BECANS WORKING PAPER 2

Economic Competitiveness across Nigerian States: The Challenge of Infrastructure and Utilities

AFRICAN INSTITUTE FOR APPLIED ECONOMICS

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1 BECANS is acronym of Business Environment and Competitiveness across Nigerian States. BECANS is a flagship initiative of the African Institute for Applied Economics (AIAE). It is implemented in collaboration with government and private sector organizations. BECANS is designed to carry out research, survey and advocacy in support of business environment reforms at sub-national level in Nigeria.

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Table of Contents

List of Tables

List of Acronyms and Abbreviations

AIAE	African Institute for Applied Economics
BECANS	Business Environment and Competitiveness Across Nigerian States
BES	Business Environment Survey
BOT	Build, Operate and Transfer
BOOT	Build, Own, Operate and Transfer
BPE	Bureau for Public Enterprises
CBN	Central Bank of Nigeria
CWIQ	Core Welfare Indicator Questionnaire
EOS	Executive Opinion Survey
EPSR	Electric Power Sector Reform
FCT	Federal Capital Territory
FDI	Foreign Direct Investment
FERMA	Federal Roads Maintenance Agency
FMI&NO	Federal Ministry of Information and National Orientation
GCI	Global Competitiveness Index
GDP	Gross Domestic Product
GER	Gross Enrolment Ratio
GNI	Gross National Income
GSM	Global Systems for Mobile Telecommunications
HSRP	Health Sector Reform Programme
HUs	Housing Units
ICT	Information and Communications Technology
IMD	International Institute for Management Development
ITU	International Telecommunications Union
IPP	Independent Power Plant
LEEDS	Local Economic Empowerment and Development Strategy
LG	Local Government
MAN	Manufacturers Association of Nigeria
NACA	National Action Committee Against HIV/AIDS
NBS	National Bureau of Statistics
NCC	Nigerian Communications Commission

NCP	National Council on Privatisation
NEEDS	National Economic Empowerment and Development Strategy
NEPA	National Electric Power Authority
NERC	Nigerian Electricity Regulatory Commission
NESG	Nigerian Economic Summit Group
NHF	National Housing Fund
NHIS	National Health Insurance Scheme
NISH	National Integrated Survey of Households
NITEL	Nigerian Telecommunications
NPC	National Population Commission
NPHCDA	National Primary Health Care Development Agency
NPI	National Programme on Immunization
NRC	Nigerian Railway Corporation
NTP	Nigerian Telecommunications Policy
NUC	National Universities Commission
PHCN	Power Holding Corporation of Nigeria
PPP	Purchasing Power Parity
R&D	Research and Development
ROT	Rehabilitate, Own and Transfer
RBDA	River Basin Development Authority
RPED	Regional Program on Enterprise Development (World Bank)
SACA	State Action Committee Against HIV/AIDS
SEEDS	State Economic Empowerment and Development Strategy
TBA	Traditional Birth Attendant
UBE	Universal Basic Education
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNIDO	United Nations Industrial Development Organisation
WCY	World Competitiveness Yearbook
WEF	World Economic Forum
WHO	World Health Organisation

ABOUT BECANS WORKING PAPER SERIES

BECANS Working Paper Series publishes the technical outputs from research, survey and analysis of the business environment and competitiveness across Nigerian states. It disseminates both theoretical and empirical research. The objective is to enrich policy debate and stimulate evidence-based dialogue between government and the private sector for improved investment climate across Nigeria. The Papers provide up-to-date literature, statistics and empirical analysis to situate and enlighten business environment reforms throughout Nigeria.

Manuscripts considered for the Series are subjected to scientific review by independent examiners and revised accordingly prior to publication.

Papers in the Series bear the names of the authors and should be used and cited accordingly. The findings, conclusions and interpretations expressed by the papers are those of the authors and do not necessarily represent the views and policies of AIAE or of the collaborating organisations.

OVERVIEW

This paper examines the main issues and challenges in benchmarking and assessment of infrastructure and utilities as a critical influence of business environment and economic competitiveness across Nigerian states. There are six sections. Section one is the introduction. Section two reviews the conceptual and theoretical issues on infrastructure and economic competitiveness. Section three discusses the situation of infrastructure and utilities in Nigeria, using data and statistics from studies and reports. Section four recapitulates state-level disaggregated indicators from recent national surveys of welfare indicators. Section five outlines the BECANS methodological perspective. Section six identifies policy reforms on infrastructure development. Section seven is the conclusion.

1.0 INTRODUCTION

Infrastructure and utilities refer to basic facilities, amenities and installations upon which the functioning and operations of firms and individuals depend. This definition covers the gamut of services that are essential for the conduct, growth, sustenance of social, business and economic activities and processes of a community. Definitions of infrastructure identify common examples to include transportation, water, electricity, communication, health and education facilities and systems (Moteff and Parfomak, 2004). Over time, the concept of infrastructure changes as technology, culture and society evolve. But, generally, literature classifies infrastructure into economic and social. Economic infrastructure includes public utilities, such as transportation (roads, airports, seaports and waterways), power, water and sanitation, piped gas, solid waste management and telecommunications, public irrigation, among others. On the other hand, social infrastructure includes education, health, recreational facilities and housing.

Infrastructure, whether social or economic, plays a significant role in the economy. It eases productive activities by alleviating costs and hence, makes firms more competitive. No economy can grow and develop without robust and efficient infrastructure. A large volume of literature shows that physical infrastructure fosters productivity, enterprise growth, reduces business costs and increases overall efficiency (Canning, 1999). Cross-country data show a strong relationship between infrastructure and measures of economic development (Canning, 1998).

On the other hand, weak infrastructure impedes private sector development and economic competitiveness (Lee and others, 1996a; Aschauer, 1989; Borensztein and others, 1998). Differential rates of development in Asia and Africa during 1960-2000 can be linked with dissimilar priorities given to infrastructure in both regions. According to the World Bank (1994), infrastructure and economic capacity are linked; a one percent increase in the stock of infrastructure is associated with one percent increase in the gross domestic product (GDP) across all countries. Infrastructure is a determinant of economic growth (Aschauer, 1989). The quality and quantity of infrastructure explain differential growth performance of countries, after allowing for other production factors (Aigbokhan, 1999; World Bank, 1994). Adequate, reliable and good quality physical infrastructure improves the investment climate for domestic and foreign investments and businesses, as it eases the cost of total investment thereby raising the potential rate of return (Kumar, 2001).

The fundamental role of infrastructure in social and economic development is usually expressed in terms of “social overhead capital”. The term - social overhead capital - implies that infrastructure production is characterized by huge capital investments, economies of scale and positive externalities or spillovers throughout the economy and society (Aigbokan, 1999). These spillovers make their marginal social benefit and effect on aggregate output exceed their marginal private benefit (Canning, 1999). Some of these externalities are hard to estimate. For example, transportation and communication infrastructure may link hitherto isolated markets and increase the degree of competition. Also, an important externality of communication infrastructure is improvements of diffusion of technology. In a study of infrastructure's contribution to aggregate output, Canning (1999) found that while returns to physical capital as a whole, human capital and electricity generating capacity are close to those found from microeconomic evidence based on cost-benefit analysis, the productivity effects of telephone networks (and in some cases, transport routes) were over and above the normal productivity of capital.

These unique characteristics (externalities, market failure and private underinvestment) underpin the arguments and reasons for government provisioning of infrastructure and utilities by means of public enterprises. Private investments tend to respond to price signals which reflect private benefits and ignore externalities, hence the need for government interventions

using public enterprises. Public enterprises are government-owned or controlled productive entities which are designed to earn the bulk of their revenues from sales of outputs to the public, have a distinct legal identity and are self-accounting (Galal, 1991). The use of public enterprises to provide infrastructure is widely acknowledged as necessary to correct market failures, trigger economic growth and overcome private sector incapacity/underinvestment in the production of public goods and services of strategic national importance (Nellis, 1986). This is why infrastructure provision constitutes the dominant object of public enterprises, all over the world.

Notwithstanding government intervention to produce infrastructure, it is increasingly argued that greater efficiency gains would accrue from the policy environment where the government opened up the markets for infrastructure services. Encouraging private infrastructure provisions can ameliorate system congestion and enhance the reliability of services. Another approach to infrastructure provision is public-private partnership. It has been shown that efficiency gains can be achieved by using public and private resources more efficiently in the supply of infrastructure services (Lee and others, 1996a).

2.0 ECONOMIC COMPETITIVENESS: CONCEPTUAL PERSPECTIVES

The modern concept of competitiveness evolved from long history of economic thinking rooted in the works of classical economists, including Adam Smith's *An Inquiry into the Nature and Causes of the Wealth of Nations* published in 1776, David Ricardo's *Law of Comparative Advantage* published in 1776 and Michael Porter's *Competitive Advantage of Nations* published in 1990. The World Economic Forum (WEF) defines competitiveness as the set of factors, policies and institutions that determine the level of productivity of a country (Lopez-Claros and others, 2006). Competitiveness depicts the ability of a country to achieve sustained high rates of growth in GDP per capita; a more competitive economy is one which is likely to grow faster in the medium to long-term. The Global Competitiveness Index, developed by Jeffrey Sachs and John MacArthur and modified by Professor Xavier Sala-i-Martin provides a holistic overview of the factors that are critical to driving productivity and competitiveness. Accordingly, these factors are defined in terms of nine broad mutually complementary pillars of competitiveness: institutions, infrastructure, macroeconomy, health and primary education, higher education and training, market efficiency, technological readiness, business sophistication and innovation (Lopez-Claros and others, 2006).

But, none of these nine pillars can alone ensure competitiveness. Hence, countries which implement a wide range of factors and maximize their interconnection by developing framework policies in a comprehensive manner tend to be more competitive. For example, though macroeconomic stability is precondition for sustained growth by creating a business environment conducive to planning and investment, two countries can have comparable macro indicators but different competitiveness standings. This underscores the role of other factors in explaining productivity growth. For any economy, institutions matter because achieving growth goes beyond simply fixing inflation or addressing macroeconomic volatility. Of great importance is public sector accountability, efficiency and transparency as well as the ways in which government interacts with the private sector.

Also, the pillars of competitiveness apply differently to different countries, depending on economic circumstances. For example, less developed countries can still improve their productivity by adopting existing technologies or making incremental improvements in other areas. But, countries that have reached the innovation stage of development need frontier products and processes to retain competitive edge. Hence, innovation is often referred to as the only self-sustaining driver of growth (Lopez-Claros and others, 2006). Innovation is correlated to knowledge, which is perhaps the most critical competitiveness factor in today's globalizing world. As countries move up to the economic scale, the more they rely on new knowledge to ensure their prosperity and to compete well in global marketplace.

To demonstrate the joint influence of the variety of factors affecting growth and competitiveness, the WEF's 2006-7 Global Competitiveness Index combines three sub-indexes: basic requirements, efficiency enhancers and innovation and sophistication factors. The sub-indexes and constituent factors are summarized by Table 1, as follows.

Table 1: WEF's Global Competitiveness Sub-indexes and constituent factors

Sub-indexes	**Constituent factors**
Basic Requirement Index	*Institutions, Infrastructure, Macroeconomy, Health and Primary Education*
Efficiency Enhancers	*Higher Education and Training, Market Efficiency (goods, labour and financial), Technological readiness*
Innovation and Sophistication Factors	*Business sophistication, Innovation*

Similarly, the Global Competitiveness Index captures the competitiveness-enhancing factors, the measures and components as follows (Table 2).

Table 2: Measures of Competitiveness-enhancing factors in the Global Competitiveness Index

Factors	Measures and components
Institutions (quality and effectiveness of public institutions)	*Respect for property rights, ethics of government behaviour and the prevalence of corruption, independence of the judiciary, extent to which the government gives the private sector freedom or engages in interventionist discretionary practices (undue influence), government inefficiency reflected in the waste of public resources and a heavy regulatory burden, ability to provide an environment for economic activity characterized by adequate levels of public safety.*
Infrastructure (quality of infrastructure)	*Energy, transport and telecommunications services.*
Macroeconomy	*Inflation, interest rates, price stability, public sector deficits, exchange rate stability, domestic currency debt markets*
Health and Primary Education	*Life expectancy, mortality, HIV/AIDS prevalence, primary school enrolment, illiteracy, basic skills for employability, ability to participate in development process, civil society and professional life*
Higher Education and Training	*Quality of the labour force as assessed by the business community, secondary and tertiary enrolment, quality of science and related schools, availability of specialized training for the workforce, vocational and continuous on-the-job training*
Market efficiency	*Goods market - Market openness, government distortive intervention in the market, size of the market; Labour market-flexibility in labour markets, productivity-remunerations relationships, employer-employee relations (industrial relations); Financial market soundness of the banking sector, bank credit to private sector/business investment, performance of equity and venture capital supervisory capacity of the central bank.*
Technological readiness	*Availability of ICTs and other technologies, technology-intensive FDI,*
Business sophistication	*Ability of business leaders to maintain their companies efficiently, quantity and quality of local suppliers, well-developed production processes, extent to which companies are producing the most sophisticated products. This measure is particularly important for productivity at the top end of the global value chain.*
Innovation	*Environment conducive to innovative activity, business investment in research and development, high quality scientific research institutions, collaboration in research between universities and industry and protection of property rights*

Comparable conceptualisations of competitiveness have been given by the World Competitiveness Yearbook (WCY) - the annual competitiveness reports - prepared by the Geneva-based International Institute for Management Development (IMD). Describing competitiveness as one of the most powerful concepts in modern economic thinking, Garelli

(2006) observes that the term competitiveness refers to facts and policies that shape the ability of a nation to create and maintain an environment that sustains more value creation for its enterprises and more prosperity for its people.

Since the 1980s and with the rise of globalization and information and communication technology (ICT) revolution, competitiveness has become a growing academic topic and growth factor. In the literature, competitiveness is characterized as the relationship between a country's national environment (as created by the state) and the wealth creation processes (as played out by enterprises and individuals). Some viewpoints liken the competitiveness of a country to that of an individual firm. According to the Report of the Select Committee on the House of Lords on Overseas Trade in 1985, a firm is competitive if it can produce products and services of superior quality and lower costs than its domestic and international counterparts. Put differently, competitiveness of enterprises also refers to immediate and future ability of, and opportunities for, firms to design and produce goods whose price and non-price qualities are more attractive than those of foreign and domestic competitors. Also, from international trade perspective, Scott and Lodge (1985) defines national competitiveness as a country's ability to create, produce and distribute goods and services in international trade while earning rising returns to its resources.

The literature points to a number of features for understanding and explaining the competitiveness of countries. Some of these features are that competitiveness:

- Is relative, not absolute;
- Includes both efficiency and effectiveness;
- Encompasses the present, short-term and long-term;
- Is a dynamic phenomenon involving actions and feedbacks;
- Includes both the ends and the means towards those ends; and
- Embodies elements of productivity, profitability and efficiency.

In short, competitiveness encompasses all the elements that can explain the success of a nation in creating wealth and achieving prosperity for its people and it encompasses the economic consequences of non-economic issues (Garelli, 2006). Some scholars argue that nations themselves do not compete, rather, their enterprises do. However, such argument does not deny the role and responsibilities incumbent upon nations to shape the environment in which enterprises operate/compete and by implication, influence the attractiveness of the country to businesses and investments.

The IMD World Competitiveness Analysis defines four sets of competitiveness factors: economic performance, government efficiency, business efficiency and infrastructure. Each of these sub-factors is divided into five sub-factors, each highlighting different facets of competitiveness. The sub-factors are further divided into categories that define competitiveness variables more explicitly. Altogether, the WCY rankings cover 4 factors, 20 sub-factors and 239 criteria or indicators. An additional 73 criteria are presented for background information only and are not included in the computation of data to determine the overall rankings.

The factors, sub-factors and variables are given by Tables 3, 4 and 5 as follows.

Table 3: Competitiveness Factors and Variables of the World Competitiveness Yearbook (Infrastructure and Business Efficiency)

Factor	Sub-factor	Variables
Infrastructure (measures extent to which basic, technological, scientific and human resources meet the needs of businesses; a total of 95 criteria)	Basic infrastructure	*land area, arable area, urbanization, population-market size, population under 15 years, population under 65 years, dependency ratio, roads, railroads, air transportation, quality of air transportation, distribution of infrastructure, water transportation, maintenance and development, energy infrastructure, energy production per capita, energy consumption, energy consumption per capita,energy intensity, electricity costs for industrial clients*
	Technological infrastructure	*investment in telecommunications, fixed telephone lines, international fixed telephone costs, mobile telephone subscribers, mobile telephone costs, communications technology, computers in use, computers per capita, internet users, internet costs, broadband subscribers, broadband costs, information technology skills, technological cooperation, development and application of technology, funding for technological development, technological regulation, high-tech exports, high-tech exports, cyber security*
	Scientific infrastructure	*total expenditure on R&D, total expenditure on R&D, total expenditure on R&D per capita, business expenditure on R&D, business expenditure on R&D, total R&D personnel nationwide, total R&D personnel nationwide per capita, total R&D personnel in business enterprise, total R&D personnel in business per capita, basic research, science degrees, scientific articles, science in schools, youth interest in science, Nobel prizes, Nobel prizes per capita, patents granted to residents, securing patents abroad, intellectual property rights, number of patents in force, patent productivity, legal environment*
	Health and environment	*total health expenditure, public expenditure on health, health infrastructure, life expectancy at birth, healthy life expectancy, medical assistance, urban population, human development index, health problems (AIDS, alcohol, drug abuse, etc.), paper and cardboard recycling rate, waste water treatment plants, carbon dioxide emissions, ecological footprint, sustainable development, pollution problems, environmental laws, quality of life*
	Education	*total public expenditure on education, pupil-teacher ratio (primary education), pupil-teacher ration (secondary education), secondary school enrolment, higher education achievement, educational assessment, educational system, university education, illiteracy, economic literacy, education in finance, language skills, qualified engineers, knowledge transfer*
Business Efficiency (measures the extent to which enterprises are performing in an innovative, profitable and responsible manner; a total of 68 criteria)	Productivity and Efficiency	*overall productivity (PPP), overall productivity, overall productivity real growth, labour productivity (PPP), agricultural productivity (PPP), productivity in industry (PPP), productivity in services (PPP), large corporations, small and medium-size enterprises*
	Labour Market (Costs)	*compensation levels, unit labour costs in the manufacturing sector, remuneration in services professions, remuneration of management*

Table 4: Competitiveness Factors and Variables of the World Competitiveness Yearbook (Government Efficiency)

Factor	Sub-factor	Variables
Government Efficiency (measures the extent to which government policies are conducive to competitiveness; a total of 72 criteria)	Labor Market (Relations)	*working hours, labor relations, worker motivation, industrial disputes, employee training*
	Labor Market (Availability of Skills)	*labor force, labor force growth, part-time employment, female labor force, skilled labor, finance skills, brain drain, foreign high-skilled people, international experience, competent senior managers*
	Finance (Bank Efficiency)	*banking sector assets, credit, number of credit cards issued, credit card transactions, investment risk, venture capital, banking and financial services, retail banking, banking regulation*
	Finance (Stock Market Efficiency)	*stock markets, stock market capitalization, stock market capitalization, value traded on stock markets, listed domestic companies, stock market index, shareholders rights, financial institutions transparency*
	Finance (Finance Management	*cash flow, corporate debt, factoring*
	Management Practices	*adaptability of companies, ethical practices, credibility of managers, corporate boards, auditing and accounting practices, shareholder value, customer satisfaction, entrepreneurship, marketing, social responsibility, health, safety and environmental concerns*
	Attitudes and Values	*attitudes toward globalization, image abroad, national culture, flexibility and adaptability, need for economic and social reforms, values of society, corporate values*
	Public Finance	*government budget surplus/deficit, government budget surplus/deficit, total general government debt, total general government debt, total general government debt real growth, central government domestic debt, central government domestic debt, central government foreign debt, interest payment, management of public finances, total reserves, general government expenditure*
	Fiscal Policy	*collected total tax revenues, collected personal income tax, collected corporate taxes, collected indirect tax revenues, collected capital and property taxes, collected social security contribution, effective personal income tax rate, corporate tax rate on profit, consumption tax rate, employees social security contribution rate, employers social security contribution rate, real personal taxes, real corporate taxes, tax evasion*
	Institutional Framework (Central Bank)	*real short-term interest rate, cost of capital, interest rate spread, country credit rating, central bank policy, exchange rate policy, exchange rate stability*
	Institutional Framework (State Efficiency)	*policy direction of the government, legal and regulatory framework, adaptability of government policy, government decisions, political parties, transparency, public service, bureaucracy, public service, bureaucracy, bribing and corruption*
	Business Legislation (Openness)	*customs authorities, protectionism, public sector contracts, international transactions, foreign investors, access to capital markets, investment incentives*
	Business Legislation (Competition and Regulations)	*government subsidies, subsidies, competition legislation, product and service legislation, price controls, parallel economy, regulation intensity, ease of doing business,*

Table 5: Competitiveness Factors and Variables of the World Competitiveness Yearbook (Economic Performance)

Factor	Sub-factor	Variables
Economic Performance (measures the macroeconomic stability and competitiveness of the country; a total of 77 criteria)	Domestic Economy (Size)	*gross domestic product (GDP), GDP (PPP), Private final consumption expenditure, government final consumption expenditure, gross domestic investment, gross domestic savings, economic sectors*
	Domestic Economy (Growth)	*real GDP Growth, real GDP Growth per capita, private final consumption expenditure real growth, government final consumption expenditure real growth, gross domestic investment real growth, gross domestic savings real growth, resilience of the economy*
	Domestic Economy (Wealth)	*GDP per capita, GDP (PPP) per capita, private final consumption expenditure per capita, government final consumption expenditure per capita, gross domestic investment per capita, gross domestic savings per capita*
	Domestic Economy (Forecasts	*Forecast real GDP growth, forecast inflation, forecast unemployment, forecast current account balance*
	International Trade	*current account balance, balance of trade, balance of commercial services, exports of goods, exports of goods real growth, exports of commercial services, exports of commercial services real growth, exports breakdown by economic sector, imports of goods and commercial services, imports of goods and commercial services real growth, imports breakdown by economic sector, trade to GDP ratio, terms of trade index, tourism receipts*
	International Investment (Investment)	*direct investment flows abroad, direct investment stocks abroad, direct investment stocks abroad real growth, direct investment flows inward, direct investment stocks inward, direct investment stocks inward real growth, balance of direct investment flows, net position in direct investment stocks, relocation threats of production, relation threats of R&D facilities, relocation threats of services*
	International Investment (Finance)	*portfolio investment assets, portfolio investment liabilities*
	Employment	*employment, employment growth, employment by sector, employment in the public sector, unemployment rate, long-term unemployment, youth unemployment*
	Prices	*Consumer price inflation, cost-of-living index, apartment rent, office rent*

Source: World Competitiveness Yearbook 2006. Geneva: International Institute for Management Development.

Competitiveness is a basic means for an economy to grow incomes, raise the standard of living, provide jobs and eradicate poverty, in a sustainable way. To become or remain competitive, countries need to adopt a number of principles and strategies. These are summarized as the Golden Rules of Competitiveness (Garelli, 2006). They include:

- Create a stable and predictable legislative environment;
- Develop flexible and resilient economic structure;
- Invest in traditional and technological infrastructure;
- Promote private savings and domestic investment;
- Develop aggressiveness on the international markets as well as attractiveness for foreign direct investment;
- Focus on quality, speed and transparency in government and administration;
- Maintain a relationship between wage levels, productivity and taxation;
- Preserve the social fabric by reducing wage disparity and strengthening the middle class;
- Invest heavily and effectively in education, especially at the secondary level and in the life-long training of the labour force; and
- Balance the economies of proximity and globalization to ensure substantial wealth creation, while preserving the desired value system.

3.0 INFRASTRUCTURE SITUATION IN NIGERIA: REVIEW OF EVIDENCE

Several studies have revealed weaknesses of business environment and competitiveness of private sector in Nigeria. Such studies include the World Economic Forum's African Competitiveness Reports, World Bank's Doing Business Indicators and the US Department of State's Doing Business in Nigeria Reports. Others include the World Bank's Regional Program on Enterprise Development (RPED) in 2001 and Business Environment Survey (BES) in 2000, UNIDO Nigerian Manufacturing Enterprise Survey in 2001 and 2004 and Commonwealth Business Council Business Environment Survey in 2003.

The World Economic Forum ranked Nigeria 76 out of 82 countries on the infrastructure sub-index, as reported by the Global Competitiveness Report 2002-2003. Recently, Nigeria dropped in competitiveness rankings by the World Economic Forum's Global Competitiveness Index (GCI) for 2006-2007. Nigeria was ranked 101 out of 125 countries, a worse performance compared to the previous year's position of 83.

In particular, there is abundant evidence that the infrastructure situation is poor in Nigeria. Lee and others (1996a; 1996b) studied infrastructure deficiencies in Nigeria in comparison to Indonesia and Thailand. The criteria of comparisons include: the extent and incidence of infrastructure deficiencies; the extent of manufacturers' private provision responses to the deficiencies; estimation of capital shares of various private infrastructure investments; and estimation of the average cost for producing own electricity and water.

The United Nations Industrial Development Organization (UNIDO) survey of manufacturing firms in Nigeria used a 6-point rating scale to assess firms' satisfaction with public institutions responsible for roads, postal services, telephone services, water/sewerage, electricity, public health services and education services. Ilesanmi (2005) also conducted a qualitative study of ECOWAS citizens' perception of infrastructure situation, adequacy and distribution in Ghana, Nigeria and Niger. The sample consisted of 236 (Nigeria), 133 (Ghana) and 88 (Niger) and a total of 457 firm managers. The infrastructure situation was rated bad in Niger, fair in Nigeria and very good in Ghana. Adequacy was rated very high for Ghana, high for Nigeria but inadequate in Niger. Lopsided distribution of infrastructure was also worst in Niger, followed by Nigeria, but fairly evenly distributed in Ghana.

Furthermore, Kumar (2001) used panel data to establish an association between infrastructure availability and FDI inflows and their export orientation in a study of 66 countries, including Nigeria. It was observed that a practical problem faced by empirical studies analyzing the role of infrastructure availability is that of measurement of availability of the different components of infrastructure objectively in an inter-country setting. It was further explained that there are many aspects of infrastructure, for instance, transportation facilities like road network, port, airport etc., communication infrastructure covering telecommunication network; information infrastructure, energy availability, etc., but there is no comprehensive indicator of infrastructure availability. The study first developed a composite index of the availability of different aspects of physical infrastructure using the principal component analysis. Using the infrastructure index, it evaluated the role of infrastructure in explaining the patterns of multi-national enterprise activity in the sample countries and the export orientation of foreign affiliate production. Nigeria was ranked 61 out of 66 countries on infrastructure availability for foreign direct investment (FDI). Except for length of rail line and number of daily newspapers in circulation, Nigeria is not among

the first five countries on such indicators as electricity consumption per capita, total road network and educational and health expenditure per capita. Less endowed poorer countries such as Kenya and Ethiopia were ranked higher than Nigeria on most of the indicators.

These studies underscore inadequate and unreliable infrastructure as the main obstacle to business and private sector competitiveness in Nigeria. The Government of Nigeria's National Economic Empowerment Strategy (NEEDS) acknowledges that “Nigeria's infrastructure does not meet the needs of the average investor, inhibiting investment and increasing the cost of doing business”. Typical infrastructure obstacles are poor roads, inefficient port clearance facilities, poor quality and unreliability of electricity and water supply. These obstacles impose high risks and high costs to businesses. Firms are compelled to implement measures to cope with infrastructure deficiencies. In every country, there are essentially four ways by which firms respond to deficiencies in publicly provided infrastructure services (Lee and others, 1996): relocation; factor substitution; private provision; and output reduction.

Relocation: The firm may relocate to a site with better infrastructure services. Such relocation can occur within a city or from one region (city) to another. Relocation is not a popular response by firms for a number of reasons. Relocation involves high set up costs and huge capital requirements. In some cases, relocation is deterred because it means trading one infrastructural deficiency for another. In countries with generally poor infrastructure, moving to new locations would not yield gains in infrastructure quality. For instance, evidence in Nigeria showed that only marginal incidence of relocation in response to infrastructure deficiencies (Lee and Anas, 1992a; 1992b).

Factor substitution: This involves situation where the firm alleviates the impact of infrastructure deficiency by adjusting its method of production in favour of those inputs and raw materials which are less infrastructure-intensive. An example is the substitution of labour-intensive methods for capital-intensive ones. But, the factor substitution ability of firms may be constrained by the current technologies in use and limited input substitution possibilities.

Private provision: This involves firms providing their own infrastructure services, including power, water and waste disposal. This means substitution of internal capital in the form of equipment, machinery and labour for the publicly provided infrastructure services which are inadequate, unreliable and poor in quality. Four variants of private provisioning have been identified: self sufficiency; standby private provision; public source as standby; and captivity. Three additional regimes of private provision of infrastructure in areas can be found where government is liberal on the supply and trading of infrastructure services by private entities (Lee and others, 1996a). These are: joint production, satellite behaviour; and shared production. Joint production refers to the situation where a firm which has a substantial investment in infrastructural capital finds it profitable to sell part of its infrastructural output to other firms. Satellite behaviour is the other side of the coin. It involves a case where one firm purchases infrastructure services from another firm that has surplus infrastructure services to sell; for instance, the satellite firm would switch to the supplies of a nearby private producer when public power fails. Shared production refers to the arrangement whereby firms team together to produce a utility pool to share the cost of infrastructural capital inputs by building own facilities. This arrangement can be observed in industrial estates in Indonesia and Thailand.

Output reduction: Firms which cannot afford own infrastructure services are captive to public services. Small firms which find it too expensive to pursue own infrastructure options experience loss of output due to inadequacies of public infrastructure or when own infrastructure services fail under the weight of high running costs.

Infrastructure is a potent determinant of economic competitiveness and remains largely responsible for Nigeria's poor global competitiveness. The comparable rankings of Nigeria and other African countries on the Global Competitiveness Index are given by Table 6 as follows:

Table 6: Nigeria's ranking on the Global Competitiveness Index, 2006-2007

Country	Global Competitiveness Ranking		Business Competitiveness Index	Quality of the national business environment
	2005 (rank out of 117 countries)	2006 (rank out of 125 countries)	2005 (rank out of 117 countries)	2005 (rank out of 117 countries)
Nigeria	88 (3.23)	101 (3.45)	76	79
South Africa	42 (4.31)	45 (4.36)	28	30
Botswana	48 (4.21)	81 (3.79)	55	50
Mauritius	52 (4.00)	55 (4.20)	52	49
Ghana	59 (3.82)	--	45	47

Figures in parentheses are scores

Source: Global Competitiveness Report 2006-2007. World Economic Forum.

The following sub-sections illustrate the infrastructure situation in Nigeria using current data and statistics. The infrastructure and utilities covered include electricity, water, sanitation, roads, railway, telecommunications, housing, education and health.

Electricity

The Nigerian public electric power infrastructure comprises five thermal stations, three hydro-power stations, 19 330kv transmission lines, 69 132kv transmission lines and 92 bulk stations with a combined capacity of about 5,800mw, which is much below the capacity in an average European city (MAN, 2004a). Electric power generation increased from 1772.9 MW/hr in 1994 to 2763.6 MW/hr in 2004 amounting to a 55.9% increase, compared to increase in industrial consumption by 70.6% within the same period (CBN, 2004a). In 2004, electricity generation increased by 15.2% as against increase in consumption of 20.25% (CBN, 2004b). The power distribution infrastructure includes 23,543km of 33kv lines, 19,226km of 11kv lines, 697 of 33/11kv sub-stations and 20,543 of 33/10.415kv or 11/0.415kv, and distribution loss is put at 30-40% (MAN, 2004b). Firms cope with inadequate public electricity by self-provisioning through the use of own electricity generators.

A study of industrial clusters in Eastern Nigeria in 2003 (by Skoup and Company Ltd. in collaboration with the International Finance Corporation and World Bank) identified electricity as a major constraint to growth and competitiveness of small and medium enterprises (SMEs). About 92% of the firms reported electricity as their biggest production problem, followed by water (85%), roads (79%) and waste disposal (73%). The study found that on the average, the cost of acquiring a generator and the annual cost of maintenance reaches up to 9% of total value of the firm's equipment and machinery, and 13% of the firm's operating expense. It was also estimated that over ₦530m worth of equipment was damaged or destroyed because of power fluctuations, that is, an average of ₦3m per enterprise.

The structure and trends of electricity generation and consumption in Nigeria from 1970-2004 are presented in Table 7 as follows:

Table 7: Electricity Generation and Consumption in Nigeria

	Generation			Consumption (MW / hr)							
Year	Installed capacity (MW)	Total generation (MW/hr)	Capacity utilized (%)	Industrial	% of total	Commercial and street lighting	% of total	Residential	% of total	Total	Proportion of total generation consumed
1970	804.7	176.6	21.9	91.4	62.9	-	-	53.9	37.1	145.3	82.3
1971	804.7	215.4	26.8	114.9	63.5	-	-	66.2	36.5	181.1	84
1972	786.7	255.4	32.5	138.2	65.5	-	-	72.9	34.5	211.1	82.6
1973	670.6	299.7	44.7	146.1	62.8	-	-	86.6	37.2	232.7	77.6
1974	721.0	261.1	36.2	163.2	61.3	-	-	103.0	38.7	266.2	100
1975	926.2	395.4	42.7	200.4	62.9	-	-	118.3	37.1	318.7	80.6
1976	1,125.2	468.7	41.7	214.6	58.0	-	-	155.2	42 0	369.8	78.9
1977	1,114.2	538.0	48.3	253.0	58.1	-	-	182.7	41.9	435.7	81
1978	1,793.7	522.7	29.1	157.7	31.3	93.5	18.5	253.2	77.9	504.4	96.5
1979	2,230.6	710.7	31.9	160.3	34.8	77.9	16.9	221.9	08.2	460.1	64.7
1980	2,230.5	815.1	36.5	199.7	37.2	74.1	17.5	243.1	45.3	536.9	65.9
1981	2,240.0	887.7	36.5	121.0	30.2	21.3	21.3	193.6	48.5	355.9	65.1
1982	2,902.1	973.9	33.6	260.0	38.4	79.1	11.6	344.5	50.6	685.6	70
1983	2,856.8	994.6	34.8	254.4	36.5	84.3	12.1	358.0	51.4	696.7	70
1984	3,178.0	1,025.5	32.3	217.2	34.7	81.7	13.1	326.6	52.2	625.5	61
1985	3,695.5	1,166.8	31.6	259.8	36.2	85.6	11.9	372.0	51.9	717.4	61.5
1986	4,016.0	1,228.9	30.6	280.5	33.3	84.7	10.1	476.6	56.6	841.8	68.5
1987	4,548.0	1,286.0	28.3	294.1	34.5	90.2	10.6	468.6	54.9	852.9	66.3
1988	4,548.0	1,330.4	29.3	291.1	34.1	118.6	13.9	443.8	52.0	853.5	64.2
1989	4,548.0	1,462.7	32.2	257.9	26.4	195.3	20.0	523.6	53.8	976.8	66. 8
1990	4,548.0	1,536.9	33.8	230.1	25.6	217.6	24.2	550.8	50.2	898.8	58.5
1991	4,548.0	1,617.2	35.6	253.7	26.8	254.1	26.8	459.3	48.5	946.6	58.5
1992	4,580.0	1,693.4	37.0	245.3	24.7	266.1	26.8	481.6	48.5	993.0	58.6
1993	4,548.6	1,655.8	36.4	237.4	20.8	311.6	27.3	590.4	51.9	1,1414	68.9
1994	4,548.6	1,772.9	39.0	233.3	21.3	386.7	28.0	575.0	52.5	1,115.0	61.8
1995	4,548.6	1,810.1	39.8	218.7	20.3	279.6	26.0	552.6	51.3	1,050.9	59.5
1996	4,548.6	1,854.2	40.8	235.3	22.8	280.0	27.1	518.0	50.1	1,033.3	55.7
1997	4,548.6	1,839.8	40.4	236.8	23.5	264.5	26.2	508.3	50.3	1,009.6	54.9
1998	4,548.6	1,724.9	37.9	218.9	22.5	253.9	26.1	500.0	51.4	972.8	56.4
1999	4,548.6	1,859.8	33.3	191.8	21.7	236.8	26.8	455.1	51.5	883.7	47.5
2000	4,548.6	1,738.3	31.2	223.8	22.0	274.7	27.0	518.8	51.0	1,017.3	58.5
2001	4,548.6	1,689.9	27.5	241.9	21.9	298.3	27.0	564.5	51.1	1,104.7	65.4
2002	4,548.6	2,237.3	36.2	146.2	11.5	372.6	29.3	752.8	59.2	1,271.6	56.8
2003	6,130.0	6,180.0	38.8	196.0	12.9	417.9	27.5	905.6	56.8	1,519.5	63.4
2004	6,130.0	2,763.6	45.1	398.0	21.8	489.3	26.8	938.5	51.4	1,825.8	66.1

Source: Central Bank of Nigeria (CBN) (2004b) Bulletin of Statistics.

Note: 1.Industrial figures for 1970-1977 include commercial consumption figures; 2.Total generation has been covered from million KPH to mega watts per hour. This applies to electricity consumption which was formerly in kilowatts per hour (MKWPH); 3. Industrial installed capacity for the period 1999-2003 had been revised.

Water and Sanitation

At the household level, less than 30% of Nigerians have access to safe drinking water, and consume only 40 litres of water per day per capita, compared to WHO-recommended standards of 130 litres and 70 litres per day per capita for urban and rural dwellers, respectively (World Bank, 2005b). The study of industrial clusters in eastern Nigeria (Skoup and Company Ltd, in collaboration with the International Finance Corporation and World Bank) in 2003 found that more than half of the studied firms own boreholes for water production. In a particular industrial cluster (Nnewi), over 90% of the firms reported that all the water used is self-provided, and annual estimated cost of providing own water was estimated at ₦530,000 per firm.

Regarding sanitation, it has been observed that in 1990 and 2002, only 50% and 48%, respectively, of urban population had access to sanitation (World Bank, 2005b). Some comparison of Nigeria to other low income countries on water and sanitation indicators reveals a relatively poor performance, as shown by Table 8, as follows.

Table 8: Nigeria and comparable Countries: Key Infrastructure Indicators

	Access to improved water source - % of total pop.			Access to sanitation - % of urban pop.			Electricity use / capita - kw / hr		
Country	1990	2002	2003	1990	2002	2003	1990	2002	2003
Nigeria	49	60	-	50	48	-	82	68	-
Senegal	66	72	-	52	70	-	99	135	-
Rwanda	58	73	-	49	56	-	-	-	-
Kenya	45	62	-	49	56	-	116	120	-
Ghana	54	74	-	54	74	-	293	297	-
Vietnam	72	73	-	46	84	-	93	374	-
Turkey	81	93	-	96	94	-	801	1,458	-
India	68	86	-	43	58	-	249	380	-
Zimbabwe	77	83	-	69	69	-	888	831	-

Source: World Bank (2005) World Development Indicators, World Bank (2005) African Development Indicators, CBN (2004) Statistical Bulletin

Roads

Nigeria had a road stock of 194,394km in 2002, made up of federal (17%), state (16%) and local government (67%). It has a road to population ratio of 1.5 as against 11.6 and 6.3 for Botswana and Kenya, respectively. Even at this, it is estimated that 51%, 58.3% and 61% of federal, state and local government paved roads, respectively, are in disrepair (MAN, 2004b). The annual loss to the economy due to bad roads has been put at ₦133.8 billion. Some of the causes of the poor state of roads include: poor maintenance culture, lack of road furniture such as drainages and poor structural performance by contractors. Others are corruption among government supervising engineers; poor monitoring of the designed life of roads; collapse of integrated transport system; poor rail and water transport that put greater pressure on the road network; and poor funding (MAN, 2004b).

Railway

The rail infrastructure consists basically of 3,505km of two diagonal routes running parallel from Port Harcourt to Maiduguri and Lagos to Kano. These cover only 15 states out of 36 and the Federal Capital Territory (FCT). The lines are of the single track type and characterized by sharp gradients and curves, which impede the speed of trains, and are overdue for replacement. By 2001, the Nigerian Railway Corporation (NRC) had in operation only 22 functional locomotives, 236 coaches and 1226 wagons, representing only 19%, 48% and 45% respectively of the total equipment (MAN, 2004a). Consequently, passenger revenue and the freighttonnes per km. ratio declined by 15.3% and 4.4%, respectively in 2004 (CBN 2004b). The system is comatose and needs major rehabilitation. According to MAN (2004b), some of the reasons responsible for the state of affairs include under-funding and institutional weakness. Critical management problems include poor assets replacement plans, backlog of track maintenance, over-aged tracks, inadequacy of locomotives and rolling stock. Other problems are related to corruption, excessive government intervention, low technological capacity and capability and poor staffing.

Telecommunications

Nigeria's telecommunications landscape has recorded significant transformations in regulatory framework, growth in coverage and investments since 2001. By 1999, Nigeria had roughly 500,000 telephone lines available for a population of about 120 million. But as of 2005, the landscape has changed tremendously, as shown by Table 9, as follows.

Table 9: Nigeria Telecommunications Indicators, 1999-2005

Telecommunications indicator	1999	2000	2001	2002	2003	2004	2005
Private investment in telecoms (millions, US$)	50	150	1200	2100	2550	4000	6080
Tele-density (per 1000)	0.45	0.51	0.73	1.89	3.35	8.5	15.72
Total no. of telephone lines	508,316	588,374	866,782	2,271,050	4,038,006	10,201,728	19,810,258
Total no. of mobile phone lines	35,000	35,000	266,461	1,569,050	3,149,472	9,174,209	18,587,000
Total number of Fixed telephone lines	473,316	553,374	600,321	702,000	872,473	1,027,519	1,223,258
Total no. of NITEL telephone lines	450,172	49,709	540,662	555,466	539,405	507,268	447,979
Private Telephone Operators (PTOs)	23,144	56,355	59,656	146,534	333,068	520,251	775,279
Internet penetration (%)	-	0.1	0.1	0.3	1.3	1.5	1.9
Growth In Telecommunications							
New additions, investment in telecoms (millions, US$)	-	100	1,050	900	450	1,450	2,080
Net new additions (Total)	-	80,058	278,408	1,404,268	1,766,956	6,163,722	9,608,530
Net new additions (Fixed lines)	-	80,058	46,947	101,679	186,534	138,985	195,739
Net new additions (Mobile lines)	-	-	231,461	1,302,589	1,580,422	6,024,737	9,412,791
Tele-density Growth (%)	-	16.7	46.9	162.5	77.8	154	85
Growth in investment in telecoms (%)	-	200	700	75	21	27	52
Growth in Total no of phone lines(%)	-	15.7	47.3	162	77.8	152.6	94.2
Growth in number of fixed lines (%)	-	16.9	8.5	16.9	26.6	15.6	19
Growth in number of mobile lines(%)	-	-	661.3	488.8	100.7	191.3	102.6

Source: NPC (2006). Quarterly report on the Nigerian economy. Abuja: National Planning Commission. July 2006.

With the deregulation of the sector and auctioning of Global Systems for Mobile Telecommunications (GSM), many more telephone lines have been added. For example, by 2003 tele-density had improved to 32 per 1000 persons for both fixed and mobile systems. In 2004 a total of 9.33 millions lines (1.03m fixed and 8.3m mobile) with tele-density of 7.77 lines per 100 persons were recorded. Tele-density reportedly rose to 15.72 per 100 in 2005 (NPC, 2006). This record is far above the International Telecommunications Unions (ITU) minimum standard of 1:100 (CBN, 2004b). These developments resulted from the liberalization of the telecommunications sector by the federal government. The mobile telephone sub-sector has been pivotal to the growth of telecommunications in Nigeria and mobile network coverage of about 45% of the population, covering a land area of about 156,200 sq. km. (17% of the country's total land area of 923,768 sq. km.) was achieved as far back as 2003. Similarly, the growth of Internet users has accelerated rapidly and explosively at an average of about 108% since 2001 (NPC, 2006).

Housing

The housing sector especially urban housing has over the years been executed through public-private partnership. The level of housing is estimated at 2.3 dwelling units per 1000 persons as against 8-10 units recommended by the UN General Assembly Resolution 37/321 of December 1982. However, reports show that housing units had grown from 156,000 units in 1999 to 374,000 in 2005, an increase of 23.4% (NPC, 2006). In most major cities in Nigeria, an increasing number of the people live in very poor housing environments while those that have access to average housing do so at a very high cost. For instance, it was estimated that about 85% of the urban population live in single rooms, and the number of occupants per room range from 8 to 12, with adverse effects on sanitation and health. This poor housing situation is linked to the fact that the average Nigerian would need to spend between 50% and 70% of his disposable income, to be decently housed. Also, the rapid increases in the prices of building materials and poor land ownership (tenure) systems, among other factors, have made house ownership difficult for most Nigerians. In fact, access to decent shelter has worsened for increasing segments of the urban population in Nigeria. Acute shortage of urban housing was traced to the weakness of the housing financing policy, acute shortage of long term funds for mortgage financing and weak institutional framework for mortgage loan. The poor state of housing is attributed to the failure of past policies and institutions on urban housing development. Other problems are uncertainty in property rights and security of tenure emanating from the poor administration of the Land Use Act 1978.

Education

The Nigeria educational sector has witnessed phenomenal growth since independence in 1960. The trend in gross enrolment ratio (GER) indicates considerable fluctuations between 1991 and 2000. It increased steadily between 1990 and 1994, rising from 68% to 86%; declined to 81% in1995 and 70% in 1996. Female enrolment was consistently lower than male enrolment. Literacy rates among 15-24 years olds have deteriorated since 1991, falling from 71% to 64% in 1999, and higher in urban than rural areas(FGN/UNESCO, 2004). The trends in Nigeria education sector from 1999-2005 are shown by Table 10, as follows.

Table 10: Nigeria Educational Sector Indicators, 1999-2005

Educational sector indicator	1999	2000	2001	2002	2003	2004	2005	% change 1999-2005
Total number of universities	41	45	46	52	53	55	75	83.0
Federal	25	25	25	26	26	26	26	4.0
State	13	17	17	19	19	21	25	92.3
Private	3	3	4	7	8	8	24	700.0
Polytechnics	46	46	46	46	46	46	46	0.0
Colleges of Education	64	64	64	66	66	66	66	3.1
Sec. schools	6,292	6,292	6,292	6,293	10,570	10,913	10,830	72.1
Primary schools	49,326	49,326	49,309	51,870	59,131	60,189	60,226	22.1
Student Enrolment								
Universities	312,344	327,980	325,707	626,101	727,765	670,397	779,253	149.5
Polytechnic	55,185	197,542	217,296	239,025	262,972	289,269	318,195	476.6
Sec. school	3,844,585	4,104,354	4,601,105	4,897,048	6,509,772	6,279,562	6,255,522	62.7
Primary school	17,907,010	19,158,439	9,385,177	19,342,659	25,765,969	21,575,178	22,099,553	23.4
Number of Teachers (000)								
University	-	-	487,300	491,800	591,000	596,000	597,700	22.7
Secondary school	-	-	143,300	163,300	180,300	154,000	156,600	9.3
Primary school	-	-	4,100	10,800	20,100	23,400	23,400	470.7

Source: NPC (2006). Quarterly report on the Nigerian economy. July 2006. Abuja: National Planning Commission.

As can be observed from Table 10, the education sector has witnessed an explosive growth in all the sub-sectors between 1999 and 2005. The phenomenal growth in the sector is exemplified by an 83% increase in the total number of universities from 41 in 1999 to 75 in 2005, as the number of private universities increased from 3 in 1996 to 16 in 2005. But, the number of polytechnics has remained unchanged over the same period, indicating structural imbalance and distortions in educational development in the country.

Health

Nigeria has a challenging health sector. The country performs poorly on several health indicators and the worsening trends reduce the prospects of meeting the MDGs targets by 2015. The situation of the health sector in Nigeria is shown by Table 11, as follows.

Table 11: Nigeria Health Sector Indicators, 1999-2005

Health Sector Indicators	1999	2000	2001	2002	2003	2004	2005
Federal Government Allocation to Health (million)	16,180	20,445.2	44,651.5	63,171.2	39,685.5	52,406.1	77,498.8
Capital expenditure	7,386.8	11,579.6	20,128	12,608	6,431	18,207.7	21,835.8
Recurrent expenditure	8,793.2	7,386.8	24,523.5	50,563.2	33,254.5	34,198.5	55,663
Expenditure Ratios:							
Capital/Ratio	0.46	0.57	0.45	0.2	0.16	0.35	0.28
Recurrent/Total	0.54	0.36	0.55	0.8	0.84	0.65	0.72
Capital/Recurrent	0.84	1.57	0.82	0.25	0.19	0.53	0.39
Health Manpower:							
Doctors	31,359	33,106	32,215	38,355	40,159	41,935	44,031
Nurses	123,390	125,240	109,790	128,559	136,751	158,920	166,866
Basic Health Indicators							
*Infant mortality (per 1000 live births)	75	n/a	n/a	n/a	100	n/a	n/a
*Under-five mortality rate (per 1000 live births)	133	n/a	n/a	n/a	201	n/a	n/a
*Maternal mortality ratio (per 100,000 live births)	704	n/a	n/a	n/a	n/a	n/a	n/a
*Proportion of 1 year-old children immunized against measles	n/a	n/a	n/a	n/a	31.4	n/a	n/a
Life expectancy male (in years)	56.27	n/a	n/a	n/a	n/a	n/a	57.91
Life expectancy female (in years)	54.85	n/a	n/a	n/a	n/a	n/a	56.35
PREVALENCE RATE OF NOTIFIABLE DISEASES (Per 100,000)							
Cholera	2.02	5.38	8.61	19.05	2.05	1.06	n/a
Malaria	1,767.4	2,023.8	1,858.78	2,202.95	1,726.99	1,157.85	n/a
Measles	194.99	92.48	140.73	71.48	93.71	36.41	n/a
Tuberculosis	16.92	15.74	12.01	12.57	21.75	7.07	n/a
Typhoid & Paratyphoid	51.24	66.54	20.05	84.65	61.43	30.14	n/a
CASE FATALITY OF NOTIFIABLE DISEASES (Per 100,000)							
Cholera	79.53	3.98	4.04	2.04	4.31	2.53	n/a
Malaria	0.21	0.23	0.19	0.15	0.19	0.16	n/a
Measles	1.72	1.15	1.36	1.49	2.16	1.11	n/a
Tuberculosis	1.69	1.57	2.21	1.58	2.56	1.56	n/a
Typhoid & Paratyphoid	0.9	n/a	0.98	0.79	0.59	0.72	n/a
HIV/AIDS Indicators							
National HIV/AIDS prevalence rate	5.4	n/a	5.8	n/a	5.0	n/a	4.4
New infections	n/a	n/a	n/a	n/a	4.0	n/a	3.6
% of persons ever tested for HIV/AIDS	n/a	n/a	n/a	n/a	6.8	n/a	10.8
% of persons with knowledge of prevention of	n/a	n/a	n/a	n/a	64.9	n/a	70.7

n/a = not available
** Data obtained from the National Demographic and Health Survey 2003*
Source: NPC (2006). Quarterly Report on the Nigerian Economy. July 2006. Abuja: National Planning Commission.

Table 11 shows mixed trends of health indicators. Infant mortality rate falls far short of Nigeria's MDG target of 30.3 per 1000 live births by 2015 just as under-five mortality rate falls sharply below the Nigeria MDG target of 63.7 by 2015. According to the National Demographic and Health Survey in 2003, rural infant mortality rate (121 per 1000) was much higher than the urban rate (81 per 1000); just as maternal mortality rate was much higher in rural areas, 828 per 100,000 live births than in the urban areas, 351 per 100,000 live births (NPC, 2005). It is estimated that in order to meet the target of reducing by under-five mortality by two-thirds, neonatal mortality would decline by over 50%.

4.0 STATE-LEVEL DISAGGREGATED INDICATORS OF INFRASTRUCTRE AND WELFARE

During 2006, the National Bureau of Statistics (NBS) carried out nationwide survey of indicators of welfare, based on the National Integrated Survey of Households (NISH) design. The survey covered 7,740 Enumeration Areas and 77,400 housing units (HUs). The results are reported for national level, state-by-state and zone-by-zone to enable comparisons. The survey elicited data on 34 core welfare indicators, using the Core Welfare Indicator Questionnaire (CWIQ).

The Nigeria Core Welfare Indicator Questionnaire (CWIQ) survey conducted by the National Bureau of Statistics in 2006 produced results across states and geopolitical zones. The results reveal disparities in socioeconomic indicators across geopolitical zones and thereby underscore the value of disaggregated sub-national level analysis. Some results of the survey are presented according to the six geopolitical zones, in Table12, as follows.

