NIGERIA'S LONG ROAD TO STEEL DEVELOPMENT: THE PRICE FOR POOR PLANNING AND IMPLEMENTATION

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Abstract

As far back as 1958 the Nigerian government tried to establish an iron steel Industry knowing how very important this sector is for industrialization. This article critically reviews Nigeria's tortuous road to developing a viable steel industry. At the dawn of independence, the founding fathers were aware that steel is the backbone of industrialization, economic growth, and the much-desired national development. They engaged the then USSR and this resulted in the birth of the National Steel Council Decree No.60 of the 18th of September 1979. Section 2(2) of the Decree, set up the Ajaokuta Steel Company Limited (ASCL)/NIOMCO, Delta Steel Company (DSC), and others, all incorporated as Limited Liability companies. Unfortunately, the vision of the founding fathers is still far from materialising. Nigeria cannot be said to be a steel-producing country, rather it depends largely on imported steel, which is a very expensive habit. Meanwhile, Nigeria has most of the required natural resources needed and all it has to do is make up for deficiencies in the quality of available raw materials so that good-quality steel is produced. The question is – why has Nigeria been unable to attain success in steel development and production, knowing fully well what it stands to gain? What are the immediate steps to be taken to address the state of affairs in the Nigerian steel industry, especially with the emergence of alternative forms of cleaner energy that will most likely drive down global oil prices and diminish revenue from crude oil sales?

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Keywords: Nigerian Steel Industry, National Steel Council, Ajaokuta Steel Plant Industrialization, National Development

The Evolution of Steel

Steel is known to be an "alloy of iron and other elements, primarily carbon that is widely used in construction and other applications because of its high tensile strength and low cost". Steel's base metal is iron. It was first produced in antiquity, but two decades before the industrial revolution, an improvement was made in the production of steel, which at the time was an expensive commodity, used only where iron would not suffice (McLean, n.d).

Steel played a key role in the industrial revolution, by enabling goods to be massively produced. It is important to state that the industrial revolution was aided by the discovery of Iron and Steel which made it possible to craft various implements and machines. The second revolution so to say was in the mid-19th Century with the invention of the internal combustion engine, harnessing of electrical energy, construction of canals, railways etc. Within this period also, there arose in such countries a number of coal mines, steel works and textile factories. Although, its second phase (involving iron and steel development 1840-1900) also occurred in England, like its initial counterpart, it extended to Germany and France and was as noted founded on achievements in the nexus of the electric engine and steel industry. This should be distinguished from the first industrial revolution that pertained to the advent of the steam engine, textile industry or the industrial loom and mechanical engineering: all concentrated in the United Kingdom, between 1780-1840 (Agbu, 2007: 8, citing Mudenda, 1995). As steel got cheaper, heavy machinery, cars, planes, ships, high-speed trains, railway lines, bridges, skyscrapers, steel cables, flat sheets, and rods were able to be produced.

The Open Furnace method of production was then recommended and used. The defence industry was boosted by the increased production of steel thereby resulting in the mass production of all manner of weapons, aircraft, and warships. The list of goods produced is not limited to those listed above.

The United Nations Industrial Development Organization (UNIDO), in its 1985 annual report pointed out the advantages of a country developing its steel industry, especially if they have the required natural resources to do so. (Ocheri et. al, 2017). Luckily, Nigeria falls into this category but what has remained worrisome is Nigeria's failure to develop this industry, which is the backbone of Nigeria's industrialization, economic growth, and national development. It becomes necessary to ask questions. Is it that the problems confronting Nigeria's steel industry are insurmountable? Or is it due to poor planning and Implementation or even the lack of political will on the part of her leaders to get this sector working? Indeed, what should be done at this time to salvage this industry?

