SUSTAINABLE INFRASTRUCTURE FINANCE AND INVESTMENT

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1.0 PREAMBLE

1.1 BUILD YOUR OWN INFRASTRUCTURE(BYOI).

Election fever was in the air. Gubernatorial candidates of the various parties were busy traversing the length and breadth of the State detonating electoral promises like Hiroshima and Nagasaki atomic bombs of World War II.

" When you vote for me, if you have no roads, you will have them. If you have no electricity, you will have it and if you have no water, you will have it". These promises galvanised and charged the atmosphere across the entire State. This particular Candidate was young, handsome and charismatic. The people, energised, captivated and motivated, voted for him massively. Excitement was in the air. A new era of fulfilled campaign promises was eagerly anticipated.

Then he won and settled into governance. And the people in excitement awaited the fulfillment of the promises, to no avail. Months stretched to years, and nothing was heard of all the glowing infrastructure promises made. Then Communities in the State resorted to what they had always known--Selfhelp. They began to launch projects for water, electricity and upgrading of schools. State Government officials, would routinely appear at such launching programs to make donations on behalf of the Government. The Government acquired the nickname 'Donatus'.

The era of 'Build Your Own Infrastructure'(BYOI) had arrived. The World Bank, jumped into the fray and adopted the term. Fastforward to decades later, a small Community in the State decided to empower that concept. One wealthy public-spirited individual in the town embarked on the construction of asphaltic road network, and other rich individuals joined him. Others, embarked on the refurbishment and upgrading of schools' infrastructure. Some other wealthy individuals in neighbouring communities joined the train. Now the people have embarked on water supply scheme for the entire community in partnership with the State Goverment. Government installs the boreholes, and the community provides reticulation. The mantra is: 'Do what you can--provide the pipes to your own compound'.

The Community has been challenged and most members in Nigeria and the Diaspora have keyed in. The leaders have coined a new infrastrucure finance concept: PUBLIC-PRIVATE-COMMUNITY PARTNERSHIP(PPCP). The State Government has adopted it. The Dance is on. That community todate, has the best rural road network in the State and financing of the water scheme, is a collaborative venture between the Government and the People. Finance is the life wire of infrastructure projects, and creative finance moreso. The MASTER had been right in the 1st century when He declared; " For which of you, intending to build a tower, sitteth not down first, and counteth the cost...?"(Lk 14:28 KJV). He is still right today, in the 21st century. Cost Counting, is what the Quantity Surveyor is trained to do and as Professionals, let us together, put our hands to the Plough.

2.0. INTRODUCTION

In recent decades, the importance of infrastructure finance on economic, industrial, technological and social development of a country has dominated the policy discussions of developing countries, international donor agencies and developed countries.

Financing infrastructure projects remains a major constraint in the delivery of efficient and improved infrastructural facilities across developing countries in general and Nigeria in particular. Provision of good infrastructure can accelerate economic development and prosperity in developing countries just as maintenance of existing infrastructure can ensure that developed countries remain developed.

The level of accumulated infrastructure facilities is, no doubt, one of the major indices for measuring development of an economy. With the rising demand for infrastructure co-moving with the accelerating pace of globalization and urbanization, the total global infrastructure investment requirement by 2030 for transport, electricity generation, transmission and distribution, water and telecommunications, according to the OECD, amounts to $71tn. The European Commission estimates that, by 2020, Europe will need between euro 1.5tn and euro 2tn of infrastructure investments.

According to Kawalya-Kwaga (2014), the infrastructure gap in Africa per annum is $93 billion. Every month in the developing world more than five million people migrate to urban areas (Schwartz et al, 2014). Fast growing populations and rising urbanization

rates in developing countries have also led to a global shortage of infrastructure services such as roads, rail, mobile and fixed line telecommunications, water and electricity, among others (Water UK, 2013). In such a rapidly growing and evolving global infrastructure market, there is need for proper understanding of infrastructure financing and its challenges in not only Nigeria but globally, since infrastructure finance has become a global business. While most infrastructure investments are local, the sources of finance are increasingly global.

3.0. INFRASTRUCTURE

Infrastructure has been defined as "the physical components of interrelated systems providing commodities and services essential to enable, sustain, or enhance societal living conditions" and maintain the surrounding environment. It is the set of facilities and systems that serve a country, city, or other area, and encompasses the services and facilities necessary for its economy, households and firms to function.

3.1. TYPES OF INFRASTRUCTURE

Two main categories of infrastructure are hard and soft infrastructure. Soft infrastructures are the institutions that make up an economy, like healthcare systems, law enforcement, financial institutions and educational systems. Hard infrastructures are the physical systems that help run a region or nation such as roads, bridges and telecommunications.

Since we are more concerned about hard infrastructure in this discussion, here is a list of nine types of hard infrastructure and examples of each:

3.1.1 Aviation

Flying is a form of travel that allows people to cross long distances in a much shorter time than driving or taking a train. One important current aviation infrastructure project includes building extensions to pre-existing airports to increase the overall percentage of flights landing on time. Another in-demand project is maintaining the safety of current ground facilities by repaving airfields.

Examples of aviation infrastructure include:

Airports

Air traffic control

Heliports

Ground facilities

3.1.2. Telecommunications

Technology is always expanding, and that leaves a constant need for telecommunications infrastructure projects, such as progressing from 4G to 5G mobile networks. Examples of telecommunications infrastructure include:

Telephone wires and cables

Internet

Satellites

Mobile network towers

Radio broadcasting systems

3.1.3. Bridges

The maintenance of large-scale, high-volume bridges is necessary for many people's daily transit. Examples of bridge infrastructure include:

Beam bridges

Cable bridges

Arch bridges

3.1.4. Power and Energy

Traditional energy infrastructures include coal, gas and nuclear plants, which help produce electricity for an entire country. Maintenance crews regularly perform repairs and maintenance on the plants to ensure they properly and efficiently transmit power to the correct locations. Modern infrastructure projects create power and store energy

without the use of fossil fuels, such as solar-, wind- and geothermal-powered infrastructures.

A few examples of both traditional and renewable energy infrastructures used today are:

Electric power grid networks

Nuclear plants

Gas pipelines

Fossil fuel-based power production such as gas and coal plants

Renewable energy like hydro-electric power, biofuels and solar power

3.1.5. Railways

In addition to train tracks, railroad infrastructure includes all buildings, equipment and land that support the railways. This also includes management, transport of materials and maintenance of rail lines and all of their facilities. Divided into two categories, the rail network consists of freight and passenger. For both categories, railroad infrastructure projects involve the maintenance and upkeep of the current railways, but also include making efforts to create new rail line extensions and adding signage near railways.

Examples of railway infrastructures include:

Railway lines

Trains

Tunnels

Railroad bridges

Train stations

3.1.6. Roadways

Roadway infrastructure includes drivable locations such as highways, roads and streets. Minor roadway projects are tasks such as creating new traffic lights, signage, ramps and traffic lanes. Larger roadway projects consist of building new roads and repairing

existing roads. Street and highway reconstruction and resurfacing are essential to keeping a road in drivable condition. Many states rely on the income from toll roads to fund the construction.

Some examples of roadway infrastructures include:

Roads

Bridges

Tunnels

Bus transit

3.1.7. Water

The constant supply of clean and filtered water to people across a country is an important infrastructure to maintain. Water infrastructure projects differ depending on location because of environmental factors. For example, in a location that typically has droughts, water infrastructure projects ensure the continuation of a steady water supply and reduce the number of leaks by monitoring and repairing the water facilities in use. Most projects include updating the current distribution of water and finding effective ways to transport water from one location to another.

Examples of water infrastructure include:

Main water lines

Wells

Pumping stations

Treatment plants

Septic tanks

Stormwater drains

Roadside gutters

Dams

Levees (An embankment built to prevent the overflow of a river)

3.1.8 Waste Management

Waste management's goal is to keep the environment free of waste in roads, cities and neighborhoods in order to keep citizens safe. Waste management includes transporting waste from commercial and residential areas to places such as landfills and recycling facilities to prevent the spread of sickness and pests. Waste management infrastructure projects consist of building and properly maintaining these facilities.

Waste management also includes water waste management, which keeps rivers, lakes and oceans clean. Waste water collection systems filter out harmful substances in water (such as soaps, food scraps and other solids) before returning it to natural bodies of water.

Examples of waste management infrastructures include:

- Landfills
- Treatment plants
- Recycling facilities
- Storage facilities
- Solid and hazardous waste transport
- Wastewater facilities

3.1.9. Recreation Facilities

Recreation infrastructure provides facilities and services that help bring communities together through the use of shared public amenities in surrounding neighborhoods. Recreation infrastructure projects include designing new facilities that communities can enjoy and maintaining existing structures, such as parks, playgrounds and nature reserves.

