Global Advanced Research Journal of Management and Business Studies (ISSN: 2315-5086) Vol. 1(10) pp. 353-369, November, 2012
Available online http://garj.org/garjbb/index.htm

Full Research Paper

Upscaling of sub-national transportation and communication infrastructure in Nigeria: A case study of Cross River State

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Accepted 28 November 2012

The paper reviews the efforts of Cross River State Government in upscaling transportation and communication Infrastructure in Nigeria. The study adopted survey research through mapping of transport and communication infrastructure in the 18 local government areas (LGAs) of Cross River State. The findings indicated that Cross River State has made significant efforts in infrastructural development but still suffers drags due to insufficient funds for infrastructural maintenance, upgrading and lack of infrastructural control measures in the transportation and communication sub-sectors. The study recommended public-private partnership and deregulation of certain infrastructure sectors by the federal government to support the state government efforts in infrastructural development. The paper opines that a more transparent budget implementation process matching the sector allocations at the federal level with the state and local government funding that will prevent institutionalized corruption is needed. Citizens' advocacy led by beneficiary/host communities to demand, monitor and evaluate transportation and communication infrastructural services should be promoted if the State's social infrastructure is to be upscaled and sustained.

Keywords: Upscaling, infrastructural maintenance, communication sub-sectors.

INTRODUCTION

Infrastructure basically brings to mind public facilities such as transport infrastructure (roads, railway lines, air transport, maritime/water ways, etc); power infrastructure (power generation stations, transmission lines, distribution networks, etc); telecommunications, geodetic control framework and similar physical structures or networks in which government has played a major role in their construction or ongoing support. "Information or Data infrastructure" also brings to mind the facilities, processes and standards which make information available to citizens, scientist, and other governmental agencies and bodies. Grossly underdeveloped and inefficient infrastructure and utilities have contributed significantly to the deplorable poverty situation in the country and Cross River State is not left out. Epileptic power supply and poor telecommunication services have exacerbated the problem of capacity underutilization and have eroded profitability of many enterprises in various sectors of the economy, leading to unemployment and disinvestments. As a result, economic and social deprivation has worsened considerably, Lack of access roads in the rural sector

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and the poor transportation system in general have made the movement of goods and services difficult and in some cases impossible, thus leading to economic wastes. Most producers have to supply their own water, generate their own electricity, and bear the relative high transport cost, all of which tend to escalate the cost of production and prices. Thus, expensive and unreliable infrastructure has eroded some of the comparative edge the country could have through cheap labour. In light of the foregoing, the Cross River State government is now focusing attention on the development of the energy, transportation, water, housing and communication sectors. Availability of electricity and water can radically improve income-generating opportunities for the poor and at the same time reduce women's workload thereby improving their lives. The development of rural roads and connection to a well – maintained highway system are essential for evacuation and marketing of agricultural produce and for provision of education, health and other services to the rural populace. Besides, a well – developed rural infrastructure will stem the rural urban drift which has heightened the proliferation of urban slums across the state. The objective of this paper is to examine the projects and programmes of Cross River State Government aimed at upscaling transportation and communication infrastructure in Nigeria. The rest of the paper is structured as follows: Section 2 presents a review and theoretical issues. The scope and methodology are presented in section 3. Section 4 discusses the findings on transportation and communication infrastructure in Cross River State. While the concluding remarks and recommendations are contained in Section 5.

THEORECTICAL ISSUES

Effects of transport infrastructure on growth and economic development

There has been an underlying concept that transport infrastructure has the effect of promoting economic growth. However, according to Vickerman (2001) the correlation between transport infrastructure and economic growth is not so stable. It is difficult to assume a single causal direction of these two factors, regarding the high possibility of mutual interaction. According to Banister and Berechman (2001), it is widely agreed that the economic growth happens mainly due to capital, labor, etc. and only partly relying on the infrastructure improvement. Transport acts as a necessary condition for the growth to occur. Although there is no doubt about the direct effect that the transport infrastructure improvement contributes to cost savings of productive sectors, such as time saving, whether there is spillover effect, i.e. additional benefit generated from the infrastructure is discussable.

On property value, according to Kofi Bofah (2012), the effects of highway infrastructure upon property values vary according to the type of construction that is already in place or currently being proposed. He stated that Roads that provide access to communities and business for "smart" growth will increase property values. On the other hand, Kofi (2012) mentioned that Roads that serve as barriers, or redirect traffic away from particular areas, will cause property values to fall.

On investment in transportation infrastructure, David Lewis (1993), opines that, Investment leads to economic growth by improving productivity, i.e., by developing ways to provide greater output from a given input of resources. He shows that some types of infrastructure investments (typically in selected airport and highway projects) have very large economic rates of return—i.e., their economic benefits are significantly larger than their costs (including the costs of adverse impacts). But there is little relationship between aggregate spending on infrastructure and economic growth. This should not be surprising, in that most infrastructure projects are promoted in terms of "distributional" effects — e.g., the number of jobs they will create in a specific locality. He explains that this kind of "job creation" seldom involves real economic growth; it simply redistributes resources from one use or location to another use or location.

The great trend of quantified analysis of this issue could possibly dates back to the work done by Aschauer (1989), who estimated the macro effect of infrastructure investment on American economy. And his work was followed by many researchers, e.g. Munnell (1990), Ford and Poret (1991), etc. In these first trials big estimate results were derived. And this was criticized by other researchers that the high elasticity means unrealistic rate of return of infrastructure (>1). (Gramlich 1994). Yet some explanation was made that a first shock in infrastructure could cause great effect, however, after the basic infrastructure was in place, new investment would not cause much effect. (Hulten 1996). Considering the oversized results of previous work, Holtz-Eakin (1994) argued that results were substantially modified when econometrically taking into account state or region-level unobserved effects. Assumptions were made that the unobserved effects are time invariant. And fixed-effects and first difference regression was employed to reexamine the data. Positive estimates found were significantly smaller than those of Aschauer. (Romp and Haan, 2005) However, there was argument that the first difference will destroy the long term relationship. (Duggal et.al.1999).

Transport Infrastructure and FDI

According to Boopen (2009), the primary benefits of

transport infrastructure development are increased accessibility and reduced transport cost and firms can benefit from these without actually contributing directly to the project. This is because of the 'free-riding' nature of these types of public capital. One can think of transport infrastructure as being indeed a consequential intermediate input in private production process. Its ample supply at no or low costs to users is therefore conjectured to have a positive impact on cost and productivity of firms. In fact when a good or service is provided by the government, it affects a firm's cost. Clearly, start-up costs are less when public infrastructure is provided and if the costs of materials are less due to improved transportation systems for instance. Moreover the usefulness of privately owned and operated cars and trucks depends on a network of roads and bridges. For example, better road designs, materials and highway maintenance can reduce the wear and tear on privately owned and operated vehicles, thus reducing transportation costs. The same is true for aircraft, which require airports, and for private ships and barges, which require ports and navigable waterways. Improvement in the quantity and quality of transport infrastructure can reduce the amount or cost of private inputs needed for a given level of output. The reduction in supply costs is true at the firm level and in the aggregate as total output per unit of input increases when government-provided infrastructure results in a more efficient use of existing resources. Thus, in the above context, it can be argued that transport and the general public capital may enhance the productivity of private inward and foreign direct capital and thus their level. Erenburg (1993) further argued that if these types of infrastructure were not publicly provided, the domestic private sector and Multinational Enterprises (MNEs) would operate less efficiently and attempts by them to provide their own networks would result in duplication and a waste of resources. Indeed recent empirical research suggests that public inputs have a non-negligible impact on the productivity and cost structure of private firms (Aschauer, 1989; Nadiri et. al., 1994; Morrison et. al., 1996; Haughwout, 2001). Nadiri et. al. (1994), for instance, estimated a cost elasticity estimates with respect to infrastructure capital to range from –0.11 to –0.21 depending on the industry. Despite these evidences, universal agreement regarding the contribution of public investment on private sector cost and productivity does not exist. Conflicting studies have found that public investment does not have a statistically significant direct impact on productivity in the private sector (Holtz-Eakin, 1994; Holtz- Eakin et. al., 1995). Even if such infrastructure has no direct role in the cost structure and productivity of private firms, ample evidence suggests that the indirect spillovers from agglomeration and clustering created by public infrastructure lower the costs of firms (Houghwout, 2001).

Communication Technologies in the Public Sector.

Pusey (1991) showed the impacts of value shift on policy, but did not unravel the complex interactions at the organisational and technological levels. Spillane (1994) conducted a survey of functional uses of language by senior and middle Australian public sector managers. She noted that problems at work are often attributed to 'poor communication', and that growth and development require language to promote discussion and debate. Also building on previously established categories, Spillane asked nearly 300 respondents to indicate on a questionnaire how often they used expressive, signalling, descriptive, prescriptive and argumentative communications with their work colleagues, using a Likert scale. She found relatively low levels of expressive language, consistent with studies that show Australians to be generally less emotional and anxious than other groups, particularly at the management level. Relatively low levels for commanding (although higher for senior managers) were also consistent with studies (from the 1970s) showing Australian managers have an egalitarian attitude to work. Non-participatory assumptions are embedded in the methodology of this study. Asking informants to nominate their communication styles based on somewhat abstract and value-laden terms is questionable, especially with no attempt to verify results by asking subordinates about their perceptions of managers' use of language. She implied, without current verification, that the Australian ethos somehow protects against the harsher consequences of hierarchical communications. This inhibited investigation of true communication patterns in the public sector workplace. Her approach also reinforced the assumption that managers are so unaccountable that their subordinates' opinions need not be sought. Spillane also assumed stability, and thus did not explore the actual and changing communication environment.

According to Jaro Berce (2012), ICT stimulates administrative efficiency. This automatically enhances the effectiveness of eGovernance.

Empirical Connections

Several papers focused on policy issues, trends and barriers to economic development, and the evolving transportation sector driven by e-commerce and globalization. Regan et al. (2000) discusses freight transportation and logistics trends and challenges in the new millennium. The paper identifies the key issues that affect freight planning and logistics.

Specific freight industry attitudes towards policies to reduce congestion are reported by Golob (2000) in an extensive survey of California-based carriers. Given that freight transportation plays a vital role in the economy of

the nation and of the state of California in particular, the 1998 California Transportation Plan for goods movement developed by the California Department of Transportation (Caltrans) identifies four constraints and deficiencies affecting freight transportation in the state: capacity and congestion, safety, geometry and surface conditions, and intermodal connections. In European Transport and Communication Networks, and Transport in a Unified Europe Banister et al. discuss the evolving European/EC networks together with policy responses to a very broad range of issues. The collection of papers covers trans-European networks, the effects of dissolution of borders and remaining barriers, private sector investment and network diversity. They conclude that there needs to be a European strategy for transport and communications infrastructure investment, agreed by all member states and neighboring countries. They suggest moving away from increasing the physical capacity and extent of the network to a broader range of options including means to limit growth in demand through pricing, regulation and management, to optimize freight fleets and multi-modal transport, and to explore private sectors' role in new developments.

Studies by and for the Federal Highway Administration Office of Policy Development have documented the effects of public highway capital on logistics system and commercial sector economic performance. In particular, Jacoby notes that Nadiri's 1996 study provides empirical evidence of the contribution of highway capital on the total output growth and productivity of 35 industry sectors of the US economy.

From the perspective of methodologies employed to assess the productivity impacts of transportation investments various approaches have been employed by researchers. For example, Bell (1994) reviews macroeconomic analyses of the linkages between transportation investments and economic performance. Xin (1996) uses an input/output model to study regional economic benefits of transportation system projects. Duffy-Deno models the relationship between capital stock and per capita income as an economic development indicator.

A recent comprehensive review by Khanam examined empirical work on the relationship between highway capital stock and the output and productivity of goods-producing industries. In the published literature, the bulk of which is based on US data, the impact of public capital stock of various types on the output and productivity of different economic sectors has been examined. These studies suggests that a positive relationship exists between public highway capital and private sector output and productivity; and the estimated size and significance of this relationship are very diverse and depend to a large extent on the approach followed. The results, expressed as output elasticities, range from 0.04 to 0.56; in some models, the estimates are statistically insignificant (from zero) or negative. The report compares results (output elasticities) obtained using Cobb-Douglas and Translog models.

Mohring's paper provides the theoretical foundation for the cost benefits analysis and micro-economic framework. It demonstrates the validity of using consumer surplus in estimating net benefits of transportation investments under very broad conditions. Forkenbrock (1990) discusses two types of benefits of corridor highway investments, reductions in transportation costs and increases in economic activity. Although road user benefits should form the basis for decisions of whether or not to invest public funds to upgrade highways, policy makers often wish to see estimates of economic development. The question of which benefits should be taken into account depends on the geographic perspective, whether regional (where transfers can occur), or national (where road user net benefits can be demonstrated). Economic development impacts to corridors were estimated using IMPLAN, an input/output model. This paper is consistent with the micro-economic framework. Regional economic impacts, if reported at all, should be seen as adjunct information. To include them depends primarily on the geographical perspective.

Blanchard (1996), explores relationships between highways and production costs through case studies, tactical logistics models, and theoretical treatments. The most compelling and general work is Mohring. (Case Studies) He also summarizes findings from Case studies carried out by KPMG for Transport Canada who have investigated, in a qualitative manner, the relationship between highways and logistics performance. McKinnon (1996) examines the relationship between traffic growth and production and changes in logistics practices in the UK. Traffic growth for trucking is shown to be the result of logistics management interactions between planning, supplier/distributor choices, production scheduling, and transport fleet management. He shows that traffic growth is not simply a function of GDP growth, but also of restructuring effects and just-in-time freight scheduling.

Root and Ahmed (1979) were among the first scholars to establish the positive role of the general infrastructure level on FDI. Schneider and Frey (1985) reexamined the issue for less developing countries and confirmed the results. In their influential paper, Wheeler and Mody (1992) employed a translog specification and uses a panel of 42 countries for the period 1982-1988 also interestingly reported that infrastructure quality (quality of transport, communications and energy infrastructure) exhibit a high degree of statistical significance and thus have large, positive impacts on investment. Loree and Guisinger (1995) constructed an indicator for infrastructure that encompassed measures such as highways, ports, communications and airports using principal components factor analysis and showed that

the level of infrastructure did influence the flow of US direct investment. Kinoshita (1998), using survey data to study the locational determinants of foreign direct investment (FDI) by Japanese manufacturing firms in seven Asian countries, subsequently reported that infrastructure encourage firms to invest in a certain country with a reported regression coefficient of 0.26. More recently Cheng and Kwan (2000) confirmed the above for the case of 29 Chinese regions over the period 1985-1995. Kumar (2001) used a composite index of infrastructure availability for the case of 66 countries and concluded that 'MNEs decision making pertaining to location of product mandates for global or regional markets sourcing is significantly influenced from infrastructure availability (with an infrastructure coefficient varying between 0.6 and 1.5) considerations and that infrastructure development should become an integral part of the strategy to attract FDI inflows in general'.

Studies investigating the role of infrastructure in FDI in the African context have been very scarce and among the rare one features. Asiedu (2002) analyzed 34 countries in sub-Saharan Africa over the period 1980-2000. Using the number of telephones per 1000 population to measure infrastructure development and controlling for classical FDI determinants she concluded that countries that improved their infrastructure were "rewarded" with more investments. In fact a one unit increase in infrastructure was estimated to lead to a 1.12 percent increase in FDI/GDP in the 1980s. Sekkat and Veganzones-Varoudakis (2004) estimated a correlation coefficient of 0.45 for the case of Middle East and North African (MENA) countries the 1990s with a lower correlation coefficient of 0.21 for the case of the manufacturing sector.

While most studies validated the importance of infrastructure for FDI, there are also other studies which failed to validate the hypothesis. For instance Quazi (2005), on the other hand, could not established positive and significant relationship between infrastructure and FDI using panel data from 1995-2000 for a sample of seven East Asian countries such as the number of telephones per 1,000 people. The authors however admitted that 'it is plausible that their proxy variables - the natural log of the number of telephones available per 1,000 people and the adult literacy rates, respectively, perhaps inadequately capture their true effects on FDI'.

Due to the lack of integrated planning of interregional transportation infrastructure, the development of interregional transportation system is restricted in China. Chaoyang Li (2011) and Yi Zhang (2007). Early study by Sylvie (2001) examined China data to find that the infrastructure might explain the regional disparities of economic development. In recent years, some related studies have also come forth in China. Xu et.al (2007) formulated a two-stage correlation between highway transport and economic development.

Transport and Communication Infrastructure in Cross River State

This section highlight the importance of both transport and communications infrastructure development to economic growth and the need for government and the private sector to jointly take a more strategic approach to tackling its dearth both in Cross River State and the Country at large. The infrastructure development is a key priority in the state's journey towards development. The infrastructure contributes to economic development by increasing productivity and providing amenities which enhance the quality of life (Akinyosoye, 2010). The former also maintains that the services generated from solid infrastructural base will translate to an increase in aggregate output. Investment in infrastructure services, such as transportation (roads, railway, maritime, air transport, motor parks, etc), electricity, etc are intermediate inputs into production. Infrastructure services tend to raise productivity of other factors. Infrastructure is often termed the "unpaid factor of production". Investment in infrastructure in a given location often attracts additional flow of resources. Both effects contribute to economic growth by stimulating aggregate supply as well as demand. However, these contributions on aggregate output, take time for the benefits to be realized. In a paper by Canning and Fay (1993), it was concluded that developing countries showed a high rate of return on transport infrastructure comparable to those of developed countries. From the above, the outputs of infrastructure to economic growth are wide and far reaching that their impacts should never be underestimated. Ability to foster infrastructure development is best tackled at a strategic level from where the necessary energy lies to drive its implementation.

SCOPE AND METHODOLOGY

This study covers the geographical and political region officially recognized as Cross River State. The State lies between latitude $4^0$28'and $6^0$55'North of the Equator and longitude 7^0 50'and 9^0 28' East of the Greenwich meridian. It shares common boundaries with the Republic of Cameroun in the East, Benue State in the North, Ebonyi and Abia States in the West, Akwa Ibom State in the South West and the Atlantic Ocean in the South. Its international boundaries make it a security hotspot and an axis of international trade. Cross River State is located within the tropical rainforest belt of Nigeria. The State is strategically located, between Eastern and Northern parts of Nigeria, offering daily road

Table 1. Data and GIS Process Matrix

Data	Description	Data Type	Data Model	Technique	Output
DEM	Shuttle radar topographic mission grid of height values 30 meters resolution. Base map.1:25,000 topographic map	Raster	Raster	Contouring	Contour (topography map)shape file base map
Road network	Classified road network map.	Vector	Line shape file	Digitisation symbology Calculate geometry	Classified roads
Settlement data	Annotated settlement data	Vector	Point shape file	Digitisation and symbology	Settlement
Nigerian national administrative data delineating LGA boundaries	LGA boundaries	Vector	Polygon shape file	Digitisation symbology	LGA and state boundaries base map.
Geologic and hydro-geologic data	Geologic and hydro-geologic boundaries (Base map)	Vector	Polygon shape file	Digitisation symbology	Geologic and hydro-geologic data.

Source: Authors

Figure 1. Extension of the Ndidem Usang Iso Road to link the Ikom/Calabar Highway

Table 2: Recent Capital Expenditure on Roads and Bridges in Cross River State

MDA	FISCAL YEAR	APPROVED BUDGET	ACTUAL EXPENDITURE	% OF FUNDS ACCESSED
Ministry of Works	2008	15,233,328,170	12,816,144,692	84.13
Rural Dev Agency	2008	6,220,741,240	5,135,561,240	82.56
Ministry of Works	2009	5,262,929,597	3,392,835,673	64
Rural Dev Agency	2009	6,612,649,073	6,518,907,655	99

Source: SPC (2009), State Development Status Report, Vol. 2.

trips to Cameroun and sea routes to Equatorial Guinea, Gabon etc. The State, as it is presently constituted, has a land area measuring about 23,000 square kilometers, with a population density of 20 per square kilometer. The population of Cross River State is estimated at 2.89 million persons (2006) male - 50.03% (1,195,520) and females – 49.97% (1,194,293). The research data collection was through mapping and digitization of transport and communication infrastructure in the 18 local government areas (LGAs) of Cross River State, designed to meet its overall objectives through: user needs assessment, establishment of a well defined approach, creation of a geo-database and data integration, digitization and custom map production**.** (See table 1 for data and GIS process matrix).

The research followed a well articulated strategy. Several basic concepts guided the planning from the outset. The survey design adopted the Decision Support Systems (DSS) comprising the integrated tools of databases, models, GIS, and expert systems. The success of DSS applications is closely related to the quantity and quality of available information on

economic, social and environmental aspects of roads and other transport infrastructure and communication network.

A team is assigned to each LGA. Each team comprised a Team leader, a GIS expert, LGA PRS Officer and 2 Enumerators, making 5 persons per team. The Survey for roads and other transport infrastructure and communication infrastructure covered one senatorial district at a time and occurred simultaneously in all the LGAs within each of the senatorial districts. Team leaders of each team were directly dedicated to mapping of roads while other team members were involved in the mapping of other transport and communication infrastructure.

State level Supervisors provided ongoing monitoring and support during data collection, while combining their tasks with state-level inquiry and data acquisition. Data was collated at the various ward levels and compiled at the LGA level, and the entries were made on pre-designed GIS-based templates and interfaces to allow for full geospatial representation of all components of the emerging data and further data management. Data Analysis and presentation was done using a combination of ESRI ArcGIS software and SPSS Software. It is expected that the emerging information will be made useful to the extent of commencement of a comprehensive service gap analysis based on existing standard parameters as well as indicators and thresholds for measurement; this will be done using the gap analysis matrix

DISCUSSION

Transport Infrastructure in Cross River State

Findings of this survey are herein presented as shown in the sections and subsections below. The presentation of findings is supported by GIS maps and tables showing the state of infrastructural development and ongoing efforts at revamping the transport and communications sector to boost industrial and socio-economic development in Cross River State.

Nigeria has a total road network of about 195,000 km. This network constitutes a combination of Federal, State and Local Government roads. State roads account for 30,900 km (16%) while the Local Government road system comprises approximately 132,000 km (68%). As provided in the Constitution of Nigeria, the three levels of Government have independent responsibilities for the planning, construction, financing and maintenance of their respective road networks.

Cross River State (CRS) has a total road network of about 6,100 km, of which 56% are unpaved and most of these are in poor condition. More than 80% of the CRS road network is managed by the States and Local Governments and the remaining 20% by the Federal Government. Insufficient funds for maintenance and lack of axle load control measures are the main reasons for the serious deterioration of the road network. This in turn led to increased expenditure requirements for maintenance and rehabilitation.

Classification and Coverage of Road Networks in the State

The existing transport infrastructure in Cross River State for obvious reasons is affecting the economic performance and competitiveness. The transport infrastructure in the State consists of the following modes: Road transportation, maritime/shipping and Air transportation. However, recent efforts by the State Government to introduce the Calabar Monorail, brings to bear the fourth transport infrastructure mode; Rail transportation. Bulk of cargo transported across the State makes use of the road system.

Rural Road Access

A total of 30 roads of about 530 kilometres with 19 bridges of over 730 metres span spread across 16 of the 18 local government areas are ongoing at a total completion level of 80 percent on the road projects. Some of these road projects have been commissioned, with the expectation that all the road projects will be completed by the fourth quarter of 2011. The total cost of the road project is put at over N27 billion. The award of contracts and on-going construction of 29 asphalt roads covering a distance of 430.8kms across 16 LGAs of the State at a total cost of about 25.5 billion naira is recorded as the highlights of the achievements of the rural development agency. These roads are said to cut across 115 communities in 16 LGAs.

The following rural roads have been completed and commissioned by the Governor under this very ambitious Programme:-

i) Ugboro/Ijibor/Imaje Road (8.4 km), Bekwarra Local Government Area.

ii) Iyamoyong – Iyamitet Road (14.2 km) Obubra Local Government Area.

iii) Inyima – Assiga Road (9.1 km) and Yakurr (30 metre Span Bridge) Yakurr Local Government Area.

iv) Itigidi – Adadama Road (10.6 km, with spurs to Etigeve and Isong Inyang) Abi Local Government Area.

v) Betukwel – Ohong – Bedia – Ibong – Okorshie Road (9.5 km), Obudu Local Government Area.

vi) Ipollo – Ogba – Ijibollo, Apiapumtet Road, Yala/Obubra (23 km with 45 metre span Bridge) Obubra Local Government Area.

vii) Ballop – Bendeghe – Afi – Bellip, Akparabong –

Table 3: Availability of Improved Water Facilities in Motor Parks in Cross River State

LGA	Name of Motor Park	Facility Type
Akamkpa	Old Netim Lorry Park	**PSP**
Boki	Okundi Market	HPBH
Calabar South	Cross Lines	MBH
Calabar South	Etim Edem	MBH
Calabar South	Edo Line	PSP
Calabar Municipal	Dangote Transport Division	MBH
Calabar Municipal	EcoMarine, Esuk Utan	MBH
Calabar Municipal	Calculux, Eta Agbor	PSP
Yala	Okuku Motor Park, Okuku	MBH

Source: Fieldwork

Table 4: Availability of Latrines in Motor Parks in Cross River State

LGA	Name of Motor Park	Latrine Type	No. of Compartments
Akamkpa	UNICEM Lorry Park	Cistern Flush	6
Akamkpa	Old Netim Lorry Park	VIP Latrine	
Calabar South	Etim Edem	Cistern Flush	6
Calabar South	Edo Line	Cistern Flush	3
Calabar Municipal	Dangote Transport Division	VIP Latrine	6
Calabar Municipal	EcoMarine, Esuk Utan	VIP Latrine	10
Calabar Municipal	Calculux, Eta Agbor	Cistern Flush	6
Ikom	Ikom Main Park, Bokomo	VIP Latrine	6
Ikom	Ikom Mass Transit, Etayip	VIP Latrine	4
Ogoja	Young Shall Grow, Igoli	Cistern Flush	2
Ogoja	New Nyanya, Abakpa	Cistern Flush	1
Ogoja	Ogoja Council Park	Pour Flush	2
Ogoja	Ogoja Central Park, Mission Road	Pour Flush	2
Yala	Okuku Motor Park, Okuku	Pit Latrine	5

Source: Fieldwork

Opu Road, Ikom Local Government Area.
viii) Ugep – Idomi Road

Federal and Urban Road Networks

The Federal trunk roads are the principle vectors of the system and have a total length of 32,100 km (16%) of which the majority is paved. There exist four Principal Federal road networks in the State including:
1) The Calabar – Ikom – Vandeikya Highway linking Cross River and Benue State;
2) The Odukpani – Ikot Ekpene Highway linking Cross River State with the South western axis of the Nation through Akwa Ibom State;
3) The Ugep – Itigidi – Abakaliki Highway linking the state to the Eastern States; and,
4) The Ogoja – Abakaliki Road linking northern Cross River with the South East.

It is pertinent to note that the main trunk road, the Calabar – Ikom – Vandeikya Highway is still in a serious state of disrepair despite several efforts at rebuilding this road. Although work is ongoing, there is a notable lag in the pace at which construction works are being undertaken. Recent observations on the Odukpani – Ikot Ekpene Highway reveals a very high level of decay which has caused untold hardship on commuters on a daily basis. This road has particularly been affected by the high traffic influx by heavy duty trucks conveying laterites and rock aggregates from quarry sites in parts of Akamkpa LGA. Two of the Federal Highways: the Ugep – Itigidi – Abakaliki Highway and Ogoja – Abakaliki Road are in their advanced stages of completion.

The two urban local governments (Calabar Municipal and Calabar South) and the urban towns of Ugep, Ikom, Ogoja and Obudu, have no projects of the agency as the planning, construction and maintenance of these set of urban networks are the statutory responsibilities of the State Ministry of Works.

The Urban centers in the State witnessed tremendous transformation in terms of the development of road

Table 5. Distribution of Telecommunication Masts in Cross River State

LGA	No. of Masts	Percent	Valid Percent	Cumulative Percent
Abi	6	2	2	2
Akamkpa	12	4.1	4.1	6.1
Akpabuyo	2	0.7	0.7	6.8
Bakassi	5	1.7	1.7	8.5
Bekwara	7	2.4	2.4	10.9
Biase	13	4.4	4.4	15.3
Boki	8	2.7	2.7	18
Calabar Municipality	65	22.1	22.1	40.1
Calabar South	36	12.2	12.2	52.4
Etung	7	2.4	2.4	54.8
Ikom	34	11.6	11.6	66.3
Obanliku	5	1.7	1.7	68
Obubra	17	5.8	5.8	73.8
Obudu	9	3.1	3.1	76.9
Odukpani	20	6.8	6.8	83.7
Ogoja	20	6.8	6.8	90.5
Yakurr	19	6.5	6.5	96.9
Yala	9	3.1	3.1	100
Total	**294**	**100**	**100**	

Source: Fieldwork

Table 6. Telecom Service Providers and Number of Telecommunications Masts Installed

Service Provider	Frequency	Percent	Valid Percent	Cumulative Percent
AIRTEL	70	23.8	23.8	23.8
ETISALAT	21	7.1	7.1	31
GLOBACOM	72	24.5	24.5	55.4
MTN	112	38.1	38.1	93.5
NITEL	9	3.1	3.1	96.6
OTHERS	3	1	1	97.6
STARCOMMS	7	2.4	2.4	100
Total	**294**	**100**	**100**	

Source: Fieldwork

infrastructure and other transport infrastructure and transport institutions. The past one decade (2000 – 2010) could be rightly described as the decade of transport transformation in Cross River State as this sector witnessed unprecedented provision of road and other transport infrastructure in the state including policy and institutional development in support of the transformation of the transport sector. Over 70% of the urban road networks in Calabar, Ugep, Ikom, Ogoja and Obudu were built up while existing roads were upgraded and others rehabilitated to conform to the desired outlook of these urban centers and in line with the vision of making the State a preferred destination for both investors and tourists in Nigeria.

The Governor Imoke administration has ensured that the urban centres in the State remain the most livable in the country by sustaining the urban renewal programme in Calabar, Ugep, Ikom, Ogoja and Obudu. Calabar South is now easily accessible with over 44 roads are being reconstructed in that Local Government under the Governor Liyel Imoke's Administration. The extension of the Ndidem Usang Iso Road to link the Ikom/Calabar Highway has been completed, as well as the dualization of the City Gate Road to Tinapa and the access road to the proposed Calabar International Market. The Idundu Bridge has also been completed, linking Calabar to Akpabuyo through MCC Road.

Road Planning and Financing

The Cross River State Economic Empowerment and Development Strategy (CR-SEEDS) have been developed by the State Planning Commission to

Table 7a. Functional Telecom masts in Cross River

	SERVICE PROVIDER							Total
NAME OF LGA	**Airtel**	**Etisalat**	**Globacom**	**MTN**	**NITEL**	**Others**	**Starcoms**	
Abi	1	0	1	2		0	0	4
Akamkpa	2	0	5	4		0	0	11
Akpabuyo	2	0	0	0		0	0	2
Bakassi	1	0	1	3		0	0	5
Bekwarra	1	1	2	2		0	0	6
Biase	4	0	2	5		0	0	11
Boki	2	1	2	3		0	0	8
Calabar Municipal	7	8	14	28		0	4	61
Calabar South	7	1	6	17		1	3	35
Etung	1	0	4	2		0	0	7
Ikom	9	2	9	13		0	0	33
Obanliku	1	0	2	2		0	0	5
Obubra	7	0	3	4		1	0	15
Obudu	1	0	4	2		0	0	7
Odukpani	4	1	5	9		0	0	19
Ogoja	4	2	5	5		0	0	16
Yakurr	5	0	5	8		0	0	18
Yala	6	0	2	1		0	0	9
Total	**65**	**16**	**72**	**110**		**2**	**7**	**272**

Source: Fieldwork

Table 7b: Non-Functional Telecom masts in Cross River

	SERVICE PROVIDER							Total
NAME OF LGA	**Airtel**	**Etisalat**	**Globacom**	**MTN**	**NITEL**	**Others**	**Starcoms**	
Abi	0	0		0	1			1
Akamkpa	0	0		0	1			1
Bekwarra	0	1		0	0			1
Biase	0	0		0	2			2
Calabar Municipal	1	0		0	1			2
Ikom	0	1		0	0			1
Obubra	0	0		0	2			2
Obudu	2	0		0	0			2
Odukpani	1	0		0	0			1
Ogoja	1	0		1	1			3
Yakurr	0	0		0	1			1
Total	**5**	**2**		**1**	**9**			**17**

Source: Fieldwork

Table 7c: Telecom masts Under Construction

	SERVICE PROVIDER							Total
NAME OF LGA	**Airtel**	**Etisalat**	**Globacom**	**MTN**	**NITEL**	**Others**	**Starcoms**	
Abi		***1***				***0***		***1***
Calabar Municipal		***1***				***1***		***2***
Ogoja		***1***				***0***		***1***
Total		***3***				***1***		***4***

Source: Fieldwork

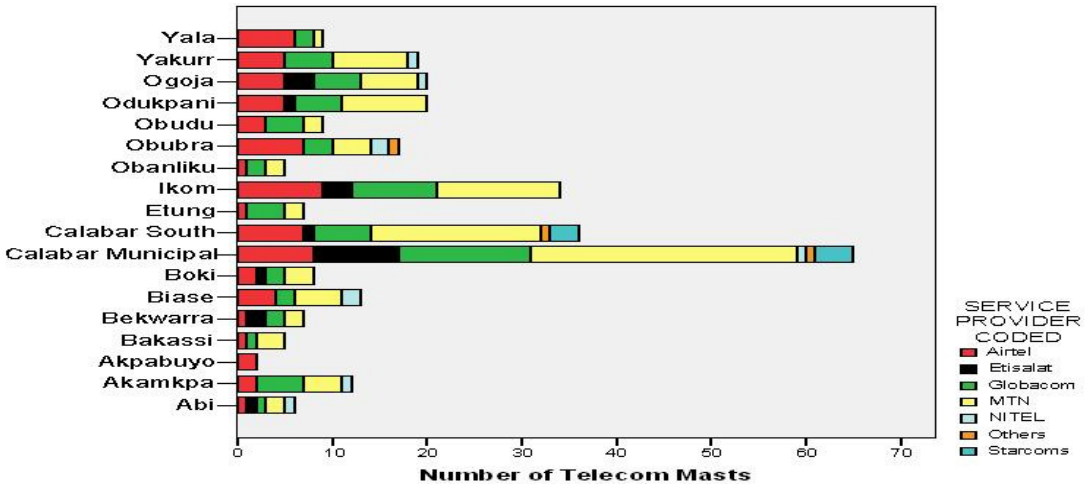

Figure 2: Telecommunication Coverage across the 18 LGAs of Cross River State

complement the National Economic Empowerment and Development Strategy (NEEDS). The CR-SEEDS has set specific targets for road sector development. The Federal Ministry of Transport (FMT's) responsibilities include the planning and coordination of the classified Federal Road Network, while the State Ministry of Works (SMW) is responsible for the State Road Networks and the 18 Local Government Councils for the Local Road Networks.

Road Construction, rehabilitation and maintenance is mainly financed out of the capital budgets at the Federal, State and Local Government levels. In Cross River, the State expenditures on capital works for roads were NGN 1.36 billion (USD 10.2 million) in 2005 or 93% of total expenditures on roads. Between 2008 and 2009, the state's budget and capital expenditures on roads increased by NGN16.54 billion. In the year 2009, the State's total capital expenditure on roads and bridges was NGN 9.91 billion as shown in the table 2 below.

In a bid to overcoming the numerous challenges associated with road transport congestion and environmental pollution associated with most urban towns, a well organized public transportation system, structured to match the tourism prospects of the State has been introduced by the Imoke administration. To this end, the use of motorcycle as a means of public transportation was banned in the State capital, while a modern fleet of taxis and buses were introduced. Due to the need to provide institutional capacities for ongoing planning, law enforcement and implementation of the emerging systems, the State Government established the Department of Public Transport (DOPT).

Status of Maritime and Inland Water Ways in the State

Today, Nigeria has 13 major ports and 11 oil terminals. The two largest ports are Lagos (Apapa) and Port-Harcourt (Onne). Two (Onne and Calabar) of the 13 ports include a free trade zone. Their total cargo handling capacity is over 35 million tons. With an inland waterway system of approximately 8,600 km (of which about 3,000 km are navigable) and an extensive coastline of almost 450 km, there is great potential for the movement of goods from the coast to the hinterland by water transport in some States. The current strategy for inland waterways focuses on dredging of the River Niger and rehabilitation of river ports. The Nigeria Inland Waterways Network is reputed to be one of the longest in the world spanning over 3000 kilometres. It consists of 50 Rivers, including Rivers Niger, Benue, Cross River, Kaduna, Imo, Ogun, Sokoto and Lakes in Oguta and Chad. However, this great transport resource is still underutilized. Development and utilization of Inland Waterways in Nigeria will improve logistics to a large extent, which explains recent efforts by the government to dredge the River Niger by the Nigeria Inland Waterways Authority.

The port of Calabar is 83 km up the Cross River in the estuary and has an array of modern facilities for export and import trade, which include 860 m quay length and 35,000 sq.m of stacking area. In addition, it has a direct road link with the middle belt and the north-eastern parts of the country. The Cross River, due to insufficient draught for barges in the dry season, has little potential to become an important waterway for the transport of agricultural products.Data made available from the study shows a total of 21 Water Ways connecting 183 communities and 76 Markets. 7 of the waterways are plied by Canoes, 2 waterways are plied by Engine Boats while 10 waterways are plied by Speed boats. Approximately 80% of respondents interviewed along various waterways described accessibility on these waterways as being **"difficult"** and attributed their assessment to: winding and narrowness of routes which are most times tortuous and rocky with so much accumulation of sand hills along waterways and posing a

threat to lives and property transported along these routes. Others attributed the difficulties on these routes to the lack of modern transport infrastructure on these routes as they are most times constrained to the use of canoes and berated engine boats. Speed boats and Ferries are obviously lacking on these routes and commuters are subjected to very unpleasant situations during rains; when they are forced to travel long distances under the rains and often struggling with protecting their agricultural produce from rains.

Coverage and Distribution of Motor Parks

Findings from this survey shows that there are a total of 57 motor parks (public and private) in Cross River State. Out of this number, only 9 motor parks are provided with improved water supply facilities; this also implies that commuters and operators of parks in 48 motor parks do not have access to water within the periods they make use of these parks (see Table 3). Latrines are only found in 14 motor parks (%) of a total of 57 motor parks in the State. This has a negative effect on the strong drive and political will to keep Cross River State as the cleanest and most environmental friendly State in Nigeria. The likelihood of passengers practicing open defecation around the vicinities of these motor parks is not ruled out (see Table 4).

The Proposed Calabar Mono-Rail

The problems of Nigerian Railways are many including insufficient locomotives, rolling stock, poor working capital, obsolete signalling and communication equipment, narrow gauge system, poor financial and managerial support base and lack of political will. Government needs to re-launch the 25year strategic rail vision for Nigeria, change from narrow to standard gauge, strengthen the curves and gradients of the existing narrow gauge and professionalize the management structure. In spite of concerted efforts at ensuring prompt and timely maintenance of assets, the major constraint of effective infrastructural assets management in the Nigerian Railway Corporation remains inadequate funding and neglect by successive governments resulting in; Poor infrastructural assets management, Delays in accident clearance resulting from non-availability of needed materials and tools, Poor mechanization of track maintenance, Inadequate number of inspection vehicles, Delay in the rehabilitation of washout sites, Lack of adequate maintenance of spare parts for locomotives and rolling stocks. In a bid to overcoming these numerous challenges associated with rail transport in Nigeria, Cross River State Government has started with the construction of a *monorail* in *Calabar*. The 12.9 km rail will link Tinapa with the Margaret Ekpo International Airport.

The project is expected to reduce pressure on the city's roads as well as improve transportation in the capital in general. According to government officials, the Calabar Monorail will be completed in 18 months. An extension to Anantigha in Calabar South is also planned for later. Funding for the US$36m monorail has been provided by Egypt based Afrixem Bank and the project is said to provide investment returns within 4 to 5 years. Besides boosting tourism in the state, the Calabar Monorail will provide many employment opportunities as well as increase economic development in the region.

Air Transport Infrastructure

Nigerian aviation is overseen by the Federal Airport Authority of Nigeria, the National Aviation Management Agency and the National Civil Aviation Authority. There are three international hubs (Lagos, Kano and Abuja) and 34 airports with paved runways. One of such is the Margaret Ekpo Airport in Calabar. The Nigerian aviation industry has experienced steady growth since the gradual liberalization of the industry by Government evidenced by the growing number of airline operators, increased movement of passengers and cargo as well as increased utilization of airport facilities. Major Airlines operating at the Margaret Ekpo Airport include Arik and Aero Contractor.

Communication Infrastructure in Cross River State

Findings of this survey are herein presented in this section and subsections below. The presentation of findings is supported by GIS maps and tables showing the state of infrastructural development and ongoing efforts at revamping the communications sector in Cross River State as one of the critical inputs required for rapid socio-economic development in the State and the Country at large. Telecommunication infrastructure remains one of the major issues affecting technology deployment required for growth and development in Nigeria. There has however, been massive improvement in infrastructure over the past few years. Nigeria has certainly left the telecomm state where there were only a few dial-up e-mail providers and Internet service providers (ISPs) and when Nigerian Telecommunications Limited (NITEL) was the only Telecommunications operator. It was a dark era characterized by slow Internet links, poor service, high cost, lack of infrastructure and an unprogressive telecoms monopoly. Deregulation of the telecommunications sector led to the introduction of major Global System of Mobile Communications (GSM),

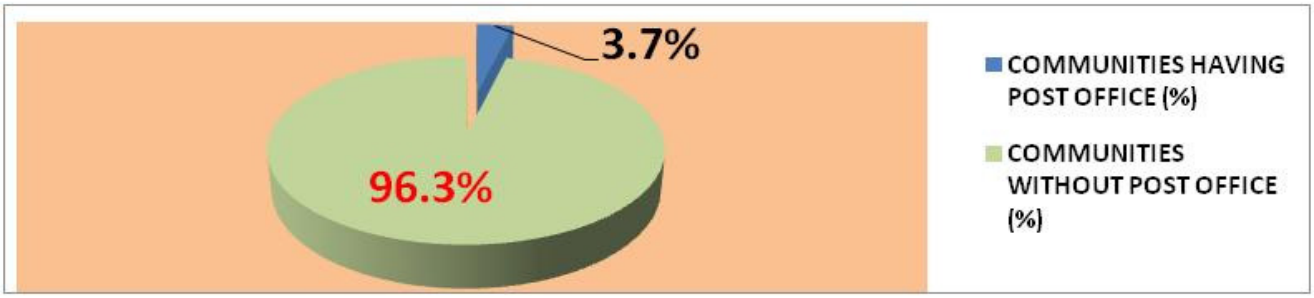

Figure 3. Availability of Post Offices in communities

Table 8: Availability of Post Offices per LGA
(Disparities in the distribution of the few available Post Offices within each Local Government Area of the State.)

		AVAILABILITY OF POST OFFICE		
LGA		YES	NO	Total
ABI	Count	7	17	24
	% within LGA	29.2%	70.8%	100.0%
AKAMKPA	Count	2	68	70
	% within LGA	2.9%	97.1%	100.0%
AKPABUYO	Count	1	98	99
	% within LGA	1.0%	99.0%	100.0%
BAKASSI	Count	0	22	22
	% within LGA	0.0%	100.0%	100.0%
BEKWARRA	Count	1	38	39
	% within LGA	2.6%	97.4%	100.0%
BIASE	Count	6	55	61
	% within LGA	9.8%	90.2%	100.0%
BOKI	Count	3	109	112
	% within LGA	2.7%	97.3%	100.0%
CALABAR MUNICIPAL	Count	3	27	30
	% within LGA	10.0%	90.0%	100.0%
CALABAR SOUTH	Count	1	9	10
	% within LGA	10.0%	90.0%	100.0%
ETUNG	Count	0	26	26
	% within LGA	0.0%	100.0%	100.0%
IKOM	Count	3	95	98
	% within LGA	3.1%	96.9%	100.0%
OBANLIKU	Count	1	97	98
	% within LGA	1.0%	99.0%	100.0%
OBUBRA	Count	1	93	94
	% within LGA	1.1%	98.9%	100.0%
OBUDU	Count	4	49	53
	% within LGA	7.5%	92.5%	100.0%
ODUKPANI	Count	1	113	114
	% within LGA	0.9%	99.1%	100.0%
OGOJA	Count	4	80	84
	% within LGA	4.8%	95.2%	100.0%
YAKURR	Count	4	31	35
	% within LGA	11.4%	88.6%	100.0%
YALA	Count	3	134	137
	% within LGA	2.2%	97.8%	100.0%
	Count	45	1,161	1,206
	% within LGA	3.7%	96.3%	100.0%

Source: Fieldwork

mobile phone providers: MTN Nigeria, Airtel, Globacom, Visafone, Etisalat, and Mtel. According to NCC, deregulated telecommunications services include:

a) "Sales and Installation of Terminal equipment (Mobile Cellular Phones, Satellite Communication and Switching equipments etc);
b) Public Payphone Services;
c) Internet Services;
d) Prepaid Calling Card Services;
e) Community Telephony with exchanges;
f) Paging Services;
g) Trunk and 2-Way Radio Network Services;
h) Fixed Telephony Services, employing cable and Radio;
i) Satellite Network Services (e.g. Domestic VSAT networks);
j) Repairs & Maintenance of telecommunications facilities;
k) Cabling services;
l) Tele-Centers/Cyber Cafes.

The telecomms boom has resulted in greater usage of Internet Technology, growth and availability of cyber cafés, increased Internet provision by ISPs and PTOs, increased communications services (mobile telephony, e-mail, VOIP), reduction of Internet costs, online information gathering and research, e-learning, Internet business opportunities, online advertising opportunities as well as developments in e-banking. Growth has been phenomenal because Nigeria's size is massive and Nigerians have been starved of such access for decades.

Under-served rural areas

The Nigerian Communications Act 2003 established a Universal Service Provision Fund (USPF) to provide subsidy for service delivery in high cost areas especially the rural and under-served parts of the country. The Board of USPF was inaugurated in July 2006. To ensure that telecommunication services are extended to rural / under-served / un-served areas, the NCC has supported and promoted a number of initiatives through the Fund including:

- Community Communications Center (CCC): provide a public calling center, cybercafé and information and communications technology (ICT) training courses on a shared basis, as well as serve as a platform to wirelessly extend Internet access to surrounding un-served communities.
- Schools, Universities Access Program to Digital Life Style (SUAP2DLS): provide Broadband connectivity to schools and universities and neighboring communities.
- Rural Broadband Internet (RUBI) Access: award subsidies to successful applicants to provide wholesale Internet bandwidth to CCC, Cybercafés, Rural Internet Service Providers (RISE), Institutions, etc.
- Accelerated Mobile Phone Expansion (AMPE) Project: encourage network roll-out in at least five un-served towns/villages in each of the 774 Local Government Areas (LGA) by taking advantage of the ease in deployment of mobile services
- Backbone Transmission Infrastructures: provide voice and data access points in LGA headquarters with backbone connectivity.

