Federal Republic of Nigeria

National Integrated Infrastructure Master Plan





National Planning Commission

The Presidency

March 2015

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FOREWORD

The Nigerian economy has recorded strong growth in the last decade due partly to sustained reforms and integration into the global economy. As it is widely acknowledged, the country is on the right path to sustainable growth. This strong growth is making our economy more prosperous and globally competitive as we work assiduously to translate it into improved living condition for the citizenry.

However, our weak infrastructure base limits the extent to what to which we can take due advantage of its potentials, increase opportunities for job and wealth creation. With our rapidly growing population and urbanization, the demand for infrastructural facilities is outpacing supply. This state of affairs necessitated the development of the National Integrated Infrastructure Master Plan (NIIMP), which is a policy document for accelerated infrastructure development. The NIIMP as a strategic document, would also guide infrastructure development, add value to the National Economy and enhance public-private sector participation in infrastructural development. This is consistent with the focus of this Administration and a strong indication of our commitment to transform the Nigerian economy.

The NIIMP sets out our aspiration of raising Nigeria's infrastructure stock from the current 20-25per cent of the GDP to at least 70 per cent by 2043 and ensuring delivery of quality and affordable infrastructural services. It provides good estimates of investment requirements for actualizing this aspiration. In line with the global trend, governments at all levels are expected to upscale investment across all infrastructure asset classes as well as regions and provide an enabling environment for private sector participation. The NIIMP identifies measures to be taken in the short to medium term in this regard.

I commend the National Planning Commission for developing this policy document. I urge all the stakeholders associated with its implementation to actively work with the Commission to ensure the NIIMP has maximum impact on the economy and people.

I am, therefore, privileged to present the NIIMP to the Nigerian public and, indeed, the world. I believe that its implementation over the next 30 years will transform our economy and drastically change the fortunes of our citizens. I have no doubt that with the NIIMP, the country is on a predictable and irreversible path to collective prosperity.

Dr Goodluck Ebele Jonathan, *GCFR*
President, Federal Republic of Nigeria

PREFACE

The National Integrated Infrastructure Master Plan (NIIMP) is Nigeria's blue-print for boosting and modernizing the nation's stock of Infrastructure, over the next 30 years.

The National Planning Commission (NPC) in 2012, initiated the crafting of a long-term Infrastructure Development Plan, that will engender sustainable economic growth and development, in furtherance of Mr. President's Transformation Agenda. The catalytic role of modern infrastructure in national development cannot be overemphasized. The development of the NIIMP was anchored on the need to harmonise the various sectoral infrastructure Development plans into a single, comprehensive and coherent document taking into consideration inter-sectoral linkages.

The NIIMP, therefore, is set to liberate the economy from the shackles of debilitating infrastructure bottleneck, and place it on a solid growth path. It provides the framework that will guide interventions, investments, as well as budgetary allocations to the sector in the next 30 years.

The NIIMP has taken stock of the existing infrastructure, and future stock requirements, including total resource requirements, across key sectors of the economy and has identified critical enablers for the promotion of private sector investment. It, invariably, presents a strong platform for Public and Private sector constructive engagement and Donor support for boosting infrastructural development and empowering Nigerians.

The NIIMP provides the strategies, targets and priority projects, as well as total investment outlay for the first five years and scheduled timelines for deliverables. It also, highlights financing options for funding infrastructure investments in Nigeria.

There is no doubt that the estimated resource requirement for NIIMP's implementation is enormous. We are not unmindful of the challenges that lay ahead. Looking forward, we are optimistic that, with the various bankable projects identified under the NIIMP and the increasing international and domestic investors' confidence in the Nigerian economy, as evident from the in-flow of FDI in the past decade, the NIIMP objectives are realizable.

I must acknowledge that a lot of work went into crafting of this document. The wide consultative process and participatory approach adopted in the articulation of the NIIMP will ensure that Nigerians own and participate actively in the implementation.

I thank all those who contributed to the successful development of this policy document, particularly the various Technical Working Groups, Representatives of the Organized Private Sector - the Business Support Group (BSG) and Government officials for their commitment and hard-work. I also acknowledge the effort of the Editorial Committee, who [painstakingly worked to ensure the final document is of impeccable quality.

The NPC is committed to coordinating implementation of the NIIMP and the provision of necessary support to stakeholders to ensure that the noble objective of the document are effectively realised.

Dr. Abubakar O. Sulaiman
Honourable Minister/Deputy Chairman (National Planning Commission)

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ACRONYMS

AfDB	-	African Development Bank
AICD	-	Africa Infrastructure Country Diagnostic
AIDS	-	Acquired Immune Deficiency Syndrome
ANOCA	-	Association of National Olympic Committees
BLOS	-	Beyond Line of Site
bpd	-	barrels per day
BPE	-	Bureau of Public Enterprise
BPO	-	Business Process Outsourcing
BRICS	-	Brazil, Russia, India, China and South Africa
BTS	-	Base Tower Stations
BUDFOW	-	Business Development Fund for Women
CAGR	-	Compounded Annual Growth Rate
CBN	-	Central Bank of Nigeria
DDC	-	Direct Data Capture
DICON	-	Defence Industry Corporation of Nigeria
DMO	-	Debt Management Office
ECCDE	-	Early Childhood Care Development and Education
EMIT	-	Economic Management Implementation Team
EMT	-	Economic Management Team
FCT	-	Federal Capital Territory
FDI	-	Foreign Direct Investment
FEC	-	Federal Executive Council
FERMA	-	Federal Roads Maintenance Agency
FGN	-	Federal Government of Nigeria
FHA	-	Federal Housing Authority
FME	-	Federal Ministry of Education
FRSC	-	Federal Road Safety Corps
G2B	-	Government to Business
G2C	-	Government to Citizens
G2G	-	Government to Government
GDP	-	Gross Domestic Product
GPS	-	Global Positioning System
GW	-	Gigawatts
HIV	-	Human Immundeficiency Virus
HRH	-	Human Resources for Health
ICRC	-	Infrastructure Concession Regulatory Commission
ICT	-	Information and Communication Technology
IDPs	-	International Development Partners
ISR	-	Intelligence Surveillance and Reconnaissance
Kbps	-	Kilobytes per second
Km	-	Kilometres
KPI	-	Key Performance Indicator
KV	-	Kilovolts
KWh	-	Kilowatt hours
LGA	-	Local Government Area
M&E	-	Monitoring and Evaluation
Mbpd	-	Million barrels per day
Mcfpd	-	Million cubic feet per day
MDAs	-	Ministries, Departments and Agencies
MDGs	-	Millennium Development Goals
MNCs	-	Multinational Corporations
MTEF	-	Medium Term Expenditure Framework
MVA	-	Megavolt amperes
MW	-	Megawatts
NALAPS	-	Nigerian Army Low Altitude Platform Stations
NAMA	-	Nigerian Airspace Management Agency
NARSDA	-	National Space Research and Development Agency
NASOC	-	Establishing a Special Operations Command
NATRAC	-	Nigerian Army Training Centre
NCE	-	Nigeria Certificate in Education
NDPHC	-	Niger Delta Power Holding Company
NEC	-	National Economic Council
NELEX	-	Nigerian Labour Exchange
NEMA	-	National Emergency Management Agency
NGOs	-	Non Governmental Organisations
NIGCOMSAT	-	Nigeria Communication Satellite
NIIMP	-	National Integrated Infrastructure Master Plan
NIP	-	National Implementation Plan

NIPOST	-	Nigeria Postal Service
NIPP	-	National Integrated Power Projects
NIS	-	Nigeria Immigration Service
NNPC	-	Nigerian National Petroleum Corporation
NOSDRA	-	Nigeria Oil Spill Detection and Response Agency
NPC	-	National Planning Commission
NRC	-	Nigeria Railway Corporation
NSCDC	-	Nigerian Security and Civil Defence Corporation
NV 20: 2020	-	Nigeria Vision 20:2020
NYSC	-	National Youth Service Corps
PHC	-	Primary Healthcare Centre
PHCN	-	Power Holding Company of Nigeria
PIB	-	Petroleum Industry Bill
PMS	-	Premium Motor Spirit
PPP	-	Public-Private Partnership
R&D	-	Research and Development
RORO	-	Roll-on/Roll-off
SMEs	-	Small and Medium Scale Enterprises
TB	-	Tuberculosis
Tbps	-	Terabytes per second
TOD	-	Transit-Oriented Development
TRACON	-	Total Radar Coverage of Nigerian Airspace
TWG	-	Technical Working Group
USD	-	United State Dollar
USV	-	Unmanned aerial ground surface vehicle
UTC	-	Urban Traffic Control

Executive Summary

EXECUTIVE SUMMARY

The National Integrated Infrastructure Master Plan (NIIMP) is Nigeria's blue print for accelerated infrastructure development. It provides the roadmap for building world class infrastructure required to grow the economy, enhance quality of life of the citizenry, create jobs and improve Nigeria's global competitiveness. The Plan takes stock of existing infrastructure and identifies the required investments to bring infrastructure in line with the country's growth aspirations. It also establishes sector targets, priority programmes and critical enablers for effective implementation.

Nigeria's core infrastructure stock is estimated at only 20-25per cent of GDP in 2013. Based on the rebased GDP figures and the country's economic growth aspirations, it is estimated that a total investment of about USD 3.0 trillion will be required over the next 30 years to build and maintain infrastructure for Nigeria. In the preferred growth path ('the accelerated path'), Nigeria would need to increase investments in infrastructure from the current USD 15.9 billion annually in 2014 and USD 51.1 billion in 2018, averaging USD 33 billion annually (5.4per cent of GDP) for the five-year period 2014–18. Thereafter, the investment rate would further increase to 7.9 per cent of GDP by the period 2019–23, and remain above or close to 7 per cent of GDP for the rest of the 30-year plan until 2043.

Based on sector growth strategies, outcome targets, and international benchmarks, the total investment of about USD 3.0 trillion over 2014–43 would comprise investments in:

Energy – USD 1,000 billion, 33per cent of total;
Transport – USD 775 billion, 25per cent of total;
Agriculture, Water and Mining – USD 400 billion, 13per cent of total;
Housing and Regional Development – USD 350 billion, 11per cent of total;
ICT – USD 325 billion, 11per cent of total;
Social Infrastructure – USD 150 billion, 5per cent of total;
Vital Registration and Security – USD 50 billion, 2per cent of total.

All these amounts are at constant 2010 prices.

In the first five years of the Plan, investments in Energy, Transport, Social Infrastructure, and Housing will be accorded priority due to their current relative level of under-investment. It is expected that the investments will grow over the next five years at an annual growth rate of 50 per cent for Energy, 39 per cent for Transport, 32 per cent for Social Infrastructure and 23 per cent for Housing. Investments in the remaining sectors will also grow, but at lower growth rates of 6-16 per cent over the next five years. In other words, the investments required for the first five years of the Plan would not be less than USD 60 billion in Energy; USD 51 billion in Transport; USD 22 billion in ICT; USD 18 billion in Agriculture, Water and Mining; USD 7 billion in Social Infrastructure; USD 5 billion in Housing; and USD 2.5 billion in Vital Registration and Security (at constant 2010 prices).

In addition, the NIIMP provides the framework for investment allocation across the six regions in the country. The

investments would be in accordance with socio-economic priorities of each region. Based on assessment, the investment requirements across the regions are as follows: North West: USD 481 billion, North East: USD 316 billion, North Central: USD 482 billion, South West: USD 717 billion, South East: USD 419 billion, South South: USD 585 billion.

The priority project portfolios identified include 'quick wins' that would receive urgent attention over the first five years of the Plan. To guide MDAs and States in the prioritisation of capital projects, the NIIMP provides investment prioritisation framework.

Energy: Priority would be given to generation capacity and expansion of transmission infrastructure, as well as construction of supporting gas infrastructure. Increased refining capacity to meet national demand for petroleum products is to be accorded high priority.

Transport: Close to 50 per cent of investments would be directed at the Roads sub-sector, in order to refurbish cross-national highways and expand the regional road network and linkages to other modes of transportation. Investments are also required in rehabilitation of major rail links, renovation/upgrading of main airports and aviation facilities and systems, inland waterways, and urban transportation in major cities.

ICT: Expansion of mobile network capacity and the broadband fiber optic network would be the priority.

Water, Agriculture and Mining: Priority would be given to investments in water supply and irrigation. In addition, development of the agriculture sector will require investments in staple crop processing zones, agro-industrial parks, as well as agricultural processing facilities. In the Mining sector, investments would be targeted at reviving the basic mining infrastructure.

Housing: Priority would be placed on increasing the number of housing units in order to close the current and projected housing deficit estimated at 17 million housing units.

Social Infrastructure: Priority investments would be in construction of facilities for education, hospitals, women and youth development, and sports.

Vital Registration and Security: Priority would be accorded to investments in national vital registration system and construction and rehabilitation of facilities for all security institutions.

Given the anticipated increased role of the private sector in infrastructure development, the NIIMP identifies potential sources of finance for the required infrastructural investments and enablers. Out of the total investment requirement of about USD 3.0 trillion over the next 30 years, USD 166 billion will be required during 2014–18, i.e., an average of USD 33.2 billion annually.

The share of the public sector (Federal and States) is 52 per cent while private sector accounts for the remaining 48 per cent. Four options have been identified to finance the public sector required

investment:

1. Government budgets (Federal and State) would finance up to USD 31 billion of infrastructure investments during 2014–18;

2. Government debt could finance up to USD 76 billion;

3. Other government-controlled sources such as the Sovereign Wealth Fund, or Pension Funds, would provide a further USD 13 billion of financing;

4. PPPs would be developed to engage a further USD 15-25 billion in participation from the private sector. Increased private sector participation would require a supporting environment with stable and transparent government policies, rules and regulations, fiscal and monetary incentives to investors, long-term financing mechanisms, and strengthened PPP management capabilities.

Finally, the NIIMP outlines the required short to medium term measures needed to ensure effective implementation of the NIIMP.

The immediate changes required include:

1. Strengthening the legal framework to allow for private sector participation in infrastructure development;

2. Creating an Infrastructure Delivery Coordinating Unit (IDCU) within the National Planning Commission (NPC) to take responsibility for coordinating the required activities, monitoring progress and managing the process to overcome issues;

3. Ensuring financing for priority projects;

4. Launching a broad communication strategy to reach all stakeholders.

Medium-term changes include:

1. Optimisation of the end-to-end infrastructure governance model;

2. Promotion of private sector alignment and support;

3. Development of large-scale training programmes to bridge the capability gaps in building, maintaining and operating the NIIMP infrastructure;

4. Strengthening engineering infrastructure and managing the process

The States are expected to develop State Integrated Infrastructure Master Plans (SIIMPs) based on State priorities in line with the NIIMP.

INTRODUCTION

1. INTRODUCTION

Oil Rig, Rivers State

The National Integrated Infrastructure Master Plan (NIIMP) provides the roadmap for building a world class infrastructure that will guarantee sustainable economic growth and development. It would enable the nation take advantage of the vast opportunities in the domestic and global economies to enhance the nation's competitiveness and improve the quality of life of the citizenry. It provides an integrated view of infrastructure development in Nigeria, with clear linkages across the key sectors. The NIIMP also identifies and elaborates on enablers for successful implementation.

- The objectives of the NIIMP are to:
- Adopt a coordinated approach to infrastructure development;
- Strengthen the linkages between components in the infrastructure sector and the national economy;
- Preview, upgrade and harmonise existing sub-sector master plans and strategies in the infrastructure sector, to ensure consistency with national development aspirations;
- Prioritise projects and programmes for implementation in the short to medium term;
- Promote private sector participation in infrastructure development;
- Strengthen the policy, legal and institutional frameworks for effective infrastructure development; and
- Enhance the performance and efficiency of the economy.

The NIIMP was developed through an elaborate and inclusive process including the work of eleven Technical Working Groups (TWGs) and Business Support

Group (BSG), which provided private sector perspective and expectations. In addition, the views of International

Road Rehabilitation work in progress

Development Partners (IDPs) were equally harvested. The outcome of this process was validated at national and sub-national levels.

LINKAGE TO NIGERIA'S VISION 20: 2020 AND TRANSFORMATION AGENDA

Nigeria's Vision (NV) 20: 2020 is a long-term plan implemented using the medium term National Implementation Plans (NIPs) for stimulating Nigeria's economic growth and launching the country onto a path of sustained and rapid socio-economic development. The Vision aims to position Nigeria among the top 20 economies with a GDP of USD 900 billion and per capita of USD 4,000 per annum by 2020.

The 1st NIP for the period 2010–2013 articulates projects and programmes for the key sectors of the Nigerian economy and the critical policy priorities. It focuses on the development of physical infrastructure, human capital development, regional development and knowledge-based economy, among other areas. The investment outlay for the 1st NIP is N32 trillion, of which the Federal Government, sub-national governments and the private sector will contribute N10 trillion, N9 trillion and N13 trillion respectively.

The Transformation Agenda was anchored on the pillars and specific targets of NV 20: 2020. It is the medium-term economic transformation agenda for realising the Federal Government's economic growth agenda for 2011–2015. The Transformation Agenda focuses on four critical areas: physical infrastructure, human capital development, governance and the real sector.

Inspired and guided by the national aspirations and fundamentals of the NV 20: 2020 and the Transformation Agenda, the NIIMP is a long-term plan that specifically focuses on bridging the infrastructure gap that impedes the goals that the 1st NIP and Transformation Agenda seek to achieve, and expanding infrastructure to meet the needs of the economy. It provides a longer term perspective on infrastructure planning for the Federal and Sub-National Governments together with the private sector. The projects contained in the 1st NIP and the Transformation Agenda were rationalised and aligned with longer-term goals and targets for infrastructure development. This gave rise to priority projects for implementation during the

first five years (2014–2018) of the NIIMP.

The NIIMP covers the asset classes commonly referred to as 'core infrastructure' (Transport, Energy, ICT and Water) and others (Agriculture, Mining, Social Infrastructure, Housing, Vital Registration and Security) called 'non-core infrastructure'. In this plan, infrastructure refers to fixed assets with a long lifetime. It does not include equipment, personnel, etc. For each asset class, a definition of what are considered in scope and out of scope has been developed for the plan *[Figure 1.1]*.

TABLE 1.1: CONCEPT OF INFRASTRUCTURE

	In scope (examples)	Out of scope (examples)
Transport	- Roads, Rail, Ports and airports: includes investment in building the asset (e.g., construction equipment cost)	- Asset usage equipment (e.g., buses, cars, railway wagons, aircrafts, water ships)
Energy	- Generation, transmission and distribution (includes power equipment like BTG) - Refineries, oil and gas pipelines	- Generators
ICT	- Investment in telecom lines and transmission towers	- Equipment, including computers
Social Infrastructure	- Public utility buildings (schools, hospitals)	- Human capital (e.g., teachers, nurses, doctors)
Housing and Regional Development	- Low-income (social) housing	- Luxury housing
Security and Vital Registration	- Public utility buildings (police offices, barracks, fire stations)	- Asset usage equipment (e.g., police cars, tanks)
Agriculture, Water and Mining	- Water treatment plants, sanitation plants - Irrigation systems - Rail and waterway mining infrastructure	- Asset usage equipment (e.g., tractors, mining equipment)

SOURCE: NIIMP development team

Construction works at Kashimbila Dam in Taraba State.

STRUCTURE OF THE NIIMP DOCUMENT

The NIIMP consists of six parts [*Figure 1.1*]:

1. **The national vision that sets the overall direction for the master plan:** This section lays out the overall infrastructure stock required, linked to national objectives such as GDP growth. It also outlines the overall investments required in infrastructure over the next 30 years, and the expected financing required for these investments.

2. **Sector Strategies:** This is strategic focus for each NIIMP sector or asset class which spans: Transport, Energy, ICT, Agriculture, Water and Mining, Housing[1], Social Infrastructure and Vital Registration and Security. This section describes the current state of infrastructure at a detailed sector level, lays out the objectives of each sector and its infrastructure stock targets as well as concrete outcome targets. This section also lays out the required infrastructure investments for each sector over 5, 10 and 30year time horizons.

3. **Regional Strategies:** This part describes the current state and economic priorities of the regions and how these translate into infrastructure investment targets.

4. **Prioritised Project Portfolios:** This centres on the prioritised project portfolios that should receive extra focus over the next five years. A project prioritisation framework has been developed to rank projects on annual basis for inclusion in budgets.

1. The 'Housing and Regional Development' TWG included 2 subgroups, (i) Housing and (ii) Regional Development. The second group is focused on cross-sector regional infrastructure, and the strategies are included in regional/state perspective.

5. Financing Plan: It describes the options to finance the required infrastructure investments. This includes the capacity of the government to finance investments through current accounts or public debt. PPP is a potential framework to increase the share of private sector investments through creation of a supportive enabling environment.

6. Implementation Plan: This is about the actions required to successfully implement the master plan. This covers short-term and medium- term initiatives including, legal and regulatory changes; budget process changes; incentives and supporting environment for promoting private sector investment; requirements for ICT platforms to support information coordination, harmonisation and stock-keeping (including geo-positioning and satellite mapping of infrastructure); monitoring and evaluation processes to follow up on implementation progress.

FIGURE 1.1: STRUCTURE OF THE NIIMP

National Infrastructure Targets and Investments

2. NATIONAL INFRASTRUCTURE TARGETS AND INVESTMENTS

with a growth trajectory of 6%, Nigeria will ramp up infrastructures investments from the current 2% of GDP to an average of above 7%

■ *Federal Secretariat, Abuja*

2.1 GLOBAL BENCHMARKS FOR INFRASTRUCTURE STOCK

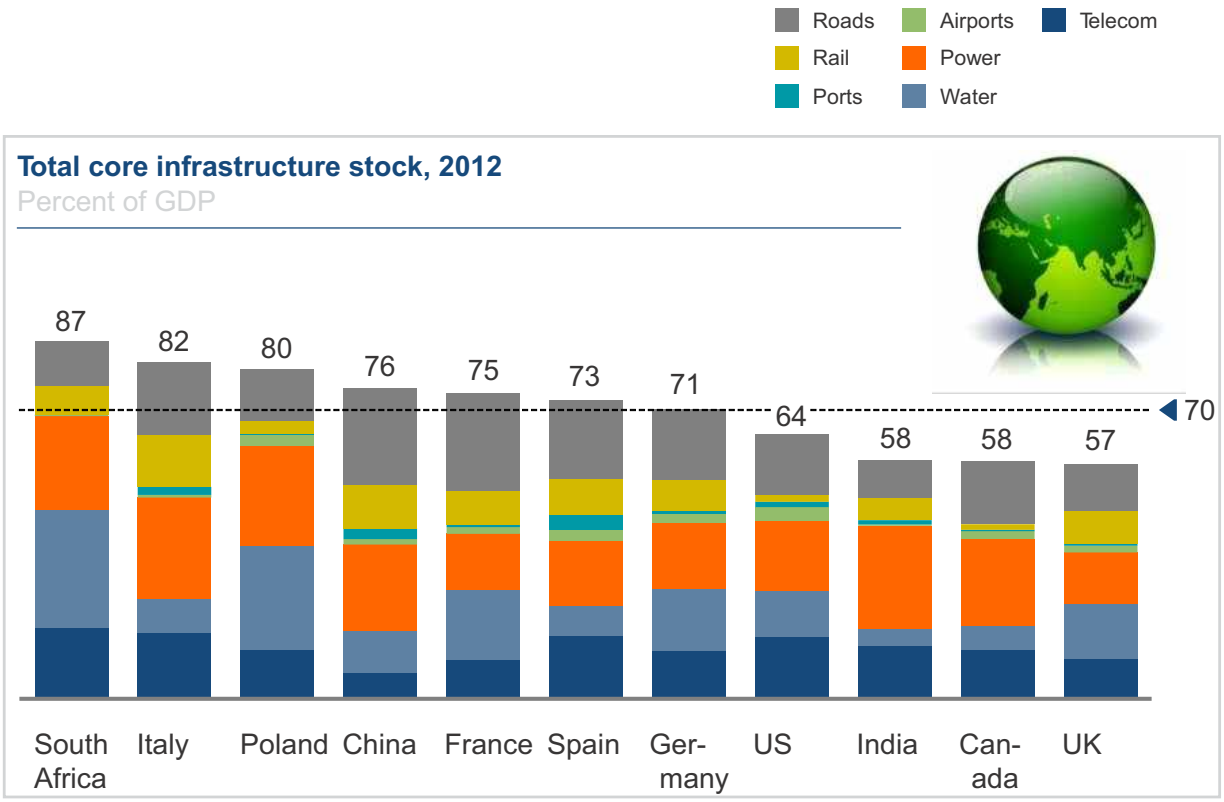
The backbone of any national economy is its stock of infrastructure. Sound transport networks and modern ports reduce transportation costs.

High-capacity telecommunication networks facilitate vast cum fast communication and efficient flow of information. Pipelines for oil and gas ensure constant energy supply and export, while ample generation capacity and functioning transmission and distribution networks secure disruption-free production of goods and provision of services. All these components of infrastructure also contribute significantly to the well-being of the population, the productivity of the workforce, and facilitate broader access to education and health services.

According to international benchmarks, more developed countries typically have 'core infrastructure' stock[1] (roads, rail, ports, airports, power, water, ICT) equal in value to about 70 per cent of GDP, with power and transportation infrastructure usually accounting for at least half of the total value [*Figure 2.1].*

1. Non-core infrastructure includes Agriculture, Mining, Housing, Social [1] Non nfrastructure, Vital Registration and Security

FIGURE 2.1: TOTAL CORE INFRASTRUCTURE STOCK FOR SELECTED COUNTRIES



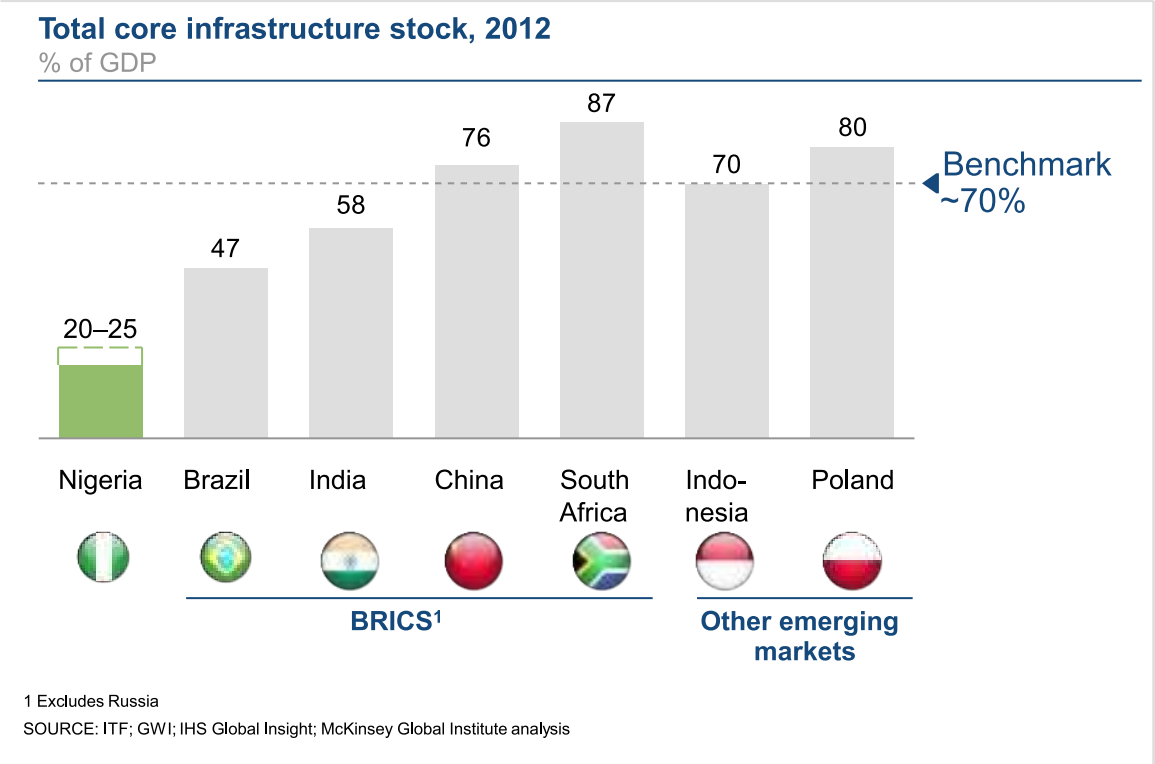
SOURCE: ITF; GWI; IHS Global Insight; McKinsey Global Institute analysis "Infrastructure Productivity: How to save $1 trillion a year"

2.2 NIGERIA'S CURRENT INFRASTRUCTURE STOCK AND INVESTMENT LEVELS

Building and maintaining sound national infrastructure comes at a high cost. However, these investments substantially and sustainably increase a country's competitive strength – especially if coming from a relatively low base. With economic performance becoming more and more closely tied to global competitiveness, building infrastructure that meets global standards has become a primary requirement for achieving ambitious growth targets.

In contrast to international benchmarks of 70 per cent, Nigeria's core infrastructure stock is estimated at only 20-25 per cent of GDP – the equivalent of less than USD 100 billion in 2012. This low value has been historically driven by low public and private spending on infrastructure [*Figure 2.2*].

FIGURE 2.2: NIGERIA' S CORE INFRASTRUCTURE STOCK COMPARED TO SELECTED COUNTRIES



1 Excludes Russia

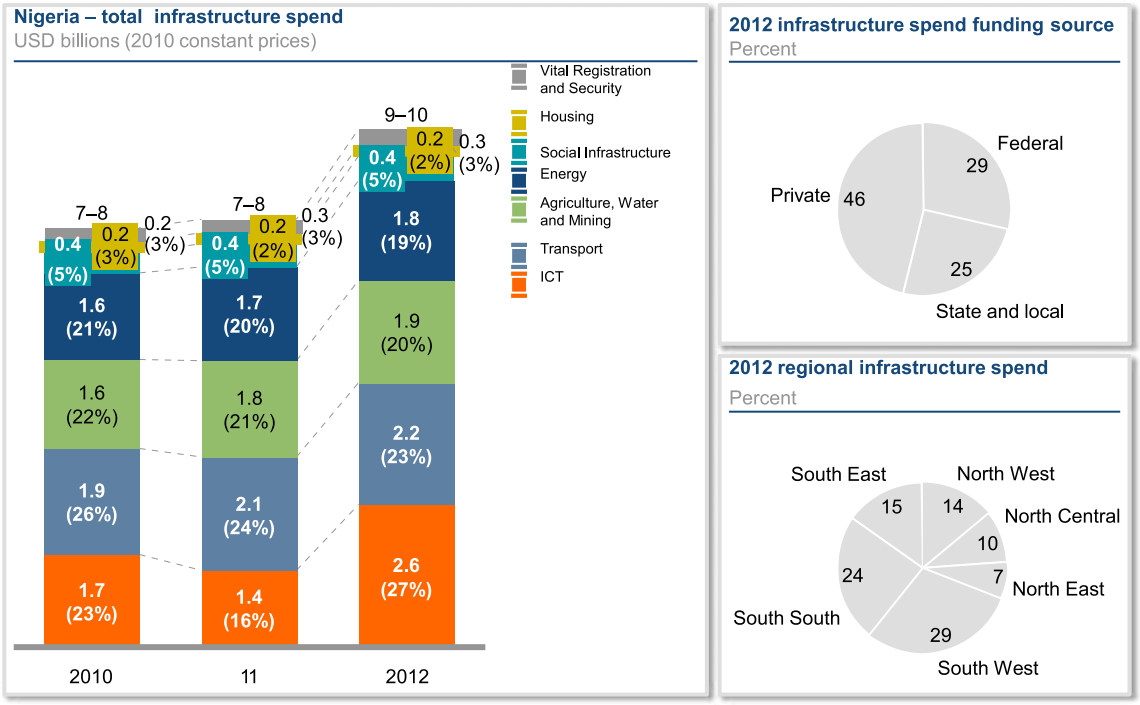
SOURCE: ITF; GWI; IHS Global Insight; McKinsey Global Institute analysis

Nigeria currently spends USD 10 billion per annum on infrastructure, of which about 50 per cent is funded by the private sector. The bulk of the spending is concentrated in ICT (28 per cent), transport (23 per cent), and energy (19 per cent). While the current spending on infrastructure is low, it has increased over the past three years [*Figure 2.3*].

Nigeria's infrastructure has long been a bottleneck for economic growth. It is underdeveloped compared to that of other fast-growing emerging countries. Road density in Nigeria, for example, is only about a fifth of that of India. The Nigerian population's access to sanitation and mobile telecommunications both compare unfavourably with Brazil and South Africa (Mobile penetration is about 50 per cent and access to sanitation is about 40 per cent of these countries').

Nigeria's five hospital beds per thousand people ratio is also lower than India's (at nine) and much lower than South Africa's 28 beds per thousand people.

FIGURE 2.3: OVERVIEW OF NIGERIA'S CURRENT EXPENDITURE ON INFRASTRUCTURE



SOURCE: NIP; AfDB; States infrastructure and Regional Development TWG; Governors Forum; NIIMP development team

The effect of weak infrastructure is most striking in the energy sector – Nigeria's per capita power consumption of 136 kWh per annum is less than 3 per cent of South Africa's 4,803 kWh [*Figure 2.4*].

TABLE 2.1: INFRASTRUCTURE STOCK: NIGERIA AND COMPARATOR COUNTRIES

SAMPLE METRICS

	Key metric	Benchmarks			
Transport	Km road per 100 square km	21	101	21	30
Energy	Consumption per capita (kWh)	136	498	2,384	4,803
ICT	Mobile phone penetration (Percent)	68	68	135	140
Social Infrastructure	Number of hospital beds per 100,000 people	5	9	24	28
Housing	Houses per 100 people	7	19	30	17
Vital Registration and Security	Number of policemen per 100,000 people	205	130	282	317
Agriculture, Water and Mining	Access to sanitation (Percent)	31	34	79	79
		Nigeria	India	Brazil	South Africa

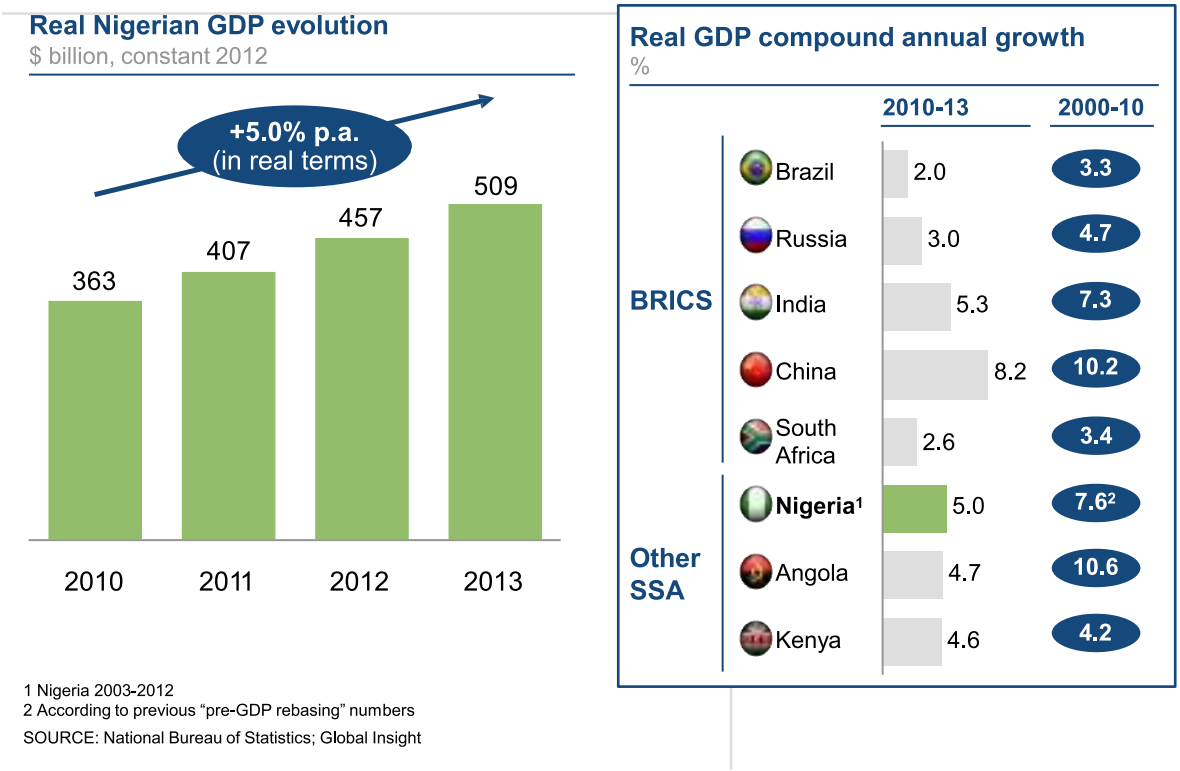
SOURCE: World Bank

2.3 NIGERIA'S ASPIRATIONS AND INFRASTRUCTURE TARGETS 2014–2043

2.3.1 Aspirations for Future Economic Growth

The Nigerian economy has experienced strong growth over the last decade. Between 2010 and 2013, Nigeria achieved a GDP growth of five per cent per annum on the average. This growth is in line with that of other fast-growing emerging markets, and well above the growth rate of some BRICS countries such as Brazil, Russia and South Africa. [*Figure 2.5*].

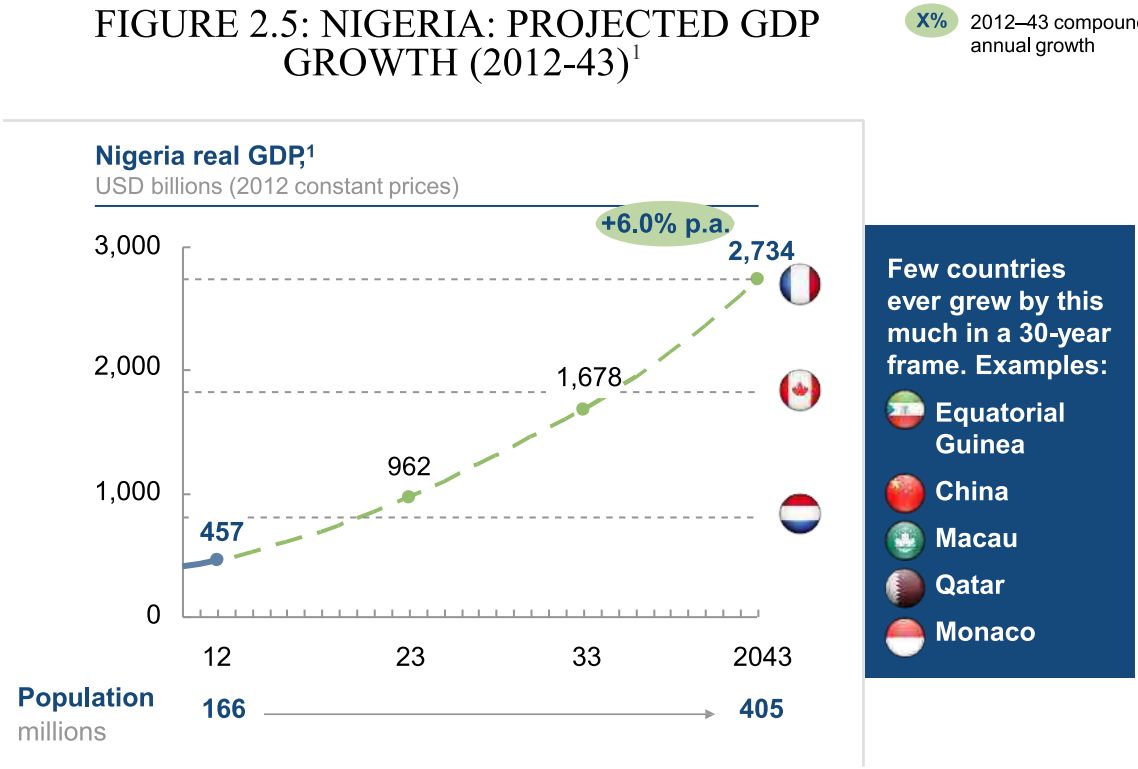
FIGURE 2.4: GDP GROWTH RATE



1 Nigeria 2003-2012
2 According to previous "pre-GDP rebasing" numbers
SOURCE: National Bureau of Statistics; Global Insight

Most international organizations project acceleration in this growth for the next few years to be over 7 per cent. Assuming that after 2020, GDP growth rate gradually converges to a more moderate (but still ambitious) level of five per cent per annum, the implicit average yearly growth rate for the next 30 years is six per cent [*Figure 2.6*].

FIGURE 2.5: NIGERIA: PROJECTED GDP GROWTH (2012-43)[1]



1 Country comparisons from 2013 (IMF): Netherlands – USD 800 billion, Canada – USD 1,825 billion, France – USD 2,737 billion
Note: Growth rate of 7.3% until 2020; Gradual convergence towards a 5,0% growth rate after 2031
SOURCE: NPC; IMF; UN World Population prospects; McKinsey Global Institute; Team analysis

This six per cent growth trajectory ('Base' scenario, constant 2012 prices) would allow Nigeria to reach a GDP of about USD 2.7 trillion by 2043, roughly equivalent to France's current GDP. Over the 30-year period, Nigeria's GDP per capita (at 2012 prices) would surge from its current USD 2,797 to about USD 6,750 (assuming a 2043 population of 405 million).

A more ambitious scenario presumes the achievement of Nigeria's aspirational goals for the continued expansion of the national economy at eight per cent real growth. It should be noted that over the past 40 years, only five countries (Equatorial Guinea, China, Macau, Qatar and Monaco) have been able to grow GDP beyond eight per cent per annum for such a long period of time.

Based on international benchmarks, Nigeria's "core infrastructure" stock is estimated to be about 20-25 per cent of GDP. This leaves Nigeria with a huge infrastructure gap. If "non-core infrastructure" (social housing, security, mining, agriculture) is included, the gap is even wider.

To fund the infrastructure needs of its growing economy over the next 30 years, Nigeria would need to spend roughly USD 3.0 trillion. This investment would allow Nigeria to close its infrastructure gap both in core asset classes (bringing it to the

1. Global insight WMM

■ *Power Sub-Station, Abuja.*

desired 70 per cent of GDP level) and in other key asset classes.

Over the first ten years of the Plan, this would require USD 500 billion in investments.

Several previous reports on Nigeria's infrastructure needed to align with the NIIMP's perspective on the investment required to improve Nigeria's infrastructure stock. Most recently (in 2013), the African Development Bank estimated that prior to its GDP rebasing, Nigeria needs to spend USD 350 billion from 2011–20, with USD 300 billion of this investment focused on core infrastructure assets for the transport, power, water and ICT sectors.

The African Development Bank analysis does not include security, housing, agriculture, mining and social infrastructure-related assets – all of which are within the scope of the NIIMP.

Similarly, a 2011 World Bank publication ('Nigeria's Infrastructure: A Continental Perspective') assessed that Nigeria needs to increase its spending to USD 14.2 billion per annum over the next decade, reaching a total of USD 142 billion, with USD 10.5 billion per annum needed for federal infrastructure and USD 3.7 billion for state/municipal-level assets.

The World Bank estimate is lower than the NIIMP perspective, as the envisaged social and economic targets are not as ambitious as those laid out in the NIIMP. The World Bank analysis also focuses on the ICT, agriculture (irrigation), power, transport and water sectors, and does not include the security, housing, mining and social infrastructure-related assets covered in the NIIMP.

The NIIMP targets have been derived by a combination of top-down and bottom-up approaches. Top-down results have been derived from global research based on

international benchmarks and best-practice examples of investment volumes for different infrastructure asset classes.

Bottom-up results have been derived in the course of preparing this plan by defining the strategic priorities for each infrastructure asset class, defining infrastructure stock indicators for all sectors, then estimating unit costs, and finally projecting future target levels and associated costs for all infrastructure stock indicators. These top-down and bottom-up estimates have been reconciled for the most important sectors in terms of target investment value.

Hence, the targets obtained from either assuming a typical 'target share' of GDP as infrastructure investment for the sector (top-down), or summing up the costs of the 'target output' for each infrastructure stock indicator of this sector (bottom-up) are fairly similar. Targets for Housing and Social Infrastructure have been derived solely by means of the bottom-up approach, since these sectors are quite specific and comprise various idiosyncratic peculiarities for each country.

Therefore, a top-down approach is not particularly well-suited for these sectors.

2.4 REQUIRED INFRASTRUCTURE INVESTMENTS

2.4.1 Overall Investments Required

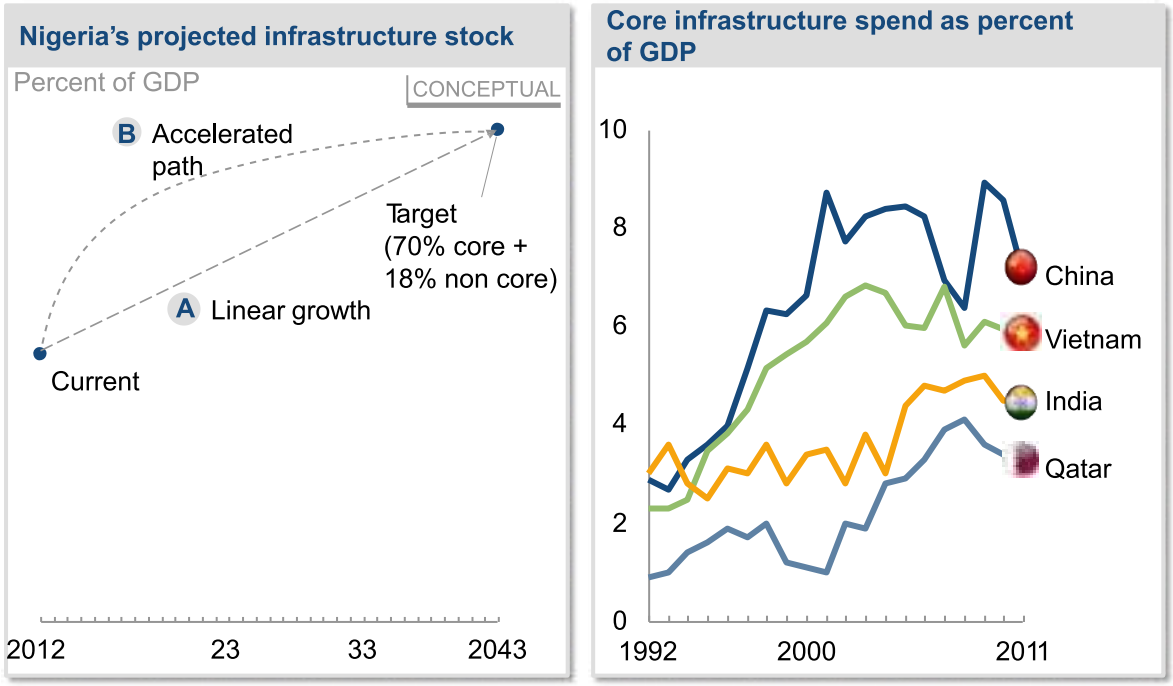
In order to close its current infrastructure gap and reach the desired total investment levels, Nigeria must aggressively increase infrastructure spending as a percentage of GDP. Spending would need to ramp up fairly quickly, from the current about two per cent to an average of above seven per cent over the 30 year period. Given Nigeria's high GDP growth projected for the period, such a ramp-up is particularly challenging.

Moreover, maintenance costs will grow significantly as infrastructure stock increases. According to global benchmarks, maintenance spending should amount to about two per cent of GDP, which translates into a total of about USD 850 billion from 2014 to 2043, or USD 28 billion per year. This is more than double the current yearly total expenditure on infrastructure in Nigeria.

2.4.2 Potential Ramp-up Paths

This acceleration in spending can be achieved in various ways. We have considered 2 alternative ramp-up curves; an aggressive scenario in which Nigeria accelerates spending very quickly, and a slower ramp-up scenario based on linear growth of spending over the 30-year time span [*Figure 2.6*].

FIGURE 2.6: RAMP-UP PATHS FOR INFRASTRUCTURE SPENDING



SOURCE: World Bank; Global Insight; McKinsey Global Institute; NIIMP development team

An accelerated development path offers early momentum and faster time to impact in terms of economic and social development. However, funding needs in the first 5-10 years are very high, and building the required local capabilities might prove a huge challenge. There is thus a certain risk of becoming dependent on foreign contractors, which may trigger a negative public reaction.

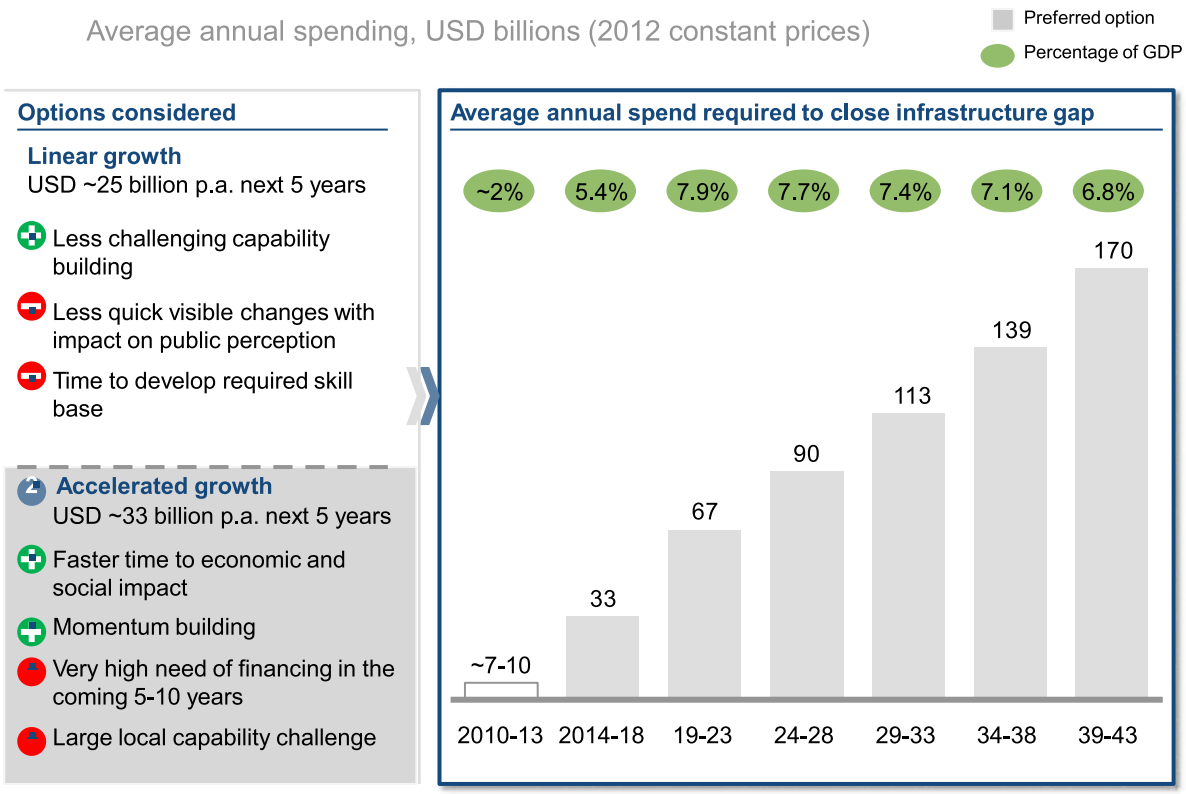
Assuming an accelerated growth path, the investment required would lead to an aggressive ramp-up with annual spend amounting to about USD 33 billion in the first 5 years (2014–18) and then growing to USD 170 billion per year for the last five years (2039–43).

A linear growth **path** implies a higher focus on capability building for longer term sustainable growth. On the other hand, there is a risk of declining public confidence if quick, visible changes are not demonstrated early enough.

These figures include spending on physical infrastructure (e.g., roads and buildings) and the associated maintenance costs, but they do not include the operational cost of using the infrastructure (e.g., schoolteachers; firemen and fire trucks for fire stations) which will require additional investments.

The NIIMP is based on the accelerated path *[Figure 2.7]*. This is due to the aspiration expressed by government to quickly improve the state of Nigeria's infrastructure in order to take advantage of vast opportunities presented by the domestic economy and a fast globalizing world. The risks of capacity constraints and financing will be addressed in later chapters.

FIGURE 2.7: SPENDING PER YEAR – ACCELERATED DEVELOPMENT PATH



2.5 ALLOCATION OF INFRASTRUCTURE INVESTMENTS OVER SECTORS AND TIME

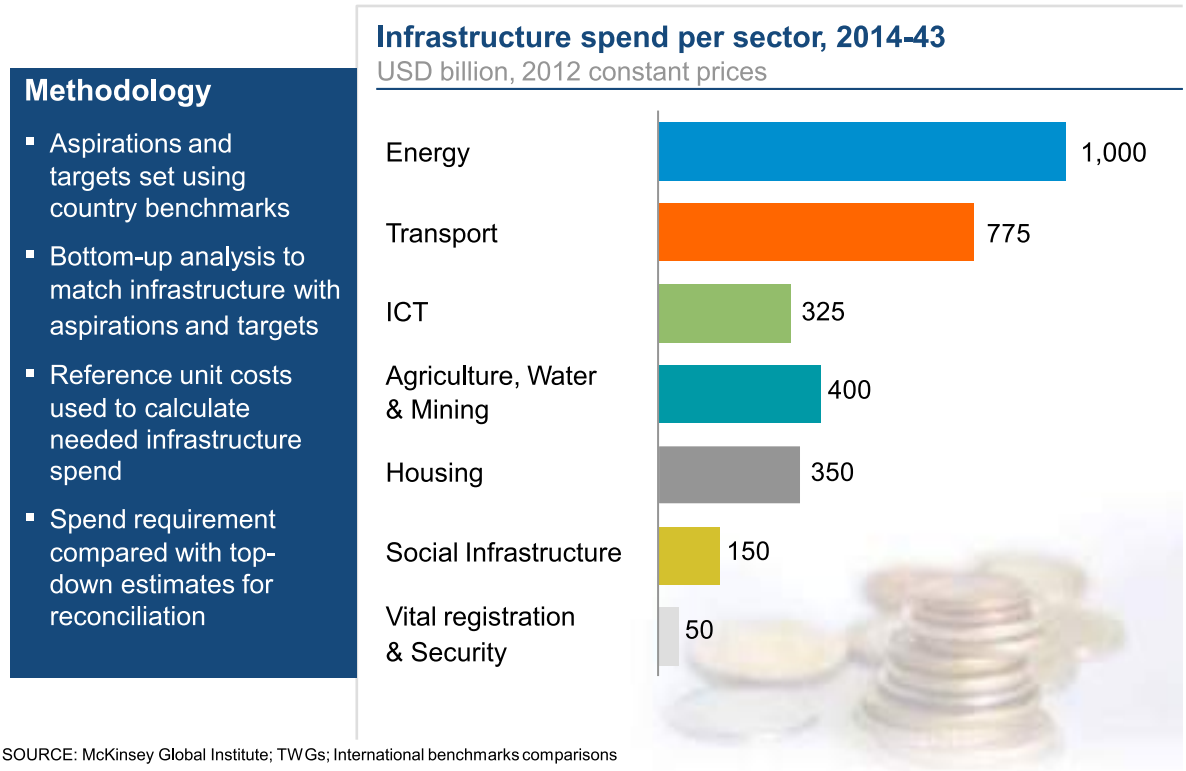
2.5.1 Allocation across Sectors

Looking at individual sectors, the largest investment needs are in energy and transport, which represent more than 50 per cent of the required infrastructure investments over the 30-year period [*Figure 2.8*].

The sector allocations were derived by first setting aspirations and targets within each sector, then identifying the infrastructure needed to achieve these aspirations and targets.

Unit costs were then used to calculate the investment required to build the needed infrastructure. Lastly, these calculated investments were reconciled with the top-down estimates.

figure 2.8: Sector infrastructure allocation (2014-2043)



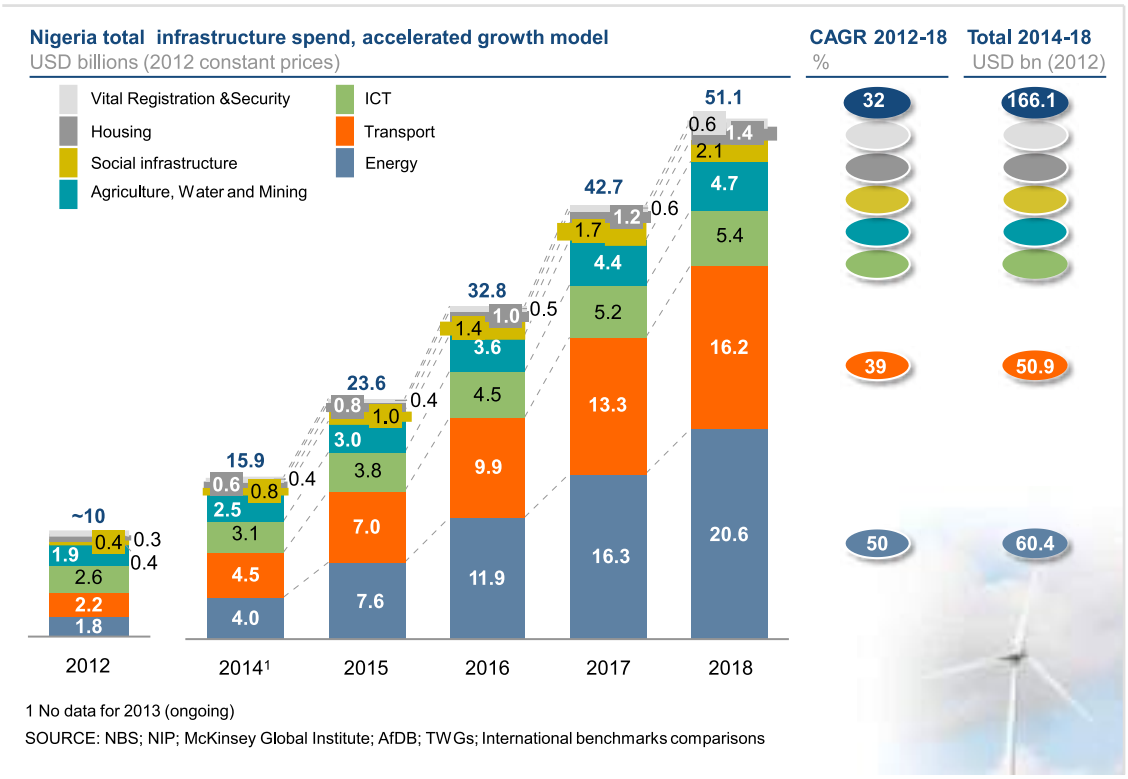
SOURCE: McKinsey Global Institute; TWGs; International benchmarks comparisons

2.5.2 Ramp-Up Paths across Sectors

The different asset classes exhibit differing ramp-up curves. Since Transport and Energy play a crucial enabler role for practically all other sectors, investment in these areas should be prioritised by means of allocating larger shares of the early investment volumes to these two sectors. Consequently, in the first five years, Transport and Energy account for as much as two-thirds of the total infrastructure investment volume [*Figure 2.9*].

This will put a solid stock of supporting infrastructure in place for other sectors such as Water, Agriculture and Mining, and lay a foundation for subsequent growth in these sub-sectors.

FIGURE 2.9: PROPOSED INVESTMENTS BY SECTOR (2014-2018)



1 No data for 2013 (ongoing)

SOURCE: NBS; NIP; McKinsey Global Institute; AfDB; TWGs; International benchmarks comparisons

The Plan therefore calls for investment in Transport and Energy to increase from current levels of around USD 2 billion per annum each, to USD 16.2 billion and USD 20.6 billion per annum by 2018 respectively.

Similarly, investment in housing infrastructure will need to also increase significantly from USD 0.4 billion to USD 1.4 billion per annum by 2018; ICT will double from USD 2.6 billion per annum to USD 5.4 billion per annum by 2018; and Social Infrastructure, Water, Agriculture and Mining, and Vital Registration and Security investments are also expected to increase over the next five years.

2.6 ADDITIONAL FACTORS TO CONSIDER

2.6.1 Climate Change Considerations[1]

As Nigeria seeks to achieve its vision for the nation's development over the next 30 years through the NIIMP, one important factor that will affect the country's development journey is climate change. Climate change could make food, energy, and water security more difficult for Nigeria to achieve. It could also affect the nation's infrastructure and make future investments more costly or require other types of investments to make the infrastructure climate resilient.

1. Toward Climate-Resilient Development in Nigeria, World Bank, 2013; Low-Carbon Development – Opportunities for Nigeria, World Bank, 2013; Assessing Low-Carbon Development in Nigeria: An Analysis of Four Sectors, World Bank, 2013; Nigeria Post-Disaster Needs Assessment: 2012 Floods, Federal Government of Nigeria, May 2013

■ *Solar Panel.*

Nigeria's agriculture is highly vulnerable to weather patterns, as most production is rain-fed. Stagnant crop yields and a growing population are leading to a dependency on food imports. Furthermore, livestock, a major source of livelihood in northern states, is already exposed to rising temperatures and declining pasture productivity.

These climate risks are further compounded by Nigeria's rapid population growth, which, coupled with the nation's pervasive poverty, reduces the nation's resilience to multiple climate risks.
The World Bank has described the issues and opportunities that exist for Nigeria in several detailed reports. According to the World Bank, climate change will increase Nigeria's vulnerability to weather swings and limit its ability to fulfil its development objectives.

Potential impacts include:
- A 20-30 per cent reduction in crop yields;
- Lower livestock productivity;
- Increased need for food imports;
- Lower food security, particularly in the North and Southwest;
- Reductions in GDP.

World Bank's analyses confirm the fact that Nigeria cannot ignore its current climate situation or put off preparing for the likely change in climate in the future.

Climate change has to be considered particularly when planning future infrastructure investments. For example, investment decisions (particularly for irrigation and hydropower) that are made using historical climate data may be incorrect, as climate change might result in under- or over-designing the required infrastructure. This could lead to capital costs or foregone revenues of 20-40 per cent of the initial capital invested.

Adequate planning of irrigation infrastructure is largely dependent on the expected climate. For example, a drier climate will require more water storage. This makes planning and designing difficult, as it is not possible to predict the future climate of a particular region with certainty. Using historical climate data to make these investment decisions might

result in losses where the investment is undersized if the climate is drier than expected, or oversized if the climate is wetter than expected. The World Bank states these losses can be as large as 40 per cent of investment costs. However, losses can be reduced by 30-50 per cent where the investment strategy focuses on minimising the risk of misjudgements across multiple future climate outcomes, as opposed to solving for a specific climate outcome.

Climate variability also already has a strong effect on Nigeria's power sector. Hydropower accounts for one-third of grid supply. As a consequence, poor maintenance of the nation's dams and variability in rainfall result in power outages that affect Nigeria's energy security and growth potential.

Given the uncertainty of future precipitation and river run-off, climate change should be taken into account when planning hydropower infrastructure. A drier climate could result in a hydropower plant delivering less than the intended amount of power. As with irrigation, designing a dam without considering climate change could lead to losses of up to 25 per cent of capital costs, but designing to increase the storage capacity in anticipation of a potentially drier climate could reduce possible losses to 5 per cent.

Beyond the uncertainty of the future climate situation, Nigeria's infrastructure will also need to be climate-resilient. The 2012 floods caused by heavy rains between July and October resulted in damage to water, energy and transport infrastructure estimated at over USD 387 million. Floods are the most common and recurring type of disaster in Nigeria. Given the unpredictability of Nigeria's future climate, steps should be considered for building more climate-resilient infrastructure.

Damage to existing infrastructure from extreme climate events such as flooding reduces the expected durability of assets like housing, roads and dams. Building climate-resilient infrastructure, (e.g., flood-proof housing), may increase costs but will also extend the asset's durability and lifespan. Furthermore, a potentially harsher climate in the future (that is not adequately planned for) will require higher maintenance.

The cost-benefit analyses of investing in climate-resilient infrastructure have to be made on a project-by-project basis. But given the cyclical nature and prevalence of certain extreme climate events, the upfront costs of building more durable infrastructure are likely to be lower than the forestalled maintenance and replacement costs.

2.6.2 Ensuring Accessibility for All

The development of infrastructure must take into account accessibility for all citizens, particularly those with disabilities. With the right infrastructure, people with disabilities can exercise basic activities for daily living, such as performing home activities, going to work, to school and using public and private facilities.

The World Health Organization considers a 'disability' to be a multidimensional life condition that consists of impairments, activity limitations and participation restrictions. To the extent that few humans remain healthy and able-bodied their

entire lives, all people experience some form of disability at one time or another, whether it be from a broken limb or as an elderly person. Disability is thus an environmental construct in which actual performance depends both on the physical impairment and contextual factors. The contextual factors involved may make it more or less difficult for people with various levels of functioning to manage their lives. Infrastructure can consequently serve a major role in either facilitating or hindering accessibility to basic activities for daily living.

Nigeria's infrastructure needs to take into account the needs of people with disabilities. The solution to addressing these needs should not be to create parallel institutions and processes, but rather to adapt existing services to include people with disabilities. This will help prevent an uneconomical duplication of services.

Accessibility of public and private amenities such as water, transport, education, and healthcare for all citizens is crucial to preventing exclusion and tapping into the full social and economic potential of the populace. Accessibility requires that the entire infrastructural service chain be fully accessible. As an example, in the Transport sector this means that stations, bus stops, airports, etc., should be fully accessible to and usable by people with disabilities.

As Nigeria builds new and rehabilitates existing infrastructure, design-for-all or universal design principles should be a key requirement in order to ensure the accessibility needs of people with disabilities (such as the hearing, seeing or physically impaired) are fully met.

Below are a number of accessibility guidelines and standards that can be employed in the development and rehabilitation of the nation's infrastructure (the full text of these guides can be freely obtained via the websites of the respective authors):

- Accessibility for the Disabled: A Design Manual for a Barrier Free Environment – A comprehensive accessibility guide published by the United Nations;
- Promotion of Non-Handicapping Physical Environments for Disabled Persons: Guidelines – Guidelines developed by the United Nations Economic and Social Commission for Asia and the Pacific;
- Enhanced Accessibility for People with Disabilities Living in Urban Areas – Guidelines developed by the United Kingdom's Department for International Development with a particular focus on developing countries; and
- Adaptive Environments Checklist – A set of standards and tools for universal design used by the United States for implementing the Americans with Disabilities Act.

Sectoral Overviews

3. SECTOR OVERVIEWS

Passenger Train (NRC)

3.1 TRANSPORTATION

3.1.1 Current State of Infrastructure

Transport infrastructure includes roads, air transport facilities, railways, maritime infrastructure (inland waterways and ports) and urban transportation (which spans across the other sub-sectors). A transport sector with adequate infrastructure in good condition is critical for any nation's success. In particular, transport infrastructure plays a critical enabler role, increasing the impact of nearly all other sectors of the economy.

Against this backdrop, Nigeria's current transport infrastructure is not aligned with the country's aspiration to become one of the world's 20 largest economies by 2020. Increased maintenance and capacity expansions are needed to improve the current state of Nigeria's infrastructure. A focus on linking the various forms of available transport, so as to strengthen the intermodal transport of goods and passengers, would improve the safety, convenience, travel time and cost of Nigerian transportation and reduce carbon/particulate emissions.

Roads

Adequate road infrastructure is central to Nigeria's economic growth; it is at the core of good governance and public welfare. Any improvement in road infrastructure positively impacts on the nation's GDP.

Nigeria has a national road network of about 200,000km. Of this total, Federal roads make up 18 per cent (about 35,000km), State roads 15 per cent (about

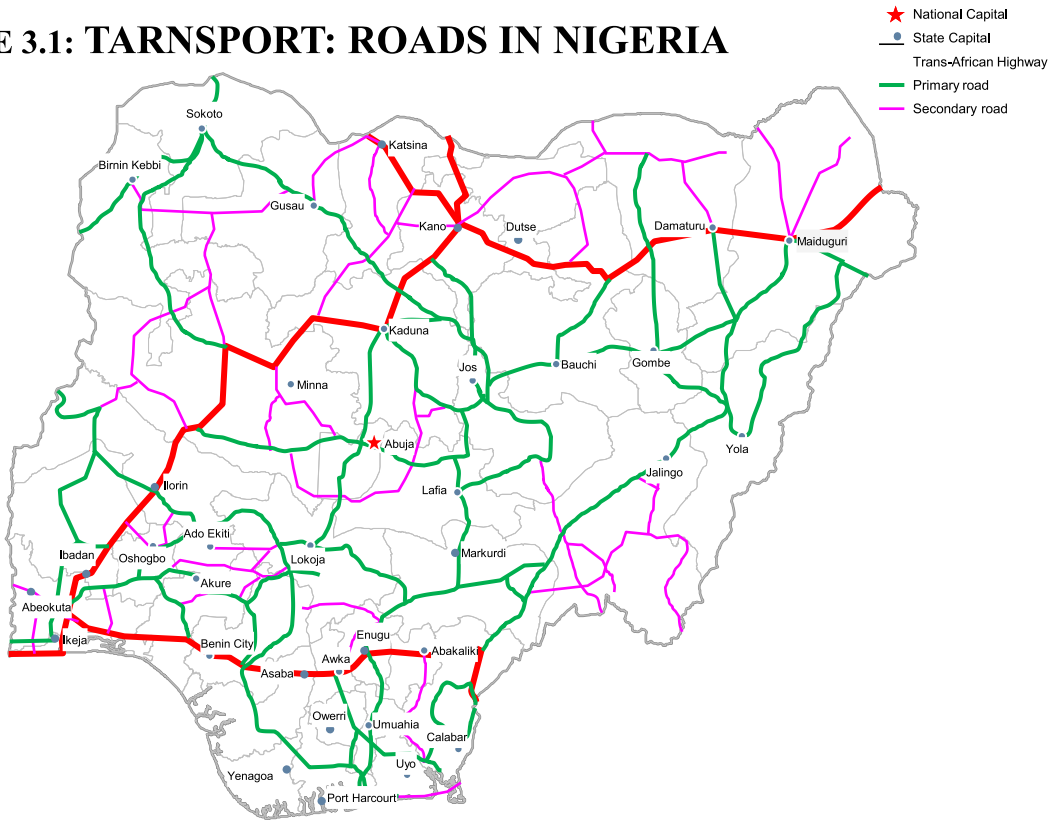
17,000km), and Local Government roads 67 per cent (about 150,000km), with most Local Government roads being unpaved.

The road sector accounts for about 90 per cent of all freight and passenger movements in the country. Although the Federal road network constitutes 18 per cent of the total national network, it accounts for about 70 per cent of the national vehicular and freight traffic.

As at 2012, an estimated 40 per cent of the federal road network is in poor condition (in need of rehabilitation); 30 per cent in fair condition (requiring periodic maintenance); and 27 per cent in good condition (requiring only routine maintenance). The remaining 3 per cent consists of unpaved trunk roads that need to be paved.

In the case of state roads, 78 per cent is in poor condition, with 87 per cent of local government roads also considered to be in poor condition.

FIGURE 3.1: TARNSPORT: ROADS IN NIGERIA



SOURCE: Natural Earth, African Development Bank

The poor state of Nigerian roads can be attributed to the following challenges:

- The current institutional structure for the management of roads is inefficient. A Federal Road Maintenance Agency (FERMA) has been established as an interim measure before instituting more substantive sector reforms, as Nigeria continues to rely on traditional general budget allocations to fund road maintenance and rehabilitation.

- Current maintenance levels are insufficient to preserve the quality of the existing road infrastructure, resulting in annual deterioration. Ample resources have been allocated to federal road rehabilitation, but not enough of these resources are reserved for preventive maintenance[1].

A historical trend of prioritising new road construction over maintaining existing roads further exacerbates deterioration of existing road infrastructure[2].

A shift in inland transportation from rail and waterways to roads has increased the burden on roads as they have become the nation's primary mode of passenger and goods transport. For example, the high volumes of petroleum products transported on the national roadways, which are meant to be transported via pipelines, diminish the already limited lifespan of the roads, resulting in higher maintenance needs.

The budgeting cycle limits the use of funds during the dry season (the season most favourable for construction).
Overloading, blocked drainage structures and the parking of heavy axle vehicles on carriageways contribute to additional deterioration of road infrastructure.

The Federal Ministry of Works is currently working to improve various sections of the Federal highway network. This effort includes 194 on-going projects which will involve a total cost of about USD 9 billion.

The Public Private-Partnership Department, a department of the Ministry, has developed outline business cases for viable and bankable major highways (brownfields) and proposed new alignments (Greenfields) to attract the private sector and Foreign Direct Investments (FDI).

However, challenges still remain. Two pilot PPP projects initiated by the Ministry (Lagos–Ibadan Expressway and Gutto–Bagana Bridge across the Benue River) were stalled due to the concessionaires' inability to obtain the stipulated funding required. Government is currently making efforts to revive the projects.

Aviation

The 1970 Federal Airport Development Plan (ADP) served as the basis for the growth and development of airports in Nigeria. Government's main objective was to open up the country for easy access and development by creating airports in each state capital. This provided the industry

1. *Benchmarks and network simulations indicate that an annual budget of around USD 240 million should be allocated for preventive maintenance. In recent years, Nigeria has only allocated about USD 50 million per year according to the 2011 AICD Report.*

2. The AICD Report states:"...While the overall allocation [of both opex and capex] is adequate, there appears to be a marked bias toward capital expenditure."

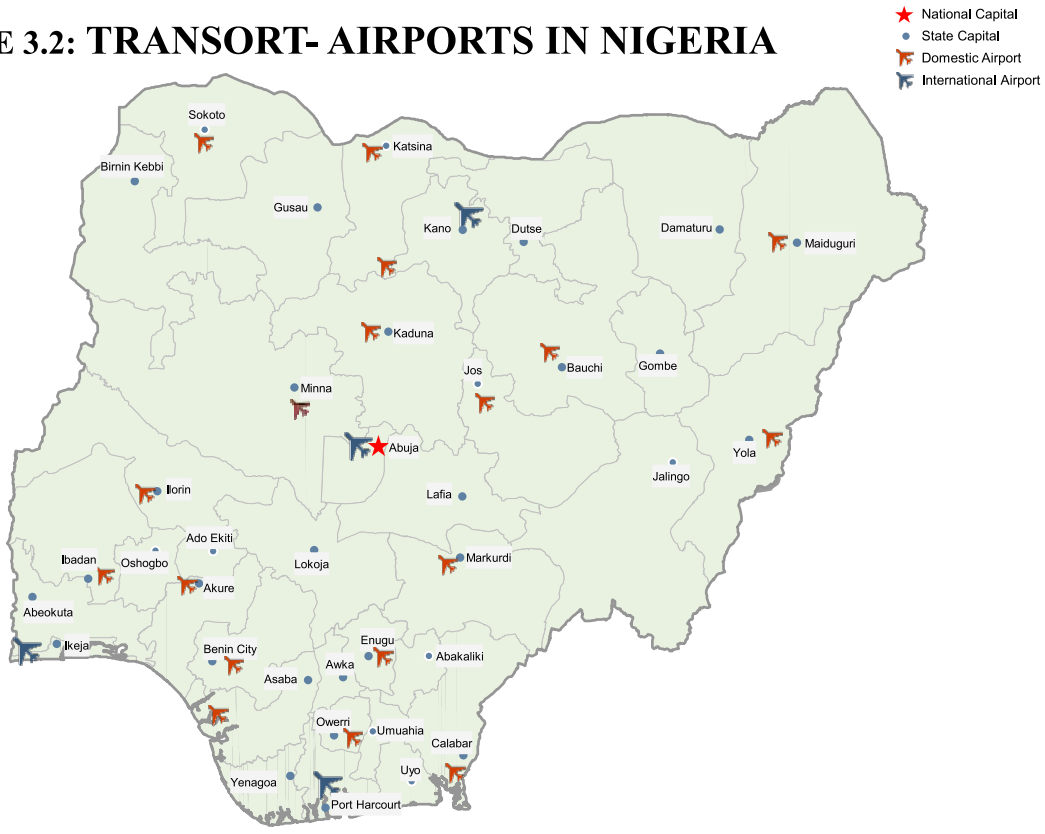
with a conducive and promising environment for growth and stabilisation, especially during the oil boom of the 1970s. Operator, airports and passenger traffic grew in number.

Today, the Federal Airports Authority of Nigeria operates five international airports, located in Abuja, Lagos, Kano, Port-Harcourt and Enugu as well as 18 domestic ones.
There is need to improve management practices, raise the quality of policy initiatives and ensure a more friendly investment environment.

The sector's challenges include the need to modernise, upgrade infrastructure and equipment such as terminal buildings, control towers, conveyor belts, instrument landing systems, communication equipment, runway lighting and fire tenders.

Other challenges include manpower development and training on equipment handling and maintenance.

FIGURE 3.2: TRANSORT- AIRPORTS IN NIGERIA



SOURCE: Transport TWG, AfDB, Team analysis

Government has taken a number of initiatives to improve domestic capacities for air traffic management and safety.

These include: the Total Radar Coverage of the Nigerian Airspace (TRACON) project, the Mobile Tower project as well as capacity building and rehabilitating the current airports.

The objective of the TRACON project is to provide total radar coverage of Nigerian airspace to enhance civil and military surveillance of aircraft.

TRACON comprises four primary and five secondary radars co-located in Nnamdi Azikwe Abuja, Murtala Mohammed Lagos, Malam Aminu Kano and Port-Harcourt International Airports. It also has provision for five stand-alone Secondary Surveillance Radars to be located in Talata Mafara, Maiduguri, Numan, Obubura and Ilorin. The international airports will have a combination of primary and secondary radar and Lagos will have a simulator centre for on-the-job training of air traffic controllers and engineers.

However, changes in the scope of the project and delayed disbursement of project funds have resulted in significant delays in implementation.

The Nigerian Airspace Management Agency (NAMA) has acquired a motorised air traffic control tower, known as Mobile Tower, for air traffic management under emergency situations.

Since the global aviation sector is implementing the Global Positioning System (GPS) for air navigation, NAMA has decided to configure the Mobile Tower with state-of-the-art GPS receivers in order to keep the system aligned with global standards.

NAMA plans to acquire an additional mobile tower to serve the Northern segment of the Nigerian airspace.
The rehabilitation project was split up over three years and focused on eleven major airports, including the completion of the MMIA/Lagos Hajj terminal, the Makurdi terminals, the Enugu International Airport Complex, the Sokoto Airport/Hajj terminal complex, Ibadan, Ilorin, Akure Airport terminal buildings and Port Harcourt airport bridges.

Rail

Building and sustaining rail networks require large capital and recurrent expenditure. Nigeria developed 3,505 km of rail network in spurts of activity between 1898 and 1964. Thereafter, development stalled until 1987 when the construction of 326 km of standard gauge rail line began on the Itakpe-Ajaokuta line (52 km) and the Ajaokuta-Warri line (274 km).

The Lagos-Kano Railway Modernization Standard Gauge project was also started, but progress was hampered because of lack of concrete funding plan.

Consequently, in 2008 the Federal Government suspended the project and eventually re-phased it, so as to have a sustained funding plan through normal yearly budgetary allocation and concessionary loans. The final structure is presented in table 3.1

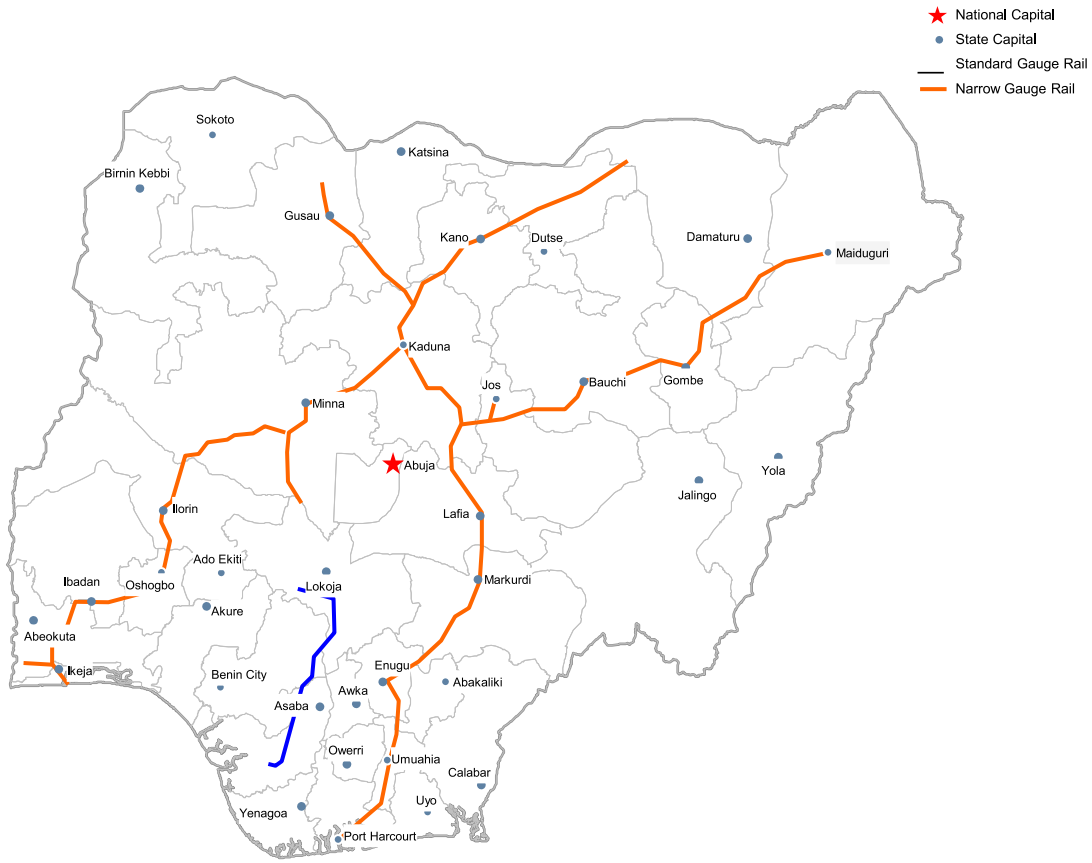
TABLE 3.1: LAGOS-KANO RAILWAY MODERNIZATION PROJECT

Period	Section	Length (km)	Completion
i.	Lagos – Ibadan	180	4 years
ii.	Ibadan – Ilorin	200	6 years
iii.	Ilorin – Minna	270	6 years
iv.	Minna – Abuja	145	2.5 years
v.	Abuja – Kaduna	186	3 years
vi.	Minna – Kano	360	7 years

Source: NRC

This project as shown in the above table has now attained 85 per cent physical completion.

FIGURE 3.3: TRANSPORT-RAILWAY IN NIGERIA



SOURCE: Natural Earth, African Development Bank

The Nigerian Railway Corporation's (NRC) infrastructure and facilities comprise:
3,505 km of narrow gauge rail line and 827 km of narrow gauge sidings and loops;
512 km of standard gauge rail line;
674 km of branch lines;
304 railway stations (280 narrow gauge, 24 standard gauge) and 273 railway outstations;
434 railway bridges across the entire track length (371 for narrow gauge and 63 for standard gauge)

The rail sub-sector faces significant challenges. Due to its large population and economy, Nigeria faces substantial demand for both inter and intra-city passenger and freight movements. However, deficient performance and erratic service have caused freight volumes to decline from three million tons in 1960 to 15,000 tons in 2005 – equivalent to about 5 trucks per day. Over the same period, passenger traffic has declined from 3 million to 500,000 passengers per year – the equivalent of about 25 buses per day. Current traffic density, at only 15,000 tons per km, is substantially lower than the already-low levels of other African Railway Networks. The railway repositioning is captured under table 3.2

TABLE 3.2: RAILWAY REVITALIZATION PLAN

Phase	**Concentration**	**Key activities**	**Time frame**
1	System transition	Rehabilitation Reconstruction Introducing operational changes Training Investment planning Development of domestic capacity for the production of rail materials Development of national technological capacity	2002 – 2007
2	System modernization	Conversion to standard gauge Construction of new lines and extensions Private investment Continue to develop national technological capacity	2007 – 2015
3	System stabilization	Completion of conversion to standard gauge and construction of extensions	2016-2027

Source: NRC

Nigeria is attempting to liberalise its railways through reforms in the rail sector, and by granting concessions of its rail network through the Infrastructure Concession Regulatory Commission (ICRC).

After a long period of insufficient investment and maintenance, the rail sub-sector is now being revitalised. The 25-year Railway Strategic Vision provides the future path for the sector, which envisages a three-phase approach.

As a result of these efforts, operational activities are now being restored in the following areas:

Lagos Intra - city mass transit
Kaduna Intra - city mass transit
Intercity passenger service (Lagos–Kano; Offa–Kano; Lagos–Ilorin; Minna–Kaduna; Kano–Nguru)
Excursion trains (on demand)
Freight service – Lafarge Cement traffic (Lagos to Ibadan, Osogbo, Ilorin and Minna); flour mills traffic (Lagos–Kano); sand traffic (Oturkpo–Makurdi); container movement (Lagos – Kano); wheat movement (Lagos– Kano); AGO movement (Lagos – Kano)

Feasibility studies are also underway for a number of new railway developments aimed at linking major industrial, agricultural, mining, commercial and economic sites across the nation. Specific corridors currently undergoing feasibility studies are:

East-West Rail Line Lagos – Shagamu – Ijebu Ode – Ore – Benin City (300 km)
Lagos – Ibadan – Oshogbo – Baro – Abuja (High Speed 615 km) Ajaokuta (Eganyi) – Obajana – Jakura – Baro – Abuja with additional line from Ajaokuta to Otukpo (533 km)

Zaria – Kaura Namoda – Sokoto – Illela – Benin Koni (Niger Republic) (520 km)

Benin – Agbor – Onitsha – Nnewi – Owerri – Aba with additional line from Onitsha – Enugu – Abakaliki (500 km)

Eganyi (near Ajaokuta) – Lokoja – Abaji – Abuja (280 km)

Benin – Sapele – Warri – Yenagoa – Port Harcourt – Aba – Uyo – Calabar – Akamkpa – Ikom – Obudu Cattle Ranch (673 km)

Port-Harcourt – Aba – Umuahia – Enugu – Makurdi – Lafia – Kuru – Bauchi – Gombe – Biu – Maiduguri
Ikom – Obudu – Ogoja – Katsina Ala – Wukari – Jalingo – Yola – Maiduguri
Kano – Nguru – Gashua – Damaturu – Maiduguri – Gamboru – Ngala
Kano – Dayi – Katsina – Jibya
Illela – Sokoto – Jega – Yauri – Makera

The contract for modernising the railway (double track) was awarded in November 2006 at a cost of USD 8.3 billion. However, the present administration has suspended the contract for re-scoping due to the lack of a sustainable funding plan.

Nonetheless, significant investments will still be required after current contracts have been completed. These investments will be needed to ensure the completion of railroad linkages to ports, the rehabilitation of crossing loops and sidings, the rehabilitation of rolling stock and locomotives, the acquisition of maintenance equipment, the management

of environmental issues; and the renovation of tracks and structures for 18-ton axle loads shall be given priority attention. Private sector funding and technical expertise will likely be required to enable these investments.

Apapa Port, Lagos

Maritime

The maritime sub-sector consists of the ports and the inland water transport system. Since the implementation of various reforms in 2004, the operation, provision and maintenance of cargo handling equipment in Nigeria has been directly undertaken by the private sector.

At present, the Nigerian seaports are comprised of 93 general cargo berths, five RORO berths, seven bulk solid cargo berths, 11 bulk liquid cargo and 63 buoy berths, as well as 650 different pieces of cargo handling equipment. The private sector has been granted concessions for virtually all the major ports, resulting in a remarkable upsurge in the cargo throughput handled in recent years.

There has also been an appreciable expansion in infrastructure, especially in 2006 when government invested USD 384 million for infrastructural expansion.

The inland water transport system centres on the Niger and Benue rivers, their major tributaries, creeks, lagoons and lakes –a total of about 10,000 km in waterways. However, only about 3,800 km are navigable. This constitutes a major challenge to profitable and sustainable inland water transportation.

In spite of recent improvements, the maritime sector faces numerous challenges including frequent changes in policy, a multiplicity of government

agencies in the ports, congestion problems, the need to improve power supply for effective port operations, need for greater economic regulation and the need to accommodate current and emerging traffic in seaports.

Other challenges in the maritime sector include:

Poor management of existing facilities
Capacity constraints as existing facilities cannot cope with the demand, leading to congestions

A bureaucratic clearing process, involving multiple agencies and non-automated processes (e.g., manual scanning)

Aggregate shortfall of skilled manpower and professionals required in the industry
Inadequate cargo support from government

Lack of cargo rights from traffic generated by Nigeria's international trade
Inadequate patronage by federal and state governments

Inadequate support/funds from government and commercial banks

FIGURE 3.4: TRANSPORT-PORTS IN NIGERIA

SOURCE: Natural Earth, African Development Bank

Overcoming these challenges will require a holistic and comprehensive approach that takes into consideration the interrelation of seaports with other sectors of the economy. The planning of port infrastructure and its regulation therefore should be achieved in the context of integration and intermodalism in order to accomplish the desired transformation in the sector.

For inland water transportation to meaningfully impact the national economy in terms of cheap and affordable transportation, it is imperative to ensure that about 3,000 km of seasonally navigable waterways are made operational all year round.

Since 2009, government has embarked on a transformation process for inland waterways that includes:

1. Dredging the lower River Niger from Baro (Niger State) to Warri (Delta State), a distance of 532km, and provision of buoys for the dredged channel;
2. Establishing an Inland Waterways Police Command;
3. Procuring 14 security patrol boats;
4. Initiating the construction of six new river ports in Baro, Lokoja, Makurdi, Owerrita, Degema and Oguta[1]
5. Developing three deep seaports in Lekki, Olokola and Ibaka
6 Developing the draft bill for reform of the National Inland Waterways Authority which is currently undergoing final review
7 Ongoing year-round maintenance and clearance of all navigable waterways

Enablers

1. Policy stability;
2. Elimination of the multiplicity of government agencies at the ports;
3. Improvement in power supply and security for effective port operations;
4. Improved regulation;
5. Improvement in infrastructure to accommodate current and emerging traffic in seaports;
6. Encouraging the development of infrastructure to cater for increased port activities; and
7. Government support in terms of guarantees to enhance the viability of projects in the sector.

Urban Transport

Urban transportation in Nigeria is largely an unregulated, small-scale market using a combination of para-transit modes consisting of shared taxis, mini-buses, motor-cycles and contrived tri-cycles known as *Keke NAPEP*. Only in Lagos and Abuja are conventional buses similar to those in most cities worldwide are used. But even here, the use of para-transit modes is clearly dominant. For this reason, Nigeria remains the only country in the world with densely populated cities of over six million people that do not have an organised urban transport system.

Nigeria roads are generally narrow, consisting of one lane that is poorly maintained, and prone to flooding due to poor drainage. The result is inadequate capacity and poor conditions, leading to traffic congestion, reduced vehicle productivity, loss of man-hour and increased vehicle operating costs. Nigerian

1. The river port in Onitsha, with installation of cargo handling equipment, has been completed and commissioned

cities also feature inadequate road furniture such as pedestrian facilities and bus stops/shelters/public conveniences and lack of other infrastructure such as towing vehicles and traffic control devices.

Bus Rapid Transit (BRT), Lagos

Many cities are seriously challenged by growth in urban population which is rising rapidly. More than half of Nigeria's population is already estimated to live in urban regions. Lagos alone is growing at six per cent annually, and will continue to be one of Africa's largest cities.

Demand is high in most cities relative to the capacity of the system to accommodate traffic flow. Traffic congestion in cities is widespread, with travel times in excess of two hours in Lagos and Mararaba – Abuja corridor, among others. Traffic control devices need substantial improvement in some cities, due to high congestion levels, with traffic standing still for up to 30 minutes at a time. In Lagos alone over 1 million trips are made daily.

Car ownership is low, but congestion levels are still high, implying that saturation levels of car ownership in the cities have already been exceeded.

Reforms are thus needed in the urban transport sector to institute an effective mass transit system and develop capacity for public transport planning, operation and regulation.

Furthermore, a key requirement is the development of integrated spatial planning and urban transport policies as the basis

for determining infrastructure and public transport service development needs/priorities.

3.1.2 Aspiration and Targets

The overall vision of the transportation sector is "to achieve an adequate, safe, environmentally friendly, efficient, affordable and sustainable integrated transport system within the framework of a progressive and competitive market economy for Nigeria".

This vision has been broken down into the following sub-sector strategic goals.

Roads

Develop, operate and maintain a safe, efficient and effective road network;
Facilitate economic and social development through efficient movement of people and goods;
Enhance connectivity between economic centres of the country
Improve linkages to other transport modes to enhance intermodal transportation
Secure funding from the private sector, multilateral agencies and concessionary loans for highway development.

Rail

Provide adequate rail infrastructure for even economic development of the country

Sustain continued rail network rebuilding and expansion so that rail services are commercially viable, both passenger and freight
Develop capacity to sustain and continuously improve the quality of rail infrastructure
Create an enabling environment for private sector participation in the provision of rail infrastructure.

Aviation

Provide a safe, secure and comfortable air transport sector that is self-sustaining and pivotal to socio-economic growth, in line with international best practice
Transform the aviation industry into an efficient, profitable, self-sustaining, effective and preferred mode of transportation
Establish Nigeria as the regional aviation hub in West Africa

Maritime

Provide safe, efficient and cost-effective maritime transport services for the country, ensuring all waterways are fully navigable
Significantly increase the capacity of and emphasis on inland waterways transportation
Attain enhanced performance and competitiveness of seaports
Improve port productivity and competitiveness
Implement a port management model that attracts full private sector involvement and promotes market principles
Establish Nigeria as a regional port hub

Urban Transport

Develop capacity to sustain and continuously improve the quality of transport services, access control and land

use policy in major urban areas;

Set the base for urban rail transport; introduce Rail Mass Transit in urban areas of over 1 million people (urban rail and rolling stock);
Secure funding from the private sector, multilateral agencies and concessionary loans to embark on Transit Oriented Development (TOD) using Abuja transit-way as a model);
Develop, operate and maintain Urban Traffic Control systems (UTC);
Improve the public transport planning and regulatory function.

Based on these strategic goals, a set of objectives have been established for the sub-sectors [*Figure 3.5*].

■ *Road Infrastructure in Nigeria*

FIGURE 3.5: SECTOR GOALS-TRANSPORT

Sub-sector	2018	2023	2043
Roads	▪ Upscale road infrastructure with most highway roads in good state ▪ Enhance connectivity between economic centres of the country/ refurbish and expand cross-national highways	▪ Rehabilitate/dualise all major economic routes ▪ Rehabilitate of major link roads ▪ Restore 70% of federal and state roads	▪ Dualise of all North-South Routes ▪ Dualise of all East-West Routes ▪ Restore 100% of federal and state roads
Rail	▪ Rehabilitate rail network ▪ Increase emphasis on rail transportation, both passenger and freight	▪ Continue network rebuilding and expansion so that rail services are commercially viable	▪ High speed rail network between major cities ▪ Rail viable transport option in ECOWAS
Aviation	▪ Rehabilitate existing airports ▪ Construct a set of four airport terminal buildings newly constructed ▪ Improved airport and airline safety/ security	▪ Upgrade and expand international airports ▪ Improve air safety improved to ICAO standards and recommended practices	▪ Establish Nigeria as the regional aviation hub in West Africa
Maritime	▪ Increased capacity of inland waterways transportation ▪ Enhance performance and competitiveness of sea ports	▪ Improve port productivity with further reductions in turnaround time for vessels ▪ Enhance competition of ports ▪ Create port management model that attracts full private sector involvement and promotes market principles ▪ Improve safety and security at the ports	▪ Regional port hub in Nigeria ▪ All waterways fully navigable
Urban	▪ Develop, operate and maintain Urban Traffic Control (UTC) systems ▪ Develop capacity to sustain and continuously improve the quality of transport services	▪ Improve synergies between land use planning and transportation planning in all cities ▪ Set base for urban rail transport: Introduce Rail Mass Transit in Urban areas of over 1 million people (Urban rail and rolling stock) starting with Lagos, Abuja, Port Harcourt, Kaduna and Kano	▪ Functioning urban transportation in all major cities ▪ Urban rail network in all cities with population greater than 1 million people

SOURCE: Transportation TWG; Transformation Agenda, NV 20:2020

Road Network in Nigeria

Strategic Objectives

Roads

The dominating pillar of the Nigerian transport sector is the road network. With a road density of 21 km per 100 km^2, Nigeria is clearly ahead of the West African average but behind international and BRICS benchmarks.

Furthermore, most roads are in very poor or poor condition. Hence improving the condition of most highway roads is a central priority; as is expanding the capacity of the national road network in order to significantly enhance connectivity between the northern and southern economic centres of the country in the short to medium term.

Furthermore, the rehabilitation of all major economic routes is envisaged, with a subsequent dualisation of the major North-South and East-West routes by 2043.

TABLE 3.3: FUTURE STATE OF TRANSPORT (ROAD)

	Short-term (2018)	Mid-term (2023)	Long-term (2043)
Strategic priorities	▪ Upscale road infrastructure with most regional roads in good condition – Badagry-Lagos – Suleja-Minna – Lagos-Ibadan ▪ Enhance connectivity between economic centres of the country/refurbish and expand cross-national highways – Ilorin-Jebba-Mokwa Tegina-Kaduna – Abuja-Abaji-Lokoja – Shagamu-Ore-Benin – Port Harcourt-Aba-Urruahia-Okigwe-Enugu	▪ Rehabilitate/dualise all major economic routes ▪ Rehabilitate major link roads ▪ Restore 70% of federal and state roads	▪ Dualise all North-South routes ▪ Dualise all East-West Routes ▪ Restore 100% of federal and state roads
Additional infrastructure stock (cumulative)	▪ 8,208 km rehabilitated roads ▪ 3,020 km increased length of paved roads ▪ 5,000 km new roads	▪ 17,808 km rehabilitated roads ▪ 11,020 km increased length of paved roads ▪ 10,000 km new roads	▪ 120,000 km rehabilitated roads ▪ 110,000 km increased length of paved roads ▪ 95,000 km new roads
Investments required	▪ USD 24 billion	▪ USD 80 billion	▪ USD 350 billion

SOURCE: Transportation TWG; Transformation Agenda; NIIMP development team

Rail

In the short to medium term, the rail network needs to be almost completely rehabilitated or rebuilt, with significant expansions which will also cover linkages to other modes of transportation such as ports and airports.

This will substantially increase the emphasis on rail transport. The long-term vision for 2043 envisages a high-speed rail network between major Nigerian cities, transforming the rail sector into an adequate and viable transport option for passengers and freight, and for rail to connect to neighbouring countries in order to become a viable transport option for the ECOWAS sub region.

Aviation

In the short term, the aviation sector envisages rehabilitating and scaling up the existing airport infrastructure, to meet the requirements of increased (and further increasing) air passenger traffic. Further emphasis is placed on improving airport and airline security to align with international standards by 2023.

This coupled with the expansion and improvement of the nation's international airports, it's no gain saying that the 2043 goal for Nigeria is to become the undisputed aviation hub in the region.

TABLE 3.4: FUTURE STATE OF TRANSPORT (RAIL)

	Short-term (2018)	Mid-term (2023)	Long-term (2043)
Strategic priorities	▪ Rehabilitate rail network – Port Harcourt-Maiduguri – Zaria-Kaura Namoda – Kano-Nguru ▪ Increase emphasis on rail transportation, both passenger and freight. Build new standard gauge railway lines – Abuja-Kaduna track – Lagos-Ibadan track – Ilorin-Minna track – Minna-Kano	▪ Continue network rebuilding and expansion so that rail services are commercially viable	▪ High speed rail network between major cities – Lagos-Abuja – Port Harcourt-Lagos – Abuja-Kano – Port Harcourt-Kano ▪ Rail-viable transport option ECOWAS
Additional infrastructure stock (cumulative)	▪ 389 km of standard gauge constructed ▪ 2,750 km of narrow gauge rehabilitated ▪ 77 stations ▪ 2 ports with rail ▪ 11 airports with rail links rail system ▪ 750 locomotives, wagons, coaches	▪ 389 km of standard gauge constructed ▪ 2,750 km of narrow gauge rehabilitated ▪ 187 stations ▪ 6 ports with rail ▪ 17 airports with rail links system ▪ 23,088 locomotives, wagons, coaches	▪ 6,000 km of standard gauge constructed ▪ 2,750 km of narrow gauge rehabilitated ▪ 427 stations ▪ 6 ports with ▪ 25 airports with rail links system ▪ 49,777 locomotives, wagons, coaches
Investments required	▪ USD 5 billion	▪ USD 10 billion	▪ USD 75 billion

TABLE 3.4: FUTURE STATE OF TRANSPORT (AVIATION)

	Short-term (2018)	Mid-term (2023)	Long-term (2043)
Strategic priorities	▪ Rehabilitate existing airports ▪ Construct a set of 4 new airport terminal buildings ▪ Improve airport and airline safety/security	▪ Upgrade and expand international airports ▪ Improve air safety to ICAC standards and recommended practices	▪ Establish Nigeria as the regional aviation hub in West Africa
Infrastructure required to cater to passenger throughput per annum	▪ 12 million passengers per annum	▪ 25 million passengers per annum	▪ 110 million passengers per annum
Investments required	▪ USD 5 billion	▪ USD 7 billion	▪ USD 50 billion

SOURCE: Transportation TWG; Transformation Agenda; NIIMP development team

Maritime

The maritime sector aspires to significantly increase its capacity and emphasis is on transportation of passengers and freight via inland waterways, expand current port throughput, and establish Nigeria as a regional port hub.

This requires rendering significant investment in port infrastructure, rendering the inland waterways network navigable all year round and building human and physical capacity for inland water navigation and deep seaports in the short term. Ramping up the performance, efficiency and competitiveness of the ports and inland waterways is a central priority for 2023.

For that purpose, a set of requirements have to be met, in particular, reducing vessel turnaround time, fostering inter-port competition, and improving safety and security at the ports.

Nigeria's aspiration in the maritime sub-sector is to be the major seaport hub for West Africa by 2043.

TABLE 3.6: FUTURE STATE OF TRANSPORT (MARITIME)

	Short-term (2018)	Mid-term (2023)	Long-term (2043)
Strategic priorities	▪ Increase capacity of inland waterways transportation – Dredge 1,000+ km of inland waterways – Build river bank protection ▪ Enhance performance and competitiveness of sea ports – Build 3 new deep seaports (Lekki, Olokola, Ibaka)	▪ Improve port productivity with further reductions in turn-around time for vessels ▪ Enhance competition of ports – Build 3 new deep sea ports (Lekki, Olokola, Ibaka) - continued ▪ Port management model that attracts full private sector involvement and promotes market principles	▪ Establish Nigeria as the regional port hub ▪ All waterways fully navigable
Infrastructure required	▪ 2,000 km of navigable waterways ▪ 30,000 operational boats, vessels and barges ▪ 75% of total ports operating 24 hrs ▪ 4 patrol boats deployed ▪ 2.2 km of roads rehabilitated and maintained within ports	▪ 4,000 km of navigable waterways ▪ 90,000 operational boats, vessels and barges ▪ 100% of total ports operating 24 hrs ▪ 12 patrol boats deployed ▪ 14.2 km of roads rehabilitated and maintained within ports	▪ 9,000 km of navigable waterways ▪ 140,000 operational boats, vessels and barges ▪ 100% of total ports operating 24 hrs ▪ 22 patrol boats deployed ▪ 34.2 km of roads rehabilitated and maintained within ports
Investments required	▪ USD 2 billion	▪ USD 7 billion	▪ USD 50 billion

SOURCE: Transportation TWG; Transformation Agenda; NIIMP development team

Re-modelling of Malam Aminu Kano International Aitport in progress

Urban Transport

The urban transportation consists of core transport infrastructure (road, rail, etc l), public transportation infrastructure (bus lanes, walkways, bus stations), and fleet (buses, taxis, ferries).

Urban transportation aspires to develop the capacity to sustain and continuously improve the quality of transport services in urban areas. In the short term, the focus will be to conduct maintenance on roads in urban areas, introduce high-capacity buses to alleviate congestion in worst areas and modernise terminals, hubs, and motor parks. In the medium term, the focus will be on introducing rail mass transit in urban areas of over 1 million people (urban rail and rolling stock) starting with Lagos, Abuja, Port Harcourt, Kaduna and Kano. By 2043, the vision is to have functioning urban transportation in all major cities and an urban rail network in all cities with population greater than one million.

TABLE 3.7: FUTURE STATE OF TRANSPORT (URBAN TRANSPORT)

	Short-term (2018)	Mid-term (2023)	Long-term (2043)
Strategic priorities	▪ Develop, operate and maintain UTC systems ▪ Develop capacity to sustain and continuously improve the quality of transport services – Introduce 6,000 high-capacity buses in urban areas – Modernise terminals, hubs and motor parks as well as the provision of related infrastructure such as lay-byes, bus shelters, pedestrian facilities and cycle tracks	▪ Improve synergies between land use planning and transportation planning in all cities ▪ Set base for urban rail transport – introduce Rail Mass Transit in urban areas of over 1 million people (urban rail and rolling stock) starting with Lagos, Abuja, Port Harcourt, Kaduna and Kano	▪ Functioning urban transportation in all major cities ▪ Urban rail network in all cities with population greater than 1 million people
Additional infrastructure stock (cumulative)	▪ 6,000 buses ▪ Urban road maintenance in 50 biggest cities	▪ 200 km railway lines in urban areas ▪ 500 km dedicated bus lanes ▪ New ferry systems in Port Harcourt and Lagos	▪ 2,000 km of urban rail networks ▪ Additional buses to cater to population in all cities greater than 1 million people
Investments required	▪ USD 2 billion	▪ USD 20 billion	▪ USD 275 billion

SOURCE: Transportation TWG; Transformation Agenda; NIIMP development team

3.1.3 Private Sector Expectations and Priorities

Expectations of the private sector include: Addressing the state of under-capitalisation, especially within the aviation sub-sector, and the sector's weak corporate governance;

Reducing the high operational charges and tariffs needed to operate in the transport sub-sectors;

Developing connectivity to address the limited intermodal connectivity between ports, airports and roads, and limited connectivity with other African and regional hubs;

Establishing coherent policies such as road standards, axle load policies and ease of securing right of way, to facilitate infrastructure development;

Improving public contracting, tendering and quality control;

Revising laws that place the construction and management of road, rail, aviation and maritime infrastructure under the exclusive purview of the federal government;

Establishing fiscal incentives (e.g., pioneer status), particularly for ancillary and rolling stock in all sub-sectors;

Increasing the concession management of infrastructure, aligning with bilateral service agreements, reducing agency fees and improving infrastructure maintenance capabilities.

Enablers

- A low interest rate regime, especially for aircraft leasing and purchase;
- Ancillary infrastructure; power, airport hotels, scanners, radars, lighting on runways, etc., that allow for more efficient operations;
- Rail connections between key intra-city airports to aid transfers;
- Investments to improve aviation security, acquisition of newer planes and local aviation maintenance capability;
- Federal government commitment to adopting a PPP framework for road construction, maintenance and management;
- Access to concessionary (cheap) financing and long-term capital, right of way and tax exemption and duty waivers;
- Adequate and efficient maintenance of the existing road network;
- Government support in terms of guarantees required to enhance the viability of projects in the sector;
- Reforms similar to the 2005 port reforms to encourage private sector participation in developing rail infrastructure;
- Reconnecting the railways to the ports and ensuring provision of serviceable rolling stock;
- Policy stability;
- Reducing the number of government agencies at the ports;
- Improving port infrastructure so as to accommodate current and emerging traffic at the seaports.
- The priority public and private sector transport projects for the short and long-term include:
- Continue with remodelling of airports, focusing on maintaining the highest operating standards;
- Connect all 3 airports in Lagos with a monorail to allow for ease of access;
- Improve lighting on airport runways;
- Build transit parks for trucks along federal roads;
- Complete key projects in the roads sub-sector including; Lagos-Ibadan road; Second Niger bridge; Benin-Shagamu; East-West Road; Costal Highway: Lagos, Warri, Port-Harcourt, Calabar, Abuja, Ilorin; and 4th Mainland bridge.
- Complete key projects in the rail sub-sector including: heavy duty rail projects for cargo traffic; Lagos blue and red line projects; East west rail line (Lagos-Calabar); Abuja light rail; Lagos Kano rail line (Lagos-Jebba and Jebba-Kano); Lagos-Ibadan rail line: Abuja-Kaduna rail line; Ajaokuta-Warri rail line;
- For the maritime sector, the priority would be to improve customs performance; tax exemption and duty waivers on equipment; ports infrastructure including Greenfield development; deep seaports development; shipyards for shipbuilding and repairs; and inland waterways development to allow for an intermodal transportation system.

3.1.4 Required infrastructure Investments

To achieve the objectives and goals of the sector, substantial additional investments in infrastructure are required. Top-down estimates through international benchmarks of the investment needs suggest the Transport sector needs about USD 775 billion over the next three decades to achieve the targets set by the sub-sectors (including construction, rehabilitation, and maintenance).

- The **roads** sub-sector accounts for the lion's share of required transport infrastructure investments. Reaching the aspirations will require an investment of about USD 350 billion over the next 30 years, for rehabilitation, expansion and upgrading of the Nigerian road network.

The corresponding investments throughout these three decades comprise the rehabilitation of about 120,000 km of existing road, increasing the total length of paved roads from the current 70,000 km to more than 180,000 km and the construction of about 95,000 km of new roads. This also includes construction and rehabilitation of feeder roads to all major seaports and airports. Of the overall amount, USD 22 billion will have to be invested in the first five years.

Required infrastructure for scaling up the Nigerian **rail** sub-sector translates into required investments of about USD 75 billion. Most of this figure (about USD 30 billion) is accounted for by new construction of more than 6,000 km of standard gauge rail. Other requirements comprise the rehabilitation of the single gauge rail network, construction of new stations and linking all important seaports

■ *Silos*

and airports to the national rail system. USD five billion is required in the first five years.

- Required infrastructure investments for the **aviation** sub-sector amount to USD 50 billion. This comprises substantial remodelling and rehabilitation of international airports in Lagos, Abuja, Kano, Enugu, Port Harcourt and Calabar. New construction will include the new Bayelsa airport as well as the second runway in Abuja. About USD five billion needs to be spent in the near-term (by 2018).

- Required infrastructure investments for **maritime transportation** amount to about USD 50 billion. For the most part, this amount is accounted for by sea- port infrastructure (about USD 30 billion). This includes improving connectivity to the national transportation systems (road, rail) as well as substantial refurbishments and expansions for the port complexes in Lagos, Tin Can Island, Onne, Port Harcourt, Calabar and the Delta port complex.

- **Urban transport** infrastructure in Nigeria needs total investment of USD 250 billion over the 30 year period. USD 120 billion will be required for transport infrastructure (road and rail), USD 40 billion for public transportation infrastructure (bus lanes, walkways, bus stations), and USD 90 billion for fleet management (buses, taxis, ferries). Over the first five years USD four billion is required for urban transportation, focusing on urban road transport infrastructure.

3.1.5 Legal enablers

A review of the relevant infrastructure-related legislations in the transport sector identified the following key legal enablers for infrastructure development.

- Federal Highways Act
- National Railway Corporation Act
- Nigerian Civil Aviation Authority Act
- Nigerian Ports Authority Act
- Nigerian Inland Water Ways Act

Federal Highways Act

The Act is investor-friendly as Section 2(4) empowers the Minister to engage other persons for the performance of functions set out in Section 2(1)-(3) of the Act. Furthermore, the Act does not conflict with the constitution, as section 2(9) fully recognizes the jurisdiction of the states to regulate the use of highways but asserts superiority of the Act over the laws of any state on the subject. The Act is also flexible enough and encourages sub-national participation.

The conflict area in the Act is in the enforcement of the penal enactments in the Act, i.e., Sections 5-18. Here, no provision is made as to specify the court that has jurisdiction to try offenders. The Act cannot be said to be an obsolete law, but there is the need for legislation to ensure and enforce regular maintenance of federal highways. The Act is also flexible for legislative openness, but there is a need to legislate on the duty of government to establish a Fund for and to ensure regular maintenance and reconstruction of the federal highways.

Nigerian Railway Corporation Act

Railways are listed in the exclusive list of the constitution. Section 5 provides for membership of the corporation in terms which seem to be aimed more at political patronage. The duties of the corporation spelled out in Section 15 and 17 are specialised. The Act under Section 28 and 29 prohibits construction or extension of rail lines without prior permission of the Minister, and also does not provide any express permission for private sector participation, except through the issuance of stock to meet its needs for finance under Sections 42 and 43.Again under Section 25, the Act prohibits litigation against the corporation for recovery of compensation. Section 69 provides that the scale of damages to be awarded for acts caused by the corporation is a mere ₦200 (equivalent of USD 1.25). All these factors make the Act less investment-friendly. While the Act is constitutional, the listing of railway transportation in the exclusive list of the constitution discourages sub-national participation going by the provisions of Section 29.

Generally, conflict is bound to arise if a state identifies a need for rail transport services within its territory but the Act imposes a restriction against it. Furthermore, the power to acquire land is subject to the Land Use Act, therefore conflicts are bound to arise in the implementation of the Act. The provisions of the Act have not been adapted to present realities and it is therefore out-of-date. The Act being subject to the National Assembly is open to amendment and could sufficiently address infrastructure development in Nigeria if properly revised.

Nigerian Ports Authority Act

The Nigeria Ports Authority (NPA) is established by Section 1 of the Act, and Section 2(i) (e) provides for executive directors of the authority though without specifying their number. Section 7 of the Act empowers NPA to manage, supervise and control or take part in the management, supervision or control of any company or undertaking under its purview. This Act also allows for sub-national participation based on the provisions of Sections 7 and 8(b) and 9.
The conflict area of this Act relates to acquisition of land and compensation pursuant to Sections 24 and 29(2) of the Act. The section places jurisdiction on the High Court exercising jurisdiction in the place where the land is located, while the Federal High Court does not have jurisdiction over land disputes.

The law is generally effective but being legislation on a subject which has international correlations, there will always be the need to stay abreast of international best practices, with a view to ensuring compliance. There are few or no restrictions in the Act; therefore, there is legislative openness for infrastructure development inherent in the Act.

National Inland Waterways Authority Act

Sections 13 and 23(i) of the Act limits participation by the private sector; under this Act, activities and functions of the National Inland Waterways Authority by any person other than the Authority is a punishable offence. The Act also prohibits persons from taking sand, gravel or stone from the waterways, making this

legislation unfriendly to investment.

Waterways are not defined in the Act, except in section 10 which lists out sundry rivers across the country. Private participation in the activities listed in Section 23 is prohibited without limitation even when it is obvious that such activities are the major economic activities of the locals in the affected areas. The authorities are not equipped to perform all the functions listed in Section 23 without issuing licenses to the private sector. Again, the provisions 23(i) (a) of the Act are a limitation of the powers of the states under the Land Use Act. While the Act is not in conflict with the constitution, it does not encourage sub-national participation due to the restriction expressly imposed by Section 23.

As regards conflicts, the functions conferred on the Authority by Sections 8, 9 and 11 of the Act are covered by Sections 7, 8 and 30 of the Nigerian Ports Authority Act, in respect of many items. The absence of a proviso in either of the Acts on the exercise of these powers by either of the authorities is a potential source for conflicts.

The provisions are not obsolete except for the need to keep a close tab on best practices in other jurisdictions. The Act is open to amendment but its provisions are not easily open to construction which can enhance private participation and investment.

Nigerian Civil Aviation Authority Act

Section 1 of the Act establishes the authority and spells out its functions in Sections 7, 35 and 36. There is no express provision enabling the authority to concession any aspect of its functions to the private sector. The Act is constitutional. However, the Act does not permit sub-national participation, as it is listed in the Exclusive Legislative List.

Section 22 of the Act contains healthy provisions for land acquisition by the authority which removes or at least remits conflict, thus there is no legislative conflict. The law is not obsolete but there is need to ensure that it is in line with global best practices. Regarding legislative openness, there is no limitation inherent in the Act, but there is need for legislative flexibility to enable engagement of the private sector.

3.2 ENERGY

3.2.1 Current State of Infrastructure

The Energy sector comprises the oil and gas as well as the power sub-sectors. It is one of the most important sectors to Nigeria because of its multiplier effect across all sectors of the economy, its contribution to government revenues, and its potential to spur significant economic growth. Nigeria has an abundance of most of the energy sources (fossil fuels, hydro, solar, tidal, geothermal and biomass) which if properly harnessed can meet the country's energy needs in the short to medium term.

Oil and Gas Infrastructure

As at 2012, Nigeria's oil reserves at present stand at 36.6 billion barrels while the gas reserves stand at 182.8 trillion cubic feet. Crude oil production delivers an average of 2.5 million barrels per day (mbpd). Nigeria installed refining capacity is 445,000 bpd, but the actual output of the refineries is as low as 45,000 bpd, which is insufficient to meet national demand and necessitates imports. Current capacity utilization at just above 30 per cent is significantly below international benchmarks, which typically operate at 95 per cent of installed capacity.

The Nigerian National Petroleum Corporation (NNPC) owns a 5,120 km network of pipelines from its refineries. The storage facilities owned by the NNPC include 258 tanks in 22 depots, with a combined holding capacity of 2.6 billion litres of PMS. Other storage and transportation networks are owned by the Depots and Petroleum Marketers Association as well as the major petroleum companies and independent petroleum marketers across the country.

The country's plan is to open up the sector to investment, thereby increasing national reserves to 40 billion barrels at a production rate of 4mbpd by 2020. NNPC has begun a significant turnaround maintenance (TAM) plan to revamp its deteriorated refineries. There are also plans to construct additional refineries in Lagos, Bayelsa and Kogi states. However, construction is yet to commence on any new refineries.

The average refining capacity utilisation of

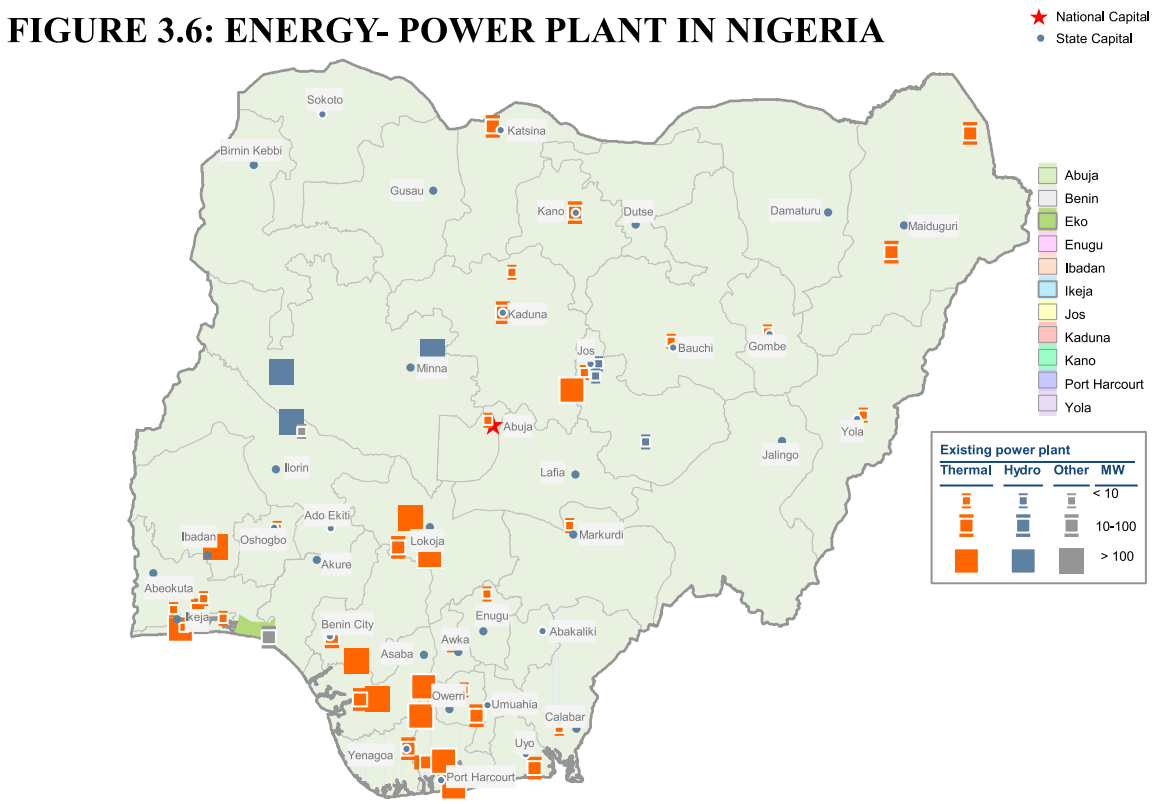
■ *Oil Pipeline in Nigeria*

the 4 refineries has fluctuated from 47.55 per cent of installed capacity (2002) to 20.82 per cent (2006) to 26.37 per cent (2011). This fluctuation reflects challenges in the sector, especially the need to improve maintenance so as to operate refineries at optimum capacity. Furthermore, transport and storage infrastructure in the oil and gas sector is capital intensive, and investment in Nigeria has been slow compared to other countries with similar potential.

Power Infrastructure

Generation: Nigeria has installed electricity generation capacity of about 7,000 MW, but capacity utilization currently ranges between 3,500MW and 4,500 MW and in June 2013 was as low as 2,200 MW. 70 per cent of Nigeria's current installed capacity is gas-fired, with the remaining 30 per cent coming from hydro. The country's total exploitable large-scale hydropower potential is estimated to be over 12,000 MW. Nigeria is estimated to have sufficient gas reserves to generate over 50,000 MW, but currently only has installed capacity of 5,000 MW. Recent reforms in the power sector have seen increased participation of private sector players. 55 licenses have been issued to private sector entities since 2000. Of this number, 20 small private electric power generation plants are operational, while 9 are under construction. With the privatization of the PHCN and NIPP assets, there will be quite a few generation companies operating in Nigeria.

FIGURE 3.6: ENERGY- POWER PLANT IN NIGERIA



SOURCE: Natural Earth, African Development Bank

PMS - Premium Motor Spirit (commonly referred to as petrol)

The biggest challenge faced in generation is insufficient investment over the past decade and low availability of fuel. Although the National Integrated Power Project (NIPP) plants have been built, this level of investment is insufficient compared to the overall need. Furthermore, although Nigeria has significant fuel supplies, especially gas, limited supplies are available for power generation.

The power sector is undergoing privatisation in both Generation and Distribution. The first round of privatisation is nearly complete. 10 of the 11 Distribution companies and five of the six generation (only thermal and hydro will remain in government control) companies have been privatized. This should increase much needed investment in generation assets. Additionally, a further 10 generation plants built under the NIPP, a fast-track scheme launched in 2004 to build government-funded, gas-powered plants during the implementation of the 2005 Electric Power Sector Reform Act, have just begun the process of being privatised. The plants, which have reached varying levels of completion and have a total design capacity of 5,454 MW, are owned by the Niger Delta Power Holding Company (NDPHC) and are located in the gas-producing southern States.

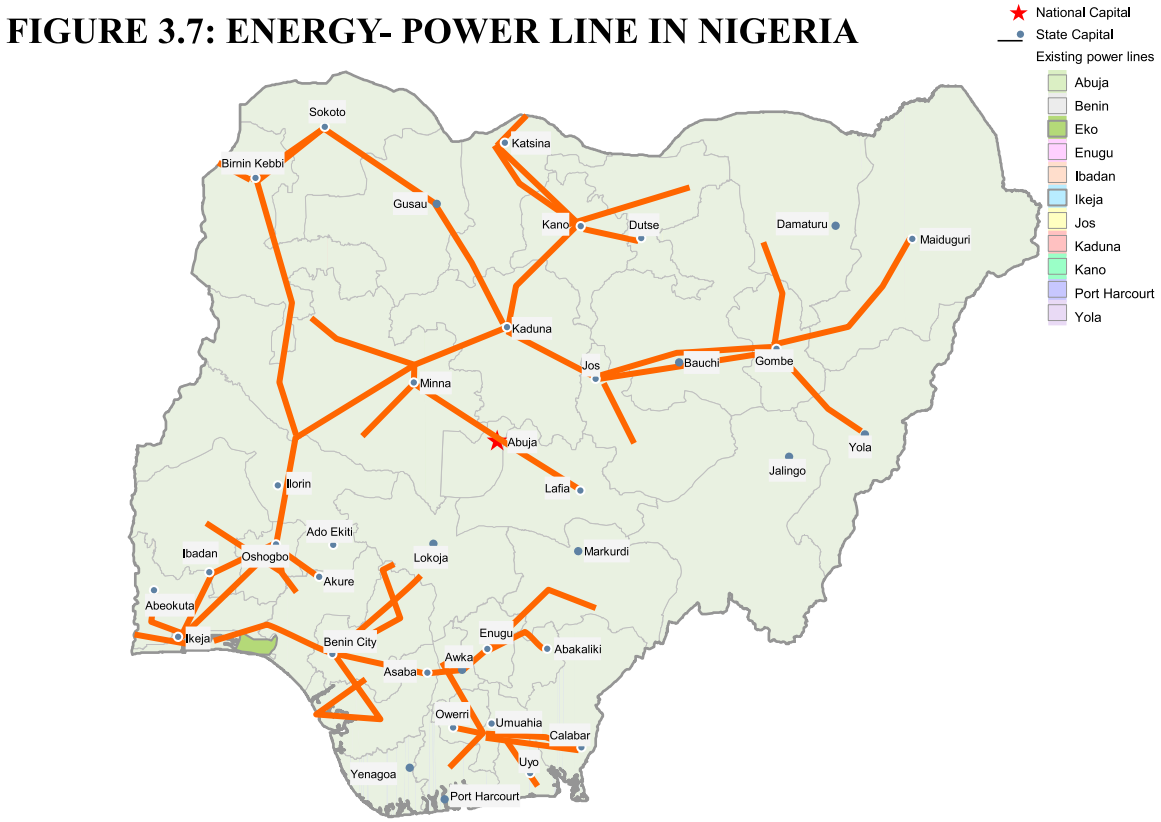
TABLE 3.8: OVERVIEW OF CURRENT ELECTRICITY GENERATION CAPCITY

	Generation plant	Location	Installed capacity MW	Available capacity MW
Hydropower	Kainji	Niger	760	480
	Shiroro	Niger	600	450
	Jebba	Kwara	54	450
Subtotal			1,900	1,380
Oil-fired	Ijora	Lagos	60	-
Gas-fired	Afam	Rivers	726	60
	Ughelli	Delta	900	300
	Egbin	Lagos	1,320	1,100
	Sapele	Delta	1,020	90
	Geregu	Kogi	414	276
	Omotosho	Ondo	304	76
	Olorunsogo	Ogun	304	76
Subtotal			4,988	1,978
Coal-fired	Oji	Enugu	30	-
Total			6,978	3,358

SOURCE: NV 20:2020

Transmission – Nigeria's transmission network splits into 2 types, i.e., a 330 kV network and a 132 kV network. For each network, there are 2 elements of basic transmission infrastructure: transmission lines and transmission substations. As at 2009, Nigeria possessed 5,524 km of 330 kV transmission lines and 6,802 km of 132 kV lines. There are 32 330/132 kV substations spread across the country with total installed transformation capacity of 7,688 MVA (equivalent to 6,535 MW). The available capacity of the 330/132 kV transmission network is about 96 per cent of installed capacity.

FIGURE 3.7: ENERGY- POWER LINE IN NIGERIA



SOURCE: Natural Earth, African Development Bank

Nigeria currently faces losses in energy transmission (including distribution) of as much as 30 per cent due to deteriorating transmission lines as a result of the need for better maintenance. Furthermore, the current transmission grid begins to face significant technical constraints and issues once it goes above 5 to 5.5 GW capacity. Transmission is a critical bottleneck to achieving generation above this level. This will need to be increased as an immediate priority. There is critical short- term need for investment and capability building to deliver immediate network improvements and the maintenance programme to strengthen the grid. Getting the basics right, completing high- priority projects and delivering significantly more stable network capacity should be the focus in the short term.

Ongoing projects by the Federal Government and NIPP are expected to increase the length of transmission lines by 6,577 km of 330 kV lines and 1,514 km of 132 kV lines, and to also increase the capacity of 330/132 kV and 132/33 kV transformers by 6,940 MVA and 4,663 MVA respectively. The proposed construction of 10 new 330/132 kV substations and seven new 132/33 kV substations, as well as the expansion/reinforcement of 32 existing 330 kV and 13 existing 132 kV substations will also boost the transmission capacity of on-grid power in the short term.

Distribution – Distribution infrastructure is made up of distribution lines and substations of varying capacities. The total length of 33 kV, 11 kV and 0.416 kV distribution lines as at 2009 was 37,173 km, 29,055 km and 70,799 km respectively. There were 102 132/33/11 kV substations with a combined installed transformation capacity of 9,130 MVA (7,761 MW). The available capacity of these distribution networks averaged 94.1 per cent of installed capacity (8,448 MVA).

3.2.2 Aspiration and Targets

Nigeria has set ambitious objectives for the Energy sector.

Power

For the power sub-sector the priorities identified are as follows:

- Increase power generation from the current 3.5MW to 20 GW by 2018 and to 350 GW by 2043, with focus on gas as the immediate priority and adding alternative sources after 2023.
- Strengthen and increase transmission capacity, with immediate focus on the national backbone.
- Increase distribution capacity, with priority placed on making power available for industrial users and reducing distribution losses.
- Finalise privatisation of power generation and distribution, and extend privatisation to include NIPP assets.
- Build capabilities, increasing human capacity 20 times by 2023 and 40 times by 2043.
- Increase rural electrification.
- Implementation of all power infrastructure projects shall comply with available international best practices.

Oil and Gas

For oil and gas, the priorities are to:

- provide gas distribution infrastructure to increase gas utilization;
- increase capacity in oil/gas production
- increase refining capacity to fully meet national demand;
- intensify exploration activities;
- increase the percentage of capital expenditure in-country;
- increase bulk storage capacity for oil and gas;
- increase the capacity of the pipeline network;
- increase the use of sustainable fuels; and
- establish links to the regional gas network (West African Gas Pipeline, Nigerian phase of the trans-Saharan gas pipeline).

The specific strategic goals for the plan periods (2015- 2018, 2019-2023 and 2024-2043) are shown in *Table 3.9*.

TABLE 3.9: ENERGY SECTOR GOALS

Sub-sector	2018	2023	2043
Power	▪ Increase efficiency of existing power infrastructure – increase load factor, decrease losses in transmission, as well as distribution, billing and collection ▪ Revamp and expand transmission network to match capacity increase in generation ▪ Grow generation capacity by ~4.5 GW per annum – ~70% gas, 30% hydro and other sources ▪ Increase human capacity through improved quality and quantity of training programmes	▪ Ramp up and stabilize capacity additions at very high rate of 8-10 GW per annum ▪ Expand the national grid in line with capacity addition and implement smart grid technologies ▪ Develop hydro and other alternative generation capacity to maintain 70:30 fossil fuels to alternative ratio ▪ Develop human capacity	▪ Reduce transport and consumption losses to global standards ▪ Increase share of alternative energy to 35% ▪ Export electricity to other ECOWAS countries
Oil and Gas	▪ Revamp existing refineries and build new refining capacity ▪ Ensure adequate gas supply for power generation needs ▪ Reduce theft, vandalism and oil spill ▪ Increase oil and gas production and reserves ▪ Increase local content and human capacity ▪ Grow oil and gas based petrochemical manufacturing capacity	▪ Increase local refining capacity to fully meet national demand ▪ Increase gas production, handling and transport capacity in line with power sector needs ▪ Increase oil and gas reserves and production ▪ Zero oil/crude theft and minimal oil spill ▪ Promote use of sustainable fuels ▪ Link to regional gas network	▪ Increase production and refining capacity in line with national demand growth ▪ Reduce greenhouse gas emissions to be in line with the Kyoto Protocol ▪ Eliminate operation-related oil spill ▪ Align with global health and safety practices

SOURCE: Energy TWG

Furthermore, these objectives have been translated into a set of specific targets for the full 30-year period, as detailed.

Power Targets

For the power sub-sector, there are several targets for the period 2014-2043 [*Figure 3.14*].

The overarching goal is to increase average generation capacity from today's about 7 GW to 350 GW by the end of the 2043, and to ensure sufficient transmission and distribution capacity for delivery of this energy output to end users. This will give Nigeria 80 per cent of the per capita generation capacity of the present day USA in 2043, and will require Nigeria to build in excess of 10,000 MW of capacity per annum for the next 30 years.

To achieve this Nigeria will need to develop national capabilities. This will be achieved through aggressive training and research and development activities. Currently, low local content in both technological and human resource input remains a major challenge in the sector.

TABLE 3.10: ENERGY SECTOR TARGETS (POWER)

Name	Unit	Definition	Current	Target		
			2013	2018	2023	2043
Generation capacity	GW	Total Installed generation capacity	7	20	56	350
Transmission route lines: 330 KV	km	Total length of 330 KV transmission lines	5,552	8,000	10,000	16,600
Transmission route lines: 132 KV	km	The total length of 132 KV transmission lines	7,040	12,000	15,000	22,000
Transmission capacity	MW	The total transmission transformer capacity~	~5,000	40,000	75,000	4,70,000
Distribution capacity	MW	The total distribution transformer capacity	6,000	36,000	67,000	4,20,000
Access to electricity	Percent	Proportion of population that have access to electricity where access means customer premises within 1 km of 11/KV network	40	75	90	100

SOURCE: Energy TWG

Oil and Gas Targets

The main goal in the oil and gas sub-sector is to advance "gas to power" in order to meet the rapidly growing energy demand of the country. The target is to increase oil production to 4 mbpd, and increase refining capacity to a level which would meet local demand and export potential, estimated at 4 mbpd by 2043, with the target of becoming premium motor spirit (PMS) self-sufficient by 2030. Similarly, Nigeria plans to increase its gas production capacity from 7,580 to 11,000 mcfpd by 2018, 15,000 mcfpd by 2023 and 30,000 mcfpd by 2043. The increase in gas production is necessary to supply the planned gas power stations and develop other gas-based industries, e.g., fertilizers, agro-processing and petrochemicals.

These are ambitious targets, especially against the backdrop of historical performance. For example, upstream oil production has been between 2.1 and 2.6 mbpd in the last 8 years as a result of security issues, crude theft, and long-term funding challenges of NNPC. Concerning midstream, there is a huge shortfall in refined products (about 12 billion litres), with the difference made up in very expensive subsidies. Current data suggests that Nigerian refineries run at a low capacity utilisation rate of below 35 per cent.

The corresponding manufacturing capacities of the gas-based industries are set to grow accordingly. In terms of

exploration, the goal is to grow natural gas reserves from 187 Tcf to 191.5 Tcf in 2023 and 200 Tcf in 2043 (which translates into a need for finding 85 Tcf over the 30-year period).

Against the backdrop of these targets, it needs to be stressed that insecurity, especially in the Niger Delta, poses a substantial threat to growth in the oil and gas sector. Steps being taken to address the issues need to be vigorously pursued to stem the tide and foster a conducive environment for oil and gas activities. Poor Government funding, especially in the area of exploration will be urgently and strategically addressed. The menace of pilfering and theft of products need to be urgently addressed also in order to fully realise the targets set for oil and gas in general, and for oil in particular.

TABLE 3.11: ENERGY SECTOR TARGETS (OIL AND GAS)

			Current	Target		
Name	Unit	Definition	2013	2018	2023	2043
Production capacity – oil	kbpd	Facilities required to safely and sustainably produce discovered volumes	2,500	2,750	3,000	4,000
Production capacity – gas	mcfpd	Facilities required to safely and sustainably produce discovered volumes	8,000	11,000	15,000	30,000
Refining capacity	kbpd	Totality of facilities required to refine crude oil	445	750	1,000	4,000
Refined products storage capacity	billion litres	Total stock of storage facilities/ depots required to hold strategic number of days of national daily consumption	2.6	3.2	3.8	5.2
Pipeline length (refined)	km	Length of pipeline installed for transportation of refined products	5,120	6,000	7,000	10,000
Pipeline – (crude oil)	km	Length of pipeline installed for transportation of crude oil	3,000	3,300	3,600	4,800
Pipeline capacity (crude oil)	kbpd	Daily volumetric throughput	1.65	1.815	1.98	2.64
Pipeline capacity (refined)	m litres	Daily volumetric throughput	30	38	47	60

SOURCE: Energy TWG

3.2.3 Private Sector Expectations and Priorities

The private sector recommendations on the enablers for private sector participation and priorities for the Energy sector include:

- complete privatisation of power generation and distribution assets;
- create a clear path for development of the Transmission Company of Nigeria (TCN), including a mandate to lead

future industry planning and allow for private sector investment;
- implement the Transmission Reinforcement Plan to address transmission constraints and improve grid capability;

- complete implementation of the Gas Master Plan;
- progress LNG projects that have viable economics and adequate gas supply; and
- enable completion of joint venture gas supply projects (funding, incentives, etc.).

***Enablers*:**
- An effective and efficient regulatory environment for timely approval of projects, contracts, permits, licences, etc., related to infrastructure development.
- Guarantee of Right of Way for infrastructure development and reduced cost of securing access rights.
- Improved regulation of gas pricing to attract investment in gas supply infrastructure.
- Government credit enhancement for IPPs (e.g., secure World Bank PRG).
- Incentives for private sector investment.
- Passing the Petroleum Industry Bill to accelerate expected reforms.

3.2.4 Required Infrastructure Investments

In order to achieve the goals and objectives of the Energy sector, Nigeria needs to increase its investment in Energy infrastructure. Estimates using international benchmarks suggest USD 1,000 billion will be required over the next 30 years to achieve the specific sector targets– USD 600 billion for power and USD 400 billion for oil and gas, which include maintenance cost.

For power, the bulk of the investment will be required to increase generation capacity from current levels of about 7 GW to 350 GW (which will be largely funded by the private sector), to build the transmission network to transfer the generated electricity across the country and to distribute electricity to Nigerians (which will be funded by the private sector). The unit cost estimates for generation are expected to decline in the period 2024–43 as Nigeria becomes more efficient at building power plants and economies of scale exert downward pressure on costs. Over the next 5 years, Nigeria needs to spend USD 23 billion in power, of which USD14-16 billion will be required to increase generation capacity from current levels of about 7 GW to 20 GW by 2018, USD 3-5 billion to increase transmission capacity, and USD 3-5 billion to increase distribution capacity.

For oil and gas, the biggest cost drivers will be increasing existing refining utilisation to match the 445 kbpd capacity, increasing refining capacity to meet local crude production capacity, building additional pipelines, increasing oil production capacity and developing the infrastructure to increase production capacity in oil and gas.

Over the first five years, Nigeria will spend USD 37 billion: USD 12 billion to increase gas production from current levels of 8,000 mcfpd to 11,000 mcfpd, USD 16 billion to increase oil production capacity by 250 000 bpd and USD 9 billion to increase refining capacity by 300 000 bpd. Most of

the refining and oil production increase will be funded by the private sector, whereas a significant part of gas expansion will be funded by the public sector.

To ensure that Nigeria reaches its ambitious targets, it will need to ensure an appropriate cost reflective tariff for power, drive transmission and distribution losses down to a reasonable level in order to make the tariff more affordable, put appropriate gas contracts in place to ensure gas is delivered to power stations and make adequate upfront investments in skills and capabilities to deliver and operate the necessary infrastructure.

3.2.5 Legal Enablers

A review of the relevant infrastructure-related legislations in the Energy sector revealed 24 principal legislations, 16 amendments and 10 sub-legislations governing the oil and gas industry in Nigeria. The key ones are NNPC Act, the Petroleum Act, and the Petroleum Control Act which were found not to be investor-friendly.

Furthermore, it was identified that the provisions of Sections 7(4), 11(2) and 12 of the NNPC Act are all in breach of the provisions of Section 162 of the Constitution which requires that revenues collected by the government be paid into an account called the Federation Account. In addition, Paragraph 2 of the Deep Water Block Allocation (back-in rights) regulation 2003 (a subsidiary legislation under the Petroleum Act) that gives the Federal Government the right to acquire five-sixths of an OPL (Oil Prospecting License) or OML (Oil Mining Lease) interest is invalid to the extent that it is inconsistent with paragraph 35, First Schedule to the Petroleum Act which provides that such participation must be made on terms to be negotiated between the Federal Government and the holder of the OPL or OML.

The laws in the sector cannot be said to be state-friendly as minerals, gas, and oil rights are all vested in the Federal Government of Nigeria.

Furthermore, most of these laws are out-of-date as they are not in line with modern practice. These inform the need to bring this multiplicity of laws into one document in the form of Petroleum Industry Bill (PIB) which is currently before the National Assembly.

3.3 ICT

3.3.1 Current State of Infrastructure

IT connectivity in Nigeria has been growing rapidly in recent years. Today, the country has about 9.8 Tbps of broadband connectivity terminating in Lagos, which is a significant increase compared to less than 3 Tbps in 2010. However, in terms of last mile connectivity, Nigeria still experiences significant gaps.

A large proportion of Nigerians live in rural areas and most of these rural communities do not have access to basic ICT services. Most broadband operators do not consistently offer 256 kbps connections and service reliability remains poor. Also, many urban areas are either not served or underserved.

Nigeria currently has 25,000 base stations, microwave radios covering

169,000 km, and 35,000 km of fibre-optic cables. This is significantly less than the infrastructure stock of comparable countries. South Africa, for example, has four times as many base stations as Nigeria does and 12 times more base stations per million people[1]. India has 20 times more kilometres of fibre-optic cables and seven times more per km[2].

Nigeria's Information and Communication Technology (ICT) strengths include ample coastline and continental shelf, serving as landing points for submarine cables, more-than-adequate undersea cable capacity and capability, and substantial indigenous satellite capacity and coverage.

At the same time, provision of connectivity services is costly due to lack of consistent energy supply, high maintenance costs resulting from fibre-cuts occurring due to theft and poor urban and regional planning, accessibility and security issues, as well as complexities in obtaining right of way. This results in low penetration and slow connectivity speeds and an acute need for additional terrestrial distribution infrastructure.

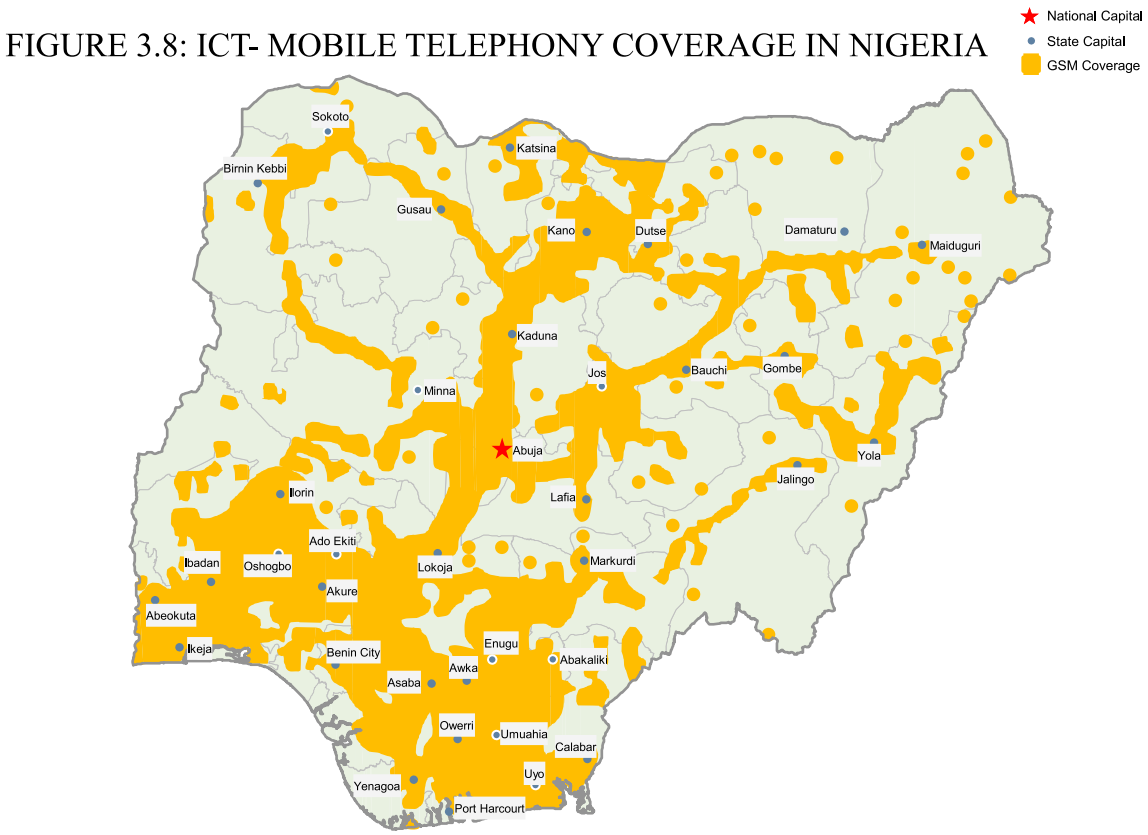
The priority for the sector is to ensure provision of universal access and delivery of quality services through the nationwide development of ICT infrastructure and services. Of prime importance are basic voice/data services and last mile connectivity for broadband internet access.

Moreover, NigComSat is an important element of Nigeria's ICT network, but has been considered in more detail under the Security and Vital Registration section.

Communication Mast in Nigeria

1. Though, it should be considered that population distribution patterns and land topology have significant impact on BTS requirements.

FIGURE 3.8: ICT- MOBILE TELEPHONY COVERAGE IN NIGERIA



SOURCE: Natural Earth, African Development Bank

Mobile Telephony

Nigeria's mobile penetration which is currently 63 per cent rate ranks low, compared to that of similar countries elsewhere. Brazil, with a similar-sized population, has an average of 1.4 lines per person – more than twice that of Nigeria. Also, Nigeria's 63 per cent mobile penetration is not evenly distributed, because most lines are concentrated in the urban and sub-urban areas.

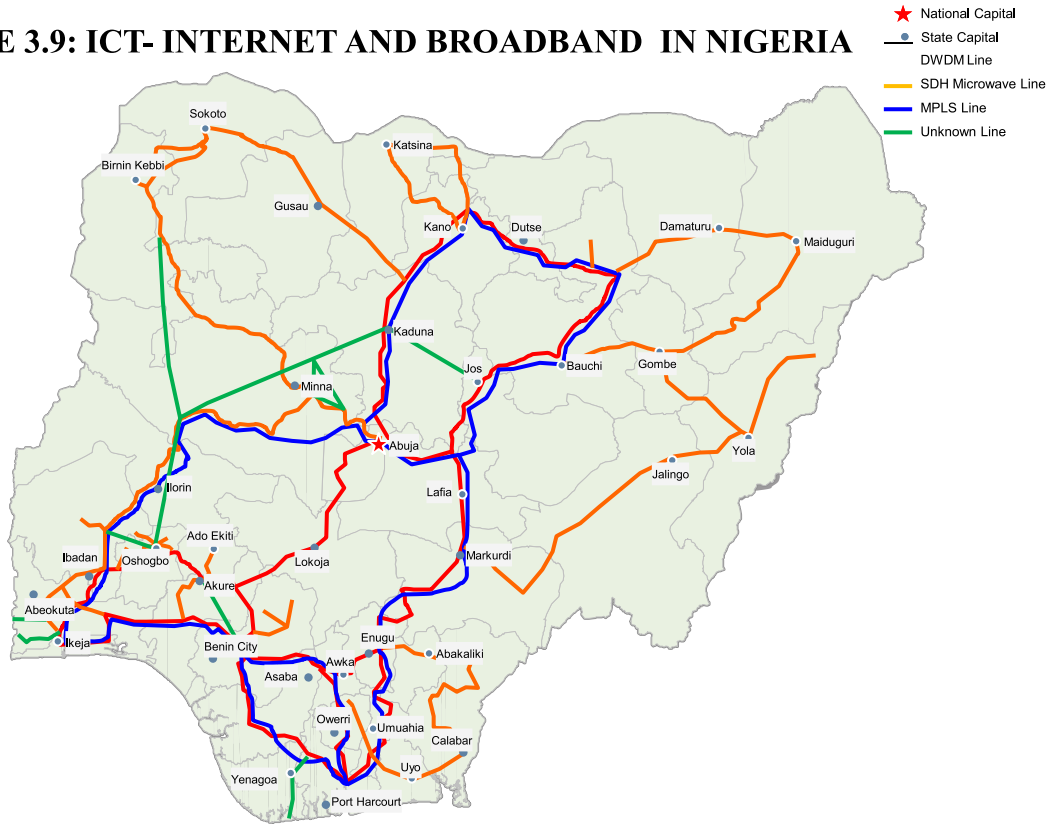
Although it is positive that the country's mobile subscriber base recently crossed the 100 million mark, this also increase the need for further capacity expansion by mobile network operators.

Although there are some initiatives aimed at deploying internet and broadband in Nigeria, many challenges remain, especially with the deployment of a national fibre-optic network to distribute the approximately 10 terabytes of capacity already delivered to Nigeria.

Nigeria has more internet users than any other African country, accounting for 32 per cent of internet users in Africa. However, Nigeria stands fifth in Africa in terms of internet penetration, with 30 per cent of the population using the internet – most of them from urban areas.

Of all internet access, 75 per cent is served by mobile broadband, at relatively high cost. The Presidential Committee on

FIGURE 3.9: ICT- INTERNET AND BROADBAND IN NIGERIA



SOURCE: Natural Earth, African Development Bank

Broadband recently redefined broadband as a minimum speed of 1.5 mbps, meaning that many service providers are not consistently offering up to 256 kbps, most areas are significantly underserved.

Therefore, there is need to accelerate the pace of ongoing efforts, and also to introduce new initiatives to address these and other challenges.

E-Governance

E-governance is the application of ICT for delivering government services, exchange of information, communication transactions, integration of various stand-alone systems and services from Government-to-Citizens (G2C), Government-to-Business (G2B), Government-to-Government (G2G), as well as back-office processes and interactions within the entire government framework.

Currently E-governance is very limited in Nigeria, with less than a quarter of government institutions computerised. Even though about 30 per cent of MDAs have an online presence, less than 5 per cent of actual government services are available online. Numerous initiatives are currently under way to address the low e-governance rate. In order for Nigeria to achieve its goal stipulated in Vision 20: 2020 *"to irreversibly consider the application and promotion of ICT strategy to facilitate its rapid growth and*

development", Nigeria will need to increase its e-governance presence.

3.3.2 Aspiration and Targets

The ICT sector's vision is based on 3 pillars:

- **Knowledge-Based Economy** – build the technological capabilities and capacity to support a knowledge-based economy;

- **ICT contribution to GDP** – increase ICT contribution to the economy by:
  - Using ICT as a wealth creation platform through job creation and entrepreneurial development,
  - Establishing Nigeria as a regional hub for ICT-based services (call centres, BPO/micro-working, analytics)

- **E-governance** – enable efficiency, transparency and accessibility across government.

These objectives have been broken down into specific short-term goals.

- To support the development of **knowledge-based economy,** the specific short-term goals are:
  - Provide universal access to computing devices and connectivity;
  - Improve computer literacy and proficiency for all;
  - Develop a larger cohort of specialised IT professionals.

- To increase the **ICT contribution to GDP**, the short-term goals are:
  - Increase local content in software development;
  - Create an enabling environment for ICT-based entrepreneurs;
  - Establish Nigeria as a regional hub for ICT-based services (film, call centres, BPO, analytics);
  - Incentivise multinational corporations (MNCs) to establish regional headquarters and operations in Nigeria.

- To improve **e-governance**, the identified short-term goals are:
  - Create seamless access to data and services from Federal, State and Local Government for all citizens, businesses and employees;
  - Automate government processes and systems to improve efficiency (G2G, G2C, G2B).

Specific targets for each ICT pillar are as follows:

- **Knowledge-Based Economy**: a set of interim targets for the next five years relating to hardware and connectivity have been identified.

For hardware:
extend the share of homes with access to computing devices to 50 per cent in 2018 (from 20-25 per cent currently)

increase the number of public institutions (e.g., hospitals, police) with access to ICT hardware from 10 per cent currently to 50 per cent

- **Connectivity**,
  - 100 per cent mobile penetration
  - 80 per cent broadband penetration

- **ICT Contribution to GDP**, there are clear targets to assist in developing the local Nigerian ICT industry.

  - increase ICT's contribution to GDP

from 6.5 per cent to 15 per cent in 2043
increase local software usage from 0.01 per cent to 20 per cent by 2043

E-Governance,

- digitalize all government institutions and services by 2023, from the current levels of about 25 per cent

The current infrastructure stock will not be able to support the outlined targets. Hence, Nigeria needs to expand its current infrastructure stock in line with international benchmarks, especially last mile connection infrastructure (base stations, microwaves, fibre and satellites) and the national backbone to support its strategy of providing broadband access to 80 per cent of the population by 2018.

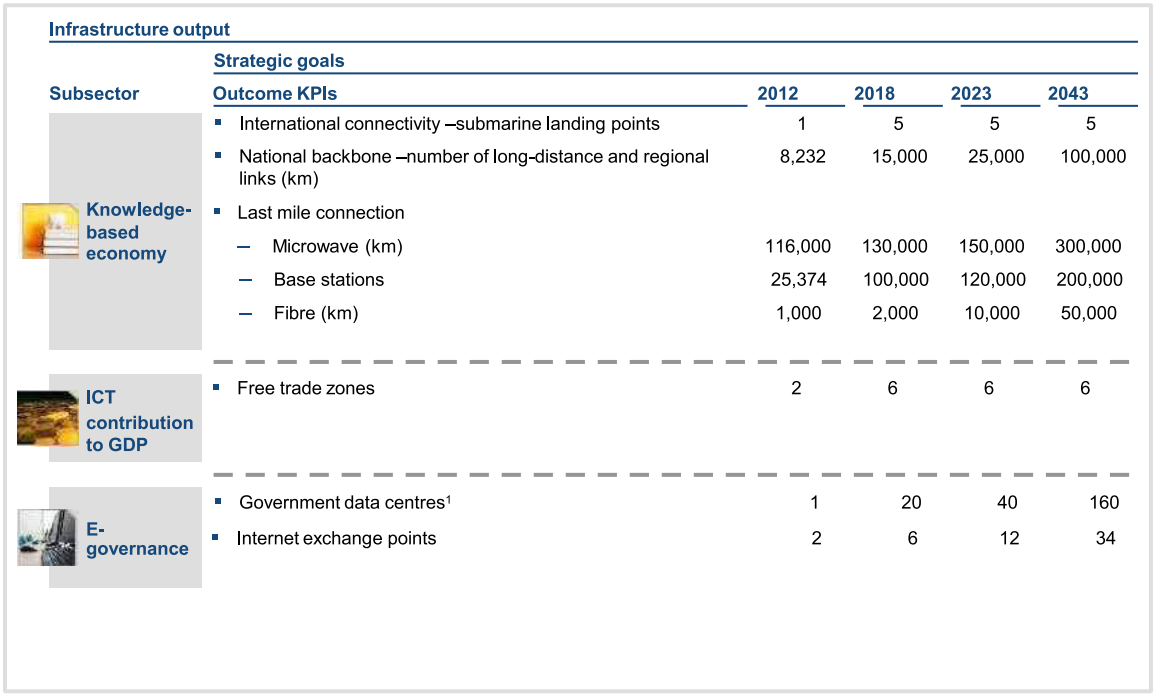
In the short term, Nigeria plans to quadruple the number of base stations and add 10,000km of fibre. In the latter part of the NIIMP, the incremental number of base stations will decline in favour of fibre.

FIGURE 3.10: ICT- SECTOR TARGETS

Subsector	Proposed KPIs	2012 Percent	2018 Percent	2023 Percent	2043 Percent
Knowledge-based economy	▪ Devices				
	– Homes (Percent of homes with access to computing devices)	20-25	50	75	95
	– Schools (number of computers per pupil)	1	5	0	1
	– Institutions (number of hospitals, police headquarters with access)	~10	50	75	100
	▪ Connectivity				
	– Population with access to 3/4G mobile service	70	100	100	100
	– Population with access to broadband service	35	80	100	100
	▫ Cities and state capitals (metropolitan	35	80	100	100
	▫ Rural	35	65	95	100
	▫ Schools and institutions	15	65	95	100
	▪ Population with access to active public access points (<2 km away)	15	65	100	100
ICT contribution to GDP	▪ Ratio of ICT sector gross revenues to GDP	6.5	10	12	15
	▪ Ratio of revenue from locally developed software to total software market	0.01	5	10	20
E-governance	▪ Percentage of government institutions that have been computerised	23	60	100	100
	▪ Percentage of government services online	<5	40	100	100
	▪ Percentage of government MDAs with online presence	31	70	100	100
	▪ Percentage of government MDAs with interactive/transactional services	6	50	100	100
	▪ Percentage of MDAs linked to central database20	25	70	100	100

SOURCE: Transformation Agenda; ICT TWG

FIGURE 3.11: ICT- INFRASRUCTURE TARGETS



Infrastructure output

Strategic goals

Subsector	Outcome KPIs	2012	2018	2023	2043
Knowledge-based economy	International connectivity –submarine landing points	1	5	5	5
	National backbone –number of long-distance and regional links (km)	8,232	15,000	25,000	100,000
	Last mile connection				
	– Microwave (km)	116,000	130,000	150,000	300,000
	– Base stations	25,374	100,000	120,000	200,000
	– Fibre (km)	1,000	2,000	10,000	50,000
ICT contribution to GDP	Free trade zones	2	6	6	6
E-governance	Government data centres[1]	1	20	40	160
	Internet exchange points	2	6	12	34

1 This refers to data centres available across MDAs, not in-house

SOURCE: Transformation Agenda; ICT TWG

3.3.3 Private Sector Expectations and Priorities

The recommendations offered by the private sector on the enablers for private sector participation and priorities for the ICT sector include:

- reducing the high barriers to entry, including the high costs of Right of Way permits and the multiple taxes and licenses required;
- reviewing the high cost of deployment and lack of supporting infrastructure (especially in power and transport);
- addressing the dearth of local ICT-related skills and competence;
- implementing the Open Access Shared Infrastructure framework;
- reducing the costs of duct building and duct infrastructure leasing;
- accelerating Right of Way permits;
- harmonising multiple taxes, and reducing taxes on computing hardware and locally produced software;
- integrating ICT infrastructure into estates and commercial districts;
- harmonising the BTS roll-out;
- releasing the spectrum for LTE/wireless data;
- ensuring consistent minimum provision of 18 hours of power supply per day;
-
- unbundling of metro access;
- unlocking broadband to cater for bandwidth issues;
- deepening fibre-optic technology; and

- expanding fibre-optic links to neighbouring capitals and submarine cables.

3.3.4 Required Infrastructure Investments

Nigeria's broadband strategy will be a big driver of how large the required investment will be. Bottom-up estimates amount to USD 325 billion over the next 30 years, predominantly consisting of additional mobile base stations and expanding the fibre network to fulfil the broadband vision.

Nigeria needs to spend USD 5 billion annually on ICT infrastructure over the next 10 years, mostly on base stations and fibre. Nigeria needs to invest USD 12.5 billion annually in the sector to boost base stations and fibre, and USD 15 billion annually during 2034–43, with an increasing share of maintenance spend and technology upgrade.

Substantial part of the expected spend is to be provided by the private sector. Therefore, the returns on investment need to be able to sustain large-scale private investments. Further investments in key sectors, especially in the power infrastructure will be required to support the development of competitively priced IT services by bringing down input costs for the sector.

The key investments for public sector will be in computerising the public sector and setting up e-government infrastructure and services.

3.3.5 Legal Enablers

A review of the relevant infrastructure related legislation in the ICT sector reveals that the Nigerian Postal Service Act is the main legislation relevant to ICT infrastructure. The critical shortcomings associated with the Act include the monopoly status conferred on NIPOST, which has resulted in complacency and lack of attention to customer needs.

The lack of autonomy and inefficient operations encumbered by a dilapidated network resulted in attendant high losses. The Act is not investment-friendly as most of its provisions are out-dated.

Therefore, there is the need to review the laws. To further support this, NIPOST could be separated as a Universal Postal Service provider and an independent regulatory authority established to oversee the activities of the sector.

Two bills were pending in the previous National Assembly – the Nigerian Postal Commission Bill 2008 and the Nigerian Postal Service (Amendment) Bill 2008. These Bills however need to be reviewed and represented, as there are no bills concerning the sector before the current Assembly.

3.4 AGRICULTURE, WATER AND MINING

3.4.1 Current State of Infrastructure

Agriculture

Agriculture contributes 22 per cent of Nigeria's GDP and employs over 70 per cent of the active population. Nigeria has 79 million ha of fertile land. However, only 32 million ha (46 per cent) of these are

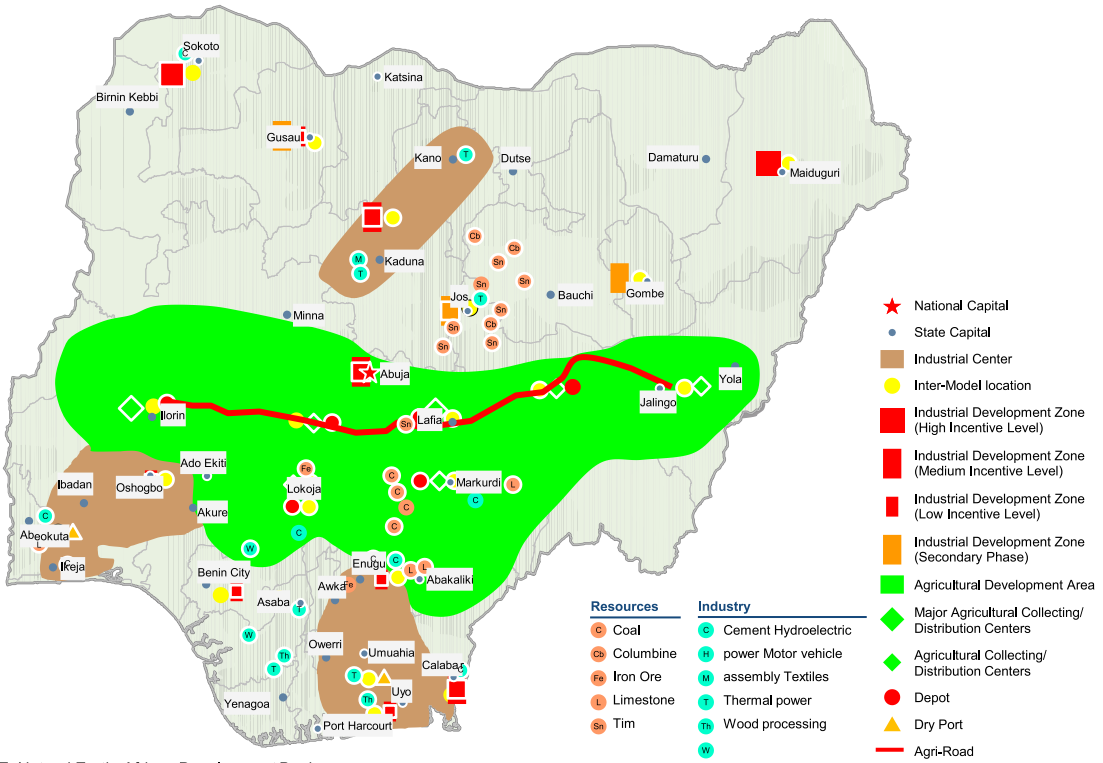
cultivated and less than 10 per cent of irrigable land is currently under irrigation. 90 per cent of agricultural output is accounted for by smallholder farmers with less than 2 ha under cropping and low per ha yield of crops.

There is therefore potential to transform agriculture into a commercial and profitable business. Special attention would be directed to managing the factors of production efficiently, as infrastructure development is a major lever to reduce production cost.

A number of current infrastructural issues require attention. These include:

- insufficient harnessing of Nigeria's surface and underground water for use during the dry season, due to inadequate irrigation facilities;
- high levels of post-harvest losses, especially during transportation due to poor infrastructural linkages to markets;
- inadequate processing facilities and storage systems, which are also responsible for post-harvest losses; and
- very little value addition of agricultural commodities via industrial processing, which is a crucial requirement in order to become a continental powerhouse in agriculture and related industries.

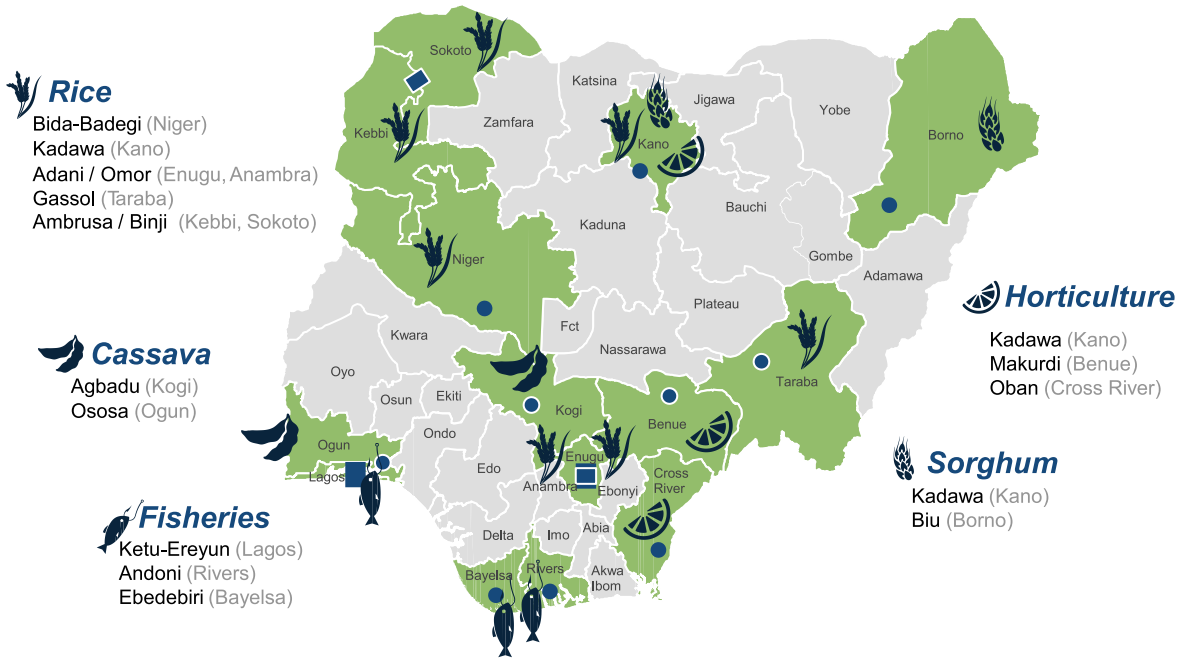
FIGURE 3.12: AGRICULTURE IN NIGERIA



SOURCE: Natural Earth, African Development Bank

A comprehensive industrialisation plan is required to unlock Nigeria's agriculture potential. The Nigerian government, as part of its broader Agricultural Transformation Agenda, is therefore implementing Staple Crop Processing Zones (SCPZ) as a tool for creating integrated, crop-focused platforms for accelerating private-sector investment in value-added agro-processing. This addresses a set of central objectives, i.e., reducing food imports, increasing value-addition through processing reducing post-harvest losses, reducing operative costs for agro-processors, and creating jobs and driving rapid rural growth. An initial set of SCPZs in 19 states are planned *[Figure 3.13].*

FIGURE 3.13: SELECTED SCPZ SITES AND ANCHOR CROPS



SOURCE: Natural Earth, African Development Bank

Current agricultural infrastructure development plans include the establishment of:

- 19 Staple Crop Processing Centres in all regions of Nigeria;
- 80 agro input centres (53 completed);
- 8 agro-processing centres near existing strategic grain reserves;
- 18 agro-industrial estates (3 per region);
- 6 export crop handling, preservation and conditioning centres (3 are at various stages of completion);
- 17 integrated large-scale rice mills (2 completed); and
- 40 rice processing plants and 18 high-quality cassava flour plants.

Water

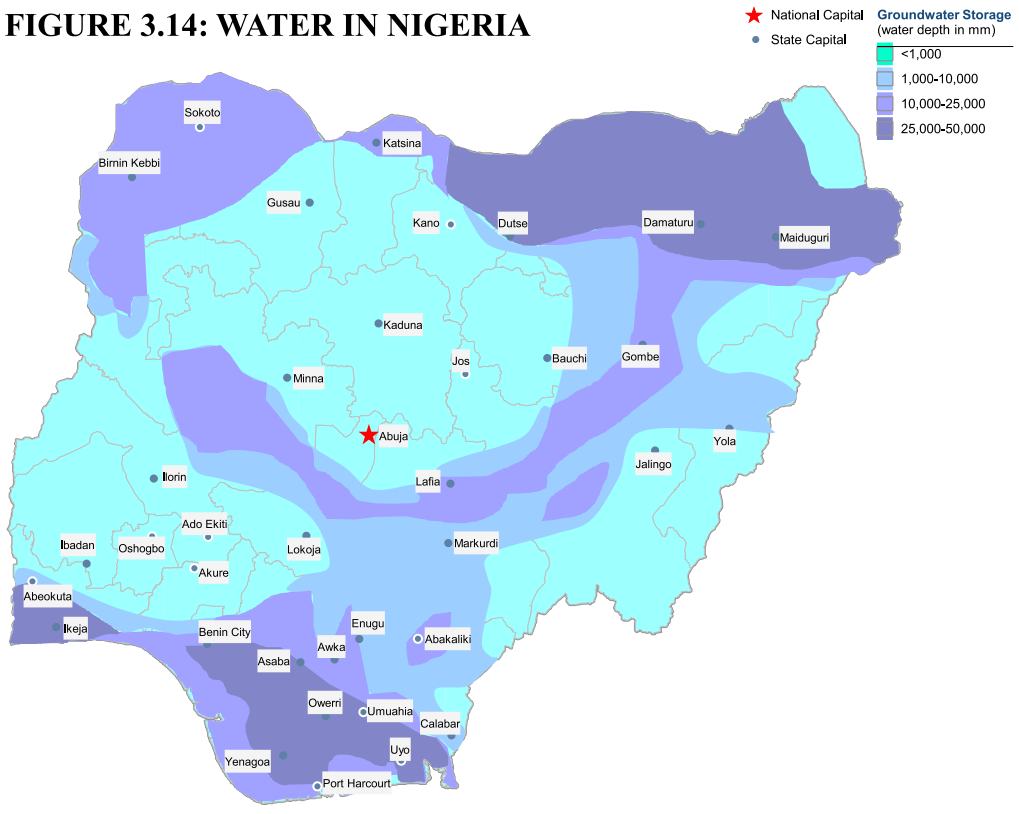
The relevance of water to the national development of Nigeria is progressively increasing with rapid population growth, urbanisation, agriculture and industrial development.

Water's usefulness in different capacities for direct human consumption, agricultural irrigation, fisheries, hydropower, industrial production, environmental protection and industrial effluents establishes the paramount importance of effectively managing this resource.

There are abundant water resources in Nigeria to meet all needs if properly harnessed (estimated at 267.3 bm^3 of surface water and 52 bm^3 of groundwater).

There are also more than 200 dams with combined storage capacity of 34 bm^3 and the capability to irrigate 500,000 ha of land (currently just under 300,000 ha are equipped for irrigation, out of 3.1 million ha of irrigable land). 19 dams have small hydropower facilities, with the combined potential capacity to generate about 3,600 MW of electricity.

FIGURE 3.14: WATER IN NIGERIA

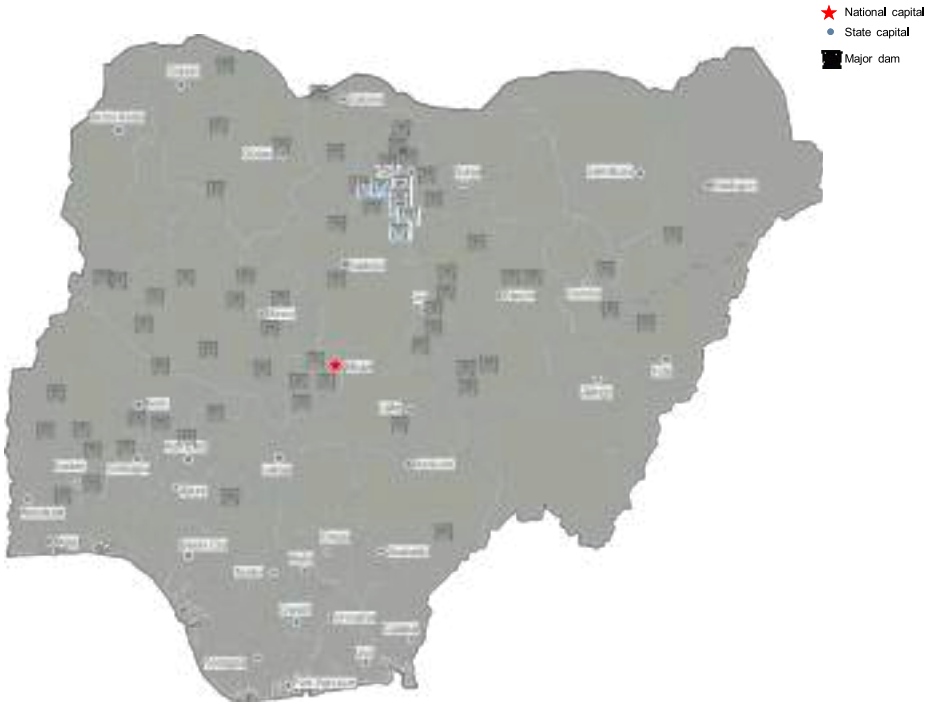


SOURCE: Natural Earth, African Development Bank

However, Nigeria's water resources are not yet effectively utilised. National access to potable water is only 60 per cent and sanitation is only 31 per cent. The Millennium Development Goals (MDGs) targets to be met in 2015 are 75 per cent for water supply and 65 per cent for sanitation. Current low levels of access can be attributed to inadequate infrastructure to meet demand, inadequate use of the existing infrastructure and poor operation and maintenance of that infrastructure.

There are currently about 30 ongoing new dam projects (Ogbese, Nkari, Adada, Oturkpo, Kashimbila, Ile-Ife, Galma, among others), and about 32 ongoing irrigation projects with completion status between 7 per cent and 85 per cent (Sabke, Zobe, Jibiya, Sepetiri, Hadejia Valley, Kano River and middle Ogun, etc.)

FIGURE 3.15: DAMS IN NIGERIA



SOURCE: Natural Earth; African Development Bank

Mining

Mining currently contributes less than one per cent to Nigeria's GDP. It is conducted at very small scale and currently employs approximately 450,000 people directly and two million people indirectly; and the sector thus has great potential for generating more employment opportunities and wealth creation. Given adequate funding, the sector is capable of generating employment opportunities for over five million people in the short term, and that the industry could contribute 3-6 per cent to GDP in the medium-term.

Nigeria has, among others, deposits of coal, gold, columbite, tantalite, bitumen, iron ore and uranium. Coal is found in Kogi, Nassarawa, Enugu, Gombe, Adamawa, Akwa Ibom, Bauchi, Cross River, and Benue states. Gold deposits are found in Northern Nigeria, most prominently near Maru, Anka, Malele, Tsohon Birnin, Gwari-Kwaga, Gurmana, Bin Yauri, Okolom-Dogondaji. Columbite and tantalite are found in Nassarawa State near the Jos Plateau, as well as in several areas in southeast Nigeria. Bitumen deposits are found in Lagos, Ogun, Ondo and Edo States. Uranium deposits are found in Cross River, Adamawa, Taraba, Plateau, Bauchi and Kano States. Nigeria has several deposits of iron ore, but the purest deposits are in and around Itakpe in Kogi State.

3.4.2 Aspiration and Targets

The aspirations of the Agriculture, Water and Mining sub-sectors are:

Agriculture

- Improve the national economy by substantially growing the agricultural sector, thus creating more jobs and wealth.
- Secure sustainable food security for all Nigerians and develop into the main food exporter in the continent.
- Promote production of agricultural raw materials to meet the needs of an expanding industrial sector and export market.
- Develop agro-minerals and build soil-fertilizer-network.
- Collaborate regionally within Africa for mineral fertilizer development, i.e., phosphates, limestone, phosphorus, potash, etc.

Water

- Ensure sustainable access to sufficient water resources for diverse uses by the population both in urban and rural areas.
- Provide effective and efficient management of water resources in Nigeria.
- Make various water sources affordable for diverse uses.
- Research inter-basin water transfer within Africa.
- Intensify and update water statistics.
- Research and develop rain water harvesting.

Mining

- Significantly increase the sector's contribution to national GDP.
- Encourage the value addition of minerals.
- Ensure mining and mineral extraction are done sustainably, including social, environmental and safety considerations.
- Organise artisanal and small scale miners for optimal participation to reduce rural-urban migration.

- Ensure robust geological data for investors and national planning.
- Promote rapid development of the mining and minerals sector for diversification of the Nigerian economy.
- Collaborate regionally within Africa on geological surveying and mineral resources/raw material development.
- Collaborate within Africa on infrastructure design and development, especially as it relates to mining.

TABLE 3.12: AGRICULTURE, WATER AND MINING SECTOR ASPIRATIONS

Agriculture	Water	Mining
▪ Secure sustainable food security for all Nigerians ▪ Promote agricultural commodity value chain to meet the needs of relevant inter-sectoral linkages ▪ Enhance farmers' income, create jobs, reduce poverty and grow the national economy ▪ Develop agro-minerals and build soil-fertilizer-network ▪ Collaborate regionally within Africa for mineral fertilizer development, i.e., phosphates, limestones, phosphorus, potash, etc.	▪ Sustainable access to sufficient water resources for diverse uses by population in urban and rural areas ▪ Effective and efficient management of water resources in Nigeria ▪ Making various water sources affordable for diverse uses ▪ Research inter-basin water transfer within Africa ▪ Intensify and update water statistics ▪ Research and develop rain water harvesting	▪ Significantly increase the sector's contribution to the national GDP ▪ Encourage value addition of minerals ▪ Ensure mining & mineral extraction are done sustainably, including social, environmental and safety considerations ▪ Organise artisanal and small scale miners for optimal participation to reduce rural-urban migration ▪ Ensure robust geological data for investors and national planning ▪ Rapid development of Mining & Minerals sector for the diversification of the Nigerian economy ▪ Collaborate regionally within Africa on geological surveying and mineral resources / raw material development ▪ Collaborate within Africa on infrastructure design and development, especially as it relates to mining

SOURCE: WAM TWG

Agriculture Targets

In order for Nigeria to first achieve domestic food security, and then subsequently transform into a continental powerhouse in terms of food exports, the agricultural sub-sector aspires to substantially increase total domestic production of key food staples (such as cassava, sorghum, milk, fish and eggs) and cash crops (such as cocoa, rubber and cotton). This aspiration is to be achieved by increasing the percentage of arable land cultivated and increasing crop yields. The national food import bill is targeted to decrease by 30 per cent, while food export earnings are intended to grow threefold. A total of 20 million additional jobs in agriculture are envisaged over the next 30 years.

Water Targets

The central aspirations of the water sub-sector cover the areas of water supply, water treatment, irrigation and hydropower. By 2043, 100 per cent coverage of water supply and sanitation access is targeted (up from current 61 per cent for water supply access and 31 per cent for sanitation access). Current annual water treatment capacity is 0.7 trillion cubic meters – it is targeted to reach 1.4 trillion cubic meters by 2043.

Irrigation and hydropower targets are obviously directly related to the agriculture and energy sectors respectively. In terms of irrigation, the rate of expansion (which has been about three per cent per annum in recent years) needs to increase substantially (beyond three per cent). The goal is to extend facilities in order to realise the national potential of about 3.1 million ha of irrigable land. In terms of hydropower, the goal is to achieve 95 per cent development of generation potential, leading to production of up to 10,000 MW of electricity.

Mining Target

The sector envisages growing substantially, in terms of GDP and employment. Annual government revenue from mining taxes is targeted to increase fivefold, from the current USD 130 million to USD 640 million. Annual royalties collected are targeted to surge from the current USD 12 million to USD 130 million by 2023, USD 260 million by 2033 and USD 640 million by 2043. Particular emphasis will be placed on increasing the connectivity of mining sites with adjacent parts of the value chain, including transportation (roads, rail) and also energy and ICT.

3.4.3 Private sector expectations and priorities

The private sector expectations and priorities are as follows:

Agriculture

Expectations and Priorities

- Generation and adoption of research technologies and use of research consortia.
- Training for agriculture extension personnel.

Enablers

- Water for irrigation projects and fertilizer plants.
- Economic corridors to target commodity value chains by region.
- Revitalisation of the commodities exchange market.
- A price support mechanism for guaranteed minimum prices.
- Revision of the Land Use Reform Act to accommodate the certification of farmlands.
- Roads connecting farms to markets and storage silos.
- Agri-industrial parks and Staple Crop Processing Zones (SCPZ) to drive food manufacturing.
- Knowledge exchange networks.
- Farm support centres

Water

Expectations and Priorities

- Develop land for large and small-scale irrigations.
- Complete various water projects across the country.
- Develop new, manageable projects

targeted at communities.
- Execute a PPP framework through the government procurement process.

Enablers
- A clear water infrastructure policy/well-articulated reforms.
- Donor support through grants.
- Effective staffing of the water corporations.
- Regional projects implemented across the states to allow for sharing of resources.
- Adoption of technology for the collection of bills.

Mining

Expectations and Priorities
- Continue with reforms and focus on sustainability of initiatives.
- Government to invest in acquisition and integration of geo-scientific data.
- License exploitation of Nigeria's strategic solid minerals – coal, bitumen, iron ore, limestone, barites, gold, lead/zinc.
- Provide basic mine site infrastructure like 'pit to port' road and rail networks.
- Develop a clear framework for private sector-led mining activities in Nigeria.
- Establish a mineral exploration and development authority.
- Ensure reliable and increased power supply.

Enablers
- A stronger regulatory framework for the sector and greater regulatory transparency.
- Access to geo-scientific data for investors.
- Addressing the activities of illegal miners and smugglers.
- Fiscal incentives for investors.
- Improved transportation infrastructure, roads and rail for haulage.

3.4.4 Required infrastructure investments

Bottom-up investment estimates for the sector suggest a total requirement of about USD 400 billion over the next 3 decades in the following areas:

- The Agriculture sub-sector accounts for about USD 138 billion of the total required investment. This translates into an average annual expenditure of about USD 4.5 billion, up from current USD 500 million. However, agriculture has substantial overlap with other areas such as transportation and water, and the corresponding investment amounts are not 100 per cent separable. Hence, a significant part of the total amount is also included elsewhere – for example, about USD 15 billion is attributable to irrigation, which is also part of the water investment requirements;
- Required infrastructure investments for the Water sub-sector amount to about USD 206 billion. This translates into yearly investments of about USD 4.2 billion in the first decade, USD 5.8 billion in the second decade, and USD 10.5 billion in the third decade. The major portion of this amount (about USD 110 billion) is accounted for by investments into water supply, water treatment and sanitation infrastructure. The remaining required investment volume is split among infrastructure deployments for irrigation, dams with hydropower components, rainwater harvesting

This is a high level assessment based on top-down assessment and assuming proportional increase of agriculture spending in the plan and includes only infrastructure-related costs, not total investments required in the Agricultural sector

systems, and drainage systems;
- The Mining sub-sector requires investments of about USD 56 billion over the next three decades. This is equivalent to an average annual spend of more than USD 1.9 billion, up from current modest amount of about USD 30 million, though this is still a little fraction of total industry capital expenditures (capex) in mining countries like South Africa. The vast majority of these capex will be privately borne. The national focus should be to set the stage and ensure favourable framework conditions (legal, political, supporting infrastructure such as transportation) in order to attract such large-scale private investments.

3.4.5 Legal Enablers

The major relevant legislation for this sector is The Nigerian Minerals and Mining Act, which was established to repeal the Minerals and Mining Act of 1999 and re-enact the Nigerian Minerals and Mining Act 2007 for the purpose of regulating all aspects of the exploration and exploitation of solid minerals in Nigeria and all other related purposes. These have been assessed to be in line with international standards.

3.5 HOUSING

3.5.1 Current State of Infrastructure

Nigeria is estimated to have 11 million houses and faces a housing deficit of about 17 million housing units. The current stock of housing is characterised by shanty-towns, dilapidated houses and unsanitary conditions without basic services like potable water, sanitation, public power supply, healthcare or education.

The key challenge is the lack of affordable housing, with the additional housing need expected to rise to 30 million units by 2043. This is further exacerbated by rapid population growth and urbanisation.

Over the past three decades, the urban population has grown at a rate of 5.8 per cent per annum; the urban population comprises over 50 per cent of the total population and is projected to rise to 60 per cent by 2025.

Furthermore, there are more than 840 urban centres and eight major cities with a growing population of over one million (Lagos, Kano, Ibadan, Abuja, Port Harcourt, Kaduna, Benin, and Zaria). Eliminating the housing deficit will require the development of an additional one million housing units annually until 2043.

Another challenge within the sector is that most households currently cannot afford adequate housing. 80 per cent of Nigerian households live on a monthly income of less than USD 133. An additional 14 per cent of households earn between USD 133 and USD 267 monthly, and would likely only be able to afford adequate housing through subsidised plans like the National Housing Fund. This suggests that only 6 per cent of the entire population can access the mortgage market or make outright cash purchases of housing units. Provision of social and low income housing is thus crucial to addressing Nigeria's current housing deficit.

Similarly to agriculture, this figure does not include all investments required in the mining industry, but only the proportion required for infrastructure development

[19] *Based on actual annual spend 2010–12*

Several attempts have been made to improve the condition of the housing sector in Nigeria, including the National Housing Policy (2002), National Building Code (2010), Vision 2010, and NV 20: 2020 to mention a few recent examples. These past policy drafts have assessed the housing challenges the nation faces and clearly outlined the need to develop a pragmatic solution to addressing the sector's primary issues of funding, land access and urban growth.

There is a need for the nation to develop a clear housing philosophy that seeks to ensure affordability for all, regardless of socio-economic status. Achieving affordable housing for all Nigerians will require the development of strong and enduring mortgage institutions with transparent processes and procedures.

Another closely related issue is lack of access to land. In order to adequately address the nation's social housing issue, the Land Use Act of 1978 should be reviewed. The World Bank has long noted that the majority of the Nigerian populace resides in informal housing structures (with varying degrees of permanence) located on land to which they do not own the rights. The difficulty in acquiring land rights has thus led to the proliferation of informal, impermanent housing and made access to mortgage lending difficult, as a certificate of occupancy and land title are key requirements. The urban housing problem is further complicated by the inefficient land management system which has made it difficult to develop broad-scale tenement housing for urban residents.

Urban and rural areas display different socio-economic and demographic attributes that consequently lead to distinct housing requirements. Over 50 per cent of housing settlements are currently categorised as urban, and there are several cities with a population of 1 million and more. While the majority of housing needs are located in urban areas, the required type of housing varies not only by urban/rural attributes but also cultural and other demographic factors.

The focus of housing development in Nigeria is on the evolution of a housing sector that will make housing finance available to the vast majority of Nigerians and create a land management system that will stimulate rapid and broad-scale housing construction for the population.

Considerable attention and effort is currently being deployed to improve the situation. In November 2012, the President held a special retreat focused on the housing sector. Key areas addressed include improving land titling, making mortgages more affordable and accessible, improving the availability of affordable and low-income housing, and fostering sustainable urban development.

There are also several ongoing projects in the housing sector, with some in the pipeline until 2015. They include:

- creation of the Nigeria Mortgage Refinance Company (NMRC) to develop the mortgage market and provide affordable housing;
- recapitalisation of the Federal Mortgage Bank of Nigeria;
- planning, design, construction and maintenance of 600,000 housing units through PPPs;
- planning, design, construction and maintenance of 240,000 affordable

housing units by the Federal Housing Authority (FHA) and other reputable developers; and
- planning, design and construction of other key housing initiatives.

3.5.2 Aspiration and Targets

Specific objectives for the housing sector include to:
- make serviced land with secure tenure easily available, accessible, transferable and at an affordable price, for housing development;
- provide easy access to long-term, affordable and adequate housing finance on a continuous basis;
- ensure sustainable maintenance of all physical assets and housing infrastructure;
- accelerate development of appropriate capacities to achieve sufficiency in the production of basic building materials and components of acceptable quality from local resources, with a view to stimulating effective housing development and economic growth;
- develop low-cost building materials and technologies;
- adopt rural technology in the provision of low-cost housing;
- provide the low-income group, no-income group and the vulnerable segment of the population with access to housing;
- establish a reliable and comprehensive database for generating statistical information for housing development in Nigeria; and
- provide incentives and the necessary legal and regulatory environment to attract PPP in mass housing development.

These objectives have further been disaggregated into sub-objectives for the 30-year period [*Table 3.13*].

TABLE 3.13: HOUSNG SECTOR ASPIRATIONS

Subsector	2018	2023	2043
Housing	▪ Provide secure, registerable and marketable titles on land ▪ Computerise the various land registry systems ▪ Energise and reinvigorate the National Housing Fund contributions ▪ Recapitalise Federal Mortgage Bank of Nigeria for secondary mortgage market operations and strengthen the Primary Mortgage Institutions (PMIs) ▪ Channel sizeable part of pension fund and other funds in housing sector	▪ Develop and execute a system of regularly scheduled maintenance actions to prevent premature failure of building components ▪ Ensure effective monitoring and coordination of all maintenance works ▪ Adopt functional design standards that will facilitate cost reduction, affordability, acceptability and sustainability which will respond to the cultural and regional peculiarities of potential users2023	▪ Completely eliminate the housing deficit by 2043

SOURCE: Transformation Agenda; housing and regional development TWG

In achieving these objectives, the NIIMP has also set actual infrastructure targets for the housing sub-sector. The most pertinent of these targets is the goal to increase the baseline number of available housing units from 11 million to 41 million nationwide by 2043, thereby eliminating the projected housing deficit by the end of the period.

3.5.3 Private Sector Expectations and Priorities

Expectations of the private sector for the Housing sector include:

- conducting a complete review of the Land Use Act;
- providing consistent power supply and better heavy duty goods transportation systems, e.g., rail; and
- having a revamped Federal Mortgage Bank capital base and Primary Mortgage Institutions (PMIs).

Enablers

- Stronger standardised regulation;
- Reducing the multiple tax provisions and number of permitting authorities;
- Developing the road network to facilitate housing development in new areas;
- Faster processing of land and title documents, and building permits;
- Longer leasehold tenures for major city and urban development;
- Reform of the Federal Housing Authority, including empowering the private sector to drive policy formulation;
- Enacting a Housing Finance Policy that focuses on ensuring access to affordable housing.

3.5.4 Required infrastructure investments

To achieve the above targets, 1 million additional housing units will need to be created per year for the next three decades. This implies a substantial need for investment in the sector. The construction cost for one housing unit is estimated to be about USD 10,000 based on current low-income housing projects. An estimate of construction costs alone already implies investments of USD 350 billion over the next 30 years. These estimates will need to be reviewed regularly over time, depending on the changes in construction costs and other housing sector developments.

Achievement of this target would be unlikely without several critical associated enablers, such as:

- Government making serviced land available;
- Rapid increase in the percentage of the population who have access to housing finance. Today, only 6 per cent of the population can access the mortgage market or make cash payments for suitable housing;
- Improvement of regulations, processes and cost required for housing transactions including significantly increasing the ease of registering a property and reducing the number of steps involved (Nigeria's current process involves 13 steps; those in Singapore, the UK and Bahrain involve only two steps), and significantly reducing the processing time to obtain land titles (Nigeria's current process takes a minimum of 82 days and can last up to 18 months).

In line with the Transformation Agenda's push to further involve the private sector in infrastructure development, a substantial amount (up to 60 per cent) of the required spend on closing the housing gap is expected to be funded by the private sector in the long-run. It is essential to develop the affordable housing mortgage market, to allow homeowners to develop their own homes and the government to recoup the majority of its investment through low-cost loans. Other funding sources apart from public spend are also expected to include funding from development partners and PPP.

The scale of this intervention in the housing sector will demand optimal use of time, capital and material resources. This bulk scale development and construction of housing units will require the exploration of mass production and delivery. Functional design standards which facilitate cost efficiency, affordability, acceptability and sustainability will have to be adopted.

The development, manufacture and utilisation of locally sourced building materials for housing development are strongly encouraged. This will be further facilitated by expansion of the National Sites and Services Programme.

3.5.5 Legal Enablers

The relevant infrastructure-related legislations in the housing sector were reviewed and some of the key legal enablers for infrastructure development in the sector were identified. These include the Land Use Act, the Federal Housing Act, the National Housing Fund Act and the Mortgage Institutions Act.

Land Use Act

This Act has been considered to be a contentious legislation, as it vests ownership of land in the State to the Governor, though this does not apply to Federal lands and lands owned by individuals prior to the Act's enactment. The Act has resulted in bureaucratic bottlenecks that discourage private sector investments, with its impact felt beyond the housing sector. The constitutionality of the Act has also been in question as it allows the government to seize land or revoke property rights without due process. The Act is outdated and requires several amendments. When amended, the Act could prove to be an effective tool for fast tracking infrastructure development in housing sector.

Federal Housing Act

The Federal Housing Authority, by virtue of Section 3 of the Act, has the power to make recommendations to grant on such aspects of urban and regional planning, transportation, communication, electricity, power, sewerage and water supply development as may be relevant to the successful execution of housing programmes approved by government. The Federal Housing Authority also has the power to compulsorily acquire land, and the land so acquired by the authority cannot be compulsorily acquired by States. Thus, the agency has the legal authority to engage in housing delivery.

The constitutionality of the Act was determined and this would enable the Federal Government to acquire land and participate in housing delivery. The Act may however create conflict between the

State and Federal Governments as to the choice and location of housing projects.

National Housing Fund Act

The National Housing Fund Act is constitutional and not obsolete. It can help in financing housing delivery through statutory contributions, and there is room for investments from varying sources. However, it may create regulatory challenges and could benefit from a review of existing regulatory structures. It could be a good source of funding for housing infrastructure delivery if properly regulated.

Mortgage Institutions Act of 1989

The Act prohibits any entity from carrying out business as a mortgage company except with a valid licence. The law is constitutional, enables private investment, and is not outdated.

3.6 SOCIAL INFRASTRUCTURE

3.6.1 Current State of Infrastructure

Social infrastructure development cuts across almost all sectors of the economy, as it has to do with the wellbeing of all communities. Facilities and services for promoting community well-being are related to health, education, sport, labour productivity, environment, culture and tourism, and developmental facilities for youth and women.

The sector covers 11 sub-sectors (health, education, youth and sports, women affairs, social development, labour, productivity, information, environment, and tourism). The NIIMP groups these sub-sectors into four broader categories:

- Healthcare, women affairs and social development;
- Education, youths and sports;
- Environment, tourism and information;
- Labour and productivity.

Healthcare, Women Affairs and Social Development

Health

Nigeria currently has an average 28 public Primary Healthcare Clinics (PHCs) per Local Government Area (LGA) (total of 21,808), 26 secondary facilities per state (total of 969), and 79 specialist hospitals across the country. There are a total of 8,290 private PHCs, 3,023 secondary facilities, and 10 tertiary facilities.

The health status indicators for Nigeria are among the worst in the world.

- Life expectancy at birth has been reported to be 54 years (NDHS 2013).
- In children, the major causes of mortality and morbidity are diarrhoea, acute respiratory infections, malaria, measles and other vaccine-preventable diseases, and the exacerbating effect of children's malnutrition.
- 350 women die per 100,000 live births. There has been improvement over the years. The rate of maternal mortality reduced from 800 women deaths per 100,000 live births in 2004 to 545 in 2008. When compared with 2015 benchmark, the 2012 figure is about 28.6 per cent short of 250 target, which means that an additional reduction of about 100 deaths (per 100,000 births) is required in 2015.
- Access to primary healthcare is

currently about 61 per cent with only 15 beds available per 1,000 population and only 30 primary healthcare centres per 100,000 people (NDHS).
- Adult HIV prevalence of ANC survey 2010 is estimated at 4.1 per cent (ANC Survey 2010) while Adult HIV prevalence in 2013 is estimated at 3.4 per cent with an estimated at 2.9million people living with HIV/AIDS (NARHS 2013).
- Estimated annual tuberculosis (TB) incidence is 293 new cases per 100,000 persons. Estimated prevalence (both new and old cases) of 546 per 100,000 implies that over 700,000 Nigerians have TB – the fourth highest number in the world.

In 2011, the Federal Ministry of Health (FMoH) estimated a total of 34,173 health facilities in Nigeria of which 88.1 per cent are primary health care facilities, 11.7 per cent secondary and 0.2 per cent tertiary. This provides roughly one health facility for every 6,000 Nigerians, with wide variations across states, urban and rural areas. The 53 federal-owned tertiary facilities provide specialist services which are mostly not available at the secondary and primary levels, with the teaching hospitals also providing training for health workers and research.

Despite considerable investment in the health sector over the years, available evidence suggests that health services throughout Nigeria are delivered through a weak health system. This weakness is characterised by inequitable distribution of resources; decaying infrastructure; poor management of human resources for health; negative attitude of healthcare providers; weak referral systems; poor coverage of high-impact cost-effective interventions; unavailability of essential drugs and other health commodities; and lack of integration and poor supportive supervision.

The following infrastructural priorities relate to the Nigerian health sector:

- A minimal number of functional primary healthcare clinics linked to a contiguous general hospital should be established in each LGA. States should have functional general hospitals in every LGA manned by qualified personnel, with a strong referral system to contiguous tertiary hospitals;
- Existing tertiary and specialist hospitals should be revamped to meet the needs of the local population; and diagnostic and quaternary mono-specialist centres should be distributed in a manner that ensures equitable access to all sections of the country;
- A robust health management information system is required which generates timely data for health decision-making as well as service improvement;
- Institutions that conduct development research to address priority health needs of the country should be strengthened.

Women Affairs and Social Development

Infrastructure pertaining to women in Nigeria includes 77 skill acquisition centres and 1 school for social workers.

Various studies and surveys have shown that women are in the lowest income level in most Nigerian organisations and contribute the highest percentage of the

poor and vulnerable. They also participate predominantly in the informal sector of the economy. The Federal Ministry of Women Affairs and Social Development has the mandate of promoting women development and protecting the rights of women and other vulnerable groups. The following infrastructure-related achievements are relevant:

- Women Political Empowerment Offices were established in 2006, one in each of the six geopolitical zones, as platforms to facilitate the improved participation of women in decision making.
- A shelter for Survivors of Gender Based Violence was set up in the Federal Capital Territory. More are planned in the six geopolitical zones.
- Two women Cottage Industries (the Kwali Pottery Cottage Industry and the Damaturu Vegetable Oil Cottage Industry) were completed by the Ministry and handed over to the host state government. Additional Cottage Industries are being constructed in Abia, Ekiti, Sokoto and Bayelsa States.
- The Nigerian Women Trust Fund is designed to boost women's political participation in Nigeria. To commemorate the take-off of the Fund, support was given to women candidates across different political parties for the 2011 general elections.
- The Women's Fund for Economic Empowerment (WOFEE) was initiated in 2005 to provide group credit facilities to womens' cooperatives in rural areas. 28 states are currently covered, with 3,039 beneficiaries.
- The Business Development Fund for Women (BUDFOW) was established in 2005 to provide credit facilities to women entrepreneurs. 26 States are currently covered.
- The Nigeria Girls Mentorship Programme was designed to give selected young girls access to knowledge and training on a range of issues at the intersection of security and development. The programme started with a pilot in FCT in 2012, and is expected to spread across the country in due course.

Education, Youth and Sports

Education

Education is key to the growth and socio-economic development of the nation. The overarching challenges to the attainment of educational goals have been the issues of *access* and *quality* of education:

Access

Over 11 million children who are expected to be in school are not in school or are receiving poor schooling. At the pre-basic level, only children of the privileged few have access to schooling that prepares and orients them for basic education. This level is dominated by the private sector. At the basic education level, government is intensifying activities to increase access but progress is still impeded by economic and socio-cultural factors such as poverty. The Federal Ministry of Education (FME) launched a national campaign to boost school enrolment in the country in Enugu in 2012, but this is yet to be replicated in all the states and local government areas in the country.

Science and technology-based education required for the rapid transformation of society is hampered by a bias for senior secondary education against technical and

vocational education and skills development. Currently, 60 per cent of basic education scholars proceed to senior secondary school; 20 per cent to technical education, 10 per cent to vocational and skills acquisition training centres, and 10 per cent become artisans. The efforts of government in this direction are still at the planning and capacity building stages.

At the tertiary level, access is even worse. Only 10 per cent of applicants seeking admission into tertiary institutions are placed because of the low-carrying capacity of these institutions. For instance, only about 100,000 candidates out of 900,000 find places in Nigerian universities annually. It is hoped that the establishment of 12 new federal universities and new licenses for 9 private-owned universities will address these inadequacies. Nigeria also possesses 21 federal polytechnics and 95 colleges of education.

Standards and Quality

Massive infrastructural decay and inadequate facilities have not only impeded access but also affected the delivery of quality education. Dilapidated school infrastructure includes classroom buildings, laboratories, school libraries, workshops, sporting and recreational facilities, roads, water, electricity, toilet facilities, staff and student accommodation. The issue of poor accommodation is even more acute in tertiary institutions.

The education curriculum is yet to be reviewed to meet the needs for a technology-based and enterprise economy. Generally, the mediocre quality of education at all levels still results in low employability of the resulting labour force.

There is still a palpable teacher gap across all levels of education in terms of quality and quantity of teachers. Most states are yet to adhere to the minimum teaching qualification of a Nigeria Certificate in Education (NCE). With expanding access to education, the existing number of teachers has become grossly inadequate. Training institutions for teachers also lack adequate institutional capacity in terms of infrastructure and requisite manpower quality.

Public education also lacks adequate communication and sustained coordination and monitoring of educational programmes and activities in the system. Funding, above all, remains a big problem in the sector. Budgetary allocation to education is not only inadequate, but below the recommended international standard.

Access and equity are among the major strategic goals of the 4-year Education Strategic Plan. There is an urgent need to meet the Millennium Development Goals on education ahead of the 2015 deadline and the national objectives of NV 20: 2020. The master plan requires mobilisation of huge financial resources for effective implementation of the programmes.

The funding of educational programmes is beyond the capability of government alone. There is need to explore the possibility of public and private support to galvanise resources for the execution of the various projects/programmes in education.

Youth

The youth population in Nigeria is

estimated to be over 60 million; they are the largest demographic group in Nigeria and have the potential to facilitate the rapid development of the country.

Currently, however, the state of youth development is problematic. Youth unemployment is very high, particularly, amongst graduates from tertiary institutions. It is estimated that about 230,000 NYSC Corps members are discharged annually with less than 10 per cent of them gaining employment.

The sector faces the following challenges:

- insufficient and late release of funds for both administration and provision of infrastructure;
- unavailability of land and other problems associated with land allocation within areas where youth development centres are to be built;
- peripheral involvement of the Ministry in core youth development programmes;
- inadequate data on youth and youth NGOs across the country; and
- limited collaboration with relevant MDAs in addressing challenges faced by youth.

Sport

An efficient sports system will assist in nation building through youth empowerment, wealth creation, employment generation, health and social mobilisation. The new strategic management activities for qualitative performance and mass participation are capacity building of coaches and administrators, early talent detection and development, policy direction on partnership and collaboration, sports facilities maintenance, a central national sports programmes system, and national sports performance monitoring and evaluation.

There are six national stadia at the federal level and four training centres (none yet completed). The federal government has also 20 sports centres at the local government level. In addition, the state and local governments also have sports stadia and other sports facilities and some private training sports academies.

The National Sports Commission does not have a clear and integrated infrastructure plan except for some stated projects and programmes mentioned below.

New facilities. Construction of 62 mini-sports centres in the various states, 15 grandstands and 3 football pitches.

Zonal Offices for the supervision of the grassroots sports development programme and assistance in the maintenance and security of the facilities. The project stands at about 15 per cent completion.

High Performance Centres. These are specialised centres with advanced equipment managed by sports scientists for research aimed at achieving high performance. The high performance centres projected to be constructed in each of the 12 zonal sports offices have only attained 15 per cent completion due to insufficient funds.

Talent development centres. The establishment of talent development centres in the six regions for the identification and development programme, along with required facilities,

is still on the drawing board.

National Sports Information Centre. The centre is still in the pipeline. It will provide a comprehensive database, statistics and general information to offer a reliable information network which will be optimally maintained through zonal offices.

Sports Medicine Centre (National Stadium, Abuja). The centre is to foster research and development initiatives in high performance and develop standards for the analysis of high performance athletes. The project stands at about 95 per cent completion.

Other related projects which have also reached advanced stages of completion include Athletes Hostel, Abuja (60 per cent completion); construction of ANOCA offices (50 per cent completion) and maintenance of the five national stadia at Abuja, Lagos, Bauchi, Ibadan and Kaduna.

Environment, Tourism and Information

Environment

As Nigeria embarks on a path of rapid economic growth, it also aims to be a nation with a healthy environment for sustainable socio-economic development.

The country is currently faced with a number of longstanding environmental challenges including land degradation and oil spillages, pollution, urban waste management, desertification and erosion. Coupled with a poor response over the years to promptly address environmental degradation, these have led to negative indirect effects on other sectors of the economy and even direct threats to human existence and survival.

Some infrastructure developments have been planned over the years targeted at halting specific environmental hazards in Nigeria, such as:

- promotion of sustained reforestation programmes to increase forest cover from 6 per cent in 2008 to 12 per cent in 2015 and 18 per cent in 2020;
- management of the 3.2 million tons of garbage produced annually via landfill development and private investment; and
- documenting and remedying past oil-impacted areas in the Niger Delta by the Nigeria Oil Spill Detection and Response Agency (NOSDRA) and the National Emergency Management Agency (NEMA).

Tourism

This sub-sector is currently hindered by infrastructural inadequacies, inadequate funding, weak product packaging and marketing approaches, security and safety issues, neglect and underdevelopment of tourism assets. Other include the existence of an underdeveloped hospitality industry and non-competitive visa regime, poor perceptions by policy makers of the potential of the sector, low capacity building, poor data collection for planning purposes and poor inter-agency collaboration on tourism statistics. There has been limited to no focus on this sector over the years.

Information

Information is a key instrument for transforming Nigeria into a critical player in the global political economy; the sector is a powerful tool for development in every human endeavour. Full participation of all

citizens in the art of good governance is founded on the effective flow of information and the resultant dialogue between the government and the governed.

The information sector is thus vital to national developmental, be it in terms of revitalising the Federal Civil Service or in the development and implementation of the NV 20: 2020, the Millennium Development Goals and the Transformation Agenda. The sector requires effective deployment and use of information infrastructure.

It is in this respect that Government has deemed it necessary to provide:

- an information culture that provides the public with easy access to official information through the enactment of the Freedom of-Information Act;
- a regulatory/political environment where government is tolerant of critical media reports and where journalists feel safe to report and analyse information;
- high standards of quality, professionalism and journalistic ethics in media and communication practices;
- easy access to funding for training and the provision of media equipment; and
- an established community media policy to relay information to the 90,000 communities in Nigeria.

Labour and Productivity

Labour remains a Nigerian national asset and a critical development factor. However, statistics show that unemployment is gravitating towards a crisis situation. National unemployment rates (in the past six years) average about 12-15 per cent and Nigeria's poverty rate (currently at about 63 per cent) exceeds the sub-Saharan average of 25 per cent. The youth unemployment rate is three times the sub-Saharan and global averages.

Poor infrastructure in energy, transportation and communications is a major driver of this crisis, as it adversely affects capacity utilisation and productivity, resulting in retrenchment, labour casualisation, poor remuneration and industrial crises.

A number of infrastructure-related measures are required to improve the current labour situation in Nigeria. These include:

- establishment of Labour Desk officers in all the MDAs to capture data on employment and vacancies;
- establishment of NELEX (Nigerian Labour Exchange) in all the states, for unemployed youths to access job vacancies/opportunities on the internet;
- Government to provide a social security fund for vulnerable groups and unemployed youths;
- establishment of more and better coordinated skill acquisition centres;
- revival of ailing industries to create more job opportunities through improved infrastructure (e.g., power, roads, markets); and
- facilitation of access to finance for SMEs.

3.6.2 Aspiration and Targets

Specific targets have been set for the Social Infrastructure sector by 2043. These objectives are divided between the 4 sub-groups as follows:

Health, Women Affairs and Social Development

- Revitalise public healthcare services;
- Improve stewardship role and regulators;
- Provide sustainable influx of input for production of drugs, vaccines, equipment, etc.;
- Focus on making rural and community healthcare services adequate and improving rural and community health;
- Promote public health programmes;
- Increase PPP participation in the provision of sustainable healthcare services;
- Increase use of ICT;
- Improve HRH capacity;
- Use diagnostic equipment to improve the quality of healthcare services;
- Harmonise HRH.

Education, Youth and Sports

- Provide equal access to education and sports development at all levels;
- Develop appropriate skills – mental, physical and social abilities and competencies – in citizens;
- Promote vocational and technical education;
- Use education and sports as catalysts for national consciousness and unity;
- Provide a globally competitive education system.

Environment, Tourism and Information

- Develop an effective pollution and waste management system in 36 states and the Federal Capital Territory (FCT), with emphasis on 'waste to wealth';
- Implement proper environmental control measures to check degradation;
- Improve governance infrastructure to

Main bowl, National Stadium, Abuja

facilitate performance evaluation for the reward of excellence and transparency;
- Develop world class tourism infrastructure to position Nigeria as a tourism destination;
- Establish effective private sector-driven tourism infrastructure by 2023;
- Ensure citizen participation in governance, information dissemination and coverage.

Labour and Productivity

- Promote employment-intensive economic growth;
- Enhance employment generation by growing an entrepreneurial economy;
- Transform the informal economy so as to further boost productive employment;
- Develop a national policy on social security and safety nets;
- Set productivity standards and a measurement system;

Several initiatives are planned to achieve these ambitious targets within the various broad groups.

Development of infrastructure to support attainment of targets in the Education sub-sector is the most prominent, with projects planned to neutralise the 250,000 classroom deficit by 2023 and create an additional 250,000 ECCDE and standard classrooms by 2043. The scope of the targets also includes increasing the number of federal universities, polytechnics and colleges of education by up to 300 per cent in the next 30 years.

In the Health sub-sector, targets set will ensure a significant increase in access to primary healthcare from 33 per cent in 2013 to 61 per cent in 2043 by:
- Increasing the number of primary healthcare clinics per LGA from 28 currently to 40 in 2023, and subsequently to 50 in 2043;
- Increasing the number of general hospitals to 74 (approximately two per state);
- Increasing the total number of hospital beds per 100,000 people from 53 currently to 200 in 2023, and to 450 in 2043.

3.6.3 Private Sector Expectations and Priorities

Health

- Establish a credible health insurance system by empowering the National Health Insurance Scheme as payment security for users, thus meeting buy-side demand. Ensure reduction of capital flight in the sub-sector through medical tourism by increasing investment in the sector, establishing world class hospitals and diagnostic centres.
- Develop strategies to stop the 'brain drain' of qualified healthcare personnel.
- Create regional centres of excellence related to common specialty fields.
- Consider a private financing initiative as in the UK, where hospital infrastructure is built by the private sector under a concession and the concessionaire is paid a unitary charge for managing the hospital and other ancillary services (catering, laundry, etc.).

Education

- Build targeted research institutes with

linkages to industry.

- Implement the 10-year Strategic Plan which calls for greater private sector and industry participation in curriculum design at all levels as well as commitment to PPPs.

- Initiate a coherent policy focused on enhancing technical education and a conscious effort to develop technical and vocational education to support planned infrastructure expansion.

To enable increased private sector participation in the sector, the following strategies were identified.

- Concession tertiary hospitals (not to include medical colleges, e.g., Lagos University Teaching Hospital) under a PPP and introduce management contracts where necessary.

- Concession all failed/abandoned federal and state hospital projects deemed attractive by the private sector.

- Provide basic educational facilities in line with United Nations MDGs.

- Ensure adequate electricity supply in schools.

- Improve broadband, including rural broadband access.

- Create centres of excellence in one university, polytechnic, and college of education in each of the six regions.

- Build targeted research institutes linked to industry.

3.6.4 Required Infrastructure Investments

In order to achieve the goals and objectives mentioned in the previous section, Nigeria needs to increase its infrastructure spend in this sector. Using estimates combined with infrastructure requirements associated with identified development targets, USD 150 billion is required over the next 30 years to achieve the specific sub-sector targets. The biggest spend will be in Education and Healthcare.

In education, USD 30 billion is required for building 800,000 new classrooms, 300,000 to close the current gap and 500,000 to account for population growth to 2043. USD 20 billion is required for building 110 new universities, and USD 20 billion is required for building 130 new polytechnics.

The need to develop the education sector is not only limited to physical infrastructure needs, which have been highlighted in this chapter. Section 6.4 provides a more comprehensive view on reforms required in the education system. The main cost elements in Healthcare will be the construction of 108 new general hospitals for a total of USD 4 billion, and 15,000 new PHCs for a total of USD 3 billion.

3.7 VITAL REGISTRATION AND SECURITY

3.7.1 Current state of infrastructure

For many Nigerians, a sense of insecurity comes not so much from traditional (i.e., mainly military) security concerns, but from concerns about their survival, self-preservation and well-being. Security

means protection from the threat of diseases, hunger, unemployment, crime, social conflict, political repression and environmental degradation.

The current security situation in Nigeria is characterised by threats that are mainly unconventional in nature. These threats include:

- insurgency characterised by terrorism, kidnapping, assassinations and armed robbery;
- organised crime such as smuggling, oil theft, illegal bunkering, pipeline vandalism, drug and arms trafficking, human trafficking and internet/cyber related crimes;
- cross-border banditry;
- ethno-religious clashes;
- blow back effects' from Mali operations and other similar operations in which Nigeria is participating;
- economic, political and financial crimes, such as corruption, embezzlement, large scale fraud, money laundering, and election rigging;
- common theft, petty fraud and cheating; and
- human security threats such as climate change, pervasive poverty, food insecurity, economic insecurity, health insecurity, political insecurity, environmental insecurity, physical insecurity, community insecurity and social insecurity, among many others.

Vital Registration

Nigeria currently has around 3,000 registration centres across the country. Accurate vital records of life events provide a reliable and comprehensive identification system that enhances the security of any nation, which is an essential component of contemporary security management. The current coverage of vital registration in Nigeria is low, with the following very poor coverage benchmarks:

- Birth registration: 38 per cent
- Death registration: 10 per cent
- Marriage/divorce: 0 per cent

The following challenges give rise to this unsatisfactory level of vital registration coverage.

- Inadequate ICT infrastructure for the National Population Commission (NatPopC). A manual system of registration is currently in use, with registration taking place in only 2,951 centres instead of 180,000 registration centres across the country.
- Custody of the E-Passport database is with a consultant, IRIS. This should be in the custody of the National Immigration Service to provide easy access to relevant data for the Population Commission.
- Inadequate funding has ensured that the basic infrastructure requirements of the agency have largely not been met.

Security

There are 12 agencies in this sub-sector namely: Nigerian Police Force, Nigerian Prison Service, Federal Fire Service, Nigerian Army, Nigerian Navy, Nigerian Air Force, Federal Road Safety Commission, Defence Industry Corporation of Nigeria, Nigeria Immigration Service and Nigeria Security and Civil Defence Corps, Nigerian Communication Satellite (NigComSat) and Nigerian Space Research and Development Agency (NASRDA). The eleven agencies within this sector have been grouped into three sub-sectors for simplification:

Civilian defence, Military defence, and others. The challenges for each sub-sector are discussed below.

Civilian Defence

Nigerian Police Force

Nigeria currently has around 2,000 police stations. The vision of the Police Force is to make Nigeria safer and more secure for economic development and growth; and to create a safe and secure environment for everyone living in Nigeria. Substantial expenditure has been made on infrastructure and training programmes for the Police Force in recent years. Implementation of communication and information technology infrastructure is ongoing. The Police Force has also acquired a private, dedicated and secure communications platform as well as customised patrol vehicles for monitoring, tracking and combating crimes and criminality in the country through collaboration with development partners.

The challenges faced by the Nigerian Police Force include:

- weak investigation infrastructure, required for the revitalisation of criminal intelligence gathering techniques and pilot implementation of a National Integrated Intelligence Strategy;
- lack of forensic laboratories/fingerprint database;
- inadequate effective ICT infrastructure;
- old and dilapidating police stations, buildings, accommodation and offices;
- poor and unserviceable vehicles and weaponry; and
- inadequate training infrastructure.

Nigerian Prison Service

The Nigerian Prison Service (NPS) is the third arm of the Criminal Justice System after the Police and Courts. The Service is under the supervision and control of the Ministry of the Interior and the Civil Defence, Fire, Immigration and Prisons Services Board.

The Prison Service is responsible for taking into lawful custody all those certified to be so kept by courts of competent jurisdiction. The Service has the responsibility to produce suspects in courts as and when due; to identify the causes of their anti-social dispositions; to set in motion mechanisms for their treatment and training for eventual reintegration into society as normal law abiding citizens on discharge.

Nigerian prisons have historically been overcrowded. By the end of January 2013, there were 52,904 persons incarcerated in 235 prisons across the country. The total capacity of the prisons was 47,284 – therefore Nigeria's prisons were overcrowded by 12 per cent.

The current infrastructure stock consists of 235 conventional prisons; 30 barracks; seven workshops for operations and maintenance; four training schools; five officers' messes; one shooting range; and one armoury. However, almost all of this stock is dilapidated, sub-standard, ill-equipped or obsolete.

Challenges facing the Nigerian Prison Service include:

- weak and inadequate prison structures, with insufficient facilities for identification, treatment and re-integration of convicted persons;

- old, dilapidated transportation fleets that are inadequate to meet the court needs of awaiting trial prisoners; and
- insufficient budgetary allocation to develop infrastructure and rehabilitate convicted persons.

Federal Fire Service

The Federal Fire Service is responsible for rescue, fire prevention and mitigation, fire fighting, paramedic and information services. The main goal of the Fire Service is to minimise fire and other emergency incidents resulting in loss of life and property.

The current infrastructure stock consists of 322 Fire Stations and five training schools. Of these, 10 fire stations and two training schools are owned by the Federal Government, while the remaining are owned by the State Governments and the FCT. The average emergency response time for buildings within 18 square kilometres of a fire station is 35 minutes. Nigeria has 8,000 firemen, of whom only 1,200 are trained according to standard requirements. The ratio of fire-fighters to the population in Nigeria is 1:20,000, while the internationally recommended ratio is 1:1,000.

The challenges the Federal Fire Service faces include:

- inadequate fire-fighting facilities, equipment and infrastructure;
- absence of sustained training and manpower development programmes, with underfunded and poorly equipped training facilities; and
- inadequate funds to run operations, maintain facilities and equipment.

Federal Road Safety Commission

The FRSC is a government agency with statutory responsibilities for road safety administration in Nigeria. The FRSC currently has, among others, 182 unit commands, 140 driver's license centres, and three license plate production plants.

The main opportunities for the FRSC lie in:

- an electronic national driver's license, vehicle and offenders register, hosting over 10 million records and all managed by FRSC officials;
- three plants for the production of license plates and driver's licenses;
- an ultra-modern communication centre to enable reduced response time to road traffic crash incidents; and
- emergency ambulances and road side clinics located at crash-prone areas for prompt response and medical treatment to road traffic crash victims.

The main challenges facing the FRSC include:

- lack of electronic monitoring of highways;
- inadequate capacity for highway security operations;
- inadequate and unreliable identity check technology; and
- inadequate ICT security equipment.

Military Defence

The Nigerian Armed Forces currently have 200,000 troops and 300,000 para-military personnel on active duty. The objectives of the Armed Forces are to:

- defend the territorial integrity of Nigeria and provide aid to civil authority to attain a safe and secure environment for economic growth; and
- achieve a full complement of the

military defence system of Nigeria in air, sea and on the ground.

The main challenge the Armed Forces are currently facing is inadequate funding for enhanced operations, training, equipment and intelligence.

Nigerian Army

Nigerian Army formations include the 1st Division, headquartered in Kaduna (North-West), the 2nd Division headquartered in Ibadan (South-West), 3rd Division in Jos (North-Central), 82nd Division in Enugu (South-East) garrison Commands in Lagos and Abuja, and many service support units spread across the country. The training and doctrine commands are located in Minna, which supervise the Army's schools and the Depot.

Opportunities for the Army exist in the:

- deployment of trained personnel from Nigerian Army Training Centre (NATRAC) to units in some flash point State capitals, highways and Forward Operation Bases, to respond to threats and emergencies regarding internal security;
- establishment of a Special Operations Command (NASOC), four Special Operations Groups, and sufficient company strength to be attached to all units in each State capital; and
- incorporation of modern surveillance devices and improvement of technical intelligence.

The challenges facing the Nigerian Army include:

- command, control, and communication, currently being addressed through the Nigerian Army Low Altitude Platform Stations (NALAPS), in collaboration with Lighter than Air Systems;

Nigerian Air Force

The Nigerian Air Force (NAF) is the air arm of the Nigerian Armed Forces. It is one of the largest in West Africa, consisting of about 10,000 personnel stationed around ten bases.

The Air Force is organised to meet current requirements of the service and the defence needs of the country. Its current structure is along a service Headquarters, six principal staff branches, four Direct Reporting Units and four operational commands.

The main opportunity available for the Air Force is the use of communications satellites and unmanned aerial/ground/surface vehicle (UAV/UGV/USV). This will provide capabilities for effective surveillance, tactical mobility, border patrol, military operations, disaster and emergency management and monitoring of critical infrastructure such as pipeline monitoring.

The challenges facing the Air Force include:

- dilapidating runways and taxiways and unserviceable aircraft;
- poor operational support facilities (hangar facilities and workshops; staff/crew utility vehicles; ammunition storage facilities; bulk fuel installations);
- inadequate electronic equipment (radars, navigational aids, control tower/base operations equipment, meteorological equipment);
- inadequate infrastructure and training aids; and
- dearth of ground-based air defence systems.

Nigerian Navy

The Navy is responsible for the naval defence of Nigeria; assisting to enforce Customs laws; carrying out hydrographical surveys and safeguarding the country's maritime economy especially in the oil and gas sectors.

The Navy currently has 39 vessels and more than 10 helicopters split between the Western Naval Command and the Eastern Naval Command. The main infrastructure-related objective of the Navy is to develop infrastructure support for sustaining its operational, administrative and welfare responsibilities for the next two decades.

The main infrastructure challenges the Navy is facing include:

- inadequate maritime and air domain Intelligence Surveillance and Reconnaissance (ISR), target identification and maritime picture compilation;
- inadequate coastal observation posts and maritime patrol aircraft; and
- inability to mount a quick response to emergencies at sea due to lack of essential facilities.

Others

Nigerian Security and Civil Defence Corps (NSCDC)

NSCDC is a para-military agency of the Federal government, commissioned to provide measures against threats, attacks and disasters against Nigeria and its citizenry.

The objectives of the NSCDC are to:

- protect critical infrastructure and national assets;
- license, supervise and monitor the operations of private guard companies in the country; and
- provide rescue and emergency aid during natural or man-made disaster.

The current infrastructure stock consists of three State Commands, 10 divisional offices, 12 dormitories, three training colleges, 30 classrooms, three commandants' residences and two shooting ranges. The main challenges facing the NSCDC include:

- shortage of manpower;
- inadequate funding; and
- weak synergies and collaboration among security agencies.

Defence Industries Corporation of Nigeria (DICON)

The main objective of the agency is to produce arms, ammunition, weapons and machinery to meet Nigeria's defence needs. DICON's current infrastructure stock includes:

- nine factories and workshops
- one arms production line
- two laboratories

One of the major challenges faced by the DICON is the unavailability of production plants and simulation centres.

Nigeria Communication Satellite (NigComSat)

The key objective of this agency is to deploy communication satellite resources for maritime, defence, aviation and other security needs of the nation.

The opportunities for NigComSat include:

- the capacity to provide the military and other security agencies with a communications service and bandwidth requirements for all platforms;
- deploying Beyond Line-of-Site (BLOS) connectivity for Unmanned Aerial Vehicles (UAVs) in Nigeria; and
- becoming the cornerstone for universal access, bedrock for ICT development, backbone of social, political and economic re-engineering in Nigeria and Africa in general.

Nigeria Immigration Service

The key objective of this agency is to establish a technology platform to address the operational challenges of modern migration, relevant to the world security order and responsive to global migration trends. An opportunity exists for improving the level of monitoring at the borders by installing CCTV cameras.

National Space Research & Development Agency (NASRDA)

The objective of this agency is to advance Nigerian indigenous competence in developing, designing and building

TABLE 3.14: VITAL REGISTRATION SECTOR TARGETS

Outcome KPI	2013	2018	2023	2043
▪ Complete coverage of birth registration	38	50	70	100
▪ Complete coverage of death registration	10	40	60	100
▪ Total digitalisation of company records	60	70	80	100

SOURCE: Vital registration and security TWG

TABLE 3.15: VITAL REGISTRATION AND SECURITY SECTOR TARGETS

Infrastructure stock	2013	2018	2023	2043
▪ Registration offices	3,120	5,000	7,000	10,000
▪ Command office complex in 36 states	5	10	20	36
▪ Divisional offices in all LGAs	10	100	250	774

SOURCE: Vital registration and security TWG

appropriate hardware and software in space technology as an essential tool for its socio-economic development and the enhancement of the quality of life of its people.

The opportunities for NARSDA include:

- developing and managing our agricultural and forestry resources
- assessing and managing our national resources
- evolving an effective and efficient communications system
- enhancing our transportation and tourism enterprises
- advancing our education and health care delivery systems, both rural and urban
- developing and managing our energy resources
- mitigating disasters for increased human safety enhancing national defence and security

2.7.2 Aspiration and Targets

Vital Registration

The objectives of the vital registration sub-sector are to:

- establish functional registration centres with Direct Data Capturing equipment in all 200,000 localities in the country;
- establish a centralised database containing biometric and demographic characteristics of all residents (internal migration); and
- computerise cross- border surveillance of all Nigerian borders (international

TABLE 3.16: SECURITY SECTOR ASPIRATIONS

General	Protect Nigerians from the threat of diseases, hunger, unemployment, crime, social conflict, political repression and environmental degradation

Sub-sector	Objectives
Police	▪ Implement comprehensive, efficient and effective crime prevention and control strategies to address crime and safety within the country ▪ Deliver quality service through a disciplined, well trained, motivated and capable workforce ▪ To build a viable technology base to support goals and deliverables
Prison	▪ Provide safe custody of all persons that are legally interned by courts of appropriate jurisdiction ▪ Reform, rehabilitate and reintegrate inmates upon discharge
Fire	▪ Reduce incidents of fire by enlightening the public ▪ Provide rescue, fire prevention, and firefighting services to the public ▪ Develop capacity of fire safety officials through rigorous training
Road safety	▪ Transform the Federal Road Safety Commission (FRSC) into a world-class organisation ▪ Place Nigerian roads within the league of 20 safest roads in the world ▪ Reduce fatality on Nigerian roads ▪ Migrate to ICT-driven operations (e-enforcement)

SOURCE: Vital registration and security TWG

TABLE 3.17: SECURITY SECTOR TARGETS

	Outcome KPI	2012	2018	2023	2043
Fire	▪ Emergency response time for buildings within 6 to 18 square km of a fire station, mins	35	15	8	5
	▪ Provision of fire disaster response cover in the geopolitical zones, percent	0	40	100	100
	▪ Number of firefighters trained	1,200	37,500	75,500	125,000
	▪ Availability of water dedicated for firefighting, percent	≤5	20	40	≥80
Prison	▪ Increase number of standard prisons, percent	80	85	90	100
	▪ Increase number of case management systems integrated with the criminal justice system, percent	2	20	45	85
	▪ Increase number of vocational/educational facilities in prisons, percent	40	50	60	95
Road safety	▪ Traffic incident fatality/100,000 population, numbers	4	3	3	2
	▪ Ratio of personnel/100,000 population, numbers	11	15	19	22
	▪ Reduce vehicle per personnel, numbers	451	350	300	200

SOURCE: Vital registration and security TWG

migration).

In order to meet these targets, the infrastructure stock needs to be increased. Targets have been derived, as can be seen in Table 3.14

These goals can be achieved by increasing the number of registration centres from the current average of one per locality and by meeting other non-infrastructure requirements (e.g., registration equipment, direct data capture (DDC) equipment, vehicles to meet logistics requirements).

It should be noted that alternative solutions should be considered in addition to increasing the infrastructure 60-fold (e.g., increased use of technology, leveraging the Nigerian Postal Service (NIPOST) network as registration offices).

As these solutions are non-infrastructure-related, they fall outside of the scope of this document.

Security

A general broad vision for the civilian defence group and objectives for each sub-sector (police, prisons, fire services, and FRSC) were identified. These objectives have been translated into specific targets for the next 5, 10, and 30 years.

Similarly, infrastructure targets have been identified for the civilian defence group that will support their objectives and bring Nigeria in line with international benchmarks *[Table 3.18]*.

These infrastructure targets include, among others, adding 2,000 fire stations, building 3,000 police stations, 40 fire

TABLE 3.18: CIVILIAN DEFENCE INFRASTRUCTURE TARGETS (1 OF 2)

	Description	2012	2018	2023	2043
Police	▪ Police stations	1,280	1,743	2,206	4,057
Prison	▪ Standard prisons	235	241	245	272
	▪ Barracks	30	50	100	200
	▪ Training schools	6	6	7	8
	▪ Armouries	1	3	15	37
Fire	▪ Fire Stations	322	750	1,500	2,500
	▪ Disaster response centres	0	2	4	6
	▪ National data centre	0	1	1	1
	▪ Number of fire service training school (basic, intermediate and officers)	5	13	26	44
	▪ Percentage of fire stations linked, percent	0	80	100	100
	▪ Fire hydrants in major cities and towns (percent of towns)	≤5	20	40	≥80

SOURCE: Vital registration and security TWG

TABLE 3.19: CIVILIAN DEFENCE INFRASTRUCTURE TARGETS (2 OF 2)

	Description	2012	2018	2023	2043
Road safety	▪ Unit command	182	282	482	744
	▪ Academy	0	1	3	6
	▪ Driver's licence printing farm	1	3	4	6
	▪ Number of plate production plants	3	6	9	15
	▪ Drivers licence centres	140	240	440	744
	▪ Roadside accident clinic	24	124	174	400
	▪ Training school	0	1	12	37
	▪ Accommodation units	5	82	130	234

SOURCE: Vital registration and security TWG

service training schools, and 600 driver's licence centres by 2043.

Military Defence

Military defence infrastructure requirements are dependent on the sovereign military strategy. While this strategy is currently being redefined to address the increasing waves of kidnappings, assassinations and terrorist attacks, some work has been done to articulate infrastructure requirements in the short to long term.

TABLE 3.20: MILITARY DEFENCE SECTOR ASPIRATIONS

Sub-sector	Objectives
Air Force	▪ Defend the territorial integrity of Nigeria by air ▪ Provide support for other security agencies towards the provision of safe and secure environment for economic growth and national development ▪ Achieve a full complement of the military defence system of the Federal Government of Nigeria both in the air and on the ground ▪ Provide close support for the ground-based and seaborne forces in all phases of operations ▪ Ensure the territorial integrity of a united Nigeria
Navy	▪ Develop adequate infrastructural support for sustaining Nigerian Navy's operational, administrative and welfare responsibilities for the next 2 decades

SOURCE: Vital registration and security TWG

TABLE 3.21: MILITARY DEFENCE SECTOR TARGETS

	Outcome KPI	2012	2018	2023	2043
Air Force	▪ Operation Response Time	72hrs	48hrs	36hrs	12hrs
	▪ Emergency Response Time	48hrs	24hrs	12hrs	6hrs
	▪ Disaster Response Time	24hrs	12hrs	6hrs	1hr
Navy	▪ Regional Maritime Awareness Capacity	MDA	Enhan-ced MDA	TSC	TSC
	▪ Coastal Maritime Surveillance System	MDA	Enhan-ced MDA	TSC	TSC
	▪ Berthing space for ships	Poor	20%	40%	80%
	▪ ICT Communications penetration	20%	40%	60%	100%

SOURCE: Vital registration and security TWG

TABLE 3.22: MILITARY DEFENCE INFRASTRUCTURE TARGETS

	Description	Today	2018	2023	2043
Air Force	▪ Commands (Barracks)	4	5	6	8
	▪ Naval Air Force Units	14	20	26	36
Navy	▪ Jetty Locations	8	12	20	All
	▪ Slipways Locations	4	10	15	All
	▪ Dockyard/Shipyard Locations	2	3	4	All
	▪ Helipads Locations	2	6	10	All
	▪ Fleet Support Group Workshops	2	3	5	5
	▪ Forward Operating Base Locations	5	10	15	15
	▪ Communications/ICT Infrastructure Locations	6	20	100	All

TABLE 3.23: SECTOR ASPIRATIONS FOR OTHER SECURITY AGENCIES

Sub-sector	Objectives
NSCDC	▪ Employ the use of modern technology to develop structures and training strategies so as to ensure security in the nation ▪ Improve service delivery and bring credibility to the concept of security in Nigeria
DICON	▪ Produce small-medium and high caliber arms and ammunition to meet the nation's defense needs ▪ Intensify defense related research and development
Nig-ComSat	▪ Deploy communication satellite resources for maritime, defense, aviation and other security needs of the nation
Immigra-tion	▪ Address the operational challenges of modern migration through a technology driven infrastructure ▪ Make the immigration service relevant to the world security order and responsive to global migration trends

SOURCE: Vital registration and security TWG

TABLE 3.24: OTHER SECURITY AGENCIES SECTOR TARGETS

	Outcome KPI	2012	2018	2023	2043
DICON	▪ Percentage of small arms and ammunition produced locally	25%	45%	60%	90%
	▪ Quality and quantity of small arms and ammunition supplied to security agenciesNig	35%	50%	65%	85%
	▪ Use of excess capacity for Civilian products	Poor	20%	40%	80%
Nig-ComSat	▪ Satellite based communication	30%	50%	50%	50%
	▪ Indigenous navigation system using the L-band of NigComSat-1R	50%	100%	100%	100%
	▪ Remote isolated systems integration and connectivity between security agencies	Nil	20%	40%	100%
	▪ Satellite Coverage to support foreign missions	Limited	Increa-sed	Global	90%
	▪ National Public Security Communications System Network	Police Force	60%	100%	100%

SOURCE: Vital registration and security TWG

TABLE 3.25: OTHER SECURITY AGENCIES INFRASTRUCTURE TARGETS

	Description	Today	2018	2023	2043
DICON	▪ Factories/Workshops	9	11	12	14
	▪ Laboratories & Simulation Centres	2	2	3	4
	▪ Laboratories	1	1	2	2
	▪ Simulation Centres	0	0	0	1
	▪ Plants	0	0	1	1
	▪ Accommodation Units	59	70	80	100
Nig-ComSat	▪ Nigerian Communications Satellite (NigComSat-1R)	1	2	2	2
	▪ Ground Network Infrastructure and Ground Station backup operations for NigComSat-1R	2	3	3	3
	▪ Trucking Station in Europe for Ka-band	1	2	2	2
	▪ Master Station for Argumentation System project on L-band	0	1	1	1
	▪ National Public Security Communications System Network	774 LGAs	Nation wide	Nation wide	Nation wide

SOURCE: Vital registration and security TWG

3.7.3 Private Sector Expectations and Priorities

Security is largely a federally-managed sector via the various security agencies, such as the Nigerian Police, Armed Forces, State Security Service, Nigerian Security and Civil Defence Corps.

The recommendation on enablers for private sector participation and priorities for the Vital Registration and Security sector deals with:

- Establishment of core and support infrastructure to ensure national security;
- Inclusion of security training in curricula for primary and secondary schools;
- Creation of a security training academy;
- A professional and proactive regulatory agency for private security companies;
- Availability of low-interest loan facilities to private security companies;
- CCTV and other surveillance systems installed on all roads and connected to control rooms of security organisations and
- Availability of database and biometrics banks to support forensic laboratories.

3.7.4 Required infrastructure investments

Estimates of the infrastructure needs in the sectors suggest total spend of USD 50 billion over the next three decades:

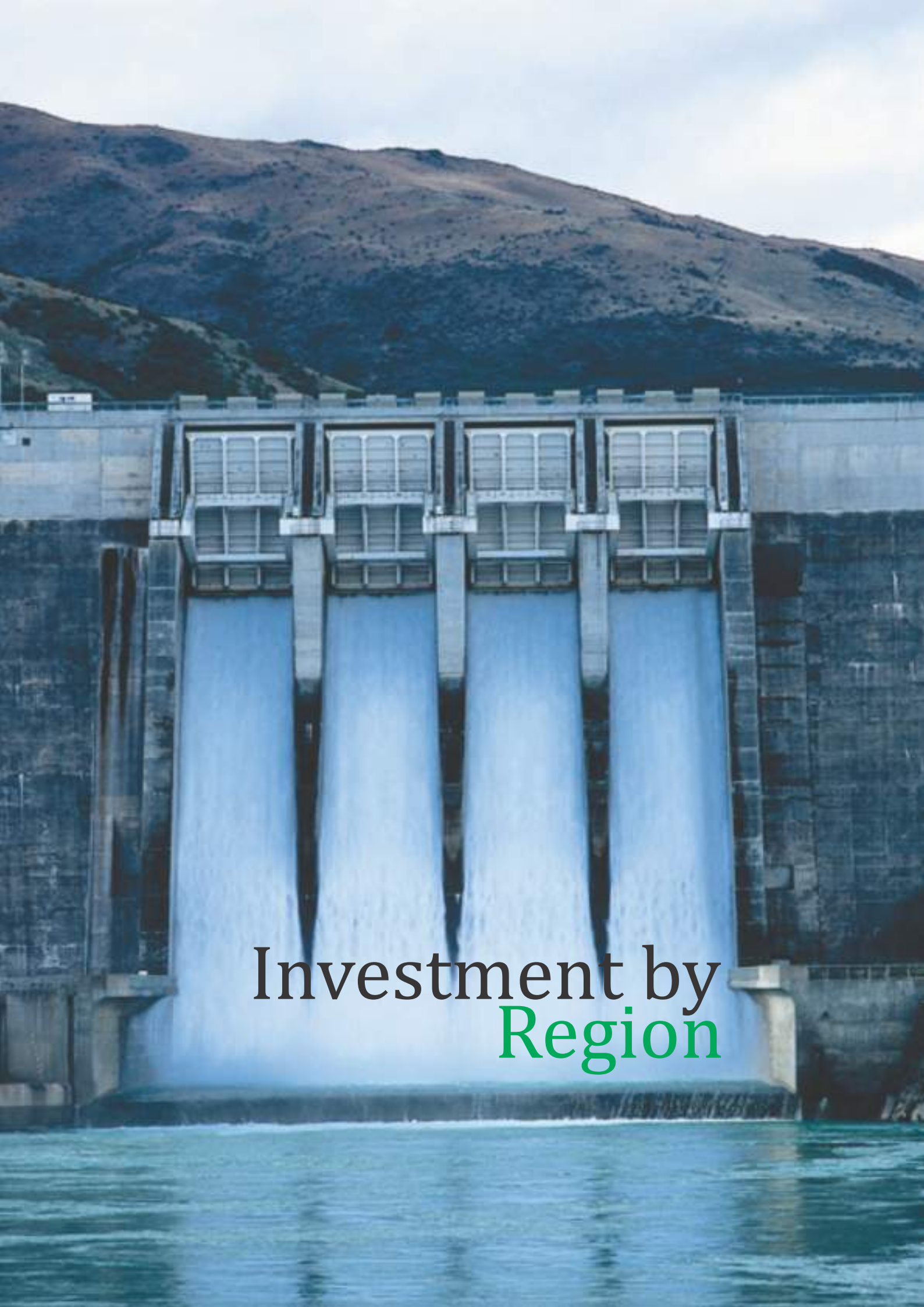
- For police, the main infrastructure spend will be the construction of 3,000 new police stations;
- For fire services, the main investments will be the construction of 2,000 new fire stations and 30 fire service training schools;
- For prisons, the biggest investment will be the building of 100 new prisons and 170 new barracks;
- For FRSC, the main investments will be building 600 new testing stations, 400 new roadside clinics and 500 new unit commands.
- NARSDA has a Fedral Executive council (FEC) approved Roadmap spanning a 25 years period, from 2005-2030. The Roadmap is estimated to cost N387 billion over the next 15 years (2015-2030).

3.7.5 Legal Enablers

The primary legislation reviewed for this sector was the Prisons Act. The provisions of the Constitution place prisons solely under the purview of the Federal Government; the Prisons Act does not make provisions for the private sector to establish prisons.

The Act thus does not enable private sector investment in the sector. The Act also does not encourage state participation, as only the Federal Government can regulate matters relating to the nation's prisons. There is room for the Act to be amended in order to allow states and private investors to invest in prisons, in line with global best practices.

Furthermore, there is need for reform in the prison system, particularly with regards to decongesting the nation's prisons.



Investment by Region

4. INVESTMENTS BY REGION

4.1 REGIONAL STARTING POSITIONS AND ECONOMIC PRIORITIES

Most of Nigeria's commitments towards regional development are products of policies such as the National Development Plans and River Basin Development Authorities. In recent times, these have been supplemented by initiatives such as Vision 2010, NV 20: 2020 and the Transformation Agenda economic blueprint.

The aim of these policies has been to generate growth simultaneously in all 6 geopolitical zones, and to provide the basis for regional planning and development by ensuring that both rural and urban areas are equipped for their proper role in the development of the national economy. Although there is an appreciable level of policy goals accomplishment, the observed gaps are due to weak implementation coordination and weak integration with the national economy, inadequate legal framework, and poor funding /resource allocation, and lack of integrated regional infrastructure clusters.

Against this background, the need is clear for integrated regional development policies that will cater for Nigeria's immediate and future needs, and identify short-medium and long-term development programmes that can drive economic growth and prosperity. Such an integrated approach should aim to harness the beneficial effect of clustering certain sectors around prevalent basic resources. The concept of economic corridors should be the base for a large part of the regional distribution of infrastructure deployment across the different sectors.

Regions in this context refer to the six-geopolitical zones in the country.

The objectives of regional development are to:

- galvanise all existing regional development policies into a single integrated National Regional Development policy/framework;
- formulate integrated infrastructure clusters in the wider regional context;
- create a comprehensive rural-urban integration system and hierarchical ordering of settlements;
- improve accessibility of all areas within the country;
- balance economic development of the regions; and
- achieve economies of scale and high degree of self-sufficiency in food production.

In this Plan, consideration has been given to infrastructure investment requirements across regions, based on regional starting position, natural endowments that can provide regional competitive advantage and serve as basis for regional planning and development of regional economic corridors.

4.1.1 Methodology

The required investment by region in the NIIMP has been derived following a 3-step approach *[Table 4.1]:*

- First, the characteristics of each region were considered, including demographical spread of population across regions, the spread of economic activities, area of the region and primary resources that can form a basis for comparative advantage for the region determine economic focus areas;
- Second, each of the asset classes under consideration was then reviewed and a preliminary assessment of requirements for infrastructure was performed based on the key drivers for each asset class as well as minimal infrastructure requirements;
- Finally, the requirements were adjusted based on economic development patterns and development priorities for each region (e.g., increased investments in rail are required in regions with higher potential for the mining industry, as well as for connectivity to ports).

These adjustments were based on a validation workshop with the States' Infrastructure TWG, followed by validation workshops in each of the six geopolitical zones.

TABLE 4.1: APPROACH FOR DRIVING REGIONAL INVESTMENT ALLOCATION

	Description	Sources
A Characterization of starting position of regions	▪ Mapping of GDP, population and area of the six regions ▪ Outline of primary resources for the regions	▪ Publicly available data, e.g. from the National Bureau of Statistics ▪ Discussion with TWGs
B First-cut regional needs for asset class investment	▪ Selection of most relevant driver for regional investment profile for each sub-asset class ▪ First-cut investment profile using selected drivers	▪ NIIMP project team analysis ▪ Validated by TWGs
C Refinement of investment profile to account for regional differences	▪ Over-under-weight regional drivers to account for different priorities on cost structures ▪ Adjust for existing investment plans/projects per sub-asset class	▪ Working sessions with states' infrastructure TWG and Regional Development subgroup ▪ Regional validation workshop (on going)
Regional investment profile	▪ Overall infrastructure investment need per region over the next 30 years	

SOURCE: NIIMP development team

The six regions show heterogeneous starting positions, as *Table 4.2* illustrates, which in turn impact regional economic priorities.

TABLE 4.2: OVERVIEW OF REGIONAL STARTING POINTS

(X) Share of total, %

Region	States	Population (Millions)		Area ('000 km²)	
North West	Jigawa, Katsina, Kaduna, Kano, Kebbi, Sokoto, Zamfara	35.9	25	212	24
North East	Adamawa, Bauchi, Borno, Gombe, Taraba, Yobe	19.0	13	280	31
North Central[1]	Benue, Kogi, Kwara, Nasarawa, Niger, Plateau, FCT	21.1	15	219	24
South West	Ekiti, Lagos, Ogun, Ondo, Osun, Oyo	27.7	20	77	9
South East	Abia, Anambra, Ebonyi, Enugu, Imo	16.4	12	30	3
South South	Edo, Delta, Rivers, Bayelsa, Akwa Ibom, Cross River	21.0	15	85	9

1 Federal Capital Territory (FCT) is included in the North Central region

SOURCE: Governors' Forum

Specific potential and comparative advantages as well as challenges facing the various regions can be summarised as follows:

- **North West** – The region has potential in wind and solar energy, as well as solid minerals (iron ore, gold, kaolin). Moreover, there is a significant potential for up-scaling agricultural production. With about 35.9 million people, it is also the most populous of the 6 regions, which conveys inherent human resources potential. However, the region's challenges include poor road infrastructure, a harsh climate with significant erosion / desertification; a weak industrial base and rural-urban migration.
- **North East** – The region, being the largest of the six regions, has abundant space for agricultural cultivation, significant surface water resources (including for hydropower) and solid minerals (limestone, barite, coal), as well as solar power potential. Gas reserves in the region are being explored. However, the region's challenges include security concerns, undeveloped rural areas, no proper solid waste management across the region, as well as lack of a detailed base map.
- **North Central** – The region has potential in surface water resources, large solid minerals reserves (iron ore, coal, limestone etc.), fertile land, skilled manpower and inland waterways. However, the region's challenges include poor industrial presence, only 20 per cent of the population with access to good sanitation; heavy erosion in the Jos (Plateau) area and a lack of detailed base maps for each area.

With the fastest growing population and corresponding increase in economic activity, the Federal Capital Territory (FCT) has particular characteristics that differ from the rest of the country and the region. High urbanisation and population density favour manufacturing and commercial activities, but also means there are substantial needs in particular within transportation, housing, urban development, health and education. Being home to the nation's capital, the FCT also has particular security-related infrastructure development needs.

- **South West** – The region constitutes a major economic centre of Nigeria. It has potential in skilled manpower, high population density and urbanization, solid minerals (gold, glass sand, granite), commercial and industrial density, inland waterways and agricultural potential. However, the region's challenges include inadequate physical infrastructure (transport, housing, health, education and power), rapid unplanned urbanisation, high unemployment, low agricultural productivity and environmental degradation.
- **South East** – The region has potential in oil and gas and solid minerals reserves (coal, black marble, etc). Moreover, high urbanisation and population density are favourable for manufacturing clusters as well as commercial activities. However, the region suffers from a poor infrastructure base to support intensified trade and commercial activities (e.g., transportation,

communications infrastructure, power and water supply), as well as erosion issues.

- **South South** – The region has potential in oil and gas reserves, surface water resources and inland waterways, exceptionally fertile land and a favourable climate for agriculture, forest resources, tourism and seaports. However, the region's challenges include a poor road network, waterways not well developed, lack of railway service (except the Port Harcourt to Kaduna link), extensive environmental degradation (oil pollution, coastal erosion and gas flaring) and security issues.

4.2 Regional infrastructure investment required

In order to assess the investment requirements, the main drivers for regional distribution of infrastructure and adjustments in this distribution were considered as shown in *Table 4.3*.

TABLE 4.3: DRIVERS FOR INVESTMENT ACROSS REGIONS

Sector	Main drivers for regional allocation	Main adjustments made and rationale
Transport	▪ Locations of largest cities (urban transport) ▪ Sites of economic importance (road/rail links) ▪ Economic activity (all other assets)	▪ Maritime and aviation infrastructure needs to reflect major port and airport locations ▪ Rail infrastructure requirements should consider main rail expansion plans
Energy	▪ Population and economic activity (power infrastructure) ▪ Oil and gas industry cluster (oil and gas infrastructure)	▪ Higher generation and transmission investment in regions of higher processing and manufacturing importance ▪ Exploration needs of new potential oil and gas reserves in the North East
ICT	▪ Population and economic activity	▪ High urbanisation and population density favour fibre backbone investments
AWM	▪ Space for agriculture, soil fertility (agriculture) ▪ Water storage capacity, population (water) ▪ Natural resources, location of minerals processing clusters (mining)	▪ Higher investments into regions with largely unexploited potential (e.g., northern regions for agriculture)
Housing	▪ Population	▪ Different housing costs in different areas of the country
Social Infrastructure	▪ Population (all asset classes)	▪ Consideration of economic activity for labour and productivity and education sub asset classes
Security and Vital Registration	▪ Population	▪ Necessity to settle security issues around industrial assets (e.g., oil and gas assets in the South South) ▪ Need to address political situation in the North East

SOURCE: NIIMP development team

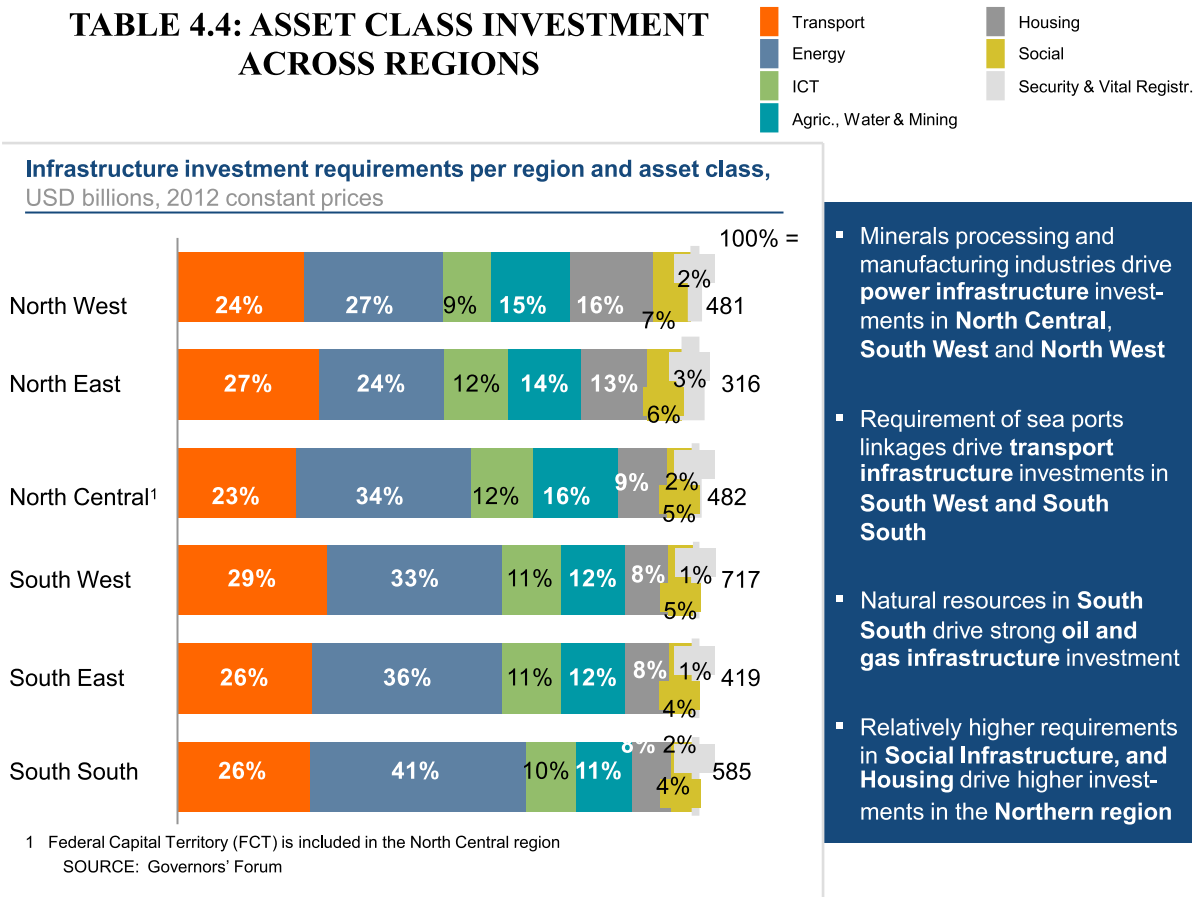
The regional requirements for infrastructure are thus assessed as shown in *Table 4.4*.

The major differences in the share of investment requirement of each asset class include a higher need for power generation and transmission infrastructure in North Central and South West due to the energy intensity of the prevalent minerals processing and manufacturing industries.

Furthermore, commercial activity, as well as the requirement of adequate linkages to sites of particular economic importance (such as seaports) drive transport infrastructure investment requirements in the southern regions.

Moreover, abundant oil and gas resources in the South South region drive a heavy emphasis on corresponding oil and gas infrastructure investments. Required infrastructure investment will take into consideration economic corridors and regional development objectives.

TABLE 4.4: ASSET CLASS INVESTMENT ACROSS REGIONS



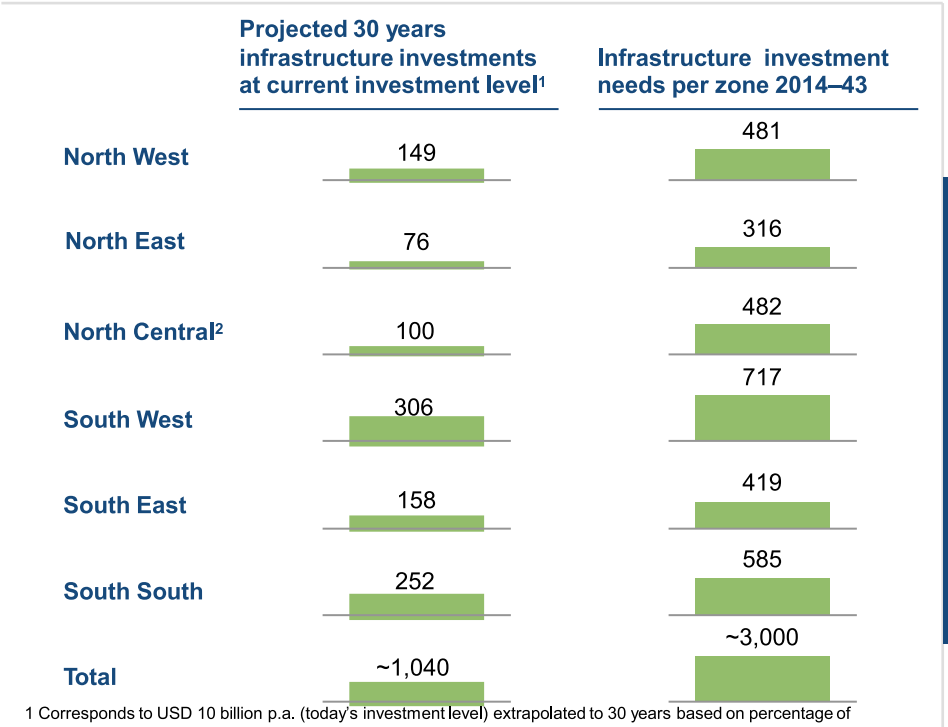
- Minerals processing and manufacturing industries drive **power infrastructure** investments in **North Central**, **South West** and **North West**
- Requirement of sea ports linkages drive **transport infrastructure** investments in **South West and South South**
- Natural resources in **South South** drive strong **oil and gas infrastructure** investment
- Relatively higher requirements in **Social Infrastructure, and Housing** drive higher investments in the **Northern region**

Across Nigeria, all regions are in need of increased investments. The total investment requirement by region has been estimated as follows:

- North West – USD 481 billion;
- North East – USD 316 billion;
- North Central (including FCT) – USD 482 billion;
- South West – USD 717 billion;
- South East – USD 419 billion;
- South South – USD 585 billion.

These numbers represent total investment required, which will need to come from a combination of public (Federal, State) and private sector budgets. *Table 4.5* summarises the regional investment requirements.

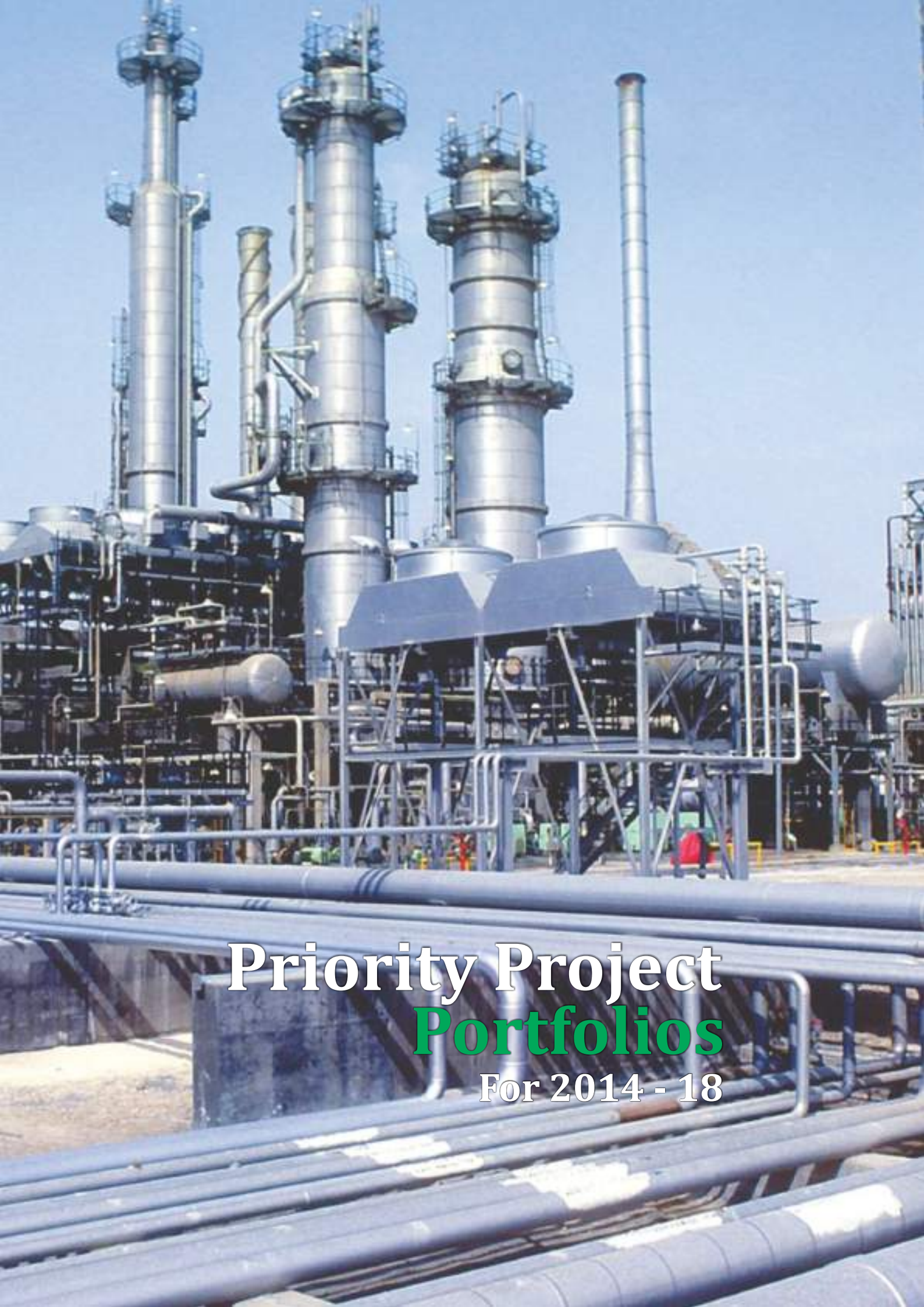
TABLE 4.5: INCREASED INVESTMENT REQUIRMENTS ACROSS REGIONS



1 Corresponds to USD 10 billion p.a. (today's investment level) extrapolated to 30 years based on percentage of GDP and projected GDP growth
2 Federal Capital Territory (FCT) is included in the North Central region
SOURCE: Governors' Forum

This is a preliminary estimate of how much infrastructure investments will be required from the private sector and the public sector (Federal and State) in each region over the next 30 years

These numbers will be validated as States develop their own Masterplans



Priority Project Portfolios

For 2014 - 18

5. PRIORITY PROJECT PORTFOLIOS FOR (2014 - 18)

In the first five years, priority will be given to projects with the right strategic fit and potential immediate benefits or "low hanging fruits' for the nation, in order to deliver projects with the largest economic and social benefits.

5.1 TRANSPORT

During this plan period, the transport sector will focus on the following infrastructure development priorities:

Roads – priority portfolios focus on refurbishing and expanding the cross-national highway network. This includes dualisations as well as general rehabilitation of major routes. Furthermore, the regional road network will be rehabilitated and expanded.

Rail – emphasis is placed on rehabilitating existing railway lines to make all of them functional, and to build additional railway lines to upscale the railway network. Moreover, rail links to sites of economic importance are envisaged to be established.

Aviation – the air transport sector needs to upgrade and expand the existing airport infrastructure. In particular, 11 airports are to be renovated and facilities to be upgraded to international standards.

Maritime – the short-term focus in maritime sector is on increasing the share of inland waterway transportation through dredging of waterways and upgrading inland ports. Also, construction of 2 new seaports and upgrading and expanding existing ports is planned.

Urban transport – in order to deploy adequate means of urban road transport across all major cities of Nigeria, a broad set of investments needs to be undertaken in the short-term. This comprises the provision of buses, establishment of terminals, bus lanes, motor parks and traffic control systems. It is also foreseen

that construction of rail mass transit for urban areas with population of more than one million people will commence in the short-term, although these projects will take longer to complete and require substantial investments later than the initial 5-year period.

5.2 ENERGY

The Energy sector will focus on the following infrastructure development priorities:

Power – First, power generation is set to increase by 2018 to reach the target level of 20 GW. The immediate focus will be placed on gas and hydro- power generation through execution of 13 priority hydro and five priority gas projects, with the option to add alternative power sources after 2023.

Secondly, transmission capacity is envisaged to be strengthened and increased, with an immediate focus on the cross-national grid. Adequate transmission lines (330KV, 132KV, 66KV) should be extended and commensurate sub-stations to wheel 20 GW should be put in place in the short-term. The extension/growth of the transmission capacity should be planned such that transmission losses, ease of connectivity to planned production plants and access to distribution points are taken into consideration. The growth in both the production and transmission capacity should be carried out along with capacity building of adequate manpower to handle the associated projects.

A plant each will be established on biomass, wind, solar and nuclear energy during the plan period. The ongoing construction work on three Centres of Excellence in Hydropower Research and Development in University of Ilorin, Ilorin; Centre of Excellence in Petroleum Research and Development in Abubakar Tafawa Balewa University, Bauchi; and Centre of Excellence in Energy Efficiency and Conservation in University of Lagos, Lagos will be completed during the plan period to strengthen infrastructure in Nigeria.

Oil and gas – over the next five years, increase in the capacity of the pipeline network is planned to support gas-to-power and gas-to-industry needs. The planned projects include ELPSII, OB3, QIT-OB3, Calabar-Umuahia Ajaokuta, Obigbo Node – Ajaokuta, and Ajaokuta-Kaduna-Kano pipelines and related gas handling and processing facilities and LPG and LNG processing and bottling plants.

Also, establishment of industrial park Ogidigbe free trade zone is foreseen. Four refineries in Akwa Ibom, Lagos, Kogi, and Bayelsa States are also planned to meet the domestic demand for petroleum products. Continued investments in crude production and exploration projects are planned to meet the sector targets.

5.3 ICT

During the plan period, the ICT sector will focus on the following infrastructure development priorities:

Telephony – priority portfolios are set to enhance and expand the mobile network to ensure ubiquitous and continuous coverage. This includes expansion of satellite and ground infrastructure, expansion of base stations and establishment of last mile connectivity in

major cities;

Internet and broadband – priority portfolios will be on expanding the fibre-optic network in order to make the existing broadband capacity accessible to end-users. Furthermore, internet access for underserved parts of the population is set to be increased by creating public access venues and universal access centres. The objective to establish Nigeria as a centre of ICT technology and entrepreneurship development is advanced by establishing fabrication centres for ICT hardware as well as ICT-enabled incubation centres.

5.4 AGRICULTURE, WATER AND MINING

During 2014–18 the Agriculture, Water and Mining sector will focus on the following infrastructure development priorities:

Agriculture – priority portfolios will be on substantially growing agricultural production (comprising crops, livestock and fisheries products) and advancing the related processing industries. In this way, domestic food security will be secured, before establishing Nigeria as a food export country.

The prioritised projects include establishment of 19 staple crop processing zones, 18 agro-industrial processing centres, 154 processing facilities, grazing settlement reserves, artificial insemination centres, dairy facilities, commodity markets and agricultural equipment hiring centres, as well as supporting research and information development through livestock research institutes and establishment of a comprehensive data bank are equally of central focus.

Water – emphasis will be placed on ensuring sustainable access to safe and sufficient water resources to meet the socio-economic needs of all Nigerians. Accordingly, priority portfolios focus on water supply schemes, sanitation, drainage and irrigation, with inter-basin water transfers and basic databank infrastructure also within scope of priority projects.

Mining – priority portfolios will be on:

- promotion of iron and steel through expansion of iron ore mines
- provision of scrap-yards infrastructure
- drill and infrastructure expansion for limestone, dolomite, clay, and manganese,
- carrying out detailed exploration studies,
- providing transportation and core processing facilities for coal to power development,
- detailed exploration studies,
- provision of transport and processing facilities for industrial minerals and road construction materials (barytes, bentonite clay, kaolin, tar sand), and
- detailed exploration studies for gold, cassiterite, and copper ore.

5.5 HOUSING

During 2014-18, the priority for the Housing sector will be on increasing the baseline number of available housing units in order to approach closure of the projected housing deficit through construction of 600,000 housing units under PPP arrangement, 240,000 affordable housing units by FHA and establishing prototype housing scheme to

construct low-cost housing units in collaboration with LGAs using 90 per cent local materials.

The various existing land registry systems are set to be modernised and digitised. Another priority is to make land easily available, transferable and affordable for housing development through implementation of housing finance infrastructure, preparation and adoption of regional development plans, preparation of National Street Addressing System and formulation of national land policy for Nigeria.

5.6 SOCIAL INFRASTRUCTURE

During 2014–18, the Social Infrastructure sector will focus on the following infrastructure development priorities:

Health – the priority is to develop an integrated health system with infrastructure that guarantees high quality, affordable and sustainable world-class healthcare services for all. Identified projects include building hospitals, health centres and specialist centres across the whole country, as well as establishing health education centres and drugs/vaccines manufacturing centres. Specifically, focus will be on establishment of 6 world-class specialist hospitals, primary health centres in each political ward, 3 health centres in each LGA and 3 general hospitals, as well as establishment of reference laboratories with capacity for virology.

Women – priority portfolios focus on establishing fundamental infrastructure for the advancement of women matters, promoting women development and ensuring maternal and child health;

Education, Youth, Sport, Environment, Tourism, Information, Labour and Productivity – priority portfolios for all of these sub sectors centre around creating new and rehabilitating/upgrading existing infrastructure facilities, such as education facilities, youth development facilities, sports facilities, pollution and waste management systems, environmental control measures and infrastructure, information centres, institutes and safety net centres.

5.7 VITAL REGISTRATION AND SECURITY

During 2014-18 the Vital Registration and Security sector will focus on the following infrastructure development priorities:

Vital Registration – the priority is to provide infrastructure for adequate Vital Registration services, i.e., establish a functional registration system across the whole country.

Security – priority portfolios focus on several areas:

- Provide adequate interior security by establishing effective crime prevention, effective prison services, state-of-the-art fire services and adequate road safety;
- Ensure state of the art immigration security facilities to address the operational challenges of modern migration through a technology driven infrastructure;
- Provide infrastructure for adequate equipment of Air Force, Navy and Army.

5.8 FEDERAL CAPITAL TERRITORY

Among the 2014-18 priorities of for the NIIMP will also have to be included special projects to account for the particular challenges of the Federal Capital Territory. These include:

Housing – including the slum upgrading, the establishment of new residential districts and satellite towns.

Transportation – construction and expansion of the road and rail networks required to transport the FCT's fast-growing population.

Expansion of **health and education** infrastructure to accommodate the rapidly increasing population.

Security infrastructure to meet the evolving security challenges.

5.9 QUICK WINS

Special consideration will be given projects that are considered "quick wins". These are projects with potential immediate benefits or "low hanging fruits" for the nation. Special consideration will be given to some immediate "quick wins" on national level, in order to achieve progress in projects with the largest economic and social benefits. The projects considered as "quick wins" include:

- Power and gas infrastructure, especially increase of generation and transmission network capacity. As the privatisation of generation and distribution assets continues and is expected to support growing capacity, it is important to ensure timely availability of critical inputs (such as gas pipelines, with ELPSII and OB3 being most critical), as well as evacuation capacity through the transmission network.
- Rehabilitation of major cross-national transport links, particularly major South-North road connections such as the Lagos-Kano link, as well as East-West connections such as Calabar-Lagos-Badagry/Seme link and East-North connections, such as Port-Harcourt-Abuja link and also rehabilitation of existing rail network.
- Improvement of cross-model connectivity links. Today, the connectivity from one model of transport to another mode of transport is limited, both for human and material goods transport. Of utmost priority are the connection links between major ports with the relevant road networks and airports.
- Upgrading of major airports, as well as enhancing connectivity of international-international and international-domestic links, e.g., in Lagos airport.
- Improvement of urban transportation. Many of Nigeria's major urban centres, such as Lagos or Port Harcourt for example, are currently struggling with the required capacity, which results in significant efficiency losses. Capacity and quality increases are required for mass transportation to remedy the current poor situation.
- Development of Staple Crop Processing Zones.
- Expansion of broadband connectivity in order to make internet connectivity from landing points available to the end-users across the country.
- Development of public health facilities and diagnostic centres to provide basic

health services to the population across the country.

- Development of priority minerals, including iron ore and coal. Today, Nigeria has a very limited development of iron and steel industry, which is disproportionate to the available iron ore reserves. Also, despite locally available coal, it use as a power generation source is non-existent. To ignite growth in these sectors, quick wins can be realised in sector development, such as exploration studies and mining infrastructure development such as the completion of the Ajaokuta-Warri Railway to support existing Steel Plants.
- Upgrading of primary, secondary and tertiary education facilities. This should be considered jointly with a broader set of changes and reforms required in the education sector.
- Rehabilitation of security facilities and infrastructure to improve the provision of quality security services is a priority.
- On-going development of mass housing market in Nigeria to significantly reduce the housing deficit fall within 'quickwin'bracket.

■ *Nigeria National Petroleum Corporation Tower, Abuja*

Financing Plan

6. FINANCING PLAN

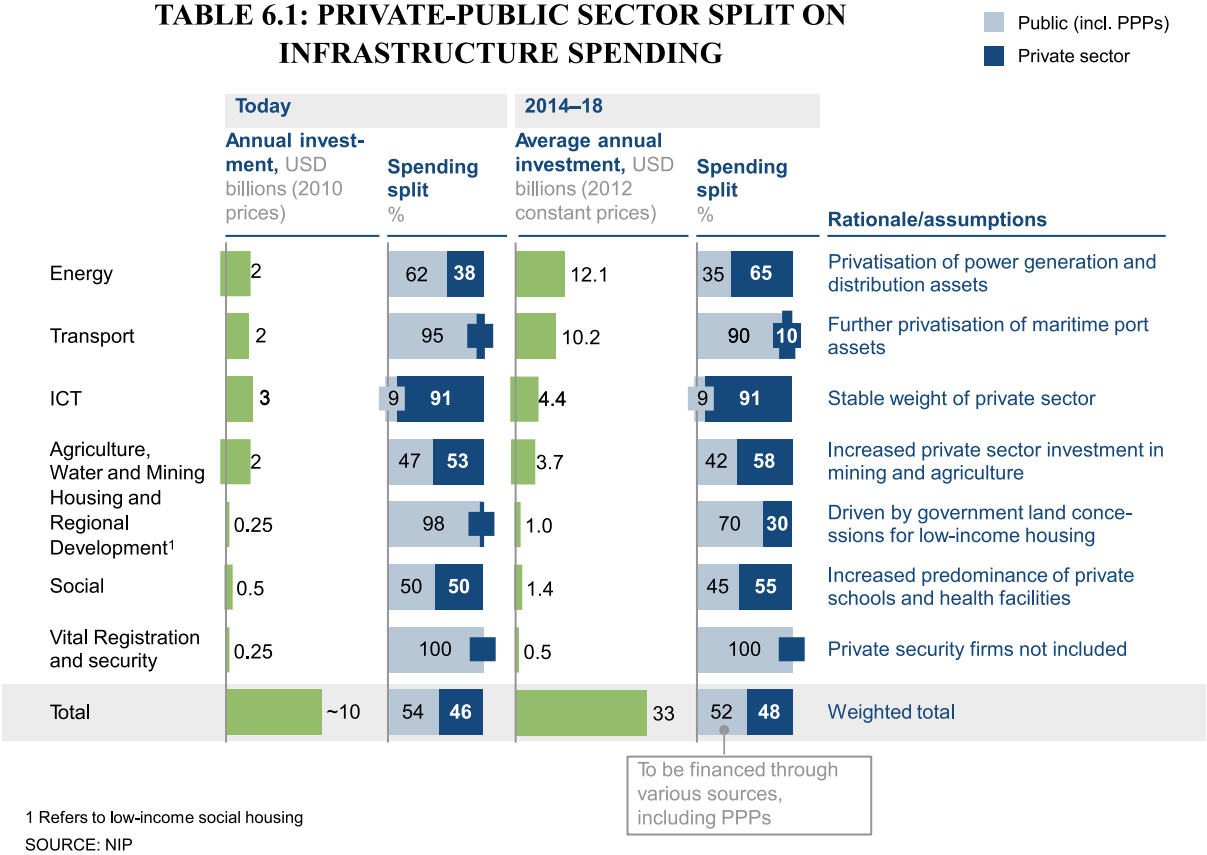
In the first five years, infrastructures investments will be financed using a combination of public and private funds, with the public sector (Federal and State) providing 52% of the total investment requirement of USD 166 billion and private sercit providing the remaining 48%

6.1 FINANCING THE PLAN

Nigeria requires a significant increase in the infrastructure investment to meet its development needs. Implementation of the master plan will require a total investment of USD 3.0 trillion over the next 30 years. For the first five years of the plan, annual investments in infrastructure need to rise from the current USD 9-10 billion (about two per cent of GDP) per year to an average of USD 33.2 billion (about 5.4 per cent of GDP) annually during 2014–18.

Financing this investment will require both public and private sector participation. The private sector is currently estimated to account for ~46 per cent of the infrastructure investments in Nigeria. Given the on-going privatisation plans, most notably in the power sector, the share of private sector's investments is estimated to increase to ~48 per cent by 2018 *[Table 6.1].* The private sector share of spend primarily accounts for assets that are fully owned and financed by the private sector. Examples of this include the base stations owned by telecom providers, and privately-owned schools and hospitals.

TABLE 6.1: PRIVATE-PUBLIC SECTOR SPLIT ON INFRASTRUCTURE SPENDING



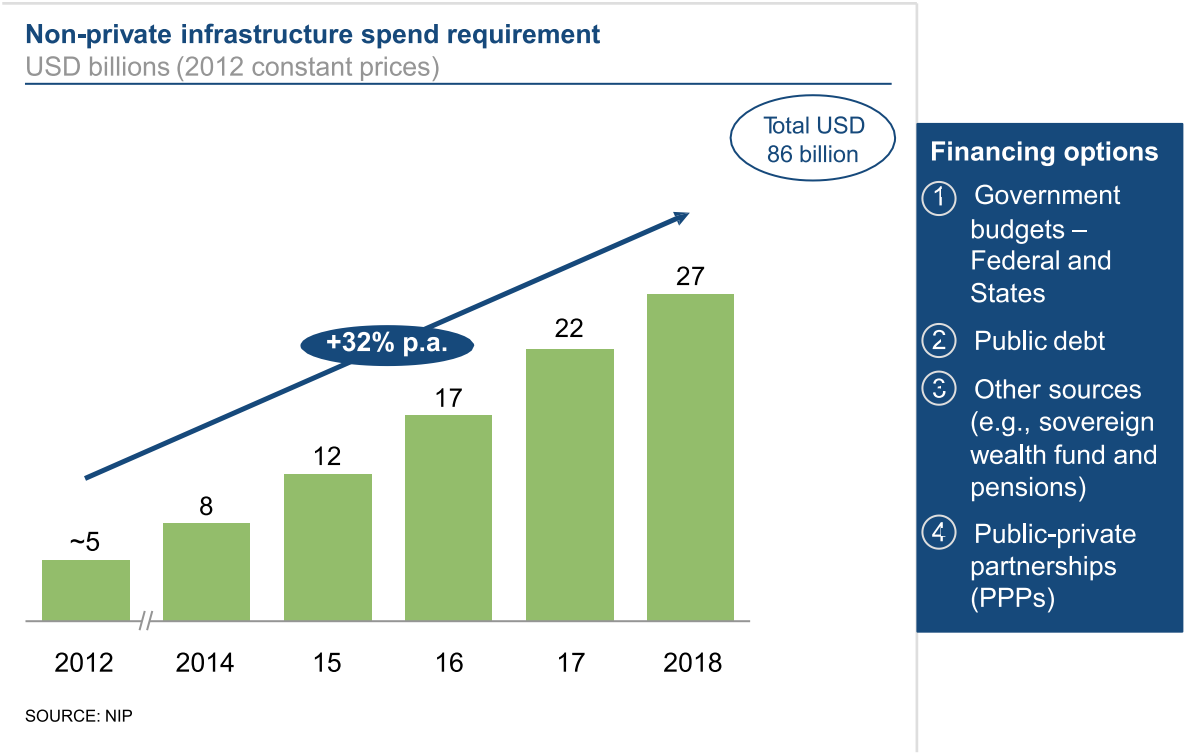
1 Refers to low-income social housing

SOURCE: NIP

The remaining 52 per cent of the required infrastructure investment (USD 86billion) for the first five years will need to be financed from a combination of public and private sources. There are four primary options available for financing these investments: 1) Government budgets (federal and state), 2) public debt, 3) other public sources (e.g., the SWF, public pension funds), and 4) public private partnerships (PPPs) or further privatisation *[Figure 6.1]*. This means that over the next five years, the total of USD 86billion would need to be financed through a combination of these sources.

■ *Federal Secretariat building Abuja.*

FIGURE 6.1: PUBLIC EXPENDITURE ON INFRASTRUCTURE (2014-2018)



6.1.1 Government Budgets (Federal and State)

The government could raise up to USD 31billion from public current accounts over the next five years, based on projections from the Budget Office of the Federal Government of Nigeria's Medium-Term Fiscal Framework. The USD 31 billion assumes the government continues its focus on moderating the growth of recurrent expenditure and increases the share of the total budget spent on Capex from 34 per cent in 2012 to 38 per cent in 2018 and that the share of
Capex spent on infrastructure remains constant at about 29 per cent. It should be recognised, however, that public current accounts rely heavily on oil revenues: if oil revenues decrease during the NIIMP period, the available financing from public current accounts will also decrease.

6.1.2 Public debt

The government could raise an additional USD 76 billion by sustaining its current relatively conservative debt-to-ratio levels around 20 per cent of GDP over the 2014–18 period. This assumes that all additional debt incurred is used solely to finance infrastructure projects.
Several countries (e.g., India, Kenya and the United States) have created infrastructure

bonds as a successful means of focusing debt financing on infrastructure projects. This approach provides a flexible solution which can allow a government to diversify its sources of financing, while also serving as a good 'communication tool' to the general population on the government's infrastructure priorities. However, given limitations on how much the government can borrow, this approach will only be able to provide a limited amount of the financing required for a large investment programme like the NIIMP. Public debt also requires extensive documentation.

6.1.3 Other Public Sources

The government could also employ alternative sources of public investments to finance the required infrastructure investments. For example, over the next five years, USD 8 billion is potentially available from the Sovereign Wealth Fund (assuming the fund grows in size significantly and continues to allocate 32.5 per cent of its assets to infrastructure financing) and USD 5 billion could potentially be sourced from public pension funds (assuming continued growth and a 20 per cent allocation to infrastructure as per the 2012 regulation on investment of pension fund assets).

It is important to note, however, that in the first few years the SWF may not provide a significant amount of financing given the magnitude of spend required. In its first year, the fund will only start with USD 1 billion, with USD 325 million allocated for infrastructure investments. The SWF is also subject to global oil price fluctuations as the amount available is dependent on the surplus generated from Nigeria's oil revenues; hence it may not provide a constant source of financing for infrastructure projects.

Employing public pension funds may be risky and highly political due to the public nature of this financing source. Though the potential exists for the funds to be invested in infrastructure (up to 20 per cent of the public pension fund can be allocated to infrastructure), no such investments have yet been made.

Investments made from these funds should only be in assets with a clear positive business case, to ensure that funds generate a return on the investments.

6.1.4 Increasing the Share of PPPs

An opportunity also exists for Nigeria to employ PPPs to finance its public infrastructure spend requirements: in recent decades, this has been a common (though not ubiquitous) approach taken by governments in developing nations [*Figure 59*]. When comparing to other developing markets, a potential USD 15-25 billion could be financed through PPPs over the next 5 years.

Governments typically consider PPPs to deliver one or more fundamental benefits that generate significant value for money. These benefits may include:

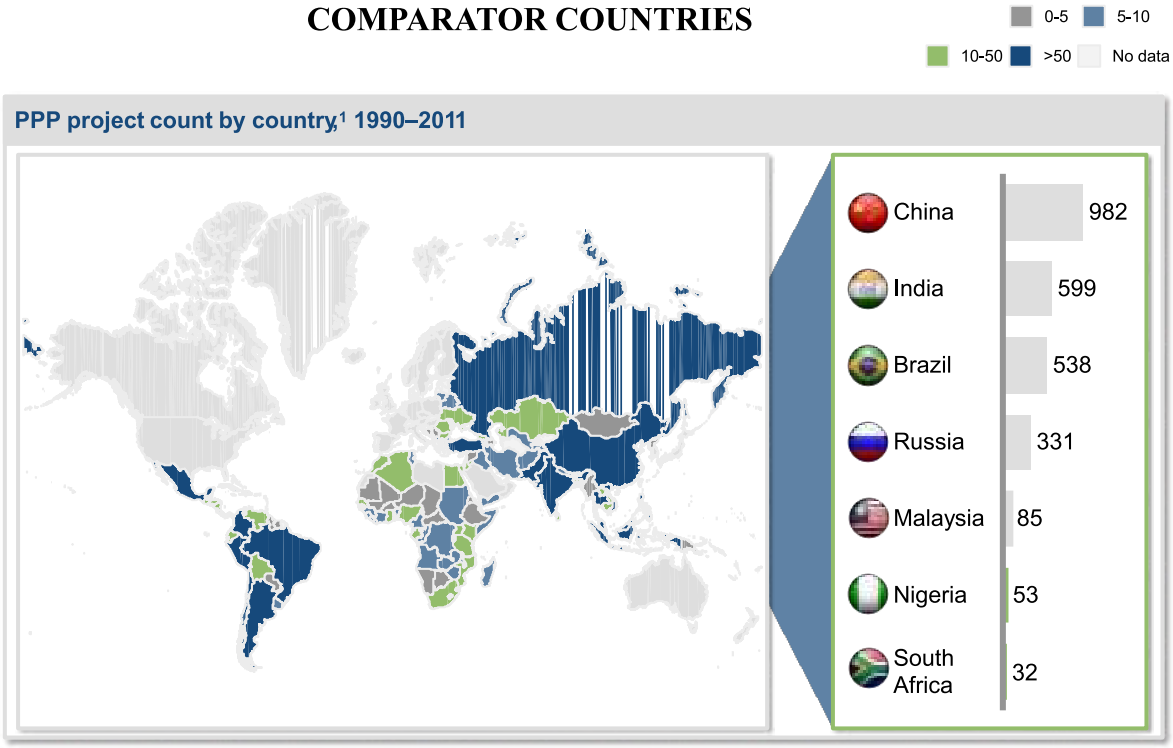
- increased efficiency, as the private sector has a financial interest in delivering on time and on budget, while competition between bidders can drive down price;
- appropriate risk allocation, by shifting selected risks to the private sector (e.g., construction risk, operational risk, technology risk);
- public sector reform, by breaking up

systems and allocating parts to the best owners while refocusing the public sector on its core mission; and
- unlocking new sources of financing through injection of private capital, thus making projects affordable where borrowing is limited.

However, not all projects are suited to PPPs. PPPs are generally unsuited to projects where there are specific public sector policy requirements, where there are no cash flows or risks are too high, or where the public cost of capital appears lower than the private cost. Not taking such factors into account can have negative repercussions, for example, on London's Metronet underground rail project.

The private sector firm, Metronet, ended up spending USD 4 billion more than what was projected.

FIGURE 6.2: PPP PROJECTS COUNT: NIGERIA AND COMPARATOR COUNTRIES



1 Based on World Bank definition: private participation in infrastructure with government backing, consisting of management and lease contracts, concessions, greenfield projects, or divestitures

SOURCE: World Bank; PPIAF; NIIMP development team

Many countries (e.g., the U.K., South Korea, Australia, Portugal and South Africa) have set up PPP units as a mechanism to accelerate adoption and improve the effectiveness of PPPs. However, as the limited success of Nigeria's ICRC demonstrates, establishing a PPP unit alone is not enough. The government must also establish enablers for private sector involvement in order for the unit to be fully effective (as discussed in Section 6.3).

6.2 RECOMMENDED FINANCING APPROACH

The four financing options, as previously outlined, should be able to adequately finance the required infrastructure investment for the first five years of the NIIMP. In total, potentially up to USD 145 billion is available to finance the USD 86billion needed, in addition to already committed private sector investments. Nonetheless, assuming a base amount of financing from public current accounts, the government will have to make a strategic choice as to how much to leverage from debt, the Sovereign Wealth Fund, public pension funds, and PPPs.

It is recommended that priority should be given to non-debt options, and debt to be used, if required, to finance asset classes where funds can be generated through asset use to repay the debt *[Table 6.2].*

TABLE 6.2: POTENTIAL FINANCING OPTIONS FOR 2014-2018

Financing options	Financing available 2014 –18 USD billions, 2012 constant prices	Assumptions	Challenges
Government budgets	31	Projections from the Nigeria Federal Budget Office MTFF[1]	▪ Great dependence on oil revenues its prices volatility ▪ Costs with Defence likely to grow given increased security concerns
Public debt	76	Debt levels increasing to 20% of GDP	▪ Raising large amounts of debt potentially challenging ▪ Requires regular debt servicing
Other sources	13	SWF[2] (~8 bn) : Excess crude account available; 32.5% to infrastructure Pension fund (~5 bn): Growth at GDP growth rate; 20% to infrastructure	▪ Unlikely to provide significant funds in the first few years ▪ Potentially risky and politically controversial
PPPs	15-25	Based on examples of other developing countries	▪ Complex and potentially back-firing if not properly managed ▪ Private and public sector interests not always aligned

- Total financing available of up to **USD 145 billion** for the next 5 years
- Revised GDP levels may allow increased public debt, but alternative options (particularly budget, SWF and PPPs) should be favoured
- Usage of diverse mix of finance options advisable to minimize exposure to specific risks

1 Medium Term fiscal framework; 2 Sovereign Wealth Fund
SOURCE: NIP; Budget Office of Nigeria; Debt Management Office of Nigeria

These financing decisions will need to be made on a project-by-project basis to ensure optimal risk allocation. The government should follow a carefully structured process when considering whether to finance through current accounts, debts, other sources or PPPs.

Four important questions can help to determine which financing option is best for a given project:

What are the main goals to be achieved by the asset? (What is the public service mission of the asset? What are the non-financial goals?)

Who needs to maintain ownership over the asset or its revenues? (Public developer, private developer or a mixture of both)

Which option will minimise financing costs? (How important is minimising the cost of financing to the project? What overall project budget can be supported by each financing option? What degree of flexibility is required for repayment of debt? What level of risk is inherent in the project?)

What are the capabilities required for the project, and who is in the best place to ensure these capabilities? (How important are specialised skills? Where do these skills exist today? Where should they exist?)

6.3 STRATEGIES TO INCREASE PRIVATE SECTOR PARTICIPATION

Increased private sector participation, both through PPPs and full privatisation, is required to decrease the burden of the required infrastructure investments by the public sector.

To enable increased participation, the government needs to address issues that discourage private sector players from investing in infrastructure. Such issues include:

- Difficulties in access to and cost of finance due to lack of maturity in Nigeria's credit/venture capital market;
- Security concerns, corruption and other governance issues;
- A lack of economic incentives in some sectors to encourage private sector investment;
- Inconsistency in enforcing policies and unpredictable regulatory regimes that limit investors' ability to protect investments;
- Insufficient public sector capability to design and implement PPP projects.

Nigeria will, therefore, need to address these issues in order to unlock the private sector investment required to successfully implement the master plan. Key actions that should be taken include [*Table 6.3*]:

Access to capital: Establish long-term financing and refinancing mechanisms for viable projects, especially, in the early stages (e.g., specialised funds for infrastructure);

Risk: Assure macroeconomic stability, policy consistency and eliminate corruption; Provide electricity to support growth and reduce cost of operations; Provide critical infrastructure such as link roads; Ensure standardisation and central access to infrastructure; Provide partial risk guarantees to projects, as appropriate;

Fiscal incentives: Offer business and fiscal

incentives to encourage private sector investments in infrastructure (e.g., granting pioneer status and duty exemptions, especially during construction);

Government rules and regulations: Establish a clear legal and regulatory framework for private financing of infrastructure, and establish a standard process for delegating authority from the Federal Government for infrastructure development;

Capabilities in managing PPPs: Establish a well-functioning PPP unit to build capabilities and manage financing of PPPs; Develop capacity building initiatives for public sector stakeholders; Identify/establish implementation teams within the MDAs; Develop templates for PPP procurement and implementation.

TABLE 6.3: RECOMMENDATIONS FOR INCREASING PRIVATE SECOR FINANCING

	Private sector recommendations outlined by BSG
Access to capital	▪ Establish long-term financing and refinancing mechanisms for viable projects, especially in the early stages
Political/cost risk	▪ Assure macroeconomic stability, policy consistency and eliminate corruption ▪ Provide electricity to support growth and reduce cost of operations ▪ Provide critical infrastructure such as link roads ▪ Ensure standardisation and central access to infrastructure ▪ Provide partial risk guarantees to projects as appropriate
Fiscal/ monetary incentives	▪ Offer business, fiscal, and monetary incentives to encourage private sector investments in infrastructure ▪ Reform interest rate regime to reduce cost of funding
Government rules and regulations	▪ Establish a clear legal and regulatory framework for private financing of infrastructure ▪ Establish a standard process for delegation of authority on infrastructure development ▪ Provide framework for ensuring continuity of government rules and regulations
Capability in managing PPPs	▪ Develop pipeline of bankable PPP projects ▪ Establish a PPP unit to build capabilities and manage financing of PPPs ▪ Develop capacity building initiatives for public sector stakeholders ▪ Identify/establish implementation teams within the ministries, departments and agencies (MDAs) and provide PPP support to states ▪ Develop templates for PPP procurement and implementation

SOURCE: CBN; BSG June 2013 report;

These actions align with some of the recommendations proffered by the Central Bank of Nigeria for increasing PPP activity in Nigeria. Specifically, these include *[Table 6.3]*:

- Create an Infrastructure Project Development Facility to finance early project development activities so as to create a pipeline of bankable PPP projects;
- Establish a dedicated, cashbacked fund (Government Resource Fund) outside the annual budgetary allocation process to finance the government's contributions on infrastructure involving the private sector;
- Establish long-term refinancing mechanisms aimed at refinancing short-term infrastructure loans;
- Provide fiscal incentives, such as exemptions from customs duties for equipment to be used for infrastructure development, for selected infrastructure projects.

he private sector has indicated its readiness to take complete responsibility for selected sectors, provided government puts in place a clear, transparent and consistent enabling environment for private sector investments. Such sectors include Agriculture, Aviation, Housing, ICT/Research, Manufacturing, Mining, Oil and Gas, SMEs, and Trade and Commerce. The BSG also indicates readiness from the private sector to participate in the power and transport sectors under PPP schemes.

6.4 LEGAL ENABLERS TO INCREASE PRIVATE SECTOR PARTICIPATION

A review of relevant infrastructure-related legislations for increasing private sector participation in infrastructure and developed provided a perspective on some of the key legal enablers for Public Private Partnerships as outlined below.

The primary focus was on Public Private Partnerships as regulated by the Infrastructure Concession Regulatory Commission Act (ICRC). The Commission was established to provide an enabling institutional, legal and regulatory environment within which the public and private sectors could partner to bridge the infrastructure gap in Nigeria.

The ICRC Act empowers the Commission with the functions and powers to:

- provide general policy guidelines, rules and regulations;
- take custody of every concession agreement; and
- ensure efficient execution of any concession agreement or contract entered into by the Federal Government.

The Act also provides for MDA's (Ministries, Departments and Agencies) to enter into contracts with or grant concession to any duly pre-qualified private sector proponent for the financing, construction, operations and maintenance of any infrastructure that is financially viable or any development facility of government.

Another key regulation is the National Policy on PPPs (N4P), which provides

TABLE 6.4: SUGGESTED INITIATIVES FOR INCREASING SHARE OF PPPs

Initiative	Description	Responsible	Rationale
Infrastructure Project Development Facility (IPDF)	▪ Facility to finance early project development (PD) activities ahead of procurement of private sector investors and ensure (a) creation of pipeline of bankable PPP projects; (b) clear direction of government's development priorities; (c) optimal allocation of risk between public and private sectors	▪ NPC, FMoF, MDAs, Budget Office	▪ Financing of PD by specialised company enhances timely preparation of PPP project pipeline ▪ Effective allocation of risks between public and private sectors ▪ Continuity in project implementation via competitive selection process
Government Resource Fund (GRF)	▪ Provision of a dedicated, cash-backed fund outside annual budgetary allocation to finance government's contributions on infrastructure involving private sector	▪ FG, NASS, ▪ Donor Partners, DMO	▪ Dedicated fund will provide financing independent of annual budgetary cycle to support PPP projects ▪ Improve commercial viability of projects and attract capital
Long-term refinancing mechanisms	▪ Group of mechanisms aimed at refinancing short-term infrastructure loans, including infrastructure assets refinancing facility (IARF), cash flow securitisation and establishment of specialised infrastructure financing companies	▪ FG, CBN, NIF, SEC	▪ Encourage continuous debt and equity investments from banks and private equity funds ▪ Cash flow securitisation will support development of the Nigerian debt capital market
Fiscal incentives for selected projects	▪ Existing incentives promoting industrialisation extended to infrastructure projects, such as exemptions from customs duty on machinery and spare parts to be used for infrastructure development	▪ Presidency, Nigeria Customs Service	▪ Reduction of overall project cost ▪ Incentivise private sector participation in infrastructure development

Supporting initiatives
- Clear legal and PPP regulatory framework
- Standardised public and private procurement process
- Immediate capacity building programme for public stakeholders
- Implementation of shared investment appraisal services for pension and insurance fund administrators
- Standard process for delegation of authority by FG on infrastructure development

SOURCE: Central Bank of Nigeria; NIFP

MDA's with operational guidelines for PPP project development. However, this policy and the ICRC Act have some limitations which include:

- limited scope, with an emphasis on concession contracts to the exclusion of other PPP options;
- lack of clarity on the Commission's role as facilitator, as well as regulator of PPPs in Nigeria;
- no powers conferred on the Commission to summon parties to a PPP contract in order to obtain information or intervene in runaway transactions; and
- no provision for unsolicited bids or inherited legacy PPP projects.

The ICRC Act is vague and the guidelines as provided by the National PPP policy documents are not investment friendly. While the ICRC Act has no identifiable conflicts with the Constitution, in the area of conflicts with other laws, there are areas of difficulties between the provisions of the Act, and the Bureau for Public Enterprises and the Bureau of Public Procurement legislations regarding jurisdictions and definition of terms.

The Act is presently somewhat outdated.

Implementation Plan

7. IMPLEMENTATION

7.1 SHORT TERM MEASURES

7.1.1 Strengthen the Legal Framework for the NIIMP

Infrastructure development in Nigeria is currently hindered by multiple legislative challenges, which hinder capital inflows and obstruct private sector involvement. In total, changes will be required in about 20 different legislations, including some key ones shown in [*Table 7.1*].

TABLE 7.1: SOME LEGISLATIVE CHALLENGES TO INFRASTRUCTURE DEVELOPMENT

NON-EXHAUSTIVE

Challenges identified by the legal TWG

Legislation	Sector affected	Challenges
NNPC Act, Petroleum Act	Energy	▪ Many and complex laws, making it challenging for investors ▪ Little room for states to support investments
Land Use Act	All	▪ Act creates several bottlenecks which discourage capital inflow
Nigerian Mining Corporation Act	Mining	▪ Prevents private sector involvement ▪ Corporation sole responsible for exploration, prospection, mining of minerals
Nigerian Railway Corporation Act, Nigerian Ports Authority Act, National Inland Waterways Act	Transport	▪ Prohibits construction/extension of some infrastructure (e.g., rail) without minister permission ▪ Limits private sector participation
Federal Highway Act	Transport	▪ Reduces private sector involvement ▪ Minister of Works responsible for all construction and maintenance
ICRC Act	All	▪ Emphasises concession contracts to the exclusion of other PPP options ▪ Unclear role of Commission's (facilitator or regulato) ▪ No provision for unsolicited bids or legacy projects

Selected examples highlighted. Total of about 20 acts are in need for adjustments

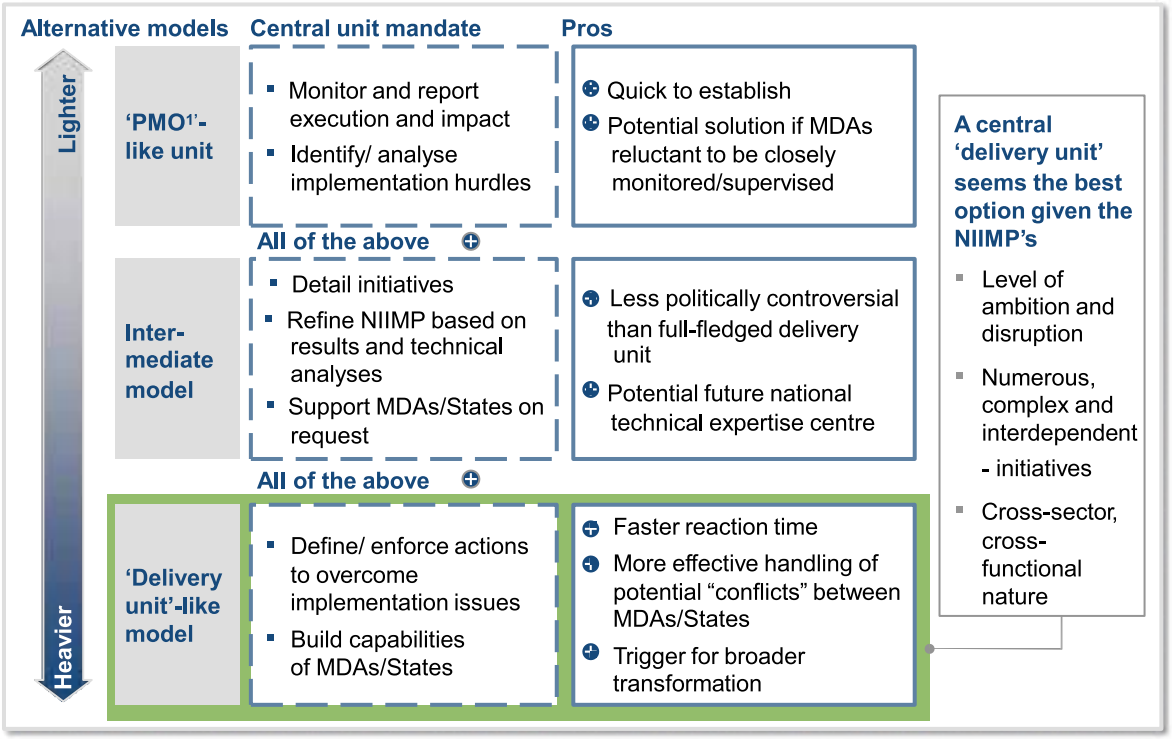
- Passing a NIIMP act to consolidate all required changes should be considered
- Act will be challenging, however may be a faster route than changing individual laws one by one

SOURCE: Legal TWG

7.1.2 Create an Infrastructure Delivery Coordination Unit

Successful implementation of the NIIMP will require a significant effort to co-ordinate and implement the plan. There are various potential implementation models, ranging from a monitoring office to a more hands-on enforcement agency [*Table 7.2*]. A central 'delivery unit' would appear to be the best option. In this regard the delivery coordinating unit will be established in the National Planning Commission in view of its mandate to coordinate the implementation of government projects and programmes.

TABLE 7.2: OVERVIEW OF ALTERNATIVE IMPLENTATION MODELS Preferred model



An Infrastructure Delivery Coordination Unit (IDCU) could assume a number of important functions for the implementation of the NIIMP [*Table 7.3*]:

Master plan monitoring and evaluation: Collect and process data on NIIMP execution, produce reports and identify areas that require intervention.

Programme management and development: Analyse execution per asset class/sector, support MDAs/other entities when required, make recommendations on how to overcome bottlenecks and promote execution (and adjustments to objectives, if needed).

Communication and Capability building: Communicate progress of the NIIMP internally and externally, support MDAs/others with crucial capability building initiatives, facilitate ongoing dialogue with the private sector.

Projects support and Private Sector Investment

Support high-priority projects and attract private sector investment. This function would be performed by the delivery unit, as shown in [Table *7.3 and 7.4*].

TABLE 7.3: FUNCTIONS OF IDCU (1)

"Core" delivery unit functions
Potential additional functions

Master plan coordination	▪ Monitor execution and coordinate the whole process, defining priorities and roles ▪ Provide reports and suggest lines of action for superior decision
Program management and development	▪ Analyse execution per asset class/ sector ▪ Make recommendations on how to de-bottleneck/ promote execution of NIIMP
Communication and capability building	▪ Support MDAs/States with capability building initiatives ▪ Coordinate communication/ facilitate dialogue with private sector
Support to high-priority projects	▪ Provide direct support to project execution thru team of technical experts (project managers, engineers) e.g., ensuring adequate technical design and its execution, supporting contractors in day-to-day decisions
Attract private sector investments	▪ Identify specific projects with potential for private funding and create business cases for them ▪ Support in attracting potential investors

TABLE 7.4: FUNCTIONS OF IDCU (2)

Purpose

- Follow up progress of biggest projects currently being executed
- Identify root causes of project delays and define actions to solve them

Participants

- Project management team from contracting
- MDA technical team
- Representatives from sponsoring MDA/state Ministry of Finance (funding) auditor general and IDCU

Agenda

- Context setting by reviewing overall project schedule and upcoming milestones
- Review dashboard of all project elements to prioritise discussions
- Discuss top 5 risks being monitored, outstanding issues and required
- Review actions required and taken from previous meeting

TABLE 7.5: ROLE OF IDCU IN ATTRACTING PRIVTE SECTOR INVESTMENT

Description	Identify potential projects	Develop potential report	Identify potential investors	Approach investors	Institutions currently in this space
▪ Small high-profile, focused team that is responsible for attracting private sector investments in infra-structure projects	▪ Identify projects which are best suited for private sector	▪ Develop core investment for potential investors	▪ Identify investors who could be interested in specific projects including banks, asset managers, private equity, multi-nationals, sector specific players	▪ Approach investors to invest in specific projects	Infrastructure Concession Regulatory Commission

7.1.3 Ensure financing for immediate projects

There is a need to immediately start preparing for scaling up infrastructure investments by preparing financially and practically for 2014. Project lists will need to be refined and submitted by September 2014, to ensure they form part of the 2015 budget [*Table 7.6*].

TABLE 7.6: PROCESS FOR INCORPORATION OF ANNUAL BUDGETS

	Distribute project list to MDAs/states	Assesses project list and missing projects	Refine individual projects and priortise projects	Identify funds available	Submit prioritised projects	Approve projects
Description	▪ Distribute project to relevant MDAs/states ▪ Highlight missing information and large discrepancies in project detail (e.g. high units cost compared to benchmarks, insufficient projects to meet targets state)	▪ Analyse project list from NPC ▪ Add any projects that are missing and projects required to meet desired 5-years targets state ▪ Amend any discrepancies in projects list	▪ Refine current projects, develop feasibility studies stress-test assumption ▪ Use prioritisations framework to priortise projects in each MDA/state	▪ Determine required spend of projects for the next 5 years. ▪ Identify funds available for for capital projects per annum for the next 5 years	▪ Submit prioritise projects list to Budget Office	▪ Match funds available to priority goals ▪ Approve budgets for specific projects. ▪ Allocate funds to specific projects
When	▪ July	▪ July	▪ August-September	▪ August-September	▪ September	▪ October-November
Responsibility	▪ NPC	▪ MDA	▪ MDA	▪ Budget Office MDA	▪ MDA	▪ Budget Office

Federal, state, and local governments should employ a standardised framework for prioritising individual projects so as to ensure the right strategic fit and economic impact, while also considering projects' financial health and social impact [*Table 7.7*].

TABLE 7.7: STANDARDIZED FRAMEWORK FOR PRIORITISING PROJECTS

	Questions
Strategic fit	1 How does this investment contribute to the national 2043 targets?
	2 Is this project in line with regional development objectives?
	3 Is this the best project to achieve the defined objectives?
Economic impact	4 What is the GDP contribution of this investment?
	5 How does this investment enable the deployment and/or effectiveness of other infrastructure projects?
Financial health	6 Does this investment have a financially positive business case?
	7 Is the investment level in line with relevant benchmarks?
	8 Are there alternative ways to finance the project?
Social welfare	9 Is there a fundamental need for this investment?
	10 Are there clear social benefits to this investment?

SOURCE: NIIMP development team

7.1.4 Launch broad communication programme

With the approval of the NIIMP by the Federal Executive Council it would be communicated to 4 core groups [*Table 7.8*]:

- The public sector, MDAs and States, to inform them of the required infrastructure investments and co-ordinate their activities to execute/implement;
- Private sector/potential investors, to generate investment interest and gather support for implementation;
- Donors, to co-ordinate the master plan with donor activities and obtain their support for implementation;
- The general public, to create awareness and public support for the plan.

In addition, a marketing campaign should be launched to promote Nigeria's infrastructure master plan and investments [*Table 7.9*].

TABLE 7.8: NIIMP COMMUNICATION PLAN

Target group	Purpose	Key content	Proposed channel
Public sector: MDAs and states	▪ Inform on required investments and coordinate activities to execute/implement	▪ Investment targets ▪ Prioritized project portfolios ▪ Implementation activities	▪ Presentation to MDAs/states ▪ Circulation of final report ▪ Abridged version of report
Private sector/ potential investors	▪ Generate investment interest ▪ Gather support and information for implementation	▪ Investment targets ▪ Suggested actions to enable private sector	▪ Presentation at appropriate investment conferences ▪ Abridged version of report
International Development Partners	▪ Coordinate plan with donor activities and get their support for implementation	▪ Investment targets ▪ Potential collaboration needed (e.g., in terms of capacity building)	▪ Circulation of final report ▪ Workshop to develop collaboration model ▪ Abridged version of report
General public	▪ Create awareness and public support for the plan	▪ Key highlights of plan	▪ Press conference at public release in August ▪ Press release ▪ Incorporation of NIIMP in key public speeches by President and cabinet ▪ Online publication of the summary report

SOURCE: NIIMP development team

TABLE 7.9: COMMUNICATION APPROACHES TO ATTRACT PRIVATE INVESTMENT

Potential communication approach
NPC and Federal Ministry of Information to communicate positive investment stories and experiences of Nigeria as safe, stable and prime investment destination for local and international investors Messages should focus on ▪ Ease of doing business ▪ Success stories ▪ Steps being taken to improve economic environment ▪ Improving international and local perception of the economic potential of the country ▪ Potential opportunities the NIIMP will offer private investors Establish team to identify most appropriate media fora and publications to use to communicate message

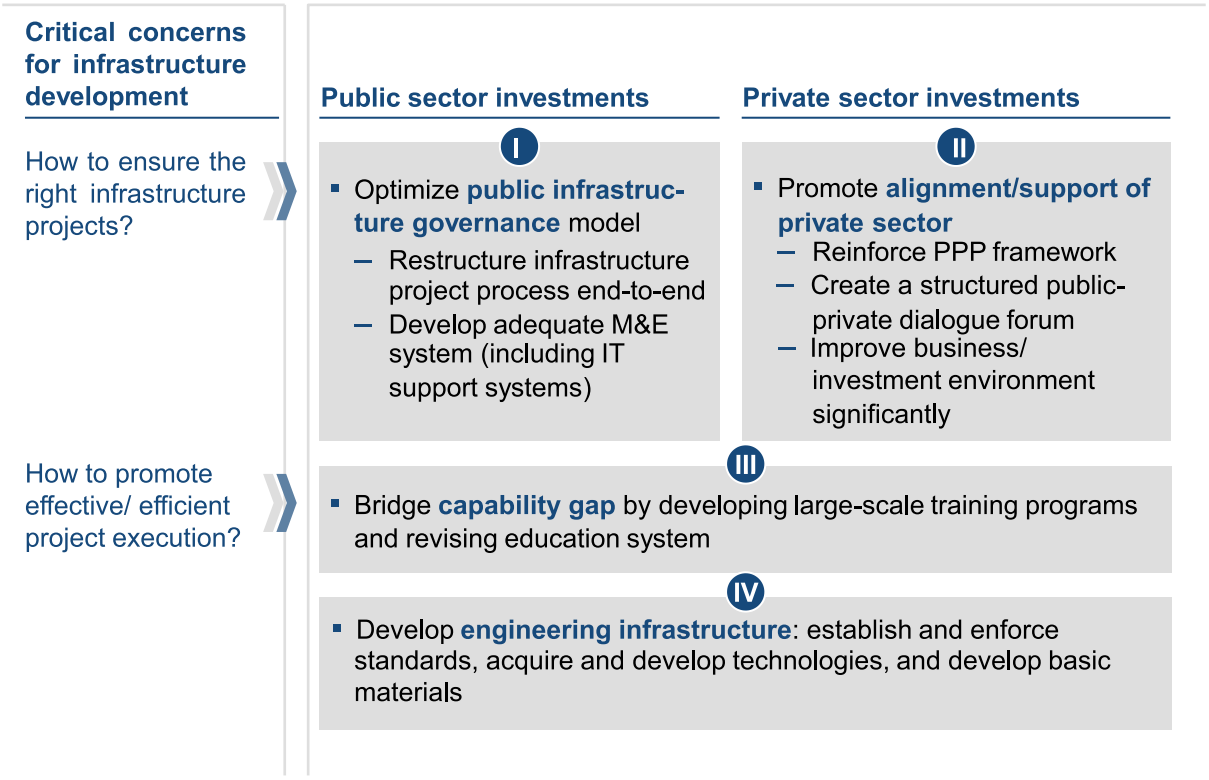
SOURCE: NIIMP development team

7.2 MEDIUM-TERM INITIATIVES

Medium-term initiatives are aimed at addressing 3 major concerns –

- How to ensure the right infrastructure projects
- how to ensure effective execution
- How to align both publcc and private sectors investment with the NIIMP [*Table 7.10*].

TABLE 7.10: OVERVIEW OF MEDIUM TERM INITIATIVES



Four medium-term initiatives are crucial for the success of the NIIMP:

- Optimise the public infrastructure governance model;
- Promote alignment/support of the private sector;
- Bridge the capability gap;
- Develop engineering infrastructure.

7.2.1 Optimise the public infrastructure governance model

The current public project selection process faces many challenges, and its application frequently distorts the original objectives [*Table 7.11*].

TABLE 7.11: CHALLENGES IN CURRENT PUBLIC PROJECT PRIORITIZATION

	Budget planning/ formulation	Stakeholder consultation and MDA ceilings	Approval of MTEF and fiscal strategy paper	Budget call circular and submission by MDAs	Budget approval	Release of funds
Key activities	▪ Determine trends in revenue performance, macroeconomic indicators and the implication of trends for next 3 fiscal years ▪ Prepare Medium-Term Revenue Framework (MTRF), Medium-Term Expenditure Framework (MTEF), Medium-Term Sector Strategies (MTSS) per MDA	▪ Consult with main private and public stakeholders to get initial buy-in and input into the MTEF from stakeholders ▪ Determine MDA expenditure ceilings: Maximum allowed spend per MDA for the following year	▪ Federal executive council analyses and approves MTEF ▪ National Assembly debates, amends and approves MTEF	▪ Minister of Finance issues Budget Call Circular to MDAs ▪ MDAs submit budgets in accordance with MDA ceilings and government's priorities ▪ Budget office evaluates and consolidates MDAs' final submissions and prepares budget	▪ Present draft budget to President ▪ President approves budget and presents to National Assembly for consideration and appropriation ▪ House and Senate debate and amend budget ▪ Appropriation bill sent to President ▪ President assents and passes bill into law	▪ Funds released to MDAs on a quarterly basis ▪ MDAs spend funds on capital projects
Challenges	▪ Lack of well-defined mechanisms and criteria to ensure alignment of MTEF and long-term vision ▪ Insufficient planning and project defining in MDAs	▪ MDAs introduce too many new projects while current projects still on-going, spreading already limited resources thin ▪ Projects are poorly defined, designed and costed ▪ Limited capabilities to properly evaluate budgets ▪ No alternative projects considered		▪ Political jostling delays budget approval and adversely impacts budget allocation	▪ Late release of funds to MDAs, leading to delays/stop-starts in executing capital projects ▪ MDAs unable to spend budgets ▪ Poor monitoring of spend and project execution in MDAs ▪ No post project evaluation ▪ MDAs return unspent budgets to Budget Office, causing interruptions in project execution ▪ Delays in paying contractors, causing intermittent stops ▪ No contractor ratings and rankings	

SOURCE: NIIMP Development Team

To address these shortcomings, Nigeria should implement four reforms to optimise the process:

- Making feasibility studies mandatory could immediately contribute to improving the quality of projects submitted [*Table 7.12*];
- The budget process should be restructured to ensure prompt release of funds [*Table 7.13*];
- A monitoring and evaluation system should be used to support implementation [*Table 7.14*];
- An asset management system should be created to support the monitoring and evaluation framework [*Fable 7.15*].

TABLE 7.12: APPROACH FOR IMPLEMENTATION FEASIBILITY STUDIES

Implementation approach	Key elements of feasibility study
▪ Conduct delivery lab in all of the MDAs ▪ Delivery lab will focus on[1] – Developing feasibility studies – Refining cost estimates – Stress testing assumptions ▪ Communicate to project managers that projects without feasibility studies will not be considered for approval ▪ Conduct project review meeting at the end of the delivery lab to review, prioritise and approve all projects ▪ Project review committee to immediately decline any projects at the project review meeting that do not have a feasibility study	▪ Needs assessment completed ▪ Validated problem/opportunity (root cause established) ▪ Most promising solution/s chosen for further development (feasibility established) ▪ Economic valuation of options checked and revalidated – Capex estimates – Benefit logic – Opex estimates and value ▪ Business fit and project classification checked ▪ Interdependencies identified ▪ KPIs defined

1 Use templates and tools developed by the Office of the Chief Economic Advisor to the President

SOURCE: NIIMP development team

TABLE 7.13: OVERVIEW OF POTENTIAL CHANGES TO BUDGET PROCESS

	Description	Responsibility
Adequate planning and proper project definition	▪ Ensure projects are aligned with the MTEF and support the long-term vision ▪ Ensure robust project feasibility studies and due diligence are done to validate project costs and benefits	▪ Budget office, MDAs, NPC, infrastructure delivery unit
Release funds on time and to specific projects	▪ Prioritise release of funds for on-going critical projects over newly approved projects ▪ Release funds in line with project plan, milestones and deliverables to eliminate stop-start execution of capital projects ▪ Release funds on time and to specific projects	▪ Budget office
Monitor and evaluate all projects during execution phase	▪ Track projects through execution stage ▪ Agree project KPIs and success measurements ▪ Put in place post project evaluation mechanisms to track overall impact of the project	▪ NPC, MDA M&E Units

SOURCE: NIIMP development Team

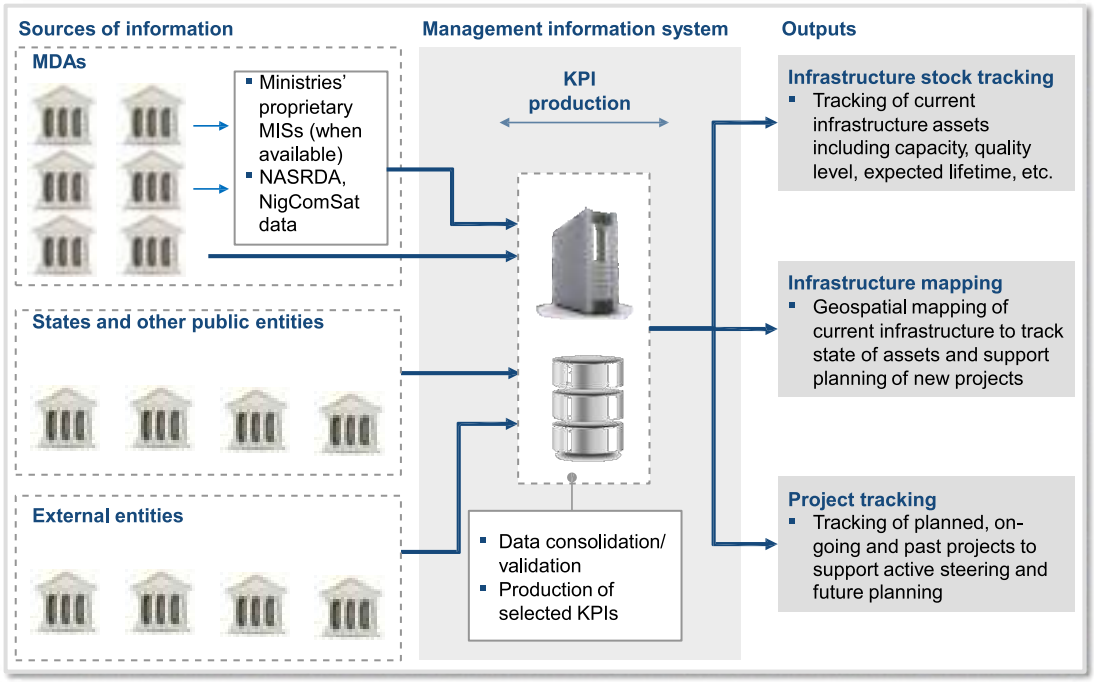
TABLE 7.14: KEY ELEMNETS OF NIIMP MONITORING AND EVALUATION SYSTEM

Key elements of M&E framework	Description	Example NIIMP KPIs (as defined by TWGs)
KPIs	▪ Key performance indicators that measure progress towards targets ▪ KPIs have been defined by the TWGs for the overall sector development, specific project KPIs will need to be developed	
Review calendar	▪ Calendar of when progress should be measured and evaluated ▪ Should be done on a weekly basis for projects, on a monthly basis for specific initiatives and on a quarterly basis for the overall NIIMP	
Roles and responsibilities	▪ Roles and responsibilities that describe who measures what metrics and takes decisions on corrective actions ▪ A new delivery unit should have overall responsibility of tracking the development (in collaboration with MDAs/States) and report findings directly to the presidency	

SOURCE: NIIMP development team Team

FIGURE 7.1: POTENTIAL FUTURE ASSET MANAGEMENT SYSTEM

ILLUSTRATIVE

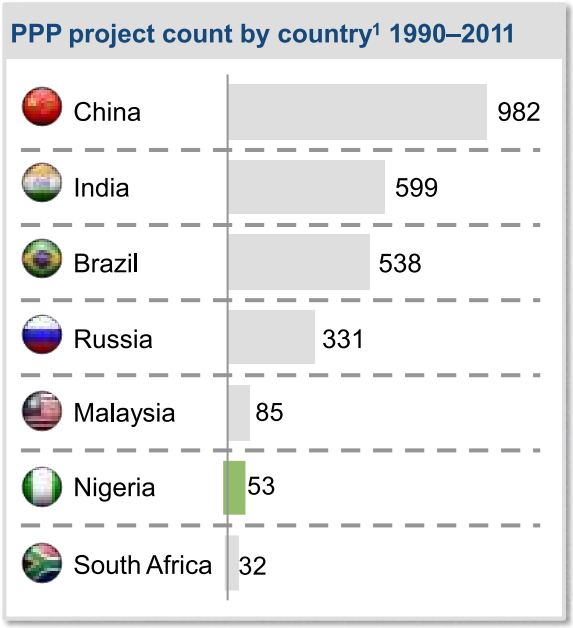


SOURCE: NIIMP development team; TWGs

7.2.2 Promote Alignment/Support of the Private Sector

There is a need to create mechanisms and incentives to promote alignment and coordination of private investments with the NIIMP, as the volume of PPP projects in Nigeria significantly lags those of other successful developing economies [*Table 7.15*].

TABLE 7.15: CHALLENGES IN INVOLVING PRIVATE SECTOR ACTORS



"Fiscal incentives are required to encourage private sector investments in infrastructure "
NIIMP Business Support Group

"…private sector involvement in the development of the road sector would not yield the desired result, until the institutional reform is implemented"
This day

"Consistency in policy implementation by the Government [is needed] to ensure ease of planning by private sector investors"
NIIMP Business Support Group

1 Based on World Bank definition: Private participation in infrastructure with government backing, consisting of management and lease contracts, concessions, greenfield projects or divestitures

SOURCE: World Bank; Business Support Group, press searches

The current PPP framework would be strengthen to foster private sector participation in infrastructure investment. Key activities include:

- Empowering a unit to identify potential PPP projects:
  - Develop a shortlist of potential projects for PPPs;
  - Refine the process to identify future potential PPP projects;
  - Introduce standardised tools and analytics to ensure all potential PPP projects are assessed in the same way.

- Providing financial support to incentivise potential investors:
  - Set up a government-backed fund (e.g., government resource fund for infrastructure projects) that will offer financial support to PPPs and boost investor confidence;
  - Establish a development finance organisation (like the IDC in South Africa, and IDFC in India) that focuses purely on financing infrastructure projects;
  - Mobilise additional sources of revenue that can be used to finance PPPs (e.g., through the Sovereign Wealth Fund).

- Refining the legal framework to encourage PPP investment:
  - Revise the current legal framework to better cater for PPPs (as opposed to mainly focusing on and catering to public projects);
  - Standardise PPP procurement frameworks based on international best practice.

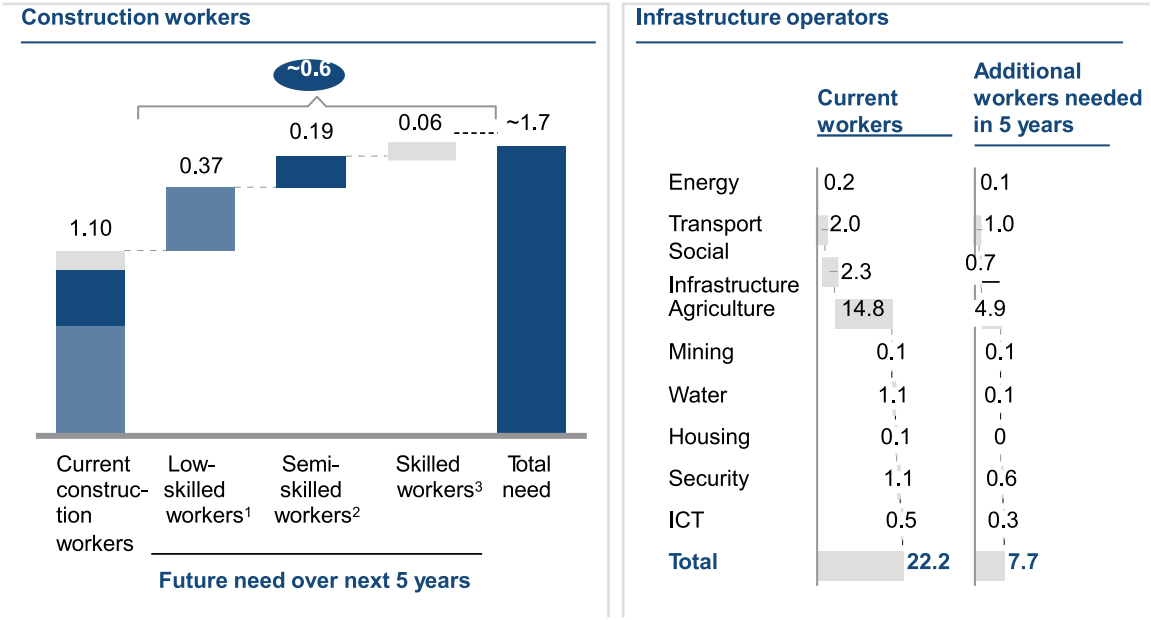
- Incentivising potential investors:
  - Offer sector-specific incentives through reduction or removal of import tariffs, tax breaks and subsidies to encourage sector-specific investment;
  - Offer revenue guarantees to investors for specific projects (e.g., toll roads).

7.2.3 Bridge the capability and resource gap

Successful execution of the NIIMP will be hindered by a capability gap that is likely to increase when investment picks up (e.g., Nigeria currently has 35 per cent fewer power technicians/engineers than it needs, and by 2020 the number of engineers/technicians required will double from current levels).

Nigeria will need an increased number of trained workers in two areas. First, Nigeria will need about 600,000 additional construction workers over the next five years to build and maintain the current and new infrastructure. This includes training for jobs like site workers, plumbers and engineers. Second, Nigeria will need to train 7.7 million additional people in the next 5 years to operate its required infrastructure [*Figure 7.2*]. This includes training for jobs like doctors, nurses, policemen, farmers, etc.

FIGURE 7.2: MANPOWER NEED FOR CONSTRUCTION AND OPERATION OF INFRASTRUCTURE 2014-2018



1 Low skilled – site workers; 2 Semi-skilled – masons, welders, carpenters, etc.; 3 Skilled workers include architects, planners and engineers
SOURCE: Interviews, NBS;

Nigeria will need to follow a targeted approach to address this skills gap so as to build and operate the NIIMP infrastructure.

The immediate priority is to ensure sufficient capacity to build the required infrastructure. This should be accomplished by:

Building basic skills at scale – Focus on scaling up the Industrial Training Fund (ITF) to develop the required volumes of workers with basic skills and engaging local institutes and private companies co-ordinated through the ITF. Establish programmes to develop the skills of the currently unemployed to build a basic workforce. Consideration will need to be given to the opportunity to utilise local skill development centres in tertiary institutions for a broad-based skill development outcome;

Ensuring skills transfer –Incentivise the Nigerian Diaspora to return, import specialised and technical skills and ensure the necessary skills transfer takes place through clear contractual agreements for apprenticeship, training, etc.

In the medium-term the priority should be to build Nigeria's local skill base and ensure appropriate standards, by:

Establishing strong standards – Introduce international certification standards per sector, regulated and enforced by the ITF and provide additional training programmes to allow experienced workers to acquire certification;

Building advanced/specialised skills – Increase the capacity and quality of current institutions to train the necessary number

of engineers, architects, etc.

The actions to develop human capacity for building, maintaining and operating infrastructure should be considered in the context of broader reforms within the education system further elaborated in Section 6.4.

7.2.4 Develop engineering infrastructure

Critical consideration has to be given to the creation of engineering infrastructure, which comprises of the following in order to successfully build the required infrastructure:

Infrastructure standards - Development and enforcement of industry standards is necessary to manage the quality of developed infrastructure and to be able to audit and validate developed infrastructure, as well as package new projects for PPP, ensuring consistent high-quality delivery of infrastructure;

Technologies for infrastructure development – modern construction technologies need to be acquired and developed to ensure cost effective and high quality provision of infrastructure;

Availability of raw materials Promotion of local industrial development would be prioritised to ensure availability of critical input materials, such as steel, road construction materials, etc., in the medium-to long-term. In the short-term, there is need to establish the best way to source materials, which will be required at significantly higher volumes than in the past. Nigeria occupies the 12th position in the world in terms of iron ore deposits; yet the current production volume of steel is only approximately 0.4 Mtpa, significantly lower than for example, South Africa (8.5 Mtpa), Brazil (33 Mtpa) or India (67 Mtpa). Similarly, considerations would be given to other construction materials, such as asphalt for roads, glass, and other metals. Only in cement industry has Nigeria achieved self-sufficiency to date, however, even in this area considerations would be given to specialty cement availability.

7.3 ROLE OF THE STATES AND LOCAL GOVERNMENTS

Consideration of implementation of infrastructure programmes at the state and local government levels is critical due to the federal nature of the governance model in Nigeria. In order to achieve consistency in implementation, and to ensure local that peculiarities are fully taken into consideration in infrastructure development, it is recommended that States and local governments should replicate a simplified model of the infrastructure delivery coordination unit.

The critical functions that need to be carried out at the State and local government levels include:

Development of States' Integrated Infrastructure Plans (SIIPs) – State Government and the FCT should develop their integrated infrastructure plans in line with state priorities, and taking into consideration national strategies and priorities, in order to ensure a single, seamless national effort.

Prioritisation of projects for implementation – Following a similar logic as proposed in the project prioritisation framework, States and local

governments will need to review projects for implementation, and prioritise projects based on their alignment with regional, State's, and local government's priority focus areas, preferring projects with the highest socio-economic benefits and the most positive business cases, and taking into account the integrated perspective of infrastructure development – (e.g. , considerations of inter-modality and inter-sector linkages). It is recommended that similarly to Federal projects, feasibility studies should be completed for local projects, to ensure availability of complete and accurate information for project selection.

Monitoring and Evaluation of implementation at State and Local Government level – States and Local Governments should also collect and process data on execution of local plans to review progress, identify areas requiring intervention, and perform post-implementation reviews to ensure completion of projects in line with initial expectations and outcome impart.

Programme management and development – the state Infrastructure Delivery Coordination Unit should analyse execution per asset class/sector, and support collaboration with the Federal delivery unit to ensure information exchange and alignment between local, State, and Federal plans, as well as collect and provide information to the Federal level for planning purposes;

Communication and private sector collaboration – the IDCU will also be responsible for communicating the plans and progress of infrastructure projects internally and externally, and facilitating ongoing dialogue with the private sector for engagement in local and state projects.

Due to the high level of priority required for infrastructure investments, it is recommended that local infrastructure development teams should report to the highest level of authority at their respective levels – i.e., to State Governors.

6.4 REQUIREMENTS FOR EDUCATIONAL SYSTEM

The Ministry of Education has also elaborated a broader set of improvements needed in the education system, beyond building physical infrastructure (as highlighted in Section 3.6) and the requirement for development of people to construct, maintain and operate infrastructure (as highlighted in Section 7.2.3).

The main objective for Nigeria is to have a sound and functional educational system that produces high-quality human capital, that is globally competitive, culturally, scientifically and technologically, creative and innovative, and capable of contributing towards national development.

To achieve this objective, the education system needs improved access and equity, standards and quality assurance, adequate infrastructure, teacher quality and development, curriculum relevance, adequate funding, transparent management, and reliable data for strategic planning and development. It also needs a more inclusive approach to education delivery in order to be more functional and responsive to nation's economy, as an enabler to all aspects of the NIIMP and for socio-economic development of the country.

For each of these areas, targets have been defined as follows:

Access and equity – increase access and equity to 90 per cent for basic education, 70 per cent for post-basic education, 40 per cent for tertiary education by the year 2023:

- Include totally excluded groups such as the Albinos, Almajiri, children with special needs, the Nomadic, the migrant fisher folks, the adult illiterate and reduce share of children who are currently out of school to five per cent;
- Carry out high-level advocacy visits to the 20 States with high gender disparity by 2015;
- Ensure that ODL providers comply with NUC standard to increase carrying capacity of the Nigerian University to 50 per cent;
- Strengthen and expand Open and Distance Learning (ODL) systems in polytechnics and colleges of education by 50 per cent;
- Increase awareness and support for alternative route to higher education through Innovation Enterprise Instruction (IEIs);
- Encourage the adoption and entrenchment of e-learning across the three levels of education.

Standards and quality assurance – Establish international best practice performance benchmarks to assess educational performance, e.g., employability of students, by the year 2023.

Adequate infrastructure – Rehabilitate, reconstruct and develop infrastructure facilities of the existing structures in the basic education, post-basic education and tertiary education, including:

- Expand the existing infrastructure/facilities;
- Provide and update libraries, laboratories, classrooms, shops, sporting facilities in 90 per cent of the schools and institutions by 2023;
- Construct ICT laboratories, virtual libraries and promote e-learning in all the existing schools by year 2023;
- Improve the dearth of accommodation, toilets and health-related facilities.

Teacher quality and development

- Establish more teacher training colleges/institutions in all the 109 senatorial zones for increased access to training and retraining of teachers nationwide;
- Embark on development programme for pre- and post-service staff in colleges and institutions of education;
- Provide robust motivation/incentive system including housing, transportation, honours.

Curriculum relevance

- Draft and put in place school curriculum to integrate the curriculum of special needs children, and the inclusion of popular foreign languages; such as Arabic, French etc,
- Establish and equip guidance and counselling units in all schools across the levels of education;
- Review and enrich the existing school curricula.

Adequate funding – Attain the recommended UNESCO funding level by

2023 and collaborate with the Organized Private Sector in the financing of education.

Transparent management

- review the National Policy on Education to include special needs education and out-of-school programmes towards a more inclusive education approach in line with international best practices;
- introduce Information and Communication Technology (ICT) as a means of communicating under the education sub-sectors and agencies for enhanced management and administration at the national and state level; and
- develop/review framework for national systems in guidance and counselling, monitoring learning achievements, teacher needs/professional development and quality assurance mechanisms.

Reliable data for strategic planning and development-

Education institution and managers at all levels could provide adequate statistics to assist in education planning and policy formulation.

List of Appendices

A.2 LIST OF TWG MEMBERS
Social infrastructure TWG

1. Prof. C. O. Onyebuchi Chukwu, Hon. Minister of Health (Chairman)
2. Prof. Muhammad Munzali Jibril (Co-Chairman)
3. Engr. Nony Mbaezue (Coordinator)
4. Sonubi Mojisola O.
5. Eguaoje FOI
6. Saibu Hauwa
7. Engr. Olatunji Okedairo
8. Ojile Clement
9. Mr. A.M. Zacchaeus
10. Mr. Ahmadu Ibrahim Maigari
11. Dr. Henry Egi Aloh
12. Mr. Ibrahim Iro Yusuf
13. Prof. Dung Pan Sha
14. Prof. C.I. Anibeze
15. Mrs. Ansa Ogu
16. Dr. Udoh U.A.
17. Mr. A.A Aremu
18. Mr. E. Evong
19. Mrs. Nduka N.
20. Mrs. Hadiza Bawa
21. Mr. Danjuma Ali
22. Mr. Sobogun O.O.
23. Mrs. Wang H.S.
24. Mrs. Osuh Helen Ifeoma
25. Mrs. B.A. Morgridge
26. Mr. G.C. Nwalupue
27. Mr. Vatyough
28. Mr. Yakubu Bello
29. Sen. El-Jibril Mas' Ud Doguwa
30. Mrs. Sadiqa-Hassan Mukhtar
31. Maryam Ado Gwaram
32. Alhaji Sanusi Koguna
33. Dr. Matthew Ojong Achigbe
34. Hajiya Zainab Maina
35. A.A. Aremu
36. Chief. Emeka Wogu
37. Mr. A.F. Amuda
38. Dr. Mary Orjioke
39. Hajiya Hadiza
40. Ibrahim Mailafia
41. Mr. Labaran Maku
42. Dogo Paschal
43. A.E. Ehigie
44. Mr. Edem Duke
45. Ibrahim Umar
46. Mr. Inuwa Abdul-Kadir
47. Usman Aminu
48. Mallam Bolaji Abdullahi
49. Prof. Roland Ndoma-Egba
50. Amb. Kabiru Rabiu
51. Dr. Masur Kabir
52. Alhaji Ali Nasidi
53. Mr. A.A. Taiwo
54. Mr. Jerome Onyemachieneje
55. Mohammed Asmai Sarki
56. Mr. Abubakar Sanusi Adamu
57. Mrs. Rekiya A. Sulaiman
58. Mr. S.U. Okeke (Secretary)
59. Mrs. R.C. Ozor (Asst. Secretary)

Financing TWG

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2. Mallam Sanusi Lamido Sanusi, Governor of CBN(Co-Chairman)
3. Mr. Akinolu Akeredolu-Ale (Coordinator)
4. Uchola E.I.
5. Bona V. Benebo
6. Mrs F.N. Okorafor
7. Mr. Shehu Abdulkareem Gezawa
8. Mr. Abdulkadir Sulaiman Sankara
9. Mr. Simon Nyaga
10. Mrs. C.N. Ikpechukwu
11. Mr. Ojo Abel Olatunde
12. Mrs. Tessy Tybangs
13. Mr. Tunde Lawal
14. Mr. Aliyu Edogi Aliyu
15. Mr. Patrik O. Okigbo
16. Mr. Emmanuel Attah Ocholi
17. Mr. Shehu Wada Sagagi
18. Mr. Evans Thompson Amaso
19. Dr. Ahmed O. Salawudeen
20. Mr. Rufai Mohammed
21. Reginald A.Ihebuzor
22. Mr. Peter Monye
23. Mr. Kristian Ikam Ukah
24. Mr.Adha Samson Danjuma
25. Mr. Aliyu Dikko
26. Mr. M.U. Airihuodion
27. Dr. Umar Bindir
28. Mr. Ahmed Shuaibu
29. Mr. Murtala Ayo Oladapo
30. Mr. S. Eloho
31. Mr. Obasa Kayode
32. Mr. I.O. Maduka
33. Mr. Mobolaji Hakeem
34. Mr. Miji Amidu
35. Mr. Dalami Gomwalk
36. Hon. Mao Ohuabunwa
37. Philip I. Obasi
38. Prof. O. Ibidapo-Obe
39. Dr. Obansa S.A.J.
40. Mr. G. Onu (Secretary)
41. Mr. Philip J. Gonya (Asst. Secretary)

States' infrastructure TWG

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2. Mr. Aishana B. Okauru, Governor's Forum(Co-Chairman)
3. Hajia Amina Ibrahim (Coordinator)
4. Alh. Lot Shittu
5. Mrs. M.O. Adebiyi
6. T.T.O. Lanipekun
7. Mr. Nnanyelugo Daniel Onyishi
8. Prof. Ndem Ayara
9. Dr. Bong Duke
10. Mr. Ashiru Dan Azumi Zage
11. Mr. Aliyu Bappa
12. Mr. Abubakar Aliyu
13. Mr. Sanusi Aliyu
14. Prof. Andrew Ibisesan Ayodele
15. Arc. Festus Adibe Njoku
16. Arc. Mansur Kurfi Ahmadu
17. Mr. Ibrahim Iro Yusuf
18. Alhaji Mohammed Bashir Abubakar Tsanyawa
19. Engr. Ali A. Rabiu
20. Mr. Olukayode Jegede
21. Mr. Eddie Ogbehie
22. Alhaji Ado Suleiman Sharfadi
23. Dr. Okputu Ochim Julius
24. Mr. Samuel I. Egharevba
25. Engr. Ochoga Ese
26. Engr. Zakari Osagye Ayitogo
27. Engr. (Sir) Christopher Okey Okoye
28. Engr. Ali Kashim Abdul
29. Mr. Kasimu Ibrahim
30. Mr. Evans Thompson Amaso
31. Mr. Omotor Douglason Godwin
32. Mr. Dimis Inusa Mai-Lafia
33. Mr Henry Aladu Warmann
34. Mr. Benson Young
35. Mr. S. Habu
36. Dr. O.A. Agboola
37. Mr. Adewunmi Akinpelu
38. Mr. Ahmad Sadiq
39. Mr. S. Nwozuzu (Secretary)
40. Mr. B. Tijani (Asst. Secretary)

Legal and Regulatory TWG

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3. Mr. Tony Odiadi (Co-coordinator)
4. Engr. Idogesit N.U. Akpan
5. Mr. Bemdoo Gwadza
6. Mr. Donald Chika Denwigwe
7. Mrs. Fatima Kwaku
8. Mr. Bashir H. Adamu
9. Mr. Suilaiman Ilu Ahmad
10. Mr. Chinedu Ndubuisi
11. Barr. (Mrs) Martina Z. Suleiman
12. Mr. Albert Akpomudje
13. Mr. Pollie Okonrokwo
14. Mrs. Lois Azode Ogechim
15. Mr. Dahiru Ibrahim
16. Engr. Felix Atume
17. Mr. Maurice Asielue
18. Barr. Ugbizi, Begwupuye Ikhe Ukaba
19. Mrs. Millionet Archibong Okon
20. Prof. Auwalu Hamisu Yadudu
21. Prof. Abdullahi Bayero
22. Mrs. O.O. Moore D.
23. Chief Barr. Johnson Ebokpo
24. Barister N. Ninisi (Secretary)
25. Mrs. Ifeoluwa Aribike (Asst. Secretary)

Vital Registration and Security TWG

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3. Prof. Habu S. Galadima (Coordinator)
4. Dr. Festus A. Uzor
5. Gyang C.D.
6. Mr. Aminu Ali
7. Mr. B.B. Olowodola
8. Mr. Freeborn
9. Engr. O. Saliu Omueza
10. Ms U.O. Oteri
11. Mr. Anthony Igbo
12. Usmnan Isa Baba
13. T.C.Obasi
14. I.Balogun
15. O.C. Oladele
16. Bagbemiro Adeyemi
17. Sheereef Balogun
18. Aliyu A. Aziz
19. Mr. M.O. Salami
20. Engr. Michael Ogbonna Agu
21. Mr. C.E Ezeilo
22. Mr. B. Akpanyung
23. Mr. Mathew O. Alarape
24. Chief (Barr.) Arthur Akpowowo
25. Hon. (Barr.) Iquo Nyong Inyang
26. Comrade Abba Moro
27. Mrs. Grace Ndubuisi Offor
28. Navy Captain Omoniyi Olubolade
29. Aduwa M.A.
30. Afolabi O.T.
31. Mr. Mohammed Hadi Bello
32. Mr. Zakari O. Ibrahim
33. Mr. Lawrence E. Alobi
34. Bello Mahmud
35. Mr. Justin Nidiya
36. Mr. Osita Egbuche
37. Major Gen. Osazuwa
38. Dr. Sunady Kolawole Alonge
39. Brig. Gen. DKS NNAA
40. Air Commodore ABC Nweze
41. Air Commodore T.V. Udoh
42. Air Commodore NOA Kolofo
43. Lt. Col. Bashir
44. Rear Admiral R.O. Osondu, D
45. Jude Ukapan
46. Mr. Nuhu Ibrahim Zuru
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51. Mr. Aminu Yargaya
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53. Uchola E.I.
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55. Mr. Fidelis Chigbu (Asst. Secretary)

Energy TWG

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5. Prof. Adeola Adenikiju
6. Engr. Emmanuel Ezekwere
7. Mr. Murtala M. Aliyu
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9. Engr. Sola Akinniranye
10. Engr. O.C. Akamuonu
11. Engr. I.O. Adegun
12. Mrs. I.Emelife
13. Mr. Danlami Gomwalk
14. Mr. Abdullahi Mahmud
15. Engr. Joseph Alayande
16. Comrade Kiri Mohammed
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20. James Olotu
21. Mr. Alfred Ohiani
22. Mr. Dapo Oyewole
23. Dr. Abubakar Saddiq Adamu
24. Engr. Abraham Akhidelor Ogholoh
25. Engr. Ibrahim Sani Usman
26. Mr. Aminu Usman Kabo
27. Mr. Claudius Olugbenga Odusanya
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9. Barr. Enoch Kanawa
10. Engr. E. Usifo
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13. Barr. N.A. Lawal
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38. Oyewunmi Ademuyiwa
39. Grp. Capt. Ojikutu
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43. Mr. Glory Onojedo
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45. Ms. Felicia O. Onwuha (Asst. Secretary)

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6. Dr. (Engr.) A.A. Talabi
7. Engr. Giando Menico Massari
8. Mr. Maduka J. Emelife
9. Mrs. S.S.O. Onabolu
10. Mr. Adeyemi Jimmy Offor
11. Mr. Leke Ogunro
12. Mr. Martin Ahachi
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