

Socio-Economic Infrastructure and National Development: An Analytical Assessment from Nigerian Perspective

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ABSTRACT:- This paper was on the challenges of infrastructure poses to national development in Nigeria. The objective of the paper was to examine the challenges of infrastructure in relation to national development in Nigeria. The source of data was mainly secondary and the analysis was analytical. The subject scope of the paper covered energy, transport, healthcare services, and education. The analytical analysis found that the provision of infrastructure was far below what is required for the country to attain the desire national development. Similarly, the paper recommends that basic infrastructural facilities like energy, healthcare, and schools, should be provided in order to attain national development.

Key Words: *Infrastructure, Development National, Energy, education*

I. INTRODUCTION

Infrastructure means the basic facilities which are necessary for the development of a nation. Economic infrastructure is the combination of basic facilities which is helpful in economic development of an economy and businesses. It includes facilities such as telecommunication, electricity, transportation, energy while Social infrastructure is the combination of basic facilities which are necessary for human development. It includes such facilities as hospitals, schools, and housing. Viewed functionally, infrastructure facilitates means the production of goods and services, and also the distribution of finished products to markets, as well as basic social services such as education and healthcare services (Olaseni and Alade, 2012). The link between infrastructure investments and development outcomes is enormous as empirical studies have proof the linkage between the two such as the work of Aschauer (1989). The importance of Infrastructure services cannot be over emphasize as they are used as final consumption items by households and as intermediate consumption item for firms. Availability of infrastructure services significantly influences development of regions and countries. It is the reason why level and quality of infrastructure have direct effect on business productivity and growth, and shortfall investments to infrastructure capital form inequality between regions and countries. The impact of infrastructure investments on country development is an important issue as development of any kind cannot be achieved without the provision and development of adequate infrastructure. The extent to which a country developed is a function of its effort in provision of infrastructure (Nurre, 2012). However, this importance facilitator of development is in acute shortage in Nigeria that poses a great threat to the country's quest for development. Currently, infrastructure is the most challenging factor that militates against the country's effort for a sustainable economic and social development. Inadequate and dilapidated infrastructure is a problem as it retards development. Energy which is the engine room for development effort has been a problem since the late 1980s to date. For example currently the country generates 4,000 mw which is far below what is required. Nigeria's per capita electricity consumption is 7% of Brazil's and 3% of South Africa's. At the same time, at least 50% of Nigerian households have no connection whatsoever to the grid. A self-generation diesel or petrol generator in Nigeria is estimated to be 6,000 MW. This is the situation in all other sectors in terms of inadequacy and dilapidation of infrastructure in the Nigeria, which does not argue well for the country that want to be in the 20th economy in the world. The objective of this paper is to examine the challenges of infrastructure facing Nigeria' thrive for national development. The study employed primary source of date as the main sources of data collection and analytical method of data analysis was used in analyzing the data.

II. LITERATURE REVIEW

The term infrastructure is wide in scope as it covers almost everything that is use to produce another thing. This paper will attempt to capture the meaning and nature of infrastructure from different view point. According to the Online Etymology Dictionary, the word infrastructure has been used in English since at least 1927, originally meaning the installations that form the basis for any operation or system, other sources, such as

the Oxford English Dictionary, trace the word's origins to earlier usage, originally applied in a military sense. The word was imported from French, where it means subgrade, a constructed pavement or railway. The word is a combination of the Latin prefix "infra", meaning "below", and "structure". Accordingly, Olasi and Alade (2012) sees infrastructure as an umbrella term for many activities usually referred to as social overhead capital by developed economists. Infrastructure is defined as a complex of capital goods which are not consumed directly rather they provide services only in combination with labour and other inputs. Infrastructure enables geographic concentration of economic resources and provides wider and deeper markets for output and employment (Macdonald, 2009). It affects input and output markets, helps determine spatial development patterns and provides a large network to individual users at low cost. Infrastructure can be generally understood as the foundation upon which the economy is built (Macdonald, 2008). According to the World Bank (2004) infrastructure is an umbrella term for many activities, it plays a very important role for industrial and overall economy. Infrastructure can be classified into economic and social infrastructure. Economic infrastructure is defined as the infrastructure that promotes economic activity, such as roads, highways, market, airports, sea ports, electricity. Social infrastructure comprises schools, libraries, universities, clinics, hospitals, courts, museums, theatres, playgrounds, parks, fountains and statues (Fourie, 2006; Baldwin and Dixon, 2008). Prud'homme (2004) defines infrastructure as capital goods which are not consumed directly rather they provide services only in combination with labour and other inputs. Infrastructure can be generally defined as the set of interconnected structural elements that provide a framework supporting an entire structure of development. It is an important term for judging a country or region's development (Nurre, 2012). As Scott, (2010) asserted infrastructure lack a precise definition, but US National Research Council panel sought to clarify the situation by adopting the term "public works infrastructure referring to both specific functional modes such as highways, streets, roads, and bridges; mass transit; airports and airways; water supply and water resources; wastewater management; solid-waste treatment and disposal; electric power generation and transmission; telecommunications; and hazardous waste management. A comprehension of infrastructure spans not only these public works facilities, but also the operating procedures, management practices, and development policies that interact together with societal demand and the physical world to facilitate the transport of people and goods, provision of water for drinking and a variety of other uses, safe disposal of society's waste products, provision of energy where it is needed, and transmission of information within and between communities. Infrastructure is classified into various categorization such as "Hard" infrastructure which refers to the large physical networks necessary for the functioning of a modern industrial nation, it is the capital assets that serve the function of conveyance or channeling of people, vehicles, fluids, energy, or information, and which take the form either of a network or of a critical node used by vehicles, or used for the transmission of electro-magnetic waves. whereas "soft" infrastructure refers to all the institutions which are required to maintain the economic, health, and cultural and social standards of a country, such as the financial system, the education system, the health care system, the system of government, and law enforcement, as well as emergency services. Infrastructure systems include both the fixed assets, and the control systems, software required to operate, manage and monitor the systems, as well as any accessory buildings, plants, or vehicles that are an essential part of the system. Also included are fleets of vehicles operating according to schedules such as public transit buses and garbage collection, as well as basic energy or communications facilities that are not usually part of a physical network, such as oil refineries, radio, and television broadcasting.

American Heritage of English Dictionary operationalize the definition of infrastructure as an underlying base or foundation especially for organization or system, It is the basic facility, services, and installation needed for the functioning of a community or society such as transportation, communication, power, public institution such as schools prisons, and post office. (AHDEL, 2010). Clinton (1993) gives a more comprehensive definition of infrastructure from a national security point of view, where he sees infrastructure as the framework of interrelated and interdependent networks and systems comprising identifiable industries, and institutions including people and procedures, cap distribution abilities that provide reliable flow of product and services essential to the economy, and the defense of United State. From the above concept of infrastructure people are view as infrastructure because they facilitate production of goods and services. A teacher in this perspective is considered as an infrastructure as he facilitates transmission of knowledge, this is a modern definition of the term infrastructure that consider individual to be infrastructure provided they facilitate production of goods and services.

Previous scientific studies have analysed the role of infrastructure in national development such studies include Prud'homme, 2004, Agénor and Moreno-Dodson, 2006, Yeaple and Golub, 2007, Baldwin and Dixon, 2008, Seethepalli, Bramati, and Veredas, 2008, Straub, Vellutini and Warlters, 2008, Canning and Pedroni, 2008, de Haan, Romp and Sturm, 2007, and Grubestic, 2009. They devoted their works using various economic theories, econometric models and analyzing data at national or regional level. For example Banyte (2008) analyzes infrastructure as the factor that determines successful diffusion and adoption of innovation in the market. Prud'homme (2004), Baldwin and Dixon (2008) agree that infrastructure is a very

long lasting space and specific, infrastructure assets involve long gestation periods, infrastructure assets have few substitutes in short run periods, infrastructure services are very capital intensive and usually associated with market failures. Baldwin, Dixon(2008) found that effective infrastructure supply supports economic growth, enhances quality of life and it is important for national security. Similarly, Bristow and Nellthorp (2000) found the effect of infrastructure on various aspects of regional competitiveness, economic growth, income inequality, output, labour productivity and welfare. Mattoon, (2004) in his study revealed that the construction of the railway system lead to standardized schedules that provided economic benefits beyond the rails themselves. Nijkamp (1986) argues that infrastructure is one of the instruments to improve development of a region, it does not guarantee regional competitiveness but it creates necessary conditions for the achievement of regional development goals. Snieska and Draksaite (2007) also argue that economy competitiveness of a country is determined by a set of different factors, and indicators of infrastructure are one of them. Snieska and Bruneckiene (2009) identify infrastructure as one of indicators of regional competitiveness within the country. Martinkus and Lukasevicius (2008) argue that infrastructure services and physical infrastructure are factors which influence investment environment on the local level and increase its attractiveness.

Grundey (2008), Burinskiene and Rudzkiene (2009) analyse implementation process of sustainable development policy and they distinguish development of infrastructure as one of the most important dimensions in strategic planning in order to assure sustainable territorial and socio- economic development of a country. Agénor and Moreno-Dodson (2006) study the link between infrastructure availability and health as well as education of society that proves that infrastructure services are crucial for health and education quality and availability which to a large extent effects welfare. According to the world statistical analysis, households use approximately one third and one half of infrastructure services as final consumption while the other half of infrastructure services corresponds to intermediate consumption, mostly by companies (Foster, Yepes (2005). The findings of Demetriades and Mamuneas (2000) suggest that public infrastructure capital has significant positive effects on profit, the demand for private inputs and the supply of output in all runs in 12 OECD countries is considered. The results of estimations made by Mentolio, Solé-Ollé (2009) supported the idea that productive public investment in road has positively affected relative provincial productivity performance in Spain. Macdonald (2008) analysed the impact of public infrastructure on private production level that has been overlooked in other researches and found out that a private infrastructure provided a vital input for private sector production.

1.3 Highlight of Infrastructure situation in Nigeria

1.3.3. Transport

Transportation is an indispensable infrastructure and a catalyst for activating and stimulating the tempo of economic, social, political and strategic development in any society. This implies that transport infrastructure has to be rationally developed to ensure that movement of people and goods takes place speedily, economically, safely, comfortably and in an environmentally-friendly manner (Sumaila, 2012). In spite of the fact that transport infrastructure is an important factor in integrating the rural and urban communities into the overall national development process, its development has not been taken seriously. The physical condition of most of the existing air, water, rail and road infrastructure in Nigeria is a worrisome and disheartening as most of these facilities are in a dilapidated condition. For example the rail transport network in the country stands at 3,557 kilometers with 3,505 kilometers still on the narrow gauge. Statistical figures on the Nigerian corporation passenger and freight traffic showed that while in 1964 the corporation carried an average of 11,288,000 passengers and 2,960,000 tons of freight, by 1974 these figures had dropped to only 4,342,000 passengers and a dismal 1,098,000 tons of freight and the passenger traffic again grew from 7 million in 1978 to 15.5 million in 1984, but then declined again to 3.0 million in 2003 due to neglect of the sector by the government. South Africa has rail network of (km) 20,872, whereas Nigeria has only 3,505 km. Nigeria needs a decent rail transport network of 40,000 km to move a major part of its estimated 50-60 million tons of freight per annum. On air transportation still there is much to be done as when compare with South Africa who has 85 airports whereas Nigeria has 22 despite the population of Nigeria which almost double that of South Africa, yet Nigeria is lagging behind in infrastructure development. In terms of seaport Nigeria has 13 seaports which is relatively adequate when compare with South Africa who has 8 seaport, but the facilities at the Nigerian seaport are obsolete and inadequate to cater for the influx of cargo and passengers, modern equipment need to be installed at the seaport to facilitate quick service delivery at the port. Road transport has experienced setbacks as most roads in the country are in a dilapidated condition which makes transportation of goods and passengers somehow difficult this is because apart from hours spent in traffic, Nigeria loses between N133.8 billion and N175 billion because of increased vehicle operating cost, delayed turn-around, increased travel time, as well as reduction in asset value (Sumaila, 2012). There is also human cost as about 80% of injuries in Nigeria are traffic accident related, making it the country with the second highest road traffic accident fatalities among 193 countries of the world. (Ayo, 2013 & Ariyomo, 2014).

1.3.1 Energy

Electricity is the hub of economic, social and technological development as it is the engine room of development which facilitates the provision of power for socioeconomic activities to take place, electricity supply is a very sensitive issue with several political and economic sophistications in many countries which most of the time define the industry's effectiveness. But this important facilitator of development is grossly inadequate when compare with other countries like Brazil for instance generates 100,000MW of grid-based power for 201 million and South Africa generates 40,000MW for 50 million (Chika,2015). The 3 to 4,000MW now being generated for Nigeria's population of 180 million is still far too low. From the inception of Buhari administration there was an increase of approximately 35% of the electricity generation from 1,500MW to 4,000MW but this increase was short live as the current generation has decreased drastically to be low 2000MW and the supply kept on fluctuating every now and then .Electricity generation had reached all-time peak of 5,074 megawatts on February 2, 2016, but recent attacks on crude oil and gas pipelines have signaled the end of the relative steady supply of electricity as vandalization of gas pipelines disrupted supply of feedstock to gas-fired power generating plants, which account for over 78 per cent of power supply in the country. The situation had worsened on 15 of April 2016 when the whole country was plunged into darkness due to a nationwide system collapse. According to Nigerian Electricity Regulatory Commission (NERC) reported that only five of the country' 23 power plants are currently functional which resulted to country's dwindling electricity supply that took a further nosedive to unprecedented all-time low level of 1,327 megawatts (MW) from the 4,800 MW level attained recently. Nigeria will need about 25,000MW to 40,000MW from now to 2020 for the country to stabilize the electricity problem (Utazi,2014).Another factor within the energy sector that poses a great challenge to Nigerian's development effort is scarcity of fuel perennial fuel crisis that has defied all solutions by successive governments is a big problem that retard development.The four refineries in Port Harcourt, Warri and Kaduna were inadequate to meet up the fuel demand of Nigeria of 45 to 60 million of liters even when functioning optimally, their total products yield cannot be more than about 10 to 12 million liters' which is only 50 percent of what is required. In 2008 18 refineries were issues licenses by government to private investors rescue the situation but this had not led to any new facility on ground to help solve the fuel crisis. Also vandalization is a challenge to fuel supply it has been recorded that over the past decades a total of 16,083 pipelines breaks in different locations in the country were recorded, with ruptures accounting for 398 pipeline breaks, while 15,685 breaks were due to the activities of vandals. The persistent up and down in electricity generation and fuel supply in Nigeria is a challenge that has to be tackle in order to achieve the desire development.

1.3.2 Health

Healthcare infrastructure in Nigeria is bedeviled by a myriad of challenges that resulted from inadequate capital spending, outdated technologies, poor infrastructure such as laboratory equipment and specialist in medical matters. In spite of media propaganda and the current health sector reforms by the government, the public health care system in Nigeria is still inefficient in all ramifications (Adeyinka2014). In 1979, Nigeria had 562 general hospitals, supplemented by 16 maternity and/or paediatric hospitals, 11 Armed Forces hospitals, six teaching hospitals, and three prison hospitals. Altogether, they accounted for about 44,600 hospital beds.In addition, general healthcare centres were estimated to total slightly less than 600; general clinics 2,740; maternity homes 930; and maternal health centres 1,240. The hospitals were distributed among federal, state, and local governments, while some are privately owned.In 1985, there were 84 federal health establishments accounting for 13 per cent of hospital beds, 3,023 owned by state governments 47 per cent of hospital beds 6,331 owned by local governments 11 per cent of hospital beds, and 1,436 privately owned medical establishments providing 14 per cent of hospital beds. Overall life expectancy at birth is 52 years; infant mortality rate is 86 per 1000 live, while maternal mortality ratio is 840 per 100,000 live births, (WHO, 2011).Bilateral and multilateral assistance, and government spending on health account for about 26.40 billion Naira or 26% of total annual budget for 2011 have not translated into enhanced health status of average Nigerians. A total of N30 billion annually is spent by private individuals, the Federal Government and the 36 states of the federation on foreign medical services. This amount of money if properly utilized at home is enough to fix all the dilapidated infrastructure in all the hospital in Nigeria as well as establishing new ones (Benjamin, 2013).

1.3.4 Education

The educational system in Nigeria is faced with numerous challenges as of its population of 180 millionpeople30millionofwhich are students only 20 % passed the SSCE examination with credit in English,

mathematics and 3 other subject (UnitedStatesEmbassy, 2012).The in-ability of the students to pass their prescribe examination is attributed to the lack of infrastructure. For example in primary and secondary schoolsclassrooms are usually overcrowded, with up to sixty or more students receiving instructions in classrooms designed for only thirty or, forty students.

Nigeria has a total of 87,941 primary schools with a population of 24,422,918 pupils in all the primary schools, and about 7,129 public junior secondary schools respectively. At the primary school level 59,007 (65.04%) schools were constructed in 2010 as against 11,295, and at the junior secondary school, the rate of the construction stand at 36.6%.This implies that there is a short fall of 64% in school construction which means that for the country to move forward additional 64% of schools have to be constructed (EFA,2014).

Relatedly, in 2011, the percentage of classrooms constructed at the primary school level stood at 72.25% of the required number, this represented an increase in the figure of 60.35% recorded in 2010 again, this implies a short falloff 28%,while for the junior secondary school, there was an increase of about 10% from 69,610 (67.87%) in 2010 to 77.51% in 2011, this also implies a gab of 23%. According to the EFA Country Report (2012), there was a shortfall of 252,312 classrooms at the JSS level, and 130,755 at the Senior Secondary level, making a total of 383,067 shortfalls of classrooms respectively (NBS,2016).

Another important factor influencing learning is the provision of utilities, particularly water, electricity, both of which make the school environment child-friendly. However, according to SER (2013), provision of water in most schools is not good enough, while only 21 states had more than 60% provision of water supply in schools. There is need, therefore, for improvement in the provision of both electricity and water in public, private and pre-primary schools. In terms of teachers, there are 426,132 teachers in both private and public primary representing 45% which implies a short fall of 55% of teachers inNigeria' schools. Similarly in Jss there are 170,628 teachers across the nation representing 43% at a ratio of 1:26 students which is grossly inadequate (NBS 2016). Another challenge facing the educational sector is the provision of utilities, particularly water, and electricity, both of which are grossly inadequate. According to SER (2013), provision of water in most schools is not good enough. While 21 states had more than 60% provision, only 5 States had 60% provision of water supply in schools.

The tertiary institutions in Nigeria comprises of 123 universities (36 Federal, 36 State, 51 Private), 71 polytechnics, 47 monotchnics and 79 colleges of education. Despite the tremendous increase in the number of tertiary institutions and particularly universities, their capacity is not enough to accommodate half of the number of qualified candidate seeking admission into higher institution of learning. For instance 1.5 million sat for the JABM 2016 examination and the available space can only accommodate 400,000 thousand candidate which implies that for the 1.5 to gain entry into these schools an increase of about 492 additional institutions is needed(FME,2016). Infrastructure is another area where there is challenge, in-adequate infrastructures manifest in obsolete laboratories, and overcrowded class rooms. Many of the laboratories and workshop were obsolete, they suffer from overcrowd, scarcity, and broken furniture. The total available bed space in all the universities was put at 109,509 which only is 10% of what is required. The average ratio of toilet users is 1:20 forcing some students to the bush or surrounding compound of the hostel as open toilets (FME,2016).

1.4 Conclusion

The challenges of infrastructure in Nigeria are numerous ranging from energy, transport, health, and education. It is quite clear that the level of infrastructural development in Nigeria is nothing but poor. For the country to achieve the desire national development as well as meeting the 2020 target to become one of the 20 strong economies in the world. Infrastructure should be given priority in terms of budgeting. Adequate funding of the capital budget in any economy whether developed or underdeveloped has the greatest potential of helping to expand and develop infrastructure which in turn will stimulate socio-economic development. Infrastructure services are used as final consumption items by households and as intermediate consumption item for firms. Availability of infrastructure services significantly influences development of regions and countries.

1.5 Recommendation

- Toachieve asustainable energysupplythat will ensurenational development andeconomicgrowth target towardsvision20:2020,more refineries need to be established to complement the existing ones, more plants for energy generation should be establish in at least six location.
- Adequate and modern transportation infrastructure should be provided, more rails and road should be constructed and airport and seaport should be provided with modern facilities.
- In order to meet up the require infrastructure in the healthcare sector government should partner with private sector to upgrade and establish more hospitals and clinics as well as employ sufficient and qualified personnel.

- There should be an overhaul of the educational system in Nigeria, this will allow a holistic approach to solving the educational problem that bedevil the nation for long. More schools and facilities as well as teachers should be provided at all levels of education.

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