The Federal Government set up the Rural Telephony Project in 2006 and pursued various policies aimed at bridging the digital divide and achieving optimum penetration of the rural areas. These include the rural telephony project, Wire Nigeria project, the Nigerian telemedicine initiative, Public Service Network initiative, Internet Exchange Point initiative, the development of a keyboard for the three main Nigerian languages, and the establishment of the Universal access fund. They are all geared towards ensuring ICT access to every nook and cranny of the country. In line with this, the government has signed a US$200 million partnership agreement with three Chinese companies, ZTE, Alcatel Shanghai Bell and Huawei Technologies, for the second phase of its rural penetration drive in 2006. The main aim of the project is the provision of telecommunications infrastructure in all the 343 local government areas with telephone facilities through the National Rural Telephony project.

Coverage and Distribution of Telecommunication Masts

There are a total of 294 telecom masts in Cross River State. Analysis of ownership of masts based on our fieldwork show that the 294 masts are operated by 6 major operators as follows:

- 70 Masts owned by Airtel;
- 21 Masts owned by Etisalat;
- 72 Masts operated by Globacom ;
- 112 Masts operated by MTN;
- 9 Masts owned by NITEL;
- 7 Masts owned by Starcoms; and
- 3 unidentified Masts

Functionality analysis shows that:

- All the 9 NITEL masts are non-functional
- 5 Airtel Masts located in Calabar (1 no.), Obudu (2 no.) and 1 each in Odukpani and Ogoja are non functional
- 2 Etisalat Masts in Ikom and Bekwara are non-functional
- 1 MTN Mast in Ogoja is not functional

- 3 Etisalat Masts in Calabar, Abi and Ogoja are under construction.

The Sate's Medium-wave and Frequency modulation broadcasting has its stations in Calabar, Ikom and Ogoja. The Cross River Broadcasting Corporation (CRBC) equally operates a TV Station situated in Calabar, the State's capital. The State equally plays host to the Nigerian Television Authority station designated "NTA Channel 9, Calabar". The state-owned television, the Cross River Broadcasting Corporation (CRBC-TV), and a private newspaper, The Defender constitutes major channels for mass communication and providing access to information in the State. Also available in the State is the Federal Radio Corporation of Nigeria (FRCN) Station in Calabar, which had long awaited commissioning by the Federal Ministry of Information and Communications.

Major print media infrastructure includes: a Newspaper Corporation that prints a local daily, the Nigerian Chronicle and the Sunday Chronicle; a private newspaper, The Media is published by Media Communications;

The government has almost completed the development, deployment and utilization of modern information and communication technology in all the Local Government Areas in the State, including a Metropolitan Area Network that links all the State's MDAs. A special purpose vehicle, the "Cross River State Network Company Limited" is driving the ICT programme of the government. This vehicle is powered by the Consortium of CISCO and NEXTZON. Every bit of government business is e-governance compliant. Highlights of efforts of the current Administration on the development of communications infrastructure is the installation of new Ultra Modern UHF Radio/Television Digital Transmitting Systems four major locations including: Calabar, Odukpani, Ikom and Obudu Ranch station, respectively to guarantee universal coverage of the State.

The Cross River State Government has partnered with Interswitch to develop a statewide identity management and e-payment backbone, which will position Calabar as the first smart city in Nigeria, a development Government describes as a new way of doing business. The infrastructure is being deployed via Smartgov. CRSG Limited, a joint venture company between Interswitch and Cross River State Government will oversee the design, deployment, management and operations of the statewide identity management and e-payment backbone infrastructure. The project aims to make Cross River state the first Smart State in Nigeria, which will in turn make the state capital, Calabar, the first Smart City in Nigeria. Generally, a city is defined as 'Smart' when investments in human and social capital, traditional and modern communication infrastructure fuel sustainable economic development. Smartgov will enable the state government automated processes such as revenue collections, salary payments of civil servants and contractors thereby making government activities transparent. The project is expected to implement automated fare collection systems for public buses, electronic tolling and an integrated electronic parking system.

Coverage and Access to Postal Services

It is of great concern that post office services are fast disappearing, and calls for urgent action. Available data shows only 3.7% of communities in Cross River have a Post Office.

CONCLUDING REMARKS AND RECOMMENDATIONS

Development crisis affecting Africa is often anchored on poor industrial development and technological infrastructure. Technology infrastructure is a vital prerequisite for economic, industrial and technological development and growth. Technology infrastructure comprises power supply, energy, transportation, communication, water supply, etc. Most of these are lacking in the continent.

Lack of roads and similar infrastructure will continue to hamper economic development in the state. With the advent of PPP, the burden of funds inadequacy gradually fizzles out and enhances the implementation of the development agenda of the State Government. These procurement options that offer the benefits of two worlds are being used all over the world to meet global infrastructure demands. Global proliferation of PPP continues and will continue in the years to come. A number of nations and states are taking advantage of Public-Private Partnership opportunities to meet their ever growing infrastructure needs. Sectors which have benefited from PPP globally include: schools; hospitals; transportation and power.

The private sector is keenly watching the Lekki-Epe Expressway project as the concessionaire soon takes the reins of the operation and maintenance of the expressway over the next 30 years. There is little doubt that this will lead to further private involvement in the rehabilitation of most decaying roads and communication infrastructure in Nigeria and in Cross River State in particular where tourism has gradually placed the State on the path of most preferred destinations in the country. Traditional procurement methods of the past have failed and with growing competition for limited state funds, the need to embrace

more dynamic procurement options (PPP) has never been greater.

The paper suggests an urgent need to overhaul completely the state of transportation and communication infrastructure, beginning from an institutional (policy) overhaul covering transport and communications sectors, respectively so as to place the State on the pedestal of economic and industrial development.

Establishment of strategic partnerships for infrastructural development: The State needs good infrastructural policies and regulations, technology transfer and engagement of foreign, local, private and public support in planning, implementation, maintenance and management of infrastructural development.

In addition to direct execution of projects, Government can influence private sector investment through direct subsidies, public-private partnership (as it is the case in the Lekki-Epe Expressway project in Lagos state, Nigeria), and deregulation of certain infrastructure sectors and by policies that incentivize investment. Expansion of funding sources for infrastructural development, including special allocations, issuance of bonds, special taxes, fees or tariffs, grants and subsidies is also necessary.

Toughening regulatory sanctions on vandalism and non-payment of bills, enforcement of constitutional provision mandating basic infrastructures through stringent congressional oversights on project execution and maintenance at all levels of government, a more transparent budget implementation process to match the sector allocations at the federal level with the state and local government funding, which also prevents institutionalized corruption, are needed. Citizens' advocacy led by beneficiary/host communities to demand, monitor and evaluate infrastructural services, efficiency of utilization cannot be ruled out if the State's social infrastructure is to be sustained.

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