The Tortuous Journey to Steel Development

Nigeria is a country in West Africa, with approximately 218 million people (NBS, 2023), blessed with a lot of natural resources. Since crude oil was found over sixty years ago, the various governments in power made it the primary foreign exchange earner for the country. This has resulted in other potential revenue-generating sectors being neglected. These other sectors, especially the mining and agricultural sectors have the potential of boosting Nigeria's economic growth and national development. Against this backdrop, the iron and steel sector comes to mind. As we know, the steel industry is the backbone of industrialization, economic growth, and national development all over the world. The economy of the country cannot be strong and vibrant without growth in its iron and steel sector or without the use of iron and steel in the manufacturing sector (Agbu, 2007).

The character of the Nigerian state in a way explains the slow pace of technology growth in the country. Its rentier character has consciously and unconsciously undermined various efforts made at the acquisition of technology and its development due to the external orientation of the leadership class. It is recognized that Nigeria has low technology and the contradictions of the domestic environment and the inability to follow through with its development plans and technology policy have served to retard its technological growth (Agbu, 2008). On

the whole, the poor state of Nigeria's technology development is worrisome. A situation in which Nigeria is still unable to develop and efficiently run an iron and steel plant sixty years after, wholly constructing a Nigerian-made car or ship not to mention the production of aircraft is worrisome. In 2020, the country spent only 0.13% of its GDP on R&D, and 0.14% in 2022 (Sesu, 2023). It is common knowledge that technology has much to do with the iron and steel industry, and the country's level of industrialization in terms of its productive capacity as opposed to just the importation and sale of products. The problem escalates when we consider the impact of the low productive capacity of the economy as a result of poor technology development, and the implications for Nigeria's ability to effectively defend and project its national interests, or pursue an effective foreign policy.

It was in 1958 that plans for the Nigerian steel industry commenced in earnest. According to Oluyole (2017), initially, the idea was to establish a rolling mill, but when it was discovered that Nigeria has an abundance of iron ore in different parts of the country, a decision was made to establish an integrated steel plant in Nigeria. A technical/economic cooperation agreement between Nigeria and the USSR resulted in soviet experts coming to Nigeria in 1967 to carry out a feasibility study on the viability of establishing an iron and steel plant in Nigeria. The team recommended the use of a blast furnace process for making iron and also recommended more geological surveys to be carried out in Nigeria, to see if a higher quality of iron ore and coal deposits could be found in the country. In 1970, the Federal Government signed a contract with Tyazhpromexport (TPE), a Russian firm. They were to carry out more geological surveys to ascertain the amount of iron ore and coal deposits that Nigeria had, so as to determine if an iron and steel industry could successfully take off. From the feasibility studies they initially carried out, a report was then prepared. In 1971, an extra ministerial agency was established by Decree to pinpoint efforts that were required to birth a steel plant. That Agency was called the "Nigerian Steel Development Authority" (NSDA).

Eventually, Iron ore was discovered in 1973 in Itakpe, Ajabanoko, and Oshokoshoko all located in the Kabba-Okenelokoja –

Koton Karfe area based in present-day Kogi state.
For the Ajaokuta Steel Plant, the raw materials required were designated as follows:

Table 1: Raw Materials Used for the Ajaokuta Steel Project MT/yr.

Raw Materials Used for Ajaokuta Steel Plant

Raw Materials	Source	Quantity | MT/yr
Iron Ore	Itakpe Deposits	2.135 m
Coking Coal	To be initially imported as local blend is being developed (Okuba, Enugu)	1.2 m
Limestone	Jakura, Ubo, Mfamosing	680,000
Dolomite	Osara, Burum	285,000
Manganese Ore	To be imported	85,000
Bauxite	To be imported	13,000
Steel Scrap	To be imported	130,000

Source: Sumarla Abdul - Akaba(2018) , The Role of Steel Complexes in Promoting Innovation and Rapid Industrial Growth in Nigeria, Speech at the Steel Summit, 9 - 10 August.

In addition to the above are other materials required in different quantities such as Ferro – Alloys, Aluminum, Sulphur, Caustic Soda, Soda Ash, Tar and Solar Oil amounting to nearly 40, 000 MT/yr.

In 1975, during the regime of Murtala Muhammed, the TPE Preliminary Project Report (PPR) specified that the raw materials base was to be at Itakpe in the Kogi power plant site (Ajaokuta). The first production volume would be 1.3m/mt. The Blast Furnace-Basic Oxygen Furnace was to be the process of production. The final product would be long products. In 1977, TPE submitted a completed and Detailed Project Report (DPR) on the Ajaokuta Steel Mill to the Federal Government (Oluyole, 2017). The National Steel Council Decree No.60 of 18th of September 1979 set up The National Steel Council (NSC). In Section 2(2), the following companies were by this Decree set up by the Federal Government for the production of steel in Nigeria;

- The Ajaokuta Steel Company Limited (ASCL)
- Delta Steel Company Limited
- Batagarawa Steel Company Limited;
- The Jos Steel Company Limited

- The Oshogbo Steel Company Limited; and
- The Associated Ores Mining Company Limited;

They were set up to mine iron ore, coking coal, and related minerals necessary for the production of steel or produce steel or by-products thereof. The National Steel Council was responsible for the central planning of the steel industry, research, and development, coordinating exploration for the necessary natural resources needed in making steel, assisting in repairing steel facilities, giving advice to the Federal Government, and helping to formulate appropriate policies to help in the development of the iron and steel industry (Official Gazette, No.44, Vol. 66). President Shehu Shagari in 1980, laid the foundation of the Ajaokuta steel plant as an integrated steel plant, on a 24,000 hectares of sprawling green-field landmass, built on 800 hectares. Works on Ajaokuta Steel Company commenced under the administration of President Shehu Shagari. It had achieved over ninety percent completion by 1983 when it was commissioned, having four sections of its rolling mills functioning, which were; light, billets, wire rod, medium section and structural mills (Bamidele et. al, 2014).

Table 2: Sections of the Ajaokuta Steel Company Limited (ASCL)

S/No.	**Plant Unit**	**Capacity (per annum)**
1.	Light Section Mill	400,000 tonnes
2.	Wire Rod Mill	130,000 tonnes
3.	Billet Mill	795,000 tonnes
4.	Medium Section & Structural Mill	560,000 tonnes
5.	Thermal Power Plant	110 MW
6.	**Engineering Works Complex comprising:**	

i.	Foundry & Pattern Making Shop	7,000 tonnes
ii.	Forge & Fabrication Shop	8,800 tonnes
iii.	Machine & Tools Shops	19,000 tonnes
iv.	Power Equipment Repair Shop	Repair of electric motors/generators etc.
v.	Rubberizing shop	Repair of conveyor belt; manufacturing of seals etc.
vi.	Erection base	Fabrication/assembly of various structures/components.
Vii	Raw Materials Preparation & Handling System	2,640,000 tonnes
Viii	Alumino-Silicate Refractory Plant	43,400 tonnes
ix.	Tar-Bonded Dolomite Refractory Shop	8,800 tonnes
x.	Lime Plant	91,000 tonnes
xi.	Coke-Oven Battery (1 of 2 completed)	440,000 tonnes
xii.	Oxygen Plant	36,000 cu. M/hr.

Source: Sanusi (2012), Nigerian Iron and Steel Industry – Historical Background, AISA.

The Current State of the Steel Industry in Nigeria

In 2010, the Goodluck Jonathan administration ordered an audit of the

Ajaojuta Steel Plant. A technical audit of the steel project was carried out by the REPROM Company. They reported that the plant was largely in good shape (Habib, 2016). The Australian company Energio Ltd. was granted a license in 2011-2012 to explore and develop the Agbaja and Ajabanoko iron ore fields (Ohimain, 2013). Further, the steel industry in Nigeria has generally under performed with many of the public and private rolling mills producing below capacity. There are at present 21 functional steel mills out of the 22 steel mills in the country. This is an increase from 5 to 21 mainly due to the Nigerian Industrial Revolution Plan (NIRP) articulated under the Muhammadu Buhari administration (Proshare, 2015).

Find below, a breakdown of the steel companies and functional rolling mills:

There are 13 Rolling mills, 7 Mini-mills, and 2 Integrated Steel companies (a total of 22 steel companies): in the country:

- South-East: Onitsha (Allied Steel Co.), Owerri (Metcombe Steel Co.); and Enugu (Niger Steel Co.).
- South-South: Aladja-Ovwian (Delta Steel Co. Ltd,), Asaba (General Steel Mill,) and Eket (Qua Steel Products).
- North-Central: Ajaokuta (Ajaokuta Steel Co. Ltd.), Ilorin (Union Steel Co. and Commercial Metal & Chemical Industries), and Jos (Jos Steel Rolling Company)
- North-West: Kano (Nigerian Spanish Eng. Co.Ltd,) and Katsina (Katsina Steel Rolling Co).
- Abuja: (Baoyao Future Lex)
- South-West, Ikeja (Asiatic Manarin Ind., Continental Iron & Steel Co., and Universal Steel Co.,), Ikorodu (Kew Metal Industries, and Mayor Eng. Co.,) Otta (Federated Steel Industry, Selsametal), Ibadan (Alliance Steel Co.) and Oshogbo (Oshogbo Steel Co). (Proshare, 2015).

It is important to note that the Ajaokuta Steel Co. Ltd. is also provided with expansive Engineering Workshops, apart from the other sections of the Plant with the following capacities for machine parts, small machinery and industrial parts:

Foundry Shop with a capacity to handle 7,000 tonnes of castings per annum.

- Forge & Fabrication Shop capable of doing 4,200 tonnes of forging and 4,200 tonnes of fabricated structures respectively per annum.
- Machine and Tools Shop with a capacity to produce 19,000 tonnes of machined products per annum. Over 400 lathe machines, boring and shaping machines are installed in one place.
- Power Equipment Repair Shop for the Repair of electric motors and generators up to 800KW, Power Transformers up to 1600 KVA.

The present output of the functional units of the Shops, are as indicated below:

- Casting and Machining of Spur Gears of diameters 406 x 182 and 344 x 182
- Fabrication of Ducting and Flanges for Cement Companies of Ranges diameter 150mm to diameter 1200mm
- Serration Jobs on flanges; diameters 250mm to 1400mm
- Repair of Cement Plant Kiln Main Drive Shafts
- Fabrication of Stone Crushers of Capacity 10 to 20 tonnes per hour for Small Scale Users
- Rewinding of 440KWA Electric Motor for NNPC
- Fabrication and Installation of Cupola Furnace capable of holding 1 tonne of Hot Metal at a time for foundry shops
- Casting of Dead Weights for Niger Dock Company
- Casting of Crusher Balls for Solid Mineral Processing
- Forging of eye-bolts for anchoring of ships
- Production of Masts for communication industries (Abdul-Akaba, 2018).

It is therefore important to state that while the Plant is yet to produce steel, this does not necessarily mean that it has been engaged with other limited production activities. With the political will based on a practical assessment of the state of the Plant as has been attempted, it is possible

that sections of this project can be made viable in a manner to generate resources to offset running costs, pending the production of steel proper.

Between 2003 and 2016, the steel plant went through several concessions, deals, and reversals, including the one between the Olusegun Obasanjo administration and Messrs SOLGAS Energy, USA, on a 10-year tenure and another given to Global Infrastructure Steel (Nigeria Ltd), which the Umaru Yar'Adua administration revoked. The case went to the London Court of Arbitration. Its resolution led to the modified agreement in 2016 which ceded the steel plant back to the Federal Government, and Global Infrastructure Steel, Nigeria Ltd. The uncoordinated deals no doubt, adversely affected the completion of the steel industry (The Sun, 2021). Hence, aside from funding constraints, poor implementation was a major factor in the non-performance of this project.

Indeed, after 14 years of legal encumbrances, which was part of the over 40 years of inactivity in the multi-billion-dollar Ajaokuta Steel Company, the Federal Government eventually reached a deal to pay off $497 million, as a settlement for the $5.3 billion claim made by Indian firms, Global Steel Holdings and Global Infrastructure Steel, over the ownership and control of Ajaokuta Steel Company and the iron ore mine" (Ogbuokiri, 2022). President Buhari had in 2019 expressed serious desires for the Ajaokuta steel plant to be completed before he leaves office in 2023. In 2020, the Senate passed a resolution urging the Federal Government to, as a matter of urgency, complete the Ajaokuta Steel Plant, (Ogbuokiri 2022). The Ajaokuta Presidential Project Team was inaugurated and urged to follow-up on a pact reached between President Buhari and Russia's President Vladimir Putin, which required the East European country to assist in completing the project and selecting a Russian firm to manage it on a Build-Operate-and-Transfer basis (Ogbuokiri, 2022). The project was to be funded with $1 million dollars, while Russia will add the sum of $460 million dollars, and MetProm Group, a Russian firm will then see to the completion of the project. Unfortunately, the concession agreement broke down. The reasons attributed to the outbreak of the COVID-19 pandemic and the

Russian/Ukraine war. Some are still of the opinion that this project can be salvaged through privatization, although previous attempts have all fallen through. Quite understandably, the Federal Government is cautious and not predisposed to completely hands off the investment fallen sunk in a whooping sum of US $10 billion.

In furtherance of its desire to have a viable steel industry, the Federal Government of Nigeria in 1977 signed a turn-key contract with a German-Austrian consortium for a Direct Reduction (DR) plant to be located in Ovwian-Aladja, Warri. This company became the Delta Steel Company (DSC). It was subsequently established in March 1979 as an integrated plant, and designed to produce steel using iron ore through the Midrex Reduction cum Electric Arc Furnace technology. It was 100 per cent owned by the government of Nigeria until its agreement with GSHL of India in 2005. Delta Steel may be regarded as the pioneer steel producer in Nigeria and in West and Central Africa. It produces Cold Briquettes Iron (CBI), Direct Reduced Iron (DRI) and billets. It was officially commissioned on 29 January 1982 with the rolling mills completed on a turnkey basis (Ogbu, 1995). This was despite the problems besieging this industry in the country which led to many of the other steel projects having long gestation periods. Ajaokuta was a case in point. Nonetheless, insufficient releases of working capital from the commissioning date until around May 1996 never allowed the plant to produce beyond 25 per cent of design capacity (Mohammed, 2002).

It was therefore not surprising when the Nigerian government under the civilian administration of Olusegun Obasanjo went into some arrangement with Voest Alpine (the original builders) and Osaka Steel of Japan under a partial privatization programme to refurbish and operate the plant. The government intended to sell off all the steel plants and the rolling mills to private-sector operators. The Nigerian government committed of US $45 million, while the Voestalpine component of the consortium promised to source a loan of US $55million to repair the plant. Osaka Steel was supposed to come up with a working capital of US $40 million, and brought its letter of commitment. But while the Nigerian government provided its own component of the finance, Voestalpine had problems in sourcing its

loan, as MIGA, the mitigating institution of the World Bank refused to guarantee the loan to Voestalpine (Daily Trust, 2002). Meanwhile, the Nigerian government had to release the sum of N900 million to the DSC for the settlement of the backlog of staff salaries (Agbu, 2002: 13). Eventually, this agreement was terminated and the Nigerian government continued its search for another investor.

However, by late 2005 the government came into agreement with Global Steel Holdings (GSHL) of India for the revitalization and operation of this plant. The P.K Mittal-controlled GSHL acquired an 80 per cent stake in the plant. The DSC plant manufactures longs and structurals, has a 2 million tonne pelletisation plant, a 1.4 million tonne per annum directly reduced iron (DRI) plant and a 1.8 million tonne per annum electric arc furnaces. It also has a captive Port with an annual material handling capacity of 4 million tonnes. The Port could be used for both inbound and outbound traffic. It is important to note that GSHL also took over the management of the Ajaokuta Steel Company in August 2004, and negotiated iron mining leases of the Nigerian Iron Ore Mining Company (NIOMCO). The iron ore linkages were expected to be used for both the Delta and Ajaokuta plants. The DSC resumed operations, which had stalled in April 2005 with the switching on of the pellet plant. Despite misgivings about the state of the plant, the Indians only needed to service the rolling mills without changing major components for the plant it to become functional. The company then started production of commercial quantities of liquid steel and its conversion into billets in December 2005, after about 10 years of inactivity.

Benefits of a Thriving Steel Industry in Nigeria

The benefits of a thriving steel industry are so many; firstly, the country will join the league of Industrialized Countries, not only will she be able to manufacture goods cost-efficiently for domestic use, but also boost her foreign reserves as this will be a big foreign exchange earner.

Nigeria has depended for over sixty years on oil to run the economy. As the world is becoming more and more aware of the drastic effects of pollution from the production of oil and gas flaring, more

research is currently ongoing into finding alternative sources of cleaner cheaper energy. Recently, oil prices have been taking a nose dive in the world oil market and Nigeria has been experiencing dwindling revenues from oil sales. Steel would definitely be another foreign exchange earner to help boost the economy.

A viable steel industry will provide employment for thousands of Nigerians, experts, contractors, construction workers, transportation, manufacturing, energy industries, and those that cater to the needs of the workers (catering and health sector). This will help solve, to a large extent, the big unemployment problem in Nigeria. The youth unemployment rate in Nigeria in 2021 was 53.4 per cent according to the National Bureau of Statistics (NBS, 2023).

A nation is as strong as its ability to defend its citizens and territorial sovereignty, and that is why countries try to manufacture their weapons, military aircraft, missiles, submarines, torpedoes, etc. The countries that are able to do this are the advanced industrialized countries today. They have the military capability to back up their actions. Iron and steel development is, therefore, an important national security issue. In sum, the steel sector creates upstream Industries that include mining industries for iron ore, limestones, and dolomites; downstream Industries like Fertilizer Plants, Graphite electrode plants, Tar distillation plants, Benzene plants, Air conditioning, Ventilation equipment, Household appliances manufacturing units, Steel doors and window manufacturing units; and ancillary Industries- Manufacture spare parts, consumables, and construction materials (Ikpeseni, 2021).

Going by the unemployment rate in Nigeria and the fast-growing population, and therefore the abundant energy of its youthful population believed to constitute about 65 per cent of its population, a thriving steel industry that will help bridge the infrastructure gap to facilitate speedy industrialization is imperative to achieving a strong economy and reclaiming her position among the emergent economies of the world.

Reasons for the Poor Performance of the Steel Industry in Nigeria

The contribution of the steel industry to Nigeria's GDP is very poor,

despite the country having the largest GDP in Africa, estimated at US$448.1 billion as of 2019 (World Bank, 2020). Professor Ibrahim Garba, who served as the 14th Vice-Chancellor of the Ahmadu Bello University, Zaria, and was seconded to the Federal Ministry of Mines and Steel Development, Abuja, where he was in charge of the development and implementation of the Mining Cadastral System in the country pointed out that Ajaokuta steel complex is not working because of fundamental errors made the Russians when they were building it. According to him, they gave us what they wanted, and not what we really needed at that point in time. He pointed out that although Nigeria had an abundance of iron ore, the quality was very low and as a result, Nigeria had to blend high-quality iron ore, from Guinea, with the local one, before producing steel. He pointed out that the required purity is 50-60% to produce high-quality steel, but what is available locally at Itakpe is 35%.

Nigeria is said to have shares in an iron ore mine in Guinea, to enable her obtain high-grade iron ore more easily (Ogbuokiri, 2022). That is why the Delta Steel Company at Aladja-Warri was located by the seaside so that iron ore could be more easily imported. Being in the country's Niger Delta region access to gas supply justified the use of the Direct Production method to produce steel. The reliance on imported iron ore made the cost of production to be extremely high and non-competitive in the end. Some high-grade iron ore is found around Lokoja but contains certain unwanted impurities which are particularly difficult to remove. Further, Nigeria's coal is largely non-coking. In short, for the Ajoakuta project, the Russian Contractors gave us a Plant that needed imported iron ore and coal-based Blast Furnace technology. Whilst the DSC could have done better since it is based on a different process that relies on gas which Nigeria has in abundance; the non-availability of high-grade iron ore constrained its chances for successful production. Whilst high-grade iron ore of about 63% purity sold for $96 per tonne in 2017, it now sells has a Spot price of $120.24 (MarketInsider, 2023). This cost is quite high for a developing country to bear in production on a sustainable basis. Even the 27 Countries of the European Union that produce steel spend about 65 per cent of the

cost of production on raw materials input, labour and other costs like power consume the remainder of the cost of production. Yet, these countries continue to produce steel because they know the importance of this material.

Nigeria's founding fathers many of them quite young in the 1960s, in their 30s and 40s certainly realized the importance of this industry, but lacked the technical knowledge to appreciate the enormity of demands an integrated Steel Plant can make against the backdrop of a polarized entity which affected their decisions. They knew that industrialization was the fastest route to national development hoping that Nigerian iron ore and coal would be adequate, but instead, the Russians built a plant that would use imported raw materials. The Ajaokuta Plant cannot run efficiently in the long run without local iron ore and coking coal to blast the furnaces. The various governments that have been in power do not seem to be willing to sit and really consider the fundamental defects in the conception of the steel plant, instead, they are more interested in granting one concession after the other. When you tackle a problem the same way over and over again, and you keep failing, then there must be something fundamentally wrong that is not being addressed. With the way the Ajaokuta Plant was conceived, the steel it can produce in its present state will be too expensive and will not be able to satisfy the local market or compete in the global market without government subsidization. The question is does the Nigerian government need this project so badly that it is willing to continue to put in more money, or is it time to scale down, cut the losses and invest in another steel project?
There is also the problem of huge logistics costs involved. According to Ohimain (2013), Iron which is a bulk material was being mined at Nigerian Iron Ore Mining Company (NIOMCO) at Itakpe in North Central Nigeria and then sent to the DSC down south for the production of billets, a distance of 327km by rail. Billets produced from DSC will then be sent to the three inland rolling mills, one in South Western Nigeria (Oshogbo), another in North Central (Jos), and the third in North West (Kastina), all these locations are far from Aladja from where the billets were produced.

There is also the problem of policy somersaults by successive governments. From inception, it has been one concession and cancellation after the other. This lack of a definite well-defined road map, that survives various administrations, has not helped the industry at all. Further, the fact of cost-overrun was also a major hindrance in the development of the steel sector in Nigeria, especially the Ajaokuta Steel Project.

It goes without saying that there is a need for more indigenous technical experts to be in control. They must be involved at the drawing board stage and throughout the process because foreign experts may not always have the best intentions at heart. A situation in which Nigeria imports steel from overseas or from them, rather than produce is more beneficial to the partners. Self-sufficiency in steel production is imperative for a country's manufacturing sector, and therefore her industrialization, and national growth.

The Way Forward

Unfortunately, leadership deficit as a productive input has been the bane of Nigeria's development as a country since her political independence in 1960, more so in the past five decades. Almost everything of value is politicized in Nigeria. As many have observed, the siting of the steel plants and the rolling mills was primarily done out of political manipulations rather than economic considerations or national interest (Irogboli, 2019). This of course led to costly logistic problems and did not allow for easy access and ease of doing business that today frustrates the efforts at revitalizing the steel industry. Foreigners often take advantage of the contradictions and weaknesses inherent in the Nigerian entity to exploit the country, by not giving the right advice, as consultants. This also affected the conception and implementation of the Steel projects in the country. There should be more well-trained and qualified experts involved in making technical decisions for the country. The people who initiated the Ajaokuta Steel project did not quite understand the long-term consequences of importing iron ore and coking coal and the importance of location for the manufacture of steel.

The Ajaokuta Steel Plant has become a drain pipe, draining away valuable resources that could have been deployed into other sectors of the economy. The steel plant should be overhauled as most of the equipment there is now old and rusty. A group of Nigerian experts need to go and understudy Japan and South Korea and find out how they managed to be among the top 10 steel-producing countries, without having any raw materials for the production of steel. Japan depends entirely on imports of iron ore and coal for its steel industry and yet can keep this sector not only running but also being among the top in the industry. According to the World Bureau of Metal Statistics, the volume of iron ore imported to South Korea in 2021 was about 74.2 million metric tons, despite the cost. Therefore, while the argument that it is expensive to obtain the basic raw materials needed to continue production is plausible, it does not quite tell the entire story because other input factors and considerations also contribute to frustrating the efforts at the revitalization of the industry in Nigeria. There is what is referred to as the 'Nigerian Factor', which implies that things are not always done logically the way they should be, due to primordial considerations. Therefore, until reason triumphs over primordialism and corruption, the right solutions may never be found or applied.

Nigeria has iron ore and coal in large quantities and effort should be made to improve on the qualities to the required purity for steel production using available technologies. Meanwhile, further exploration should be undertaken to see if better-quality raw materials can be found. The country could also explore the possibility of buying more shares in other mines of other African countries and see if we can arrange a trade-by-barter deal with them. For example, oil for high-grade iron ore and coking coal could be negotiated to enable continued production.

A well-thought-out road map of how to run the steel industry is recommended. There were just too many uncoordinated concession deals. Often one government comes in and overturns what the previous government did. A well-thought-out road map, by experts, for the industry, that will be reviewed every two years, to make sure everything is moving as planned, will go a long way in stabilizing the

activities in the steel industry. This will address the poor planning and implementation that has bedevilled the industry. Host communities where mining and steel production activities take place should be adequately taken care of concerning the provision of infrastructure, employment opportunities and education. The Federal and State Governments and foreign companies must mitigate, as much as possible, the negative effects arising from mining and production activities. This will help reduce hostility and ensure support for the projects by the host communities.

I conclude on the note that if the Ajaokuta Steel Plant had effectively taken off as planned, Nigeria would have been an industrialized country by now, taking its seat amongst the developed countries of the world. In contrast, the Ajaokuta Steel Company has failed to serve its purpose, while Delta Steel Company at Aladja and the three rolling mills at Oshogbo, Jos, and Kastina are moribund, working below their installed capacity. The steel rolling mills depend on imported billets which come at a huge cost due to the inability of the integrated steel companies to function. The privately owned rolling mills now depend on the recycling of metal scraps. The attempted privatization of the steel companies did little to revive them as the privatization process was marred by irregularities (Irogbili, 2019). The little steel that the country produces is just a drop in the ocean compared to what could have been done had the initial vision been actualized. Politics, poor funding, inadequate raw materials and poor organization, all speak to the poor planning that affected the steel industry in Nigeria. The foreign contractors see through the cracks and capitalize on these to exploit and undermine the vision for an integrated steel plant in the country through bad advice. Nigeria's leaders will do well to move away from the political economy of 'state capture' and its negative implications to one of reason and inclusivity, in other to better utilize the abundance of the leadership and technical skills in the country. This will help ensure the refocusing of the effort at revitalization of the steel industry, and re-energize the journey towards industrialization.

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