Examples of recreation facilities include:

- Public parks and playgrounds
- Public beaches

Historical sites

Nature reserves

Public bathrooms

Picnic areas

Public parking areas

4.0. CHALLENGES OF INFRASTRUCTURE FINANCE

Irrespective of the vast challenges to infrastructure development on account of climate and disaster resilience and adaptation, the development and financing of public infrastructure remains a focus of economic growth across the world. Financing for infrastructure of any kind is generally deemed risky, owing to the longevity of the construction period as well as the high costs of asset management. Climate-related unpredictability necessitates that the definition of 'resilience' be distinct for each city, even as it remains a core consideration for all.

Over the last two decades, the infrastructure sector, globally, has witnessed a dramatic shift in the extent of access to formal capital. The changing needs of the sector in the context of climate change and disaster resilience require that greater focus on planning for future climate scenarios be built into development plans, with higher volumes of committed financing. G20 countries stand at different stages with respect to their infrastructure development. For example, India is similar to South Africa and Brazil but very different from the US and the UK. After decades of dependence on public financing for infrastructure, the Indian state established regulations as part of the liberalisation reforms in the 1990s to attract private and foreign capital. Across the world, regulatory commissions are set up to provide the private sector greater ease of business with a more balanced principal-agent relationship, as compared to one with a Ministry.[i] Meanwhile, countries like the US and the UK seldom build new roads at present, but largely upgrade and expand existing roads.[ii]

The central problem: The longevity of asset creation timelines gives rise to a vast degree of risks that slowly unfold over decades, including economic risks, political risks, and changes in scope and law. Safeguarding private entities and bank financing in such situations is critical to ensure repeat investments, but this is hardly a consideration made by the public entity in charge of development and procurement. Weak contract enforcement capacity across judiciaries in emerging economies also means that when projects run into dispute, there is a lack of confidence in courts to resolve the matter, often resulting in a stalemate and delays in project completion. The failure to attract bidders and conduct competitive public asset auctions signals low interest from private firms and financiers, and therefore the need to design innovative financing models going forward.

4.1. INFRASTRUCTURE FINANCING AND INVESTMENT

4.1.1. TRADITIONAL FUNDING MECHANISM

The traditional mechanism for infrastructure financing is the use of government budget as the primary source of financing infrastructural facilities including provision of potable drinking water, roads, transportation energy, etc. This traditional method of financing of infrastructure are executed by traditional method of direct contract award. This method has proven to be inadequate and most often unimplemented creating a financing gap for execution of infrastructure projects.

It is a known fact that the world is in great need of infrastructure projects and, therefore, infrastructure finance. Developing countries need to build their infrastructure for the first time. This needs to be done in order to attract more investments. However, even developed countries need to build more infrastructure projects. This is because the population in the developed countries is growing steadily. As a result, the infrastructure which was adequate a few years earlier is no longer adequate. Also, normal wear and tear make it necessary to build infrastructure projects.

The bottom line is that infrastructure projects all over the world need a lot of funding. It is estimated that more than $96 trillion is required to fund infrastructure projects by the year 2030. At present, the annual budget available for infrastructure funding worldwide is close to $2.5 trillion to $3 trillion. However, the actual amount of funds

needed is more than double the available amount. Also, the problem is that most of this shortfall of funds exists in low and middle-income countries.

Funding of this magnitude cannot be provided by any one source alone. This is the reason that infrastructure needs to be funded by several sources having deep pockets. Some of the most common sources of infrastructure finance have been listed below:

4.1.1.1. Public Finance

Government funding is one of the biggest sources of funding for infrastructure finance. Tax dollars collected all over the world are spent in huge numbers on creating infrastructure. In general, countries spend anywhere between 5% to 14% of their GDP on developing as well as maintaining infrastructure. A lot of this money is spent on financially unviable projects which have social value for the community.

In many cases, the government does engage the private sector to execute the project on its behalf. However, this may be done to increase the efficiency of the project. The private sector only brings in the necessary expertise to deliver the project on time. In return, the government provides all the funding when developmental milestones are completed. In essence, governments worldwide use the services of the private sector as subcontractors.

However, it needs to be understood that infrastructure finance projects funded by the government are notorious for corruption. Since the taxpayer is paying the bill, a lot of the time, the development charges are highly inflated, and all the money spent on these projects ends up in the hands of mafia controlled by corrupt politicians.

4.1.1.2. Supra National Financial Institutions

Supranational bodies such as World Bank, International Monetary Fund, Asian Development Bank, etc. are also important sources of finance for infrastructure projects. However, such organizations tend to only fund projects which are financially viable. As a result, urban projects like metro rails, bridges, flyovers, etc. tend to get funded by these institutions. The internal rate of return (IRR) required by these financial institutions is generally lower as compared to other private sector institutions.

Institutions like the World Bank and the Asian Development Bank also provide other services to enable the better execution of infrastructure projects. This means that even if they do not directly fund a project, they try to add value by providing advisory services such as loan guarantees, advisory services for the creation of suitable policies, etc. In many cases, these institutions also provide treasury services to infrastructure projects. This is done to enable optimal utilization of funds.

4.1.1.3. Private Finance

Governments all over the world are desperately seeking the intervention of private money to help fill the funding gap being faced for infrastructure projects. As a result, many private mutual funds have been set up for this purpose. Governments try to make these investments more attractive by providing tax credit for road construction. A wide variety of financial instruments (both debt as well as equity) are being used to help channelize the savings of the general public towards infrastructure projects. Attempts are also being made to woo institutional investors such as insurance companies and pension funds to increase the amount of funding available.

4.1.1.4. Public-Private Partnership

The public-private partnership model is also widely used in infrastructure funding. This model works differently than public funding. Here, instead of the government using its money for the initial outlay, the private sector does so.

The idea is to create a partnership, where the government brings in land and other resources, wherein the private party brings in technical expertise. The private party then has certain rights over the asset it has helped developed.

For some years, the government allows the private party to collect money in order to generate revenue and payback its investment plus a reasonable amount of profit. Then the asset is finally given back to the government, which can decide whether or not they want to continue collecting revenue for the upkeep of the project.

The only problem with this model is that it can only be used to raise funds when the underlying project is extremely viable i.e., provides an IRR that is sought after by private investors. Otherwise, private investors will simply give it a pass.

The simple fact is that extremely large sums of money are required for infrastructure projects. In fact, all the sources of funding, together, may also not be adequate. There are many governments in the world who are trying to set aside as much money as they can for infrastructure projects.

This yearning for adequate funding for infrastructure has led to some novel models of funding. These models include:

5.0. THE SOVEREIGN WEALTH FUND

A Sovereign Wealth Fund is an investment fund or entity that is owned by the state. When the nation has a budgetary surplus, the money, i.e., Sovereign's wealth, can be channeled as investments rather than keeping with the Central Bank or pumping it into the economy. In this way, few of the Sovereign Wealth funds invest in the nation's fiscal surplus. At the same time, some SWFs are established from proceeds of privatization, foreign currency operations, revenues resulting from resource exports such as trading commodities and crude oil. They invest in various asset categories such as equities, government bonds, gold, real estate, foreign direct investments, etc.

The earliest mention of Sovereign Wealth Funds was the establishment of the first Sovereign Wealth Fund in 1953 which was done as a solution for Kuwait with a budget surplus. The Kuwait Investment Authority was established to invest in excess oil revenues. In 1955, a fund was created by Kiribati to hold its revenue reserves. The actual major SWF was Singapore's Government Investment Corporation (GIC), established in 1981.

The largest Sovereign Wealth Fund currently in the world is Norway Government Pension Fund Global, which was established in the year 1990 to hold the country's surplus revenues from the oil trade. It was then known as the Government Petroleum Fund. It changed its name to Norway Government Pension Fund Global in the year 2006 as it now invests in fixed income, equities, and real estate. In 2019, the SWF reported a 19.9% return. The highest allocation of 71% was in equities, which reported a return of 26.0%, while 3% of the fund was in real estate and 27% in fixed income.

In general, sovereign wealth funds usually have a targeted purpose. Some countries have sovereign wealth funds that can be similar to venture capital for the private sector.

Some sovereign wealth funds may be held by a central bank, which accumulates the funds in the course of its management of a nation's banking system; this type of fund is usually of major economic and fiscal importance. Other sovereign wealth funds are simply the state savings that are invested by various entities for investment return, and that may not have a significant role in fiscal management.

The accumulated funds may have their origin in, or may represent, foreign currency deposits, gold, special drawing rights (SDRs) and International Monetary Fund (IMF) reserve positions held by central banks and monetary authorities, along with other national assets such as pension investments, oil funds, or other industrial and financial holdings. These are assets of the sovereign nations that are typically held in domestic and different reserve currencies (such as the dollar, euro, pound, and yen).
Such investment management entities may be set up as official investment companies, state pension funds, or sovereign funds, among others.
There have been attempts to distinguish funds held by sovereign entities from foreign-exchange reserves held by central banks. Sovereign wealth funds can be characterized as *maximizing long-term return*, with foreign exchange reserves serving short-term "currency stabilization", and liquidity management. Many central banks in recent years possess reserves massively in excess of needs for liquidity or foreign exchange management. Moreover, it is widely believed most have diversified hugely into assets other than short-term, highly liquid monetary ones, though almost no data is publicly available to back up this assertion.
Globally, both the number of investors and assets under management (AUM) have grown substantially. AUM for SWFs and private pension funds increased from $11 trillion in 2015 to $15 trillion in 2020. In Africa, the growth of AUM by SWFs increased by 76 percent, while the number of investors grew by 54 percent. According to PwC, African SWFs managed $300 billion in 2020, representing a significant source of investible capital for the continent.

6.0. THE EXECUTIVE ORDER 007

On 25 January 2019, President Muhammadu Buhari signed the Companies Income Tax (Road Infrastructure Development and Refurbishment Investment Tax Credit Scheme) Order 2019 ("the Executive Order" or "Order").

The Executive Order 007 was made pursuant to the powers conferred on the President of the Federal Republic of Nigeria (FRN) by the Constitution of the Federal Republic of Nigeria 1999 (as amended) and more specifically, Section 23(2) of the Companies Income Tax Act (CITA).

It was due to the highly capital-intensive nature of road infrastructure development, amongst other factors, and to ameliorate the road infrastructure deficit, that the President of Federal Republic of Nigeria issued this Presidential Executive Order which established a scheme to encourage public private partnership by utilizing private sector funding in the construction, refurbishment and maintenance of roads. Private companies are to fund the construction of major road projects in the six geo-political zones of the country. In return, the companies get a tax credit or deduction equal to the amount invested in such road projects.

When a participant is issued a Road Infrastructure Tax Credit, the Participant will utilize the Project Cost incurred in the construction or refurbishment of Eligible Roads as a credit against Companies Income Tax payable.

The Federal Inland Revenue Service (FIRS) is to, upon approval by the Committee of a Participant's application for Road Infrastructure Tax Credit, issue a Road Infrastructure Tax Credit Certificate ("the Certificate") to a Participant on an annual basis. Such Certificate is only to be issued upon presentation of the information specified in or required by this Executive Order 007.

The Certificate is to denote the Project Cost incurred by the Participant in the relevant fiscal year as certified by the Committee as it relates to on-going Eligible Road projects are the uplift on the relevant Project Cost.

The Certificate will also state the Road Infrastructure Tax Credit due to the Participant, which is to be based on the Project Cost as certified and communicated by the Committee in charge.

7.0. THE SUKUK BOND

Islamic finance is a method of financing based on the principles of Islamic law (shariah) and has several structures that can be adopted to suit various means of financing depending on the circumstances including Murabaha, Takaful, Ijarah, Wakala, etc. It has equally been instrumental in the finance of several projects around the word. Lately, several countries which had hitherto not considered this method of financing have been embracing it to bridge their funding gaps.

Islamic finance is a fast growing sphere of the global/international finance industry which has grown exponentially with assets estimated to have exceeded US$1trillion from a base of US$10 billion in the mid-1970.

7.1. Nigeria has been a beneficiary of SUKUK funds. The Federal Ministry of Works and Housing on Monday 6th February 2023 received a cheque of N110 billions of SUKUK funding for the execution of critical road projects across the six geo-political zones of the country.

Two Ministries benefited from a total of N130 billion 2022 SUKUK Fund, these are: Federal Ministry of Works and Housing and the Federal Capital Territory. While the Federal Ministry of Works and Housing received N110 billion, the Ministry of the Federal Capital Territory received N20 billion.
The SUKUK fund is a form of Public Private Partnership (PPP) which was among the funding options adopted by the Federal Government under President Muhammadu Buhari to fund the construction of critical roads in Nigeria.
Receiving the cheque on behalf of the Ministry, the Minister of Works and Housing, Mr. Babatunde Fashola, SAN gave an account of the nature of the nation's road before the introduction of the SUKUK funding.
According to him, the total capital budget for road projects across the nation for Federal Ministry of Works and Housing in year 2015 was N18 billion. He said: "As of 2015 the

Capital budget for Works was just N18 billion for all Nigerian roads at the time oil prices were just dropping shy of a hundred dollar per barrel and all that could be committed to Nigerian roads was just N18 billion."

Explaining the impact of the meager amount spent on Nigerian roads then, he said that construction companies were therefore laying off staff because the Federal Government was owning these companies. "That was the story before SUKUK," he said.

Fashola stated that this development could not fund the nation's road projects adequately, adding that despite the fact that the Capital budget position of the Ministry was moved from N18 billion to over N260 billion in 2016, Federal Government had to look into alternative sources of funding road projects because that was not still enough.

"That is where the SUKUK funding came in and through the SUKUK, we have completed several road and bridge projects across the six geo-political zones of the country,".

According to him, SUKUK financing has enhanced the completion of some of the priority road and bridge projects across the country.

Earlier the host, Minister of Finance, Budget & National Planning, Dr. Zainab Shamsuna Ahmed while presenting the cheque to the two Ministries said that President Muhammadu Buhari was committed to the development of road infrastructure of the country.

While listing the intervention of the Federal Government of Nigeria Sovereign SUKUK Fund in the Nation's Road infrastructure, Dr. Ahmed disclosed that in 2017, the sum of N100 Billion was expended on the nation's road infrastructure, N200 Billion in 2018, N362.56 Billion in 2020, N612.56 Billion in 2021, and N742.56 Billion in 2022 respectively.

She said: "This symbolic event therefore is part of the celebration of the contribution of the Sovereign SUKUK Fund to road infrastructure development over the years."

8.0. CARBON FINANCING

8.1. Carbon finance supports an asset that's the main culprit of global warming and climate change – carbon dioxide or its equivalent. Its sole purpose is to reduce global carbon emissions by offering opportunities to mitigate the effects of climate change through emissions reduction projects.

Carbon financing creates climate systems that make it possible to measure carbon and incentivizes both firms and individuals to reduce their carbon footprint. It often takes the form of annual payment to a project partner, be it an NGO, private, or public entity, for the emission reductions delivered by the project.

- The emission reductions are typically measured in tonnes of carbon dioxide equivalent (tCO2e) and are represented by carbon credits. One carbon credit is equal to 1 tonne of tCO2e removed or avoided.

As such, carbon financing improves the financial viability of projects while creating additional revenue streams for developers and beneficiaries. It also enables the transfer of technologies and knowledge in the industry.

Best of all, carbon finance provides various means to leverage investments in projects that reduce GHG emissions in countries where they're most viable. All the while helping the world to transition to a low-carbon economy.

While there are a range of tools of carbon finance, the creation or allowance of carbon credits that can be traded in compliance or voluntary carbon markets, has been the top option.

That could be because this kind of financial mechanism places value on the reduction of carbon itself, which makes it a tradable asset. Turning emission reductions into carbon credits that can be traded in various exchanges and markets help stimulate the economy as the world fights climate change.

For carbon finance to work, **carbon credits** are essential.

Carbon credits, also known as carbon offsets, are permits that allow the owner to emit a certain amount of carbon dioxide or other greenhouse gases. One credit permits the emission of one ton of carbon dioxide or the equivalent in other greenhouse gases.

A carbon credit is a tradable, intangible instrument representing a unit of carbon dioxide equivalent (CO2) (typically one tonne that is reduced, avoided, or sequestered by a project), and is certified/verified to an internationally recognized carbon

accounting standard.2 Carbon offsets can arise from any activity that compensates for the emission of carbon dioxide (CO2) or other greenhouse gases (GHG) (measured in carbon dioxide equivalents [CO2e]) by providing for an emission reduction elsewhere.

hey are created through projects that reduce carbon emissions. These projects vary a lot, from nature-based solutions to carbon removal technologies.

The types of carbon credits also vary, depending on what project creates them. So far, there are 170+ types of credits available in the market.

9.0. THE INFRASTRUCTURE SUPPORT FUNDS

9.1. Infrastructure funds invest in public assets and services that are essential for a functioning society, such as power, transport, water and waste. The funds benefit from consistent, long-term returns, low volatility and low correlation to the wider market, making them an attractive addition to a private equity portfolio.

What is an Infrastructure fund?

Many private equity funds have some exposure to infrastructure, to take advantage of their characteristics of low-volatility, low-correlation and long-term returns. An infrastructure fund is simply a form of sector-specialised private equity fund that only invests in infrastructure - in much the same way as a venture capital fund might only invest in technology.

Infrastructure has typically been a governmental responsibility - especially in sectors like transport, water. Increasingly, as public finances have been stretched, Public

Private Partnerships (PPP) have sprung up to close the gap in funding. The private sector is also known to offer a lot in improving productivity and performance, allowing private companies to take on large projects - and for infrastructure funds to invest in these companies.

The other form of investment is in pure-private infrastructure companies, regulated but without government involvement. This could be large energy or telecom investments within heavily-regulated industries, taking on a private equity approach to tackling infrastructure.

Some countries have gone an extra mile in establishing infrastructure funds to help tackle infrastructure crisis in their regions. Nigeria for example have just established **Infrastructure Support Fund (ISF)** to assist its states cushion the effects of petroleum subsidy removal by improving on infrastructure. If this initiative is properly implemented, it can achieve its objective. Nigeria's infrastructure is decrepit; be it power supply, roads, communications, transportation, road and rail network, the story is the same.

The fund will enable its 36 states "intervene and invest in the critical areas of transportation, including farm-to-market road improvements; agriculture, encompassing livestock and ranching solutions; health, with a focus on basic healthcare; education, especially basic education; power and water resources, that will improve economic competitiveness, create jobs and deliver economic prosperity for Nigerians."

9.2. INFRASTRUCTURE INVESTMENT

The continuing need for infrastructure investment places huge demands on financial markets. The aggregate capital sourced by unlisted infrastructure equity funds (operating internationally) since 2004 is close to US$200bn for water infrastructure only (Water UK, 2013). In Nigeria road infrastructure, on an average, the annual funding requirement is estimated at N500b against an average budgetary allocation of N120bn with a deficit of N380bn. In 2012, out of the N143bn budgetary allocation for road infrastructure development only N110bn was released with deficit of N33bn unimplemented (Federal Ministry of works, 2013). This clearly depicts the dilemma of infrastructure financing using the traditional method of government budget. Pearson (2013) observes that if Africa is to effectively participate in the global trading

environment and reach its true economic potential, it will require a level of investment in infrastructure that goes well beyond the capacity of the government. The private sector will need to be involved and if this is to happen then instruments to reduce risk level and increase returns will need to be developed – that is the public-private partnership (PPP). PPP, according to Brusewitz (2005), is a medium to long-term venture in which there are key contractual or legal relationship between the public and the participating private sector. PPP therefore refers to a project in which there is cooperation between the public and private sector(s) in one or more of the development, construction, operation, ownership or financing of infrastructure assets, or in the provision of services. Under a PPP arrangement the private sector is typically contracted to design, build, operate, manage and finance new infrastructure and meet government obligations for a set period of time. The forgoing can only reinforce the need for investment in infrastructure.

Infrastructure investment refers to the allocation of funds towards the development, improvement, and maintenance of essential physical structures and systems that support economic activities. These include transportation networks, energy facilities, water and sewage systems, communication networks, and public amenities like schools and hospitals.

Infrastructure investments play a crucial role in driving economic development and growth by providing essential services that facilitate the movement of people, goods, and information. Governments, private companies, and institutional investors typically engage in infrastructure projects, either directly or through public-private partnerships. Such investments often require substantial capital and long-term commitments due to the large-scale nature of infrastructure projects. They are viewed as attractive assets offering stable cash flows and potential for steady returns over extended periods.

9.2.1. Economic Impacts of Infrastructure Investments

The economic impacts of infrastructure investments can be significant, and careful consideration of environmental and social considerations is critical to ensure sustainable and inclusive development. The future of infrastructure investments is expected to evolve, with the integration of technology and the promotion of sustainable and resilient infrastructure. Increased investment in infrastructure, particularly in

developing countries, is essential to promote economic growth and address environmental and social challenges.

Infrastructure investments can have significant economic impacts, including:

(a). Job Creation

Infrastructure investments create jobs in construction, engineering, and other related fields. Moreover, infrastructure development can attract businesses and industries, leading to additional job creation.

(b). Increased Productivity

Infrastructure investments can increase productivity by reducing transportation and communication costs, improving supply chain efficiency, and providing better access to markets and resources.

(c). Improved Quality of Life

Investments in social infrastructure, such as healthcare and education facilities, can improve the quality of life of citizens by providing access to essential services and promoting well-being.

(d). Attraction of Foreign Investment

Infrastructure investments can attract foreign direct investment by creating a favorable investment climate and supporting economic growth.

(e). Regional Development and Integration

Infrastructure investments can promote regional development and integration by improving connectivity between countries and facilitating cross-border trade and investment.

(f). Environmental and Social Considerations

Infrastructure investments can have significant environmental and social impacts, and these should be carefully considered and managed. Key considerations include:

(g). Sustainable and Resilient Infrastructure

Infrastructure investments should be sustainable and resilient, taking into account the potential impacts of climate change and other environmental factors.

(h). Climate Change Mitigation and Adaptation

Infrastructure investments can help mitigate climate change by promoting the use of renewable energy sources and reducing greenhouse gas emissions. Infrastructure projects should also consider the potential impacts of climate change and incorporate adaptation measures.

(j). Inclusive Development

Infrastructure investments should promote inclusive development, ensuring that all citizens have access to essential services and opportunities for economic and social advancement.

(k). Public Engagement and Transparency

Infrastructure investments should involve public engagement and transparency to ensure that projects are developed in consultation with affected communities and that the benefits and impacts of infrastructure investments are widely understood.

(l). Future Trends and Innovations

Infrastructure investments are expected to evolve in response to changing economic, social, and environmental conditions. Key trends and innovations include:

(m). Smart Infrastructure

Smart infrastructure investments involve the integration of technology, such as sensors and data analytics, into infrastructure projects, enabling real-time monitoring and decision-making to optimize operations and enhance user experience.

(n). Green Infrastructure

Green infrastructure investments focus on the development of environmentally sustainable infrastructure projects, such as renewable energy and green buildings, and the promotion of circular economy principles.

(o). Integration of Technology in Infrastructure Projects

The integration of technology in infrastructure projects is expected to continue to advance, with the use of artificial intelligence, automation, and robotics to enhance efficiency and productivity.

10.0. CONCLUSION

Traditional economists are of the opinion that infrastructure is the heart of the economy. Empirical data clearly shows that given a choice, investors prefer to invest their money in countries whose infrastructure is more developed. Hence, it can be said that rapid infrastructure development is one of the most basic ways in which a country can take advantage of economic opportunities. It is, therefore, no surprise that countries around the world focus heavily on building infrastructure.

Nigeria is not left behind in this quest for economic revolution. Over the years Nigeria has adopted various models for financing its infrastructure, these infrastructure finance models have evolved in response to the challenges posed by traditional financing methods. Infrastructure Bonds, PPPs, and Sovereign Wealth Funds have emerged as effective mechanisms for funding infrastructure projects, while newer models such as Carbon Financing, Sukuk Bond, Infrastructure Support Funds, and other emerging models offer environmentally sustainable avenues for achieving Infrastructure development goals.

While each model has benefits and drawbacks specific to the industry, their combined implementation is critical to meeting Nigeria's growing infrastructure needs and propelling economic development. By embracing innovative financing models, Nigeria can establish a sustainable infrastructure ecosystem that attracts investments and supports long-term growth.

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His work experience traversed consultancy services and construction which cumulatively spanned over 36 years. He worked as a Resident Quantity Surveyor with Ahmadu & Partners, Resident Consultant under the MDG Quickwins project where he was appointed by the Federal Government of Nigeria to supervise projects on Health, Education and Water Sectors and later oversee the rehabilitation of Water borehole projects under the same program in the South East Zone of Nigeria. He had also been a Consultant under the defunct PTF Program. His construction experience spanned seven years as Executive Director Projects/Vice Chairman of Paul-B Nigeria Plc, with oversight responsibility for the construction of several Corporate, Commercial, Aviation, Educational, Leisure Facilities and Public Sector Projects spread across Nigeria.

Mr Anago is an astute Construction Arbitrator and Mediator, a listed Neutral in the Justice Lawal Mohammad Uwais Dispute Resolution Center (Former AMDC), Lagos Court of Arbitration, Ogun State Multi Door Courthouse, Federal High Court ADR Centre, National Industrial Court, ADR Centre, Regional Centre for

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Mr Anago presently leads **IFEANYI ANAGO GROUP** comprising **IFEANYI ANAGO & PARTNERS (QS/PM**) and **IFEANYI ANAGO & CO (Construction law/ADR)**, whilst maintaining active interest as a preacher of the Gospel of Jesus Christ.