Table 12: Nigeria Core Welfare Indicators, 2006

Welfare Indicator	National	Rural	Urban	North East	North West	North Central	South East	South West	South South
Access to water	84.4	80.1	92.8	87.4	92.6	80.5	63.6	93.6	78.5
Safe water source	50.9	39.6	72.8	30.4	50.2	48.5	40.3	73.1	45.5
Safe sanitation	13.8	5.6	29.7	3.0	4.4	9.8	19.7	23.1	19.3
Improved waste disposal	18.8	4.7	37.3	6.1	10.6	8.7	8.9	35.5	13.0
Has electricity	54.1	38.1	85.3	29.5	36.9	43.9	63.9	78.1	61.2
Ownership of personal computer	1.2	0.5	2.6	0.3	0.7	1.1	1.3	2.3	1.2
Ownership of mobile telephone	27.4	14.9	51.7	8.5	12.1	21.6	32.4	47.2	33.7
Primary net enrolment	62.4	57.5	75.4	44.6	43.5	73.3	82.4	82.9	77.3
Access to primary school	74.6	70.5	85.6	70.2	74.7	78.8	59.8	87.5	70.3
Primary completion rate	12.0	10.5	16.1	6.3	5.8	12.8	22.9	18.6	17.2
Satisfaction with primary school	58.0	54.2	66.4	36.8	57.8	50.1	64.9	76.6	54.3
Secondary net enrolment	45.9	39.8	59.8	26.3	25.8	46.4	59.9	65.2	58.9
Access to secondary school	46.3	36.6	68.2	35.3	42.5	46.8	31.9	68.6	47.1
Secondary completion rate	20.0	13.6	34.5	7.0	7.2	15.8	27.9	39.4	25.5
Satisfaction with secondary school	56.0	51.0	64.2	40.6	57.8	48.3	53.1	74.6	48.3
Health access	54.1	46.8	69.7	47.3	54.2	60.1	36.4	72.3	44.6
Satisfaction with medical services	66.9	62.6	75.0	62.6	62.5	66.9	64.8	81.5	57.8

Source: NBS, 2006. Core Welfare Indicator Questionnaire (CWIQ) Survey, 2006. Abuja: National Bureau of Statistics

The results shown in Table 12 are summarized as follows:

- At the national level, the percentage of households which reported that their economic conditions have improved compared to previous year is higher than those who said that their conditions had worsened. But in southeast, south-south and southwest zones, greater percentages of households reported that their conditions had worsened;

- At the national level, the percentage of households which reported that their neighbourhood security situation has improved compared to previous year is higher than those who say the security situation has worsened. All the six geopolitical zones reported improvements in neigbourhood crime and security situation;

- At the national level, just about half of the households reported having safe water source. The percentage of rural households which reported safe water is much lower than the national average. Less than 20% reported availability of safe sanitation and improved waste disposal. The percentages of rural households which reported safe sanitation and improved waste disposal were very marginal;

- Only about half of the national sample of households had electricity. The incidence of electricity among households was reported to be much higher in urban than rural areas. The highest incidence was reported in Southwest, followed by Southeast and then South-south. The least was in Northeast;

- Only meagre 1.2% of households owned personal computer, while close to 30% of households had mobile phone. Ownership of mobile phone was less than 15% among rural households, compared to about half of urban households. Incidence of ownership of mobile phone and personal computer was highest in Southwest and lowest in Northeast;

- National primary school net enrolment was 62.4%, but primary completion rate was only 12.0%. Both the primary enrolment and primary completion rates were higher in urban than rural areas; there were also higher for males than females. Just over half of the households reported satisfaction with the primary school system. Across all the geopolitical zones, enrolment was higher for males than females. The highest primary net enrolment was in Southwest, followed by Southeast, with Northwest having the lowest. However, primary completion rate was highest in Southeast;

- National Secondary net enrolment rate was less than 50%, and secondary completion rate was much lower 20%. Among the geopolitical regions, the Southwest had the highest secondary net enrolment rate, followed by Southeast and then South-south. The lowest was in Northwest. A little over half of the national sample of households indicated satisfaction with secondary school system. The highest incidence of satisfaction was indicated by households in Southwest, the least was in Northeast. Male enrolment rate was higher than female in all geopolitical zones, except Southeast and South-south; and

- Health access was about 54% at the national level; it was highest in Southwest and lowest in Northeast.

In line with the BECANS framework of comparison across states, the core welfare indicators are reported on state-by-state basis, by Tables 13 and 14, as follows.

Table 13: Welfare Indicators of 36 Nigerian States and FCT

States	Access to water	Safe water source	Safe sanitation	Improved waste disposal	Has electricity	Owns personal computer	Owns mobile phone
Abia	77.0	63.6	28.5	17.2	68.4	1.6	35.5
Adamawa	85.1	26.3	3.1	2.6	26.2	0.7	9.9
Akwa Ibom	58.2	43.1	4.8	4.0	45.4	1.2	20.9
Anambra	65.3	30.3	19.2	7.1	78.1	1.1	40.0
Bauchi	90.4	33.5	3.7	14.3	29.0	0.4	9.9
Bayelsa	92.3	29.6	12.7	2.1	56.8	1.4	26.7
Benue	71.1	43.2	8.6	9.7	22.9	0.5	12.9
Borno	91.3	33.8	3.9	2.8	36.0	0.2	9.2
Cross River	65.1	30.7	12.8	17.7	54.0	0.5	20.0
Delta	92.2	46.1	34.3	13.5	73.4	1.3	33.7
Ebonyi	60.2	43.6	10.7	7.7	27.3	1.0	15.9
Edo	81.1	59.8	21.5	22.9	78.1	1.0	49.8
Ekiti	88.2	61.7	9.9	1.5	67.9	0.3	19.4
Enugu	57.0	28.8	24.4	9.3	49.3	2.0	32.0
FCT	94.9	42.1	42.1	21.4	84.7	5.9	74.2
Gombe	90.9	23.6	0.9	12.5	34.9	0.2	6.0
Imo	55.6	38.5	11.9	9.3	67.1	0.9	26.6
Jigawa	95.3	64.0	1.3	2.7	17.4	0.5	5.1
Kaduna	95.7	70.8	11.7	16.6	49.9	1.2	25.8
Kano	93.7	40.0	4.4	11.5	52.2	0.8	15.7
Katsina	88.6	42.9	1.7	14.3	33.0	0.8	7.2
Kebbi	93.7	38.4	2.3	8.5	34.2	0.2	8.4
Kogi	74.8	36.6	5.6	4.4	55.5	0.4	17.1
Kwara	89.1	71.4	18.6	18.7	70.3	1.9	33.8
Lagos	98.8	82.8	46.1	88.6	97.2	4.4	77.3
Nassarawa	76.5	38.1	3.7	3.8	35.9	0.6	21.3
Niger	93.5	62.2	7.9	11.8	44.9	1.1	25.2
Ogun	91.8	64.5	10.6	21.8	68.0	0.8	31.1
Ondo	91.9	61.8	7.0	9.4	64.0	0.5	28.8
Osun	92.6	70.9	10.5	1.1	66.3	2.5	31.9
Oyo	90.5	77.0	18.9	12.2	75.4	1.8	42.9
Plateau	78.2	42.9	8.2	0.8	30.6	1.4	14.2
Rivers	82.0	48.1	19.7	10.8	52.1	1.6	40.0
Sokoto	94.5	51.5	2.0	10.3	27.1	0.3	6.9
Taraba	75.5	19.0	1.6	1.8	13.9	0.4	5.6
Yobe	84.8	40.9	2.4	0.9	32.7	0.1	7.7
Zamfara	84.9	46.8	5.0	2.2	18.3	0.1	5.5

Source: NBS, 2006. Core Welfare Indicator Questionnaire (CWIQ) Survey, 2006. Abuja: National Bureau of Statistics.

Table 14: Welfare Indicators of 36 Nigerian States and FCT cont'd

States	Access to primary school	Primary net enrolment	Satisfaction with primary school	Primary completion rate	Access to secondary school	Secondary net enrolment	Satisfaction with secondary school	Secondary completion rate	Health access	Satisfaction with medical services
Abia	78.9	82.6	71.0	20.0	37.7	62.4	70.2	32.9	53.0	75.6
Adamawa	74.9	64.9	39.5	11.0	34.0	38.6	40.8	8.3	48.6	70.3
Akwa Ibom	56.0	79.5	43.4	17.8	29.4	59.6	43.7	19.0	25.5	56.9
Anambra	64.4	85.7	65.6	27.6	36.6	63.3	55.7	24.9	41.3	65.6
Bauchi	66.8	41.0	40.4	4.8	32.2	22.5	57.0	5.9	46.1	67.9
Bayelsa	88.0	72.2	37.6	14.0	46.3	50.0	33.8	18.0	52.6	57.3
Benue	62.8	77.7	59.5	14.2	33.1	45.1	52.6	19.3	41.7	70.7
Borno	70.8	35.0	34.2	4.9	39.2	23.4	36.6	7.7	53.1	61.9
Cross River	72.9	77.0	62.6	16.8	53.9	62.4	50.9	30.5	55.9	53.5
Delta	71.9	78.1	67.6	14.9	51.9	57.6	64.6	29.4	47.8	62.4
Ebonyi	32.3	75.3	67.7	23.4	18.2	43.3	54.1	15.0	17.0	67.5
Edo	76.9	77.0	67.6	15.1	62.8	58.0	68.6	23.1	52.2	80.2
Ekiti	88.8	89.2	85.7	22.0	61.2	71.3	83.7	53.7	68.4	83.7
Enugu	62.0	80.4	60.4	20.1	32.4	60.8	46.0	37.2	38.6	71.9
FCT	94.9	83.2	72.2	16.7	60.7	58.4	78.4	24.5	80.6	81.1
Gombe	81.5	33.9	49.0	5.2	42.5	16.8	61.6	3.7	48.3	57.6
Imo	52.3	84.4	60.6	22.2	28.7	62.1	40.7	25.6	21.9	43.3
Jigawa	72.9	29.6	49.1	2.9	45.1	14.5	43.5	3.5	52.5	72.6
Kaduna	82.9	67.6	59.7	8.9	51.4	42.3	59.4	13.7	59.7	66.7
Kano	76.5	47.8	51.2	7.4	58.6	27.1	54.6	8.8	58.7	61.7
Katsina	74.0	45.1	61.8	5.0	27.9	22.5	54.2	5.3	54.4	50.9
Kebbi	71.1	33.9	64.5	4.3	25.2	22.2	67.0	3.1	45.7	62.7
Kogi	87.8	81.3	63.4	18.7	61.1	60.7	47.9	19.2	75.9	57.8
Kwara	83.8	79.8	56.6	13.6	48.8	48.3	54.8	17.8	71.7	67.8
Lagos	93.4	82.3	73.1	20.1	87.0	70.1	65.1	60.4	74.8	83.7
Nassarawa	79.0	67.1	56.1	13.0	45.6	44.1	60.2	18.9	63.2	68.7
Niger	86.0	58.8	38.8	6.4	48.5	34.6	49.7	7.2	65.8	64.6
Ogun	84.6	84.1	73.1	20.1	57.1	54.3	74.1	25.0	67.2	82.6
Ondo	85.2	84.6	83.2	21.2	66.0	64.4	85.2	28.6	70.3	74.3
Osun	86.0	86.3	91.3	17.6	61.7	63.5	89.8	29.5	73.6	75.9
Oyo	84.0	79.7	61.5	18.5	60.2	65.6	64.4	30.7	73.5	82.7
Plateau	74.2	80.1	26.2	13.7	44.3	42.5	22.8	11.3	47.0	69.0
Rivers	68.8	76.8	44.2	21.7	45.5	60.1	32.9	28.4	42.3	49.1
Sokoto	79.7	32.8	69.4	6.3	41.1	18.3	64.9	4.7	54.7	57.5
Taraba	69.3	61.1	24.6	8.2	32.7	31.2	17.3	9.3	45.4	51.3
Yobe	59.9	36.3	37.2	4.4	32.1	22.6	9.3	7.0	38.0	58.9
Zamfara	60.1	27.1	62.3	3.0	16.0	20.4	70.0	4.1	40.4	70.4

Source: NBS, 2006. Core Welfare Indicator Questionnaire (CWIQ) Survey, 2006. Abuja: National Bureau of Statistics.

In order to highlight disparities in performance across states, it is instructive to show states that perform high and those that perform low on the various welfare indicators. This is presented in Table 15, as follows.

Table 15: Welfare Indicator across Nigerian States: High vis-à-vis low Performers

Welfare indicator	State that reported highest incidence	State that reported lowest incidence
Access to water	Lagos	Imo
Safe water source	Lagos	Taraba
Safe sanitation	Lagos	Jigawa
Improved waste disposal	Lagos	Yobe
Has electricity	Lagos	Jigawa
Ownership of personal computer	FCT	Yobe, Zamfara
Ownership of mobile telephone	Lagos	Jigawa
Access to primary school	Lagos	Ebonyi
Primary net enrolment	Ekiti	Zamfara
Satisfaction with primary school	Osun	Taraba
Primary completion rate	Anambra	Jigawa
Access to secondary school	Lagos	Zamfara
Secondary net enrolment	Ekiti	Jigawa
Satisfaction with secondary school	Osun	Yobe
Secondary completion rate	Lagos	Kebbi
Health access	Abuja	Ebonyi
Satisfaction with medical services	Ekiti, Lagos	Imo

Source: NBS, 2006. Core Welfare Indicator Questionnaire (CWIQ) Survey, 2006. Abuja: National Bureau of Statistics.

5.0 INFRASTRUCTURE REFORMS IN NIGERIA: AN OVERVIEW

Government is implementing infrastructure reforms under the National Economic Empowerment and Development Strategy (NEEDS). The state-level reforms -the State Economic Empowerment and Development Strategy (SEEDS)- are also being carried out to to improve economic governance. While the federal government may have constitutional jurisdiction over certain infrastructure development such as rail system, air transport facilities, electricity generation, distribution and supply, inter-state roads etc., state and local governments also have jurisdiction over infrastructure development within their boundaries. Hence, it is incumbent upon states and local governments to develop facilities and amenities to complement those provided by the federal government.

During years of military rule whereby Nigeria tended towards unitary style of governance, the states were virtually dependent on the federal government for political authority, policy formulation and development programming. But today, given the constitutional autonomy they enjoy, states are now in stronger position to impact on infrastructure development and business environment in their jurisdictions. The increasing fiscal profile of states arising from increased share of the federation account places great responsibility and increased financial resources to provide critical infrastructure for businesses.

Specifically, states have concurrent responsibility in many infrastructure domains. As provided for in the Nigerian Constitution, states along with the federal government have concurrent roles in infrastructure development including transportation, power, education, health, housing and others. To realize their infrastructure development roles, some states are now partnering with the private sector under varying types of public-private collaborative arrangements. In the power sector, for example, some states are partnering with the private sector to produce electric power; while others have been involved in airport development, in a bid to boost air transportation. It is obvious therefore that benchmarking and assessing the infrastructure availability and adequacy in the states will be relevant in disseminating best practices and promoting mutual learning in infrastructure development.

The Eleventh Nigerian Economic Summit in 2005 outlined some policy thrusts and imperatives for infrastructure development in Nigeria. These are:

- Privatise key infrastructure services to ensure effective service provision;
- Enhance and enforce relevant laws to improve competition and protect consumer welfare
- Encourage private sector participation through methods such as build, operate and transfer (BOT), build, own, operate and transfer (BOOT), rehabilitate, own and transfer (ROT) and concession;
- Provide counterpart funding for major infrastructure projects for which either the resource requirements are too high or the incentive too low for private sector participation (NESG, 2005).

The following sections recapitulate government reforms in the development of infrastructure, including electricity, water and sanitation, transportation, telecommunication, housing, health and education.

Electricity

Government seeks to increase generation capacity by additional 5,800 megawatts from 4,200 MW to 10,000 MW, transmission from 5,838 megavolt amperes (MVA) to 9,340 MVA and distribution from 8,425 MVA to 15,165 MVA in 2007, as estimated under NEEDS . Towards this end, government has taken steps to unbundle National Electric Power Authority (NEPA) to encourage private sector participation and additional investments in the power sector. Apart from earlier injecting funds for upgrading NEPA facilities, government has embarked on the construction of 15 new plants and encouraged the private sector to embark on independent power projects (IPP). Government has also enacted the power sector reform bill designed to un-bundle NEPA into distinct business units, establish a regulatory agency for the electricity industry, establish a rural electricity agency and a consumer assistance fund, increase access to electricity and privatize business units that will emerge.

The Electric Power Sector Reform (EPSR) Act 2005 was enunciated to provide a legislative framework for the reform of the Nigerian power sector in accordance with the policies set out in the National Electric Power Policy. It provides the legal backing for the unbundling of NEPA and formation of successor companies to take over the various functions, assets, liabilities and staff of NEPA. It is also the framework that can foster the development of a competitive electricity market, and creation of a regulatory body that will license and regulate the generation, transmission and distribution and supply of electricity. The Act spells out modalities for determining tariffs and provides for other related matters.

As far back as 2002, the National Council on Privatisation (NCP) approved the implementation blueprint for the restructuring of NEPA. The restructuring involves the creation of six generation companies (Gencos), an independent transmission company (Transyco) and eleven (11) distribution/marketing companies (Discos) in various zones of the country. In particular, the Lagos zone which takes up 45% of supply and provides up to 60% of revenues will be restructured into two separate companies. Emanating from the restructuring are a number of business units in the areas of generation and distribution together with a single transmission company and a special purpose entity (SPE) created to hold and pay off NEPA's major financial and trading liabilities. Each of the companies would then run as an independent commercially viable company. Then, there would be the divestiture of the Federal Government in the distribution companies (Discos) and the generating companies (Gencos).

The Bureau for Public Enterprise (BPE) has been quite proactive by considering a post-restructuring strategy of evolving management contracts in place in some of the new companies. With the enactment of the EPSR Act, BPE took necessary steps to incorporate the initial holding company called Power Holding Company of Nigeria Plc (PHCN). The PHCN has taken over the assets, liabilities and personnel of NEPA. The EPSR Act 2005 provides for the establishment of an independent regulatory agency to that would be called Nigerian Electricity Regulatory Commission (NERC). This has been accomplished. The agency will be required to carry out the monitoring and regulation of the electricity industry, issuance of licenses to market participants and would ensure compliance with market rules and operating guidelines (FMI&NO, 2006a). In August 2006, the NERC issued the first batch of power licenses to four beneficiary companies, namely, Supertek Nigeria Limited (1000MW), Farm Electric Supply Limited (150MW), ICS Power Limited (624MW) and Ethiope Energy Limited (2,800MW).

Water and Sanitation

The NEEDS emphasizes an integrated management and development of water resources in a sustainable manner to meet present and future needs of human consumption, animal husbandry, agriculture, hydropower, inland waterways, environmental protection and industry. NEEDS key objectives include development, management and protection of water resources, involvement of all stakeholders especially the private sector and optimization of the use of water resources. Some of the key strategies include development and implementation of a system of quality assurance consistent with World Health Organisation (WHO) standards, reactivation of the River Basin Development Authorities (RBDAs) and urban water schemes, watershed protection and the establishment of legal and regulatory framework to promote rational use and protect water resources database. There is also the National Water Supply and Sanitation programme covering urban and small towns, rural areas, and water resource management and sanitation. The programme partners with stakeholders including the private sector and communities to improve water supply, with the target of 60% rural coverage by 2007. These attempts are geared to meet the Millennium Development Goal (MDG) of providing improved water and sanitation for half of all those without access by 2015. In a country where only 60 and

38% (2002 figures) have access to improved water and sanitation, respectively, the task of meeting the MDGs raises serious stakes for water development reforms, particularly against the challenges of rapidly increasing needs for domestic, agricultural and industrial use.

Transportation

In the transport sector, the reform has not been as vigorous as in telecommunication and electricity. Road, rail and water transport have not been targeted by holistic and systematic reforms. The major reform is the establishment of the Federal Roads Maintenance Agency (FERMA). The performance of FERMA has been criticized as unsatisfactory. The railway system has only recently begun to receive the attention it deserves. The federal government has restructured the management of the National Railway Corporation (NRC) and awarded contracts for the rehabilitation and gauge-expansion of the existing lines and construction of additional lines. When completed, it is expected to ease up haulage traffic on the roads. The development programme in the rail sub-sector will also prepare it for privatization or concession. Government has not embarked on the construction of new airports but has a programme of rehabilitation and expansion of existing ones and making them safer through modernization of equipment. A similar development strategy has been adopted in the nation's seaports and establishment of dry ports, and most recently some of the institutions have been restructured. Five dry ports have so far been placed on concession to managing firms, but fears are being expressed about their functionality, given that performance is predicated upon the rehabilitation of the railway system.

Telecommunication

The reform process consisted of a four-phased programme for restructuring the sector, namely: development of the National Telecommunications Policy (NTP); design of new legal and regulatory framework; restructuring of the sector (including promotion of a strong and independent regulator); and privatization of NITEL. The NTP was approved by the Federal Executive Council in September, 2000. This was followed by enactment of the Nigerian on

Telecommunications Act. The Act principally re-established and re-invigorated the sector regulator, the Nigerian Communications Commission (NCC) to supervise and guide the sector; set out a licensing process and rules and regulations and obligations for interconnection; and create an environment for market competition (FMI&NO, 2006b). The NCC successfully auctioned off the digital mobile license in 2001 and the second national operator in 2002. The robust growth observed in the sector has been linked to the policy reforms of liberalization, deregulation and privatization. Today, over 18 million people are connected compared to less than one million in 2000 (NPC, 2006). As at 2004 there were 36 Internet providers as against 18 in 1999 and 52 V-sat networks as against 25 in 1999 (FMI&NO, 2006b).

Housing

The Federal Government has undertaken policy reforms for improved housing development. The National Policy on Urban Development and Housing, 2002 is the outcome of Federal Government White Papers on the reports of the Presidential Committee on Urban Development and Housing in 2001 and the Panel on the Merger of Federal Mortgage Bank of Nigeria (FMBN) and Federal Mortgage Finance Limited in 2000. The policy is designed to make housing affordable through mortgage, enabling regulatory and legislative frameworks, mass housing production by the private sector and robust mortgage finance by developing a strong secondary mortgage finance mechanism. Key policy actions taken so far include:

- Transformation, restructuring and re-capitalization of the FMBN entailing raising the capital base from ₦100million to ₦5billion naira and under a new ownership structure - Federal Government (50%), Central Bank of Nigeria (30%) and Nigerian Social Insurance Trust Fund - (20%);
- Development of a new organizational structure within the FMBN for secondary mortgage and capital market operations;
- Legislation to transform the National Housing Fund (NHF) into a Trust Fund with a Board of Trustees;
- Enactment of regulatory laws; and
- Establishment of the Federal Ministry of Housing and Urban Development in 2003 to formulate housing policies (FMI&NO, 2006c).

Health

The challenge of health sector reforms is underscored by the fact that Nigeria has not made appreciable progress towards meeting the target of reducing by two-thirds the under five mortality rate by year 2015 (NPC, 2005). Several health sector reforms are being implemented by the Federal Government under the aegis of NEEDS. The Federal Ministry of Health has elaborated a health sector reform programme (HSRP), whose main thrust is to improve the stewardship role of government. Principal among the health reforms is the National Health Insurance Scheme (NHIS), which pools funds for health system development, as well as financial protection for the insured (NPC, 2005). The health reform strategy emphasizes the strengthening of curative and preventive primary health care services and enhancing the delivery of effective, efficient, good quality and affordable health services. Furthermore, there is the Integrated Child Survival and Development Strategic Framework and Plan of Action (2005-2009), designed to guide the implementation of child survival interventions for preventing death and improving healthy growth and development (NPC, 2005).

Overall, government health policy reforms are aimed at improving health policy impacts, health legislation, regulation, resource mobilization, coordination, monitoring and evaluation. These are geared to strengthen the national health system and improve its management, improve the availability and management of health resources (financial, human infrastructure), reduce the disease burden attributable to priority diseases and health problems, like malaria, tuberculosis, HIV/AIDS and reproductive health related illnesses. It is also intended to improve physical and financial access to good quality health services, increase consumers' awareness of their health rights and obligations and foster effective collaboration and partnership with all health actors. To meet these goals, the strategies encompass: capacity building at all levels of health care, improving the health management information system framework; structural adjustments to the existing health infrastructure and further development of new ones; strengthened disease control mechanisms; integration of the health sector; and ensuring community participation at all stages.

For example, government has established the National Primary Health Care Development Agency (NPHCDA) charged with the responsibility for the development of health care facilities at the local government (LG) level nationwide. The body has undertaken training programmes designed to upgrade the skills of PHC personnel in LGAs as well as village health workers and traditional birth attendants (TBAs). Awareness campaigns against common childhood diseases and HIV/AIDS have been intensified, just as the National Programme on Immunization (NPI) has been strengthened. Emphasis is also being given to curb the scourge of HIV/AIDS through the National Action Committee against HIV/AIDS (NACA) and the state-level counterpart: State Action Committee Against HIV/AIDS (SACA).

Education

Reforms in the education sector have emphasized policy, legal and regulatory changes and institutional strengthening. For instance, government has undertaken the University Basic Education (UBE) scheme which provides for compulsory free universal basic education for all children of primary and junior secondary schools age in Nigeria. The Child Rights Act of 2003 offers legislative framework to protect children and secure basic rights, including rights to education. Government is also committing greater funding for the development of educational infrastructure in order to cope with increased enrolments. There are also measures to enhance the autonomy of universities, monitor quality and standards in the universities and liberalize the education system, through encouraging private-owned educational institutions across all levels of education. Consequently, there has been a rise in the number of private-owned secondary schools and universities in the country. Nigeria faces the challenge to improve the relevance and impact of her educational institutions in the economy and society.

6.0 BECANS METHODS FOR ASSESSING INFRASTRUCTURE AND UTILITIES ACROSS STATES

From the viewpoint of competitiveness, infrastructure can be assessed in terms of quantity and quality. Canning (1998), for example, described an annual database of physical infrastructure stocks for a cross section of 152 countries for 1950-95. The database contains six measures

including kilometres of roads, kilometres of paved roads, kilometres of railway lines, number of telephones, number of telephone mainlines and KW of electricity generation capacity. Also, the study defines infrastructure quality in terms of percentage of roads in poor condition, percentage of local telephone calls that are unsuccessful and availability of diesel locomotives, percentage of electricity lost from the system.

BECANS evaluates the infrastructure indicators based on a combination of tailored methods and techniques as follows.

1. Search for and collation of data from relevant government ministries, departments and agencies. This involves gathering of data on various infrastructure indicators as provided by federal and state ministries, departments and agencies (MDAs) and verified through reliability and consistency checks.

2. Firm-level survey. This refers to collection of data from representative sample of firms. The data will elicit assessments of infrastructure adequacy, availability, affordability and satisfaction with the performance of public infrastructure and utilities. Firm-level (practitioner) assessments are vital to complement information from public sector agencies.

BECANS emphasises physical measures of infrastructure, not just public investment in infrastructure. The use of public investment to estimate infrastructure capital can raise potentially difficult problems. Summers and Heston (1991) and Pritchett (1996) observe that the same investment flows in different countries may have different effectiveness and impact in actually producing infrastructure improvements. The differentials can be attributed to the differences in the efficiency of government institutions as well as differences in the price of infrastructure capital. While the quantity of infrastructure may be important indicator, Hulten (1996) cautioned that management and efficient use of infrastructure may be more important than quantity. This underlines the need to correct for differences in quality of infrastructure in measuring physical infrastructure capital across countries.

The methodological principles and techniques applied by BECANS are similar to those used by IMD World Competitiveness Assessments. The WCY uses different types of data to evaluate quantifiable and qualitative indicators, separately. Statistical indicators are evaluated using data

from relevant government ministries, departments and agencies (MDAs). Such statistics are referred to as hard data. The IMD World Competitiveness Assessments cover 126 indicators,from hard data, representing about two-thirds of the overall rankings. Another set of data is obtained through Executive Opinion Survey (EOS) in order to complement statistics from government agencies. Such often-called soft data cover qualitative indicators capturing perceptions or opinions of businesspeople concerning competitiveness and business environment. BECANS survey of firms covers the various sectors (primary, manufacturing and services) of the Nigerian economy and firms of different sizes. The EOS is a popular tool for eliciting private sector feedback on business environment as it presents live and reality-based assessment by the practitioners who interact regularly with the business environment. In the IMD World Competitiveness Assessments, EOS provides data for the evaluation of 113 indicators, representing one-third of the total assessment.

BECANS analytical protocols are comparable also to those used by the IMD World Competitiveness Yearbook. Like the IMD WCY which divides competitiveness factors into sub-factors and each sub-factor into a range of variables, every BECANS benchmark category of business environment is divided into a set of measures, in turn, each measure is further broken down into a set of indicators. Hence, infrastructure and utilities benchmark is decomposed into the following measures and indicators (Table 16).

Table 16: BECANS Infrastructure and Utilities Measures and Indicators

Measure	Indicators
Energy	monthly/annual per capita electricity supply, number of hours of electricity supply per 8 hour working day, difference between actual and selling price of petroleum products and evidence of availability
Water	per capita water supply per day, average price of a cubic meter of privately supplied water and proportion of daily water requirement obtained from private supply
Access to information	number of post offices per 100,000 persons, number of courier service companies per 100,000 persons, tele-density for both fixed and mobile lines, number of licensed Internet service providers (ISPs), number of local television and radio transmitters in the state, number of copies of daily newspapers circulated per 1,000 persons and states ownership of functional websites
Transportation	road density, average cost of intra state transportation, total number of airports and air-strips and number of seaports and jetties (for coastal states)
Social infrastructure	primary school enrolment rate, pupil teacher ratio, and states actual expenditure on health education in the last one year, perception of waste management, frequency of waste collection and average cost of monthly waste disposal levy

Each indicator has a measuring scale in terms of options with assigned scores. Since the indicators have different measuring scales, there is need to standardize the scores on different indicators, that is, to develop a standard scale to compute the overall results. The standardized results will reflect more accurately the performance of the state in the final overall rankings, rankings on the four benchmarks, as well as rankings on the various measures.

In line with IMD WCY (2006), the standard deviation method is used to derive the standard scale. For each indicator, the standardized value is computed as follows.

$$(STDvalue)_i = \frac{x - \bar{x}}{S}$$

Where:

STDvalue =		standardized value
x	=	original value
$\bar{x}$	=	average value of the surveyed states
N	=	number of states
S	=	standard deviation

The standard values for all criteria under a particular measure are then transformed into a single value/score for the measure. Similarly, the transformed scores on the measures under a particular benchmark are processed to form a single value or score for the benchmark (benchmark score). The benchmark scores are then used to derive the overall scoreboard known as the BECANS Business Friendliness Index. Results obtained from the standardized values (STD) method are used to rank the states on the various indicators, benchmarks and overall scoreboard. A high STD value reflects good performance if the indicator is progressive, but bad performance if the indicator is of regressive nature.

7.0 CONCLUSION AND LESSONS

Adequate and reliable infrastructure is essential to congenial business environment, and the competitiveness of firms. Investments by governments in providing efficient public infrastructural facilities improve the investment environment. BECANS offers pooled information on business environment and competitiveness of Nigerian states. It provides objective assessment of benchmarks and trends which commend it as a credible and authoritative national and international reference on statistics and opinion data about conditions of doing business across the country.

While objective assessments are needed to guide business environment reforms, existing data is mainly aggregative at the national level. There is paucity of data on infrastructure element of business environment across the states of the country. The use of national aggregates to depict business environment is fraught with conceptual and empirical shortcomings. Acknowledging the need for within-country studies, the World Economic Forum's Global Competitiveness Report 2006-2007 qualifies its results as follows: "survey data have high within-country variances; until the reliability of survey responses improves with future educational efforts and improved sampling in these countries, their rankings should be interpreted with caution". This observation lends credence to BECANS which seeks to elicit within-country differences in business environment and competitiveness. BECANS is a direct response therefore to the need to develop disaggregated and decentralized indicators for capturing state-level factors affecting the overall investment climate. Moreover, the inclusion of infrastructure in BECANS benchmarks is based on economic literature, previous research and feedback from the business community, government agencies and academics, underscoring infrastructure's impact on the business environment in Nigeria. BECANS' methods and techniques will be revised and updated as new research and data become available and as Nigeria's political economy evolves.

Measuring and benchmarking infrastructure and utilities across states will provide evidence base for dialogue among critical state-level constituencies and build sustainable momentum for infrastructure reforms in the states.

As the federal, state and local governments endeavour to improve infrastructure and utilities, BECANS is well positioned to supply critical evidence and benchmarks that will promote national dialogue and stakeholder monitoring. Through BECANS, good practices and success stories of investment climate reforms by state governments can be identified and appreciated. Without doubt, the results and products emanating from BECANS will assist state governments to intensify efforts to provide the most efficient structures, institutions and policies that encourage the competitiveness of enterprises.

The Business Environment Reports will enlighten the business community in determining/appraising investment plans and assessing respective states for new investments and businesses. State governments will find BECANS indicators useful in benchmarking their policies against those of other states and to evaluate performance over time. The reports will show in what areas of business environment a state is strong or weak, and provide a scoreboard that allows comparisons among states. The research community will use the wealth of data and statistics to explain, analyse and forecast the nature, determinants and impacts of policies on business environment and competitiveness in the respective states.

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