the fuel-to-power sector; power generation; transmission; and distribution.

In the subsequent medium term (i.e. in the period between April 2011 and December 2013), the Government will substantially reduce its funding and managerial direction of the sector as a whole. But it will retain a significant degree of accountability for service delivery standards in certain key areas (e.g. the transmission network and specific areas of power generation which the government may choose to underwrite in the interests of fuel diversity).

1.1 The Short Term Objective

The principal short-term objectives (in the period up to April 2011) are two-fold. In the first place, the government is aiming to ensure a substantial increase in the total quantum of power delivered to electricity consumers across the country.

The second and equally important objective is to ensure that the supply of power will not only be significantly greater than ever before but that it will also be much less *erratic and unpredictable*.

In this regard, it is important to note that in the short to medium term, the differential increases in generation, transmission and distribution capacity will enforce a substantial degree of spinning reserve that will allow the System Operator to maintain generation levels at a relatively steady level instead of being tempted into running all the available machines flat out.

More importantly, the Government will also be urging the System Operator and the various distribution companies to undertake more strategic and more predictable load-shedding practices. This policy reflects the Government's acknowledgement that a modest increase to a new, steady and predictable level of electricity distribution is of significantly greater value to electricity consumers than a higher (nominal) increase which ultimately proves to be highly erratic.

1.2 The Medium Term Objectives

As noted above, the medium term will witness a substantial reduction in the Government's funding and managerial direction of significant elements in the electricity value chain. Hence the medium term service delivery objectives which are described at various points in this Road Map are typically focused on those objectives for which the government expects to retain a significant degree of accountability.

In the sections that follow, these objectives are described by reference to each of the four components in the value chain. Nevertheless, it is possible to set an *overarching* medium term service delivery objective for which the government can be held directly accountable. Simply put, by December 2013, the total quantum of power delivered to electricity consumers across the country should be at least *twice the current level*.[3]

This overarching goal is an ambitious one, particularly in the light of the long history of broken promises which have accompanied previous "action plans" for the power sector. Nevertheless, the Federal Government recognises that a two fold increase in power distribution by December 2013 is the *least* that should be expected from the planned completion of projects *which have already been budgeted* and for which the government will retain direct accountability, namely:

- the completion of all the long overdue NIPP projects (for generation, transmission and distribution);
- the completion of the outstanding (and already budgeted) PHCN projects; and
- the completion of the outstanding (and already budgeted) NGC investments in the gas supply and transportation industry.

1.3 The Disclosure Objective

The Federal Government also believes that its service delivery responsibilities encompass more than the delivery of kilowatt hours. Electricity consumers (and the electorate as a whole) have a right to information as well as electricity. The Federal Government has set

3 This figure takes into account the projected increases in the capacity of each component in the electricity supply chain. For example, although power generation capacity is projected to show a marked increase by December 2013, current projections suggest that this will not be matched by a commensurate increase in transmission and distribution capacity. In summary, the Government's current target for the total amount of power that can be delivered to end-users by the end of December 2013 is in the region of 8,000 MW (roughly twice current maximum levels).

itself extremely stretching delivery targets and is working assiduously to meet those targets. It acknowledges, however, that in many areas, actual performance may fall short of targeted performance. When this has happened previously, the temptation has been to dissemble and/or to restrict the disclosure of the performance indicators by which progress could be accurately measured.

By contrast, the Federal Government is determined that its progress against objectives should be made clear and transparent – irrespective of the extent to which actual achievements fall short of the targeted goals.

2.0 Fuel-to-Power

Nigeria is blessed with numerous fuel sources for power, including hydro, natural gas, coal, wind, solar and an abundance of waste for biomass. However, because of the high capital costs required at this time to implement commercial power generation through solar, wind and biomass, the Federal Government is committing to focus on electricity generation in three areas, namely: Hydro, Coal and Natural Gas, of which the latter represents the largest resource for fuel-to-power. It is the intention of the Federal Government to exploit this asset to its fullest by converting flared gas assets and harnessing non-associated gas for power application.

However, this will require investment far beyond what the Federal Government can muster and will require providing appropriate incentives to investors such as the International Oil Companies (IOCs) and other investors in Oil and Gas businesses. A first step in this direction has been taken through the release of the National Gas Masterplan whose provisions will encourage private sector investment in gas infrastructure so that gas can be used throughout the nation for industrial processes and power generation. But, as described below, additional policy decisions should and will be made by the Government over the coming year to help stimulate the requisite levels of investment.

2.1 The short term match between fuel supply and power generation

Most of the power plants to be built in the southern part of Nigeria over the next few years will be gas fired. And in the short term (the period up to April 2011), there will be enough gas supplied to power producers (circa 1,636 mmscfd) to support the targeted increase in actual generation capacity of circa 7,000 MW.

2.2 The medium and long term challenges

As shown in Tables 1 and 2 below, by the end of 2011, the available generation capacity is projected to outstrip the available gas supply to power producers. From then on – unless

Table 1: Targeted Increases in capacity in each section of the electricity value chain between July 2010 and April 2011

Fuel-to-Power Availability

NGC/Direct	Total mm scfd	PP mm scfd	Other mm scfd	MWE
W.A.	785	595	190	2142
E.A.	52	24	27	86
Direct	212	212	0	1100
Hydro	0	0	0	1230
Total	1049	831	217	4558

NGC/Direct	Total mm scfd	PP mm scfd	Other mm scfd	MWE
W.A.	1085	825	260	2970
E.A.	150	84	66	302
Direct	212	212	0	1100
Hydro	0	0	0	1255
Total	1447	1121	326	5627

NGC/Direct	Total mm scfd	PP mm scfd	Other mm scfd	MWE
W.A.	1085	825	260	2970
E.A.	275	209	66	752
Direct	602	602	0	2504
Hydro	0	0	0	1485
Total	1962	1636	326	7711

Available Generation Capacity

July 2010

	FGN	NIPP	IPP	All
Hydro	1230	0	0	1230
Thermal	1862	0	1520	3382
Total	3092	0	1520	4612

Dec 2010

	FGN	NIPP	IPP	All
Hydro	1230	0	0	1230
Thermal	2278	351	1520	4149
Total	3508	351	1520	5379

April 2011

	FGN	NIPP	IPP	All
Hydro	1380	0	0	1380
Thermal	2867	1266	1520	5653
Total	4247	1266	1520	7033

Transmission Capacity

July 2010

KV	330	132
MVA	6444	8346
MW	5155	6677

Dec 2010

KV	330	132
MVA	6894	9160
MW	5515	7328

April 2011

KV	330	132
MVA	7494	9160
MW	5995	7328

Distribution Capacity

July 2010

MVA	7198
MW	5758

Dec 2010

MVA	7917
MW	6334

April 2011

MVA	8625
MW	6900

Note: As at July 2010, 831 mmscfd was available to power plants but only 687 mmscfd was actually used.

Table 2: Targeted Increases in capacity in each section of the electricity value chain between April 2011 and December 2013

Fuel-to-Power Availability

NGC/ Direct	Total mm scfd	PP mm scfd	Other mm scfd	MWE
W.A.	1180	880	300	3168
E.A.	550	500	50	1800
Direct	640	640	0	2641
Hydro	0	0	0	1575
Total	2370	2020	350	9184

NGC/ Direct	Total mm scfd	PP mm scfd	Other mm scfd	MWE
W.A.	1300	1000	300	3600
E.A.	1004	924	80	3326
Direct	762	762	0	3080
Hydro	0	0	0	1695
Total	3066	2686	380	11701

NGC/ Direct	Total mm scfd	PP mm scfd	Other mm scfd	MWE
W.A.	2401	2051	350	7383
E.A.	1619	1539	80	5540
Direct	762	762	0	3080
Hydro	0	0	0	1775
Total	6833	6403	430	17780

Available Generation Capacity

Dec 2011

	FGN	NIPP	IPP	All
Hydro	1575	0	0	1575
Thermal	2867	3095	2230	8192
Total	4442	3095	2230	9767

Dec 2012

	FGN	NIPP	IPP	All
Hydro	1695	0	0	1695
Thermal	2867	4775	2542	10184
Total	4562	4775	2542	11879

Dec 2013

	FGN	NIPP	IPP	All
Hydro	1775	0	0	1775
Thermal	2867	4775	4801	12443
Total	4642	4775	4801	14218

Transmission Capacity

Dec 2011

KV	330	132
MVA	8194	9360
MW	6555	7488

Dec2012

KV	330	132
MVA	9833	11232
MW	7866	8986

Dec 2013

KV	330	132
MVA	10815	12355
MW	8653	9885

Distribution Capacity

Dec 2011

MVA	9357
MW	7485

Dec 2012

MVA	10077
MW	8061

Dec 2013

MVA	11322
MW	9057

there is a significant inflow of private sector investment into the industry – the gap will begin to increase such that by the year 2013 more than 3,000MW of generating capacity will not have gas to support it.

The only solution is to attract investment as quickly as possible into the gas sector by making it viable for the private sector to play a significant role in the industry. The Fuel-to-Power Chapter of this Roadmap contains details of where the gaps exist in the country's western and eastern axes of gas production and where this investment could be best targeted.

Thereafter, to meet the longer term Vision 20:2020 goal will require billions of dollars investment which the Federal Government cannot meet. There is therefore the need to provide the basis for immediate private sector participation in this area. Consequently, the Federal Government will begin to engage the IOCs and smaller independent oil companies to fast track bankable gas supply agreements as well as gas transport to both Federal Government power plants and the independent power producers' plants.

3.0 Generation

As noted above, Nigeria will largely rely on hydro, coal and natural gas for generation of much of its power over the next decade. The sections below briefly set out the service delivery objectives (in both the short term and medium term) in respect of these three power generation technologies. The longer and more extensive Generation Chapter of this Roadmap provides additional detail in respect of the government's policy on renewables.

3.1 The short term targets

In the short term (the period up to April 2011), the Government has set itself the twin objectives of rehabilitating circa 1,000 MW of generating capacity at existing PHCN power stations and adding an additional 1,266 MW of generating capacity from new NIPP power stations. The Generation Chapter of this Roadmap lists the individual projects which will contribute to this sum total.

It is also important to note that the strategy from the beginning of next year will be to maintain for every part of the country, the current allocation of power, and then begin to allocate a significant portion of the *additional* power that will come from the NIPP and other IPP projects to key industrial cities in the country. The intention is to immediately stimulate employment and economic growth across the nation.

A second strategy is to domicile as much power as possible from independent power producers (IPPs) in their local domain where the power is produced. For example if a power company is producing 100MW in Lagos and the evacuation infrastructure allows for the power to go straight into the local grid, the policy directive will be to connect the 100MW to

the local distribution grid, thereby allowing a commensurate quantum of power from the national grid to flow to other parts of the country.

3.2 The Medium Term Targets

The medium term (December 2013) generation targets reflect the following policy objectives:

- the urgent need to complete all of the NIPP projects by December 2013;
- the withdrawal of the Federal Government from any further direct investment in or direction of thermal plants (whether gas fired or coal fired); and
- the incentivisation of private sector investment in the power generation sector.

Hence the Government expects the total power generation capacity of the existing PHCN power stations to increase between April 2011 and December 2013 by just 400 MW (to a total of just 4,642 MW). By contrast, the total power generation capacity of the NIPP plants is targeted to increase from 1,266 MW in April 2011 to 4,775 MW by December 2013. And the total power generation capacity from IPPs is targeted to increase from its current level of circa 1,500 MW to nearly 5,000 MW by December 2013.

Thus, in total, as shown in the matrices displayed in Tables 1 and 2 above, the government's medium term expectation is that just over 14,000 MW of power generation capacity will be available by December 2013.

To underscore the urgency with which the NIPP projects need to be completed, the Vice President has taken personal responsibility for addressing the issues that had constituted road blocks to the completion of these projects. He holds regular meetings with the contractors to better understand their issues and he pulls together the relevant parties involved so that problems can be speedily resolved.

However, given that a large component of the total expected increase in power generation capacity (by December 2013) is expected to come from IPPs, it is important to explain the strategy by which the Government expects to trigger the requisite increase in private sector investment.

The Federal Government is currently engaging companies that have installed capacities, either for manufacturing or as IPPs (including the international oil companies), to encourage them to expand their power production capacities and sell electricity to the national grid. Of particular importance are companies that not only have power generation capacities installed within their facilities, but also possess the requisite gas supply and power evacuation infrastructures. Given the right commercial incentives, these companies can be persuaded to use their capacity to provide additional power to the grid within a very short space of time.

The Government has also had discussions with a second category of IPP, namely those who possess a generation licence but have been unable to make significant progress in the development of their projects through the inability of PHCN to sign bankable PPAs. The Government is doing all that is necessary to prepare those who are ready in this category to sign PPAs before the end of this year.

Finally, the Government is also talking to IPPs with strong track records and credible development plans who have yet to secure a licence but who expect to do so before the end of the year.

In order to purchase power from these entities, the Federal Government – in line with EPSR Act 2005 – is in the process of setting up a bulk purchaser to purchase power and sell to the Distribution companies. This bulk purchaser will be provided with credit enhancement through the Ministry of Finance. This government entity has already been incorporated by BPE as the Nigerian Bulk Electricity Trading Plc (NBET). NBET will be licensed by the electricity sector regulator, NERC and will be the one to sign the PPAs with the private sector generation companies. The Federal Government expects that the draft power purchase agreements (PPAs) prepared by NERC will be reviewed and ready for signing within a month.

In each case, the Federal Government will not provide any upfront funding for these generation projects. The Government's assistance will be limited to the provision of credit enhancement to NBET to enable it to sign power purchase agreements, the payments under which will only commence at such point as an IPP has actually been financed and constructed and the generating units are actually working, available, and adequately supplied with the requisite feedstock.

It is also important to emphasise that NBET will play this "middle man" role *only for an interim period*, until such time as the distribution companies become credit worthy and subsequently buy electricity directly from the power producers on a bilateral basis. This could be for a period of five years or however long it will take the last distribution company to achieve credit-worthy status.

3.3 The Longer Term Targets

Although the Government is determined that the vast majority of all new power plants should be financed and built by the private sector, it also acknowledges that there is a case for some limited involvement by the FGN in the financing of renewable forms of power generation e.g. hydro (or other renewables) and in stimulating production of power from coal. However, it also acknowledges that the support for such power generation technologies should, where possible, be in the form of differential wholesale tariffs rather than direct capital injections by the FGN.

Notwithstanding the policy objective described above, the Federal Government is completing pre-existing plans that will lead to commencement of construction of the Mambilla Power plant which by itself will have an installed capacity of 2,600MW. Similarly, plans for Zungeru, with a capacity of 700MW are in process and the Government is examining plans to expand the Gurara Hydro power plant (which currently has 30MW installed) to a capacity of 300 MW. These projects could take up to 6 years to complete.

4.0 Transmission

4.1 The Short Term Targets

As at July 2010, the transmission network was capable of evacuating and transmitting just over 5,000 MW of power. This was sufficient to ensure the evacuation of all the available power generation capacity.

By April 2011, the actual available power generation capacity is targeted to reach circa 7,000 MW. However, the *annual average generation* is always lower than the *actual generation capacity* (because the water flow at the hydro plants limits the available annual average to 950 MW; whilst at the thermal plants, the impact of temporary equipment failures and the need for routine maintenance means that the capacity factor – even for brand new plants – will rarely exceed 85%).

Thus, although the total actual generating capacity is targeted to increase from 4,612 MW to 7,033 MW by April 2011, the more meaningful set of figures (from a transmission planning perspective) is the fact that the increase in the annual average generation is targeted to increase from 3,825 MW in July 2010 to circa 5,755 MW in April 2011.

To ensure that this increase in generating capacity is not left stranded for lack of evacuation capacity, there would be a need for a 30% increase in the "true deliverable" transformation capacity of the country's 330kV network between July 2010 and April 2011 above its current limit of circa 4,500 MW equivalent.

In practice, however, it is highly unlikely that an increase of this magnitude will be realisable by April 2011. On the contrary, the Government's projected targets for April 2011 are that the "true deliverable" transformation capacity will rise by just over 10% to about 5,000 MW equivalent (even though the total nominal 330kV transformation capacity is projected to rise to 5,995 MW equivalent).

Note on the calculation of transformation capacity:

As shown in Tables 1 and 2 above, the total transformation capacity of the 330kV network was 5,155 MW equivalent in July 2010. However, given the imbalance between the distribution of transformers around the country and the distribution of required customer loads, it is inevitable that some transformers will be fully loaded whilst other are lightly loaded.

Moreover the nominal transformer capacity includes transformers that are on long term outage for various reasons that include the requirement for major repair or complete replacement because they have been inappropriately configured.

Hence, the numerical sum of transformer capacities indicated in Tables 1 and 2 actually represents a higher figure than the "true deliverable" transformation capacity, which was circa 4,500 MW equivalent as at July 2010.

4.2 The medium to long term targets

As noted above, even in the short term (i.e. by April 2011) the current projection is that the generation capacity will outstrip the available transformation capacity. Moreover, even with the completion of the extant (and already budgeted) PHCN and NIPP transmission projects, the gap between generation capacity and the capacity of the grid is expected to widen considerably over the coming three years.

For example, as shown in Tables 1 and 2 above, actual generation capacity by December 2011 is targeted to reach 9,767 MW which translates into an available annual average generating capacity of just over 7,900 MW. By contrast, the total nominal transformation capacity of the country's 330kV network is not expected to exceed circa 6,500 MW equivalent by December 2011.

Moreover, although the total nominal transformation capacity is projected to increase to 8,653 MW equivalent[4] by December 2013, the gap between generation capacity and transmission capacity will have grown still further during the intervening two years. This is because the fruits of the urgently needed *new* investments in the transmission network will lag the medium term increase in power generation capacity by at least one or two years.

It is all the more imperative, therefore, that these new investments are pushed forward as rapidly as possible. To that end, the Federal Government plans to build a new super transmission network which will enable the grid to wheel power up to the requirements that will meet Nigeria's power needs for Vision 20:2020. Amongst other things, this supergrid will help to evacuate power from the proposed Mambilla hydro power plant. The procurement

4 This increase will take place largely as a consequence of the completion of outstanding PHCN and NIPP projects.

of designers for this network will shortly commence.

Alongside the work on the supergrid, the management contractor will also be responsible for significant investments in the reliability and stability of the network infrastructure, through the provision of grid integrity and reliability systems; and power quality and stability systems. These undertakings will further give impetus to the decision to domicile as much power as possible to local grids where the power is produced.

It is also important to note that a degree of private sector discipline will apply to both the management and financing of these projects. More particularly, given the Government's commitment to the introduction of a genuinely cost-reflective tariff, a substantial portion of the requisite capital investments will be recovered through the revenues generated by the electricity market itself i.e. by the transmission use of system charges paid to TCN.

5.0 Distribution

As noted in Chapter 1 of this Roadmap, Government has decided to follow through on the EPSR Act 2005 and privatise all the distribution companies in order to induce efficiency and professional management in a sector that has, hitherto, been an easy source of leakage. At the end of the day, the financial viability and operational effectiveness of the entire supply chain rests upon the revenues collected by the distribution companies. And it is the Government's opinion that the fastest way to restore the industry to financial and operational health is to subject each of the 11 distribution companies to the full discipline of the private sector.

It is important to state, however, that in the post-privatisation period (when the private sector has assumed responsibility for the expansion and improvement of the distribution systems in Nigeria), the Nigerian Electricity Regulatory Commission will provide strict oversight of the distribution companies. In addition, the privatisation strategy which has been developed by the Bureau of Public Enterprises envisages that both the Federal Government and State Governments will be allowed to maintain small, minority, equity positions in some of the newly privatised companies until such time as these companies are stable and the various Governments can divest themselves by selling their shares to the Nigerian public.

However, the Government recognises that electricity customers are keen to see immediate improvements in service delivery and will not be satisfied with the mere promise that these improvements will materialise “after privatisation”.

To that end, in the run-up to the privatisation of the distribution companies, the Federal Government will be working hard to enhance the operational and commercial performance of the distribution companies. Not only will these efforts improve the quality of service

experienced by electricity customers, they will also enhance the value of the distribution companies and the prices which the government is able to realise upon their divestiture.

5.1 The Short Term Operational Targets

Over the past two months, the Presidential Task Force on Power has been working with the staff of the various distribution companies to determine (within a 10% margin of error) the capabilities of the various segments of the distribution network. This deceptively modest-seeming exercise (which is nonetheless unprecedented in the history of the Nigerian Electricity Supply Industry) has allowed the Government to focus its project planning and budgeting on those activities which are likely to generate the greatest short-term (i.e. pre-privatisation) improvements in service delivery.

As indicated in Table 2, the results of this analysis indicate that the total peak lead on the entire distribution network is just over 9,057 MW, while the current total capability is 5,758 MW, giving a total distribution gap of more than 3,000 MW.

Faced with the gaps outlined in Table 2 above, the Government's short term targets are as follows:

- To close circa 30% of the identified gaps by April 2011. This will increase total distribution capability from 5,758 MW equivalent to circa 6,900 MW equivalent. However, it is important to note that despite this increase in capacity, the total amount of electricity delivered to customers cannot exceed the "true deliverable" transformation capacity of the transmission network, which (as described in the previous section) is unlikely to exceed 5,000 MW equivalent by April 2011.
- To reduce aggregate distribution losses (technical and non-technical) by at least 5% by April 2011;
- To secure a noticeable increase in the average number of hours of electricity supplied to consumers by at least 10% by April 2011.

To a large extent, the achievement of these targets will be made possible through the completion of the on-going NIPP and PHCN projects, the budgets for which have already been provided. Nevertheless, there are a number of new projects which need to be funded in order to secure the delivery of the Government's short term targets and these are currently being identified by the Presidential Task Force on Power.

5.2 The Short Term Commercial Targets

At present, the average monthly revenue collection capability of the Nigerian Electricity Market is Ten Billion Naira (₦10bn), while the average basic monthly obligation of the Market is Fifteen Billion Naira (₦15bn). This leaves a monthly revenue gap of Five Billion Naira (₦5bn).

This revenue gap arises due to low collection efficiency of the Discos and the non-payment of the MYTO subsidies. In the short term (i.e. the period up to April 2011), the Government aims to increase the monthly revenue collection of the industry to about ₦17.6bn which is slightly higher than the current basic obligations of the industry.

It should be noted however, that as generation improves, monthly obligations increase correspondingly. Nevertheless, appreciable reductions in the revenue gap can be obtained through reductions in technical and non-technical losses, the introduction of better customer care service programmes, and improvements in collection efficiency. With regard to the latter, the Government's target is to increase the total collection efficiency of the industry by at least 5% by April 2011.

5.3 Performance Incentives for the Distribution Companies in the Run-up to Privatisation

The Presidential Action Committee on Power is determined that the performance targets (both operational and commercial) are reached within the time periods outlined above. To that end, the Presidential Task Force on Power has developed an incentive scheme for the staff of the distribution companies which will offer rewards for good performance and sanctions for poor performance.

The key performance indicators for this scheme, include:

- Naira yield of energy delivered;
- Percentage growth in customer population;
- Percentage growth in customer response to bills;
- Percentage growth in customer metering;
- Percentage reduction in the number and frequency of transformer loss in circuit; and
- Percentage reduction in outstanding debt, and debt growth rate.

Performance will be measured and evaluated monthly and reports will be presented to the Presidential Task Force (on a monthly basis) with recommendations for rewards and sanctions.

5.4 Medium to Long-Term Challenges

Although the Government intends that full responsibility for the operational effectiveness of the distribution companies should shift in 2011 from the Federal Government to the private sector, the actions and decisions of the Federal Government will continue to exert a significant impact on their commercial effectiveness. More specifically, the Government acknowledges that its policy decisions on electricity tariffs will have a direct and critical effect on the financial viability of the privatised distribution companies.

To that end, as described in Chapter 1 of this Roadmap, the Government is committed to the introduction of a genuinely cost-reflective tariff which will secure the financial viability not just of the distribution companies but of the sector as a whole.

APPENDIX A

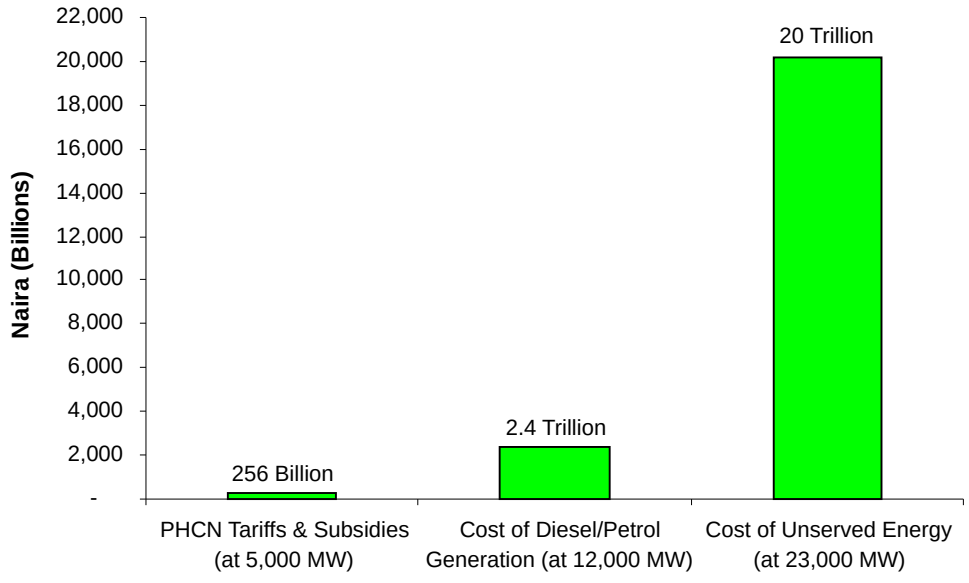
The Cost of Unserved Energy

A typical – and easily understood – method of estimating the cost of unserved energy (CUE) is to base the CUE estimates on the ratio of GDP to electricity supply of a "role model" economy whose current GDP the aspirant country could reasonably be expected to reach within the next 10 years provided it had a sufficient electricity supply.

In the case of Nigeria, the obvious role model economy is South Africa whose current actual generating capacity (at 40,000 MW) is exactly the number which Nigeria aspires to obtain by 2020. Dividing the Rand value of South Africa's GDP at market prices by the KWh of electricity sold by Eskom results in a CUE of just over 10 Rand per KWh. At an exchange rate of 20 Naira/Rand, that converts to a CUE for Nigeria of 200 Naira per KWh.

Given this CUE, the chart below illustrates the cost in terms of lost GDP per annum that the country will suffer in the "worst case" scenario (i.e. a scenario where the grid-based generation and transmission capacity remains at the levels exhibited over the previous two decades i.e. less than 5,000 MW).

The annual "opportunity cost" paid by 2020 if Nigeria fails to introduce a regulatory regime which allows for the financial viability of the electricity sector



Assumptions:

1. If prices continue to remain below "financially viable" levels, the actual generating capacity of PHCN/NIPP and any successor power plants will never exceed 5,000 MW.
2. The capacity of diesel and petrol generators will grow from circa 6,000 MW to 12,000 MW.
3. The unit price of electricity provided by diesel and petrol generators will remain at circa 45 Naira per KWh.
4. The cost of unserved energy is 200 Naira per KWh.

In this worst case, the gap between the Nigeria's 2020 power generation and transmission target (which is the figure currently enjoyed by South Africa despite its much smaller population) and the total amount of capacity (including diesel and petrol generators) will be circa 23,000 MW (assuming petrol and diesel generation has doubled from its current estimate of 6,000 MW).

At a CUE of N200/kWh that converts into a cost (in terms of lost GDP) of 20 trillion Naira in real terms (circa USD$ 130bn) every year (or six times annual Federal consolidated revenues).

The same figures can also be used to calculate the cost of failing to provide FGN credit enhancement to the bulk purchaser and thereby *delaying* the urgently needed flow of private investment into power generation.

In the example shown in Section 2.3 of this chapter, we provided an estimate of the amount of GDP growth that would be lost if FGN credit enhancement is not provided to the bulk purchaser over the next 3 years to support PPAs for a cumulative sum of 9,000 MW (i.e. 3,000 MW per annum). If this credit enhancement is not provided, it is our expectation that the development and construction of these plants could be delayed for 4 years (a pragmatic estimate of the time it might take for the distribution companies to become commercially viable and credit-worthy). Using the figures shown in the Chart above, the cumulative cost of delaying (by 4 years or more) the construction of 9,000 MW would be at least USD$ 200 billion (i.e. 9/23 * 130 * 4).

APPENDIX B

Additional Notes

The chapters in this summary document are extracted from the full, unabridged, Roadmap for Power Sector Reform, which can be downloaded from the website of the Presidential Task Force on Power (www.nigeriapowerreform.org/downloads).

The full version of the Roadmap contains four additional chapters that offer more detailed information on the targets currently being pursued by the Federal Government in all four areas of the electricity supply chain, viz: Fuel-to-Power, Generation, Transmission, and Distribution.