

Chinese steel hegemony and its impact on Africa's development

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Abstract

The African market has over the last three decades been flooded with Chinese steel thus making Africa the largest dumping ground for Chinese manufactured steel. Taken cognizance of the strategic importance of steel to a nation's socio-economic development, this paper seeks to examine the impact of Chinese steel hegemony on the African market. The paper adopts the qualitative method of research and is presented in a thematic manner. It deplores mainly the instrument of secondary sources such as journals, published books, government releases and various governmental and non-governmental data banks to gather its data for the research. The paper argues that the incursion of China into the African steel market boosted the economic and political profile of China but inadvertently impacted negatively on Africa's socio-political and economic psyche. It further argues that as long as China still hold the hegemony of steel in Africa, Africa may find it difficult industrializing as steel development is the bedrock of nations' industrialization. The paper finally urge African States to muster the needed political will and harness her steel potentials by revamping the various steel projects in the continent and other allied industries to maximise the benefits accruable to steel producing nations.

Keywords: Steel Development, Africa, China, Industrialization

Introduction

Steel which is an alloy of metals is a valuable article of trade that has not just psychological satisfaction to steel producing nations but it also has a multiplying effect on the economies that possesses it. This is because, steel has been adjudged as the bedrock of industrialization and every nation desirous of industrialization must pay special attention to her steel development. Industrialization has been largely due to man's knowledge and application of steel and with steel works, there was a rapid development of arms and armaments, railways, airplanes, automobiles, ships, turbines, heavy duty machineries and modern bridges.¹ Despite the enormous advantages that steel development provides, Africa seems to be lagging behind in this all important

1 C. Ocheri, O. Ajani, A. Daniel and N. Agbo, 'The Steel Industry: A Stimulus to National Development', Journal of Powder Metallurgy & Mining, 6(1) (2017): 1.



sector even though the continent is blessed with abundant potentials making the continent an easier prey for the dumping of steel by China.

China is the world's largest exporter of iron and steel. The volume of China's 2019 exports was almost 200% that of Russia who is the world's second largest exporter of iron and steel, and roughly 250% higher than the combined exports of Japan and South Korea. China has successfully dominated the world steel market as she exported iron and steel commodities to about 224 countries and territories in 2019 alone.² Africa has received its own fair share of Chinese steel export which inadvertently hurt the socio-political and economic psyche of the continent. About 80% of Africa's steel import is from China and this has made the continent subservient to the Chinese who dump cheap and sometimes substandard steel products on the continent.³

It is worthy to state here that as much as the Chinese steel appears to be cheaper with some other fringe benefits attached to its import, it has a negative impact on the economy of the African society at the long run and in no small measure deprives the continent the ability to harness her steel potentials for the general good of the continent.

Scholars such as NJG Ponds aver that steel development is a matter of national pride and prestige while Agbu, Enesi and Oyewole in their various studies connect the nexus between steel development and economic prosperity. Hakansson, Popescu, Nica, Hu and Ping worked extensively on the growth of the Chinese steel and her dominance of the world steel market and how the African nations profit from the Chinese steel through cost reduction, creating aids for the continent amongst others. However, no studies had been done to interrogate the impact of Chinese steel hegemony on Africa's development strive. This study therefore seeks to examine the impact of Chinese steel hegemony on the continent of Africa. The paper has been arranged thematically to explore six themes ranging from the historical development of steel in China, the Chinese hegemony in Africa and its impact on the African economy, Africa's steel consumption and the state of her steel industry, and the need for the revitalization of African steel industries.

Historical Development of Chinese Steel

China's steel total production was about 158,000 tons in 1949 when the People's Republic of China was established. Chinese steel production then was highly concentrated in the northeast region of China, largely because of the Japanese influence and occupation, before, and during World War II. In the 1950s with assistance from the defunct United Soviet Socialist Republics (USSR), the Chinese government began the building of her steelmaking industry. By 1957, China's annual steel production was over 5.3 million tons which was a tremendous increase from what it was eight years ago. By 1961,

² William Håkansson, Steel Consumption and Economic Development in China and India An Econometric Analysis, (B.A. Project, Luleå University of Technology, 2020), 46

³ Rachel Tang, 'China's Steel Industry and its impact on the United States: Issues for Congress', Congressional Research Service, www.crs.gov,(September 21, 2010):.2

there was a political rift between China and the USSR which informed the USSR's withdrawal of its assistance to China.⁴ The Chinese economy thereafter underwent some setback during the Chinese Cultural Revolution between 1966 and 1976. When Deng Xiaoping who succeeded Mao Tsetung, began the economic reforms in the late 1970s, the whole country was opened gradually to the world and adopted a more market-oriented approach, and so did the China's steel industry.

In the late 1970's, during the Chinese economic reforms, Chinese steelmakers began to adopt more advanced technology from foreign steel producers and also welcomed foreign investment and imports of raw materials. China's steel industry has grown significantly thereafter especially since the mid-1990s and has now become the world's largest steelmakers. China's major steelmaker, Shanghai Bao steel, which was built in the late 1970s was ranked the second largest steel manufacturer in the world in 2009.⁵ China produced over 567 million tons of crude steel, nearly half of the world's steel in 2009 and majority of these steel was used to meet domestic demand in China. However, as its steel production continues to grow, overcapacity become a major concern to Chinese industrial policy makers, as well as steelmakers outside China. Thus, the need to source for outlet for her excess steel produce became expedient.⁶

China made it a policy to heavily invest and grow steel due to its strategic importance to the overall health of the economy. One of the principal objectives of China's seventh five-year plan was to grow steel production to 60 million metric tons by the end of 1990, and to be increased to 80 million metric tons by 1995.⁷ At the end of these due dates, China did not only met its targeted goals but surpassed these goals by producing 61 million tons of crude steel in 1989, and 95 million tons in 1995. In 1996, Chinese steel output went beyond 101 million metric tons surpassing the 100 million metric tons mark for the first time, as China overtook Japan to become the world's largest steel producer.⁸ China has held the title of the world's largest steel producer since that year. In 2003, China produced 222 million metric tons of steel which was more than the combined production of the United States of America and Japan.⁹

The success story of China's rising steel production reached its peak in 2009 when China produced about half of the world's steel. The Chinese steel continued to make headlines in the international steel market because unlike most major steel producing countries whose production was curtailed considerably due to the economic recession of 2008, Chinese steel output grew by 13.5% in 2009 from 500 million metric tons in 2008.⁸ In 2009, was when

4 Rachel Tang, 'China's Steel Industry and its impact on the United States: Issues for Congress', Congressional Research Service, www.crs.gov, (September 21, 2010):2

5 G. H. Popescu, E. Nica, E. Nicolăescu, G. Lăzăroiu, 'China's Steel Industry as a Driving Force for Economic Growth and International Competitiveness', METALURGIJA, 55(1) (2016):124.

6 G. H. Popescu, E. Nica, E. Nicolăescu, G. Lăzăroiu, 'China's Steel Industry as a Driving Force for Economic Growth and International Competitiveness', METALURGIJA, 55(1) (2016):124.

7 Rachel Tang, 'China's Steel Industry and its impact on the United States....',3.

8 Rachel Tang, 'China's Steel Industry and its impact on the United States....',4.

9 World Steel Association Report, 2004, 78.

China accounted for about 46% of the world's total crude steel output as discussed above. It is instructive to note that just a decade earlier, in 1999 to be precise, the total crude steel output of China was 16% of the total world crude steel production. According to World Steel Association statistics, China produced approximately 323 million metric tons of crude steel during the first half of 2010. This high production level was supported by China's domestic steel demand, spurred by strong economic growth during the first decade of the 21st century.¹⁰

During the course of China's rapid industrialization and urbanization, domestic demand for steel increased. Commercial and residential construction, infrastructure building, and automobiles all use significant amounts of steel. Thus, the major steel-consuming sectors in China are construction, automotive, shipbuilding, and home appliances. As China's steel-producing capacity continued to increase, it did not take long to outweigh the domestic consumption needs. Available data for first quarter of 2010, released by World Steel Association, suggests that China exported 23.28 million metric tons of semi-finished and finished steel product.¹¹ The Chinese steel industry is highly fragmented and has its own share of problems. The industry has over 1,000 steel players, which makes the domestic market highly competitive and difficult to control. Its growth also faces constraints such as dependence on imported iron ore and high energy consumption. The Chinese government has however shown interest in stepping up its efforts to curtail overcapacity and to consolidate and restructure the steel industry by implementing policies that aids the development of the Chinese steel.¹²

Factors that aided the development of Chinese steel

It is imperative to understand the factors that aided the growth of Chinese steel industry and indeed all of Chinese industries. The Chinese government assisted the growth of its steel by devaluation of her currency, granting of export rebates and/or quotas, subsidization of corporate financing, provision of relatively conducive environmental and ensuring of cheap labor amongst others. These government aided policies have tremendously assisted the growth of Chinese steel but it has adversely affected the steel players in the international system. China's restrictions on exports of some raw materials, lowers the cost of such raw materials in the home economy, and increased global prices of these products thereby producing an unfair trade advantage to Chinese steel industries.¹³ Below are some of the government induced factors that incentivized local production of steel and other manufactured goods which inherently aided the development of Chinese steel that gives it a higher competitive advantage in the international market and boost the Chinese local economy.

10 World Steel Association Report, 2004, 78.

11 Rachel Tang, 'China's Steel Industry and its impact on the United States, p,2

12 Steel Statistics Year Book released by World Steel Association, (2005): 45.

13 G. H. Popescu, E. Nica, E. Nicolăescu, G. Lăzăroiu, 'China's Steel Industry as a Drive, p,125.

Fiscal Incentives: The Chinese government uses a powerful set of fiscal incentives, including tax exemptions, preferential tax rates, tax offsets, value-added tax refunds, special amortization and depreciation rules, and the lowering of import duties for core technologies, raw materials, and equipment to encourage steel production at a cheaper rate.

Grants: The Chinese government also runs a number of nationwide Research and Development (R&D) programmes that direct grants and personnel to key areas and research institutions which the steel sector has benefitted immensely.

Financial support: Start-up capital, access to cheap land, access to bank loans at subsidized rates and lines of buyer credit are being provided by the Chinese government to enable steel investors access funds and have a conducive environment for their businesses. Strong State control over the banking sector means that credit can be directed towards strategic economic activities that are adjudged to be critical to national development such as steel.

Foreign Direct Investment (FDI) guidelines: Through an investment catalogue, FDI can be encouraged or discouraged in various areas. Where it is encouraged, FDI brings financial and human capital and technology to impact positively on the economy. The Chinese government has used foreign ownership limitations and required technology transfer in many sectors of the economy including her steel development.

Government procurement: The government procurement is another way to stimulate innovation. It can help new technologies achieve scale, help young firms bridge funding gaps, and direct funding to key areas. China has actively promoted domestic standards, requiring indigenous ownership of intellectual property rights, fast-tracking patent applications, and steering purchases to domestic companies.

Standards: The State has encouraged the development of indigenous Chinese technology standards. Not only does it prioritize purchase and usage of the standards, it also restricted the usage of competing international standards. If need be, the government can also erect entry barriers for foreign products by requiring compliance with complex and burdensome localization requirements and standards.

Human resources: The Chinese government has made great efforts to attract professionals, mostly Chinese, who have studied and worked abroad. These returnees known as 'sea turtles' bring with them a good deal of human capital imbued with experience and knowledge.

Infrastructure projects: Government's commitment to infrastructure is a critical factor for developing industries. Whether telecommunications infrastructure or highways and high-speed train lines, these investments create the environment necessary for the other factors listed above to bear fruit. Steel development depends on lots of infrastructural lines for its smooth operation.

and the government's infrastructural project is a major booster in this direction.¹⁴

Chinese Steel Policy: The Chinese government has a very comprehensive policy for its steel development. The policy dubbed 'China's Steel Industry Development Policy' comprise nine chapters and thirty-nine articles. The nine chapters include: Policy Goals, Steel Industry Development Plan, Adjustments in Industry Layout, Policy for Industrial Technology, Structural Adjustments in Corporate Systems, Investment Management, Raw Material Policy, Economical Use of Steel Products and the ninth chapter is captured 'Others'.¹⁵ The government makes it a point of policy to build up an integral balance between various exterior factors for the development of China's steel industry. The steel industry is viewed by the Chinese government as a basic industry which is very strategic for China's economy and the Policy therefore is intended as the guideline for the sound development of China, s steel industry and hence China, s economy.¹⁶

China's Steel hegemony in Africa and state of African Steel

China joined the World Trade Organisation in 2001 and has since emerged as a major player in the international steel trade. China has maintained a share of 12 to 15% in overseas traded steel products in value terms between 2002 and 2012.¹⁷ By joining the World Trade Organisation, the Chinese government accepted far-reaching constraints on industrial policy prohibiting subsidies to support individual companies, the micro-management of state-owned enterprises and other WTO regulations. Chinese authorities were thus faced with the difficult decision to either continue using the foreign trade channel for their developmentalist agenda or to give up control and incentive mechanisms and switch to a neutral stance. Government actors, recognizing the influence of steelmaking on overall economic development and loath to forfeit control of foreign trade flows, opted for a mixed approach.¹⁸ Throughout the last decade, China has maintained a trade surplus in steel products which needed a market, and Africa became an increasing market for Chinese steel.

Africa's demand for steel products amounted to 33.4 million metric tons which accounts for less than 2.% of the world total steel needs that stood at 2,003 million metric tons.¹⁹ Nigeria and indeed most part of Africa import their steel needs from China and India. Egypt and South Africa are the only countries on the African continent that produces steel. They ranked 22nd and 26th and produced 7.3 and 6.3 million metric tons of steel respectively in 2018,²⁰ a far

14 Daniel Poon, 'China's Development Trajectory: A strategic opening for industrial policy in the South', Paper No. 218 December 2014 P.24

15 China's Steel Development Policy, Steel Business Briefing, Shanghai, (2005):p,2

16 China's Steel Development Policy, Steel Business Briefing ...,3.

17 Peter In der Heiden, and Taube Markus 'China's Iron and Steel Industry at the Global Market Interface...', 124.

18 Peter In der Heiden, and Taube Markus 'China's Iron and Steel Industry at the Global Market Interface...', 124.

19 P.H. Enesi, 'Steel Development in Nigeria and the Missing opportunities in West Africa', Wukari International Studies Journal, 3(1), (2020): 67

20 UN COMTRADE, United Nations COMTRADE database, Retrieved November 2020

cry from the 33.4 million metric tons of steel needed in Africa same year. However, Morocco, Nigeria, Tunisia and Zimbabwe produce for their domestic steel plants which are consumed locally. Compared to other regions of the world, Africa is relatively generously endowed with several steel alloying minerals which include chromite, cobalt, manganese, tantalite, nickel and iron ore but without a developed steel industry apart from Egypt and South Africa. South Africa has a fully developed steel industry and most of the generalisation that apply to most other African countries would be out of place when one is referring to South Africa. The current annual combined installed capacity of existing integrated plants in Africa has been estimated at about 16.0 million tons and that for semi-integrated mini-plants at 1.7 million tons of steel. The total annual combined capacity of existing African production units (8 integrated, 29 mini-plants and 45 rolling mills) is as follows: Iron - 8.50 metric tons; Steel - 10.40 metric tons; Long rolled product - 8.00 metric tons; Flats - 3.30 metric tons and Pipes - 0.25 metric tons.²¹

Most of the integrated complexes came into existence in the early 1960s after most of Africa had gained independence. These steel complexes underwent expansion and diversification to attain their present status during the following decades. Five integrated plants are based on the conventional blast furnace - oxygen converter route, whereas the three complexes inaugurated during the 1980s in Nigeria, Egypt and Libya are based on direct reduction - electric arc furnace route. The capacity of the individual integrated complexes vary from 0.19 million tons (Tunisia) to 2 million tons (Algeria) and 6.2 million tons (South Africa). Most of them produce mainly long rolled products with the exception of South Africa, Algeria and Egypt which also produce flats and tubular products. Production with respect to the above integrated works represents about 50% capacity utilisation on the average. The Delta Steel Company in Nigeria, for example operates at a very low level of utilisation (15 - 20%) whereas a similar direct reduction plant, El-Dikheila Complex in Egypt is operating at more than 100% of installed capacity.²²

The spread of the semi-integrated mini-plants are more uniform with 15 countries having 29 mini-plants comprising units ranging in size from 10,000/year in Mauritania and Ethiopia to over 200,000/year in Nigeria and Egypt. The average capacity utilization is about 25%. Invariably, bars, rods, wire and small profiles, which are commonly used in construction, constitute the products of these mini-plants. Production of flats is in South Africa, Egypt and Algeria and production of tubes exists in South Africa, Algeria, Egypt, Libya, Morocco, Kenya and Zimbabwe.²³

Africa's domestic need for steel far surpasses her production despite the abundant potentials at her disposal as discussed above. The militating factors for this low level of production is not the focus of this paper, but it was this

21 Mohammed Sanusi, 'Steel And Trade in Sub-Saharan Africa', A Paper Presented at the 4th Regional Meeting on Trade in Steel Products organised jointly by the Arab Iron and Steel Union and The Jordan Steel Company held at Amman, Jordan On 3rd To 5th June, 2000, 7.

22 Mohammed Sanusi, 'Steel And Trade in Sub-Saharan Africa', p.7.

23 Ibid, p.8.

window that made China made an inroad into Africa and claimed hegemony over her steel market. As discussed earlier, China had excess steel crude to export and Africa became a readily available market for dumping of steel products. The United States in a swift move to curtail their nation being a dumping ground for China who produces about half of world total steel consumption imposed 25% tariff on steel products imported to the United States in March 2018.²⁴ Although, the tariff was not country specific but analysts have suggested the high tariff on steel products was targeted at China. This became more evident when a series of tariff followed specifically on Chinese goods. This US policy was to protect the home steel industry and to save US from being a dumping ground for Chinese cheap and sometimes substandard steel. Unfortunately, African states could not take this bold step because she is economically dependent on China for her steel needs and this has in no small measure negatively impacted on Africa's development.

The Impact on Africa's Steel Development

According to Edwards and Jenkins the impact of Chinese import caused the South African manufacturing sector to drop by 5% in 2010, Reduction in employment amongst other negative indicators that adversely affected the South African economy. The authors used the Chenery-type decomposition and econometric estimation to evaluate the impact of Chinese trade on production and employment from 1992 to 2010.²⁵ The impact of Chinese steel hegemony in African can broadly be discussed with respect to its political, social, economic and psychological effects.

Political Impact: The strategic importance of steel is so overwhelming that nations who desire political relevance in the international system boasts of their steel capacity. Steel is indeed an index of national power. Since the Second World War, nations of the world have come to appreciate the unique role of steel as the base for rapid technological progress. Britain's industrial revolution and indeed the technological development of Europe was as a result of the revolution in steel which was the springboard for modern technology. The United States became a supreme post-war global power as it systematically boosted its steel capacity to excel the entire output of continental Europe.²⁶ Nations all over the world develop steel to acquire political prestige and respect. Steel producing nations are defence capable nations such as Russia, China and India. This is because, the development of armaments and armory is a function of steel and no sane or politically aware nation would leave her defence needs in the hands of other countries especially if she has the potentials to develop steel. In this light, Africa may not be able to achieve this feat of political relevance and national pride as steel producing continent by harnessing her steel potentials if her market is saturated with cheap and

24 Global Steel Monitor, 'Steel Export Report: China', Department of Commerce, USA, (May 2020): 19.

25 Lawrence Edwards and Rhys Jenkins, 'The Competitive Effects of China on the South African Manufacturing Sector', (December 2014): 11.

26 Petr In der Heiden, and Taube Markus 'China's Iron and Steel Industry at the Global Market Interface: Structural Developments and Industrial Policy Interventions'. The Copenhagen Journal of Asian Studies, 29(2), 2011, 121.

sometimes adulterated steel from Chinese steel industries. Thus, the Chinese steel hegemony in Africa has denied Africa and Africans the right to become power brokers in their own right. It must be quickly noted that trade relations between nations is laden with diplomatic maneuvers especially as it will favour the bigger nation and in this case, trade agreements are hugely skewed in favour of China.

Economic Impact: This is where the African continent adjudged to be poor and undeveloped could have made a huge impact if her steel potentials are harnessed. Steel is an economic nerve trigger. It triggers off a series of economic activities ranging from smelting, iron ore mining, beneficiation, and preparation; coal mining, sizing and preparation, coking in coke ovens; lime stone quarrying and calcining; manufacture of oxygen and lances for steel refining; refractory bricks including clay preparation and firing; air and fuel pre-heating and atomizing of oil and gas; power construction, generation and distribution, transportation services amongst others. In addition to these large scale economic and industrial activities associated with the raw materials used for steel making, are ancillary downstream sectors such as foundry, machining, fabricating and processing industries, as well as extensive services such as transportation and supplies which are given a big boost.

Agbu, Enesi, and Tenuche indicates that the production of raw steel is attended to by over twenty types of ancillary industries and associated economic activities.²⁷ All these ancillary industries would have gone a long way to stimulating the economy of Africa, generate employment and create wealth for its teeming unemployed and under employed youths, and conserve hard earned foreign reserve. It is instructive to note that Africa expended colossal amount of money on the importation of steel that runs into billions of dollars annually. This colossal amount of money is a waste of the continent's meager resources and could have been diverted to other vital sectors of the economy. These economic activities are not operational because the continent did not harness her steel largely owing to the saturation of the African steel market with Chinese steel.

Closely linked to the economy is industrialization. Steel has variously been described as the bedrock of industrialization. Most industrialised countries place much premium on harnessing their steel potentials. It is evident that Africa cannot harness her steel potentials to become industrialised if the steel needs of the continent are supplied by China. If the continent continued to be spoon fed by China, she may lost her chance of becoming industrialised. Some of these strategic productions achievable if Africa harness her steel potentials include but not limited to the following:

- 1 rail production;
- 2 manufacture of various agricultural equipment in line with the agricultural revolution agenda of the various national governments;

27 B.O. Tenuche, *The Steel Industry in Nigeria*, (CAL TOP Publications Nigeria Ltd., 1994) 51.

- 3 manufacturing various types of steel specifications for the construction industry;
- 4 manufacture of refinery spares, platforms, large storage tanks amongst others to support significantly, local content enhancement in the oil and gas sector;
- 5 manufacture of defence equipment and armament;
- 6 manufacturing of communication and power towers;
- 7 production of piscoat and pifill at Itakpe which are highly required in the oil sector;
- 8 tailings and granite aggregate production at Itakpe are useful in the construction of roads, buildings concrete poles etc; and
- 9 granite boulders from mines are used as ballast for rail line construction.²⁸

Technology Transfer: There is no doubt that actualization of Africa's steel companies will bring about technology transfer to the continent which will open a new vista for Africa's technological take-off. It is expected that when Africa has a functional steel company, foreign investors would be attracted to participate in the steel development. Indeed, nothing can expedite and actualize the much talked about technology transfer to developing countries especially Africa like the take-off of her steel industries.²⁹ Africans engaged in the industry will acquire techniques of steel on the job thereby enhancing our technological knowhow. If all Africa does as a continent is to import finished steel products, then there would never be technology growth and development. Without Africans being engaged in manufacturing and maintenance, making mistakes and learning there-from, there would never be acquisition of expertise and they would always depend on the expertise of others.³⁰

The need to develop the African Steel Industry

Having discussed the dumping of the Chinese steel on African market and the impact on Africa's development, it is then imperative to explore the need to develop the African steel industry. The potential for the development of the iron and steel industry in Africa is so promising for the continent considering the existing natural resources that it possesses. The continent has a very large reserve of iron ore, manganese ore, chromite, cobalt and nickel ores, as well as substantial reserve of coal, natural gas, and oil, together with huge water reserves and hydropower potential for electricity production as well as availability of fluxes, clays and refractories. Africa has iron ore reserve estimated at over 34 billion tons which is about 15% of the total world reserve. The largest African reserve of ore deposit is in Democratic Republic of Congo with 5 billion tons, Zimbabwe with 3.3 billion tons, and Algeria with 3.025 billion tons. Other large deposit of ore in Africa are found in Angola, Cote d'Ivoire, Liberia, Libyan, Mauritania, Nigeria and Sierra Leone.³¹ Despite Africa's

28 P.H. Enesi, 'Steel Development in Nigeria and the Missing opportunities in West Africa', *Wukari International Studies Journal*, 3(1), (2020): 60.

29 C. Ocheri, O. Ajani, A. Daniel and N. Agbo, 'The Steel Industry: A Stimulus to National Development', *Journal of Powder Metallurgy & Mining*, Vol 6(1) (2017): 3.

30 C. Ocheri, O. Ajani, A. Daniel and N. Agbo, 'The Steel Industry: A Stimulus...', 3

31 Mohammed Sanusi, 'Steel And Trade in Sub-Saharan Africa' ...,9.

extensive resource base, only a few deposits are being commercially exploited. Thus only South Africa, Algeria, Egypt, Liberia, Mauritania, Morocco, Nigeria, Tunisia and Zimbabwe rank among the world's iron ore producers. Most of Africa's iron ore resources remain largely undeveloped. South Africa, Liberia, Mauritania and Algeria are the only African exporters of iron ore. Egypt, Morocco, Nigeria, Tunisia and Zimbabwe produce for their domestic steel plants only.³²

Africa accounts for about 95% of the world's chromite reserve. Most of its production comes from Zimbabwe with proven reserves of over 500 million tons. Other significant reserves occur in Madagascar and the Sudan. Africa's share of the world's cobalt reserves is about 33% with Democratic Republic of Congo and Zambia possessing respectively 75 and 20% of the continent's reserves. Other reserves are found in Botswana, Uganda and Zimbabwe. Africa contains 78% of the world's known reserves of manganese, most of which are exploited in Gabon (26% of world's reserve) and Ghana. Significant reserves are also found in Burkina Faso, Democratic Republic of Congo, Angola, Cote d'Ivoire and Togo but they are unfortunately still undeveloped. Nickel reserves in Africa amount to 10% of the world's total and are found mainly in Burundi, Botswana, Ethiopia and Zimbabwe which is the largest producer. Other alloying metals in Africa are tungsten found in Democratic Republic of Congo and Zimbabwe; and niobium/tantalum found in Democratic Republic of Congo, Mozambique, Zimbabwe and Nigeria. Only a limited quantity of alloying elements is at present being used in a few African countries including Algeria, Egypt, Nigeria and Zimbabwe for producing special grade and alloy steels.³³

The bulk of African coal reserves occur in Eastern and Southern Africa. Zimbabwe, Botswana and Mozambique are endowed with the most extensive deposits which is about 85% of the total Africa's reserve. Only 18 countries have coal deposits and of these only Zimbabwe, Mozambique, Swaziland and Algeria have coking coal that can be used in blast furnaces. Coal is also produced in Zimbabwe, Botswana, Zambia, Swaziland, Tanzania, Malawi, Algeria, Egypt, Morocco, Nigeria, Niger, and Democratic Republic of Congo. However, only Algeria, Egypt and Zimbabwe are using coal for coke production and iron making on a large scale. Nigeria has coke oven batteries that have been commissioned since 1992 but not operated commercially till date.³⁴ The largest natural gas reserves are in Algeria, Egypt, Libya and Nigeria. Algeria is a major world producer and exporter of natural gas. This natural gas endowment in the continent has formed the basis for the establishment of the following midrex direct reduction plants: Alexandria Iron and Steel Company, Dikhela, Egypt with an installed capacity of 840,000 tons per annum; Executive Board Iron and Steel Company. (EBISCO) Misurata, Libya with an installed capacity of 1.1 million tons per annum; and Delta Steel Company, Aladja, Nigeria with an installed capacity of 1.02 million tons per annum.³⁵

32 Ibid., 9.

33 Ibid., 10.

34 P.H. Enesi, A History of Steel Economy and Development: A Case Study of Ajaokuta Steel Project, 1980 - 2015, (Ph.D Thesis, Nigerian Defence Academy, Kaduna, 2017), 67.

35 Mohammed Sanusi, 'Steel And Trade in Sub-Saharan Africa' ...,10.

On Hydro-Resources, all African countries, except Algeria, Libya, Botswana, Chad and Togo, have significant exploitable hydro-resources for electricity production as well as water resources for industrial usage. Africa's technically exploitable hydro-potential is estimated to be over 360 GW, which is more than 16% of the world total with the Democratic Republic of Congo river potential alone been greater than 100GW. Of this, less than 5% has been exploited. Irrespective of these abundant natural reserves, the steel industry in African is still in a state of slumber except for Egypt and South Africa. At best the industry can be described as being in its infancy. Even in countries like Nigeria and Zimbabwe where something substantial has been done, what is considered substantial, is really nothing to write home about. However, Sanusi argues that when the state of the industry in Nigeria and Zimbabwe is compared with situations in the other African countries, then these two countries could indeed beat their chests with pride for having acquired the sophisticated technologies for steel making in their integrated steel plants.³⁶

No doubt, Africa is so blessed with the resources to develop her own steel but as mentioned earlier, Africa's steel has been marred by several factors which Enesi describes as 'multifaceted and interwoven'.³⁷ However, we will go ahead to briefly look at countries within the continent that have tried their hand at steel production.

South Africa: The total output of Iscor, the leading steel producer in South Africa today is 6.2 million tons of crude steel, and is ranked 28th in the world. The total annual liquid steel output of South Africa is not more than 6.5 million tons. A few re-rolling mills melting scraps contribute the balance of some 300,000 tons over and above the 6.2 million tons production of ISCOR. Many other finishing mills depend on ISCOR for her billets or flat sheets for her downstream processes. South Africa exports steel to the USA and to some other African countries.³⁶ Indeed South Africa has joined the league of today's world steel producers.

Nigeria: Nigeria conceived steel development as early as 1958 and set machinery in motion for its actualization. Amidst regional controversy and other problems the country was able to establish the integrated steel plants of Ajaokuta and Aladja in Kogi and Delta states respectively. The country also established the inland rolling mills at Jos, Katsina, and Oshogbo who are to get their billets from the Ajaokuta Steel Plant. Ajaokuta's first phase was designed to produce 1.3 million tons of liquid steel using the Blast Furnace/Basic Oxygen (BF) Technology. Delta Steel Company was also designed to produce one million tons of liquid steel using the Midrex Direct Reduction technology. The three inland rolling mills have capacities of 210,000 tons each.³⁸ There are numerous private sector efforts in steel production or re-rolling of billets. These efforts are in mini-mills usually between 50,000 and 100,000 tons capacity each. The combined efforts of all these mills have never really added more than 300,000 tons annually to the overall production capacity of the nation, due mainly to

³⁶ Ibid., 8.

³⁷ Enesi P.H., 'The Rise and Fall of Ajaokuta Steel Project: An Analysis of the Social Cost', in MANDYENG Journal of Central Nigeria Studies, (Early Harmattan, 2019): 23

³⁸ P.H. Enesi, A History of Steel Economy and Development...,67.

either operational inefficiency or the lack of operational working capital, or sufficient electric power.³⁹

Zimbabwe: The British colonialists left the then Rhodesia with a 1 million tons integrated steel plant in a dilapidated state. The black Zimbabwean staff of the plant took over the plant when they were not really prepared for that take over.⁴⁰ The plant was renamed Zimbabwean Iron and Steel Company (ZISCO). Even though at reduced production capacity, the plant continued to produce. After a while, it was clear to the Zimbabwean Government, that the plant needed to be refurbished. In a typical World Bank economic style, the Zimbabwean Government was advised by the World Bank to privatize the plant as is. After some two years or so waiting for buyers and finding none, the Government then decided to refurbish the plant first before divesting to the tune of 75% in a privatization exercise.⁴⁰ During this refurbishing exercise, a new sinter-plant was put in place. A new blast furnace was also built, with the cooperation of the Chinese. Some refurbishing was also done in the rolling mills. The newly refurbished ZISCO has reached a production level of over 70% of the original 1 million tons capacity. Other areas of activities in Zimbabwe include re-rolling mini-mills like the 50,000 tons wire-rod mill at Kwekwe, and the 7,000 tons seamless, tube plant (Tor-steel), and factories for steel components (spare-parts mainly) manufacturing. Incidentally Zimbabwe is rich in good quality Iron ore, and coking coal.⁴¹

Other nations in Africa that has steel linked operations include Ethiopia who has a foundry and machine shop with an installed capacity of 64,000 tons; Kenya has steel re-rolling mills, and machine shop with cumulative total capacity about 300,000 tons; Ghana has a scrap-smelting, re-rolling and machine shop with a total rolling capacity of about 80,000 tons; Mauritania also has a 5,000 tons re-rolling facility; Mozambique produces and exports coking coal and Iron Ore; Democratic Republic of Congo has a steel re-rolling facility with a 100,000 tons capacity; Angola's raw-materials and gas are yet to be fully exploited but the country has a re-rolling capacity of 50,000 tons.⁴² Other countries within the continent of Africa that has steel re-rolling capacity include Mozambique with 80,000 tons, Uganda - 40,000 tons, Tanzania- 24,000 tons, Mauritius- 75,000 tons, Liberia - 20,000 tons, Madagascar - 36,000 tons, Togo - 32,000 tons and Cameroon - 40,000 tons.⁴³

Africa is indeed endowed with raw abundant raw materials needed for steel development. However, in what has become known as 'resource curse' in developmental studies, these raw materials are in most cases exported or not exploited at all. On the other hand, most of her consumption of finished and semi-finished products are imported which led to the Chinese becoming a steel hegemon in Africa and thereby weakening her economy. If Africa wants to

39 Ibid., 67.

40 Mohammed Sanusi, 'Steel And Trade in Sub-Saharan Africa'...,12.

41 Ibid., 13

42 African Regional Implementation Review for the Commission on Sustainable Development, Report on the Review of African Sustainable Industrial Development, (January 2006): 34.

43 African Regional Implementation Review for the Commission on Sustainable Development, Report on the Review of African Sustainable...,34.

develop and catch up with the bigger economies, it then needs to formulate a clear cut steel policy to enable her maximise the gains of steel such as stimulating the economy, rapid industrialization, employment generation, wealth generation and conservation of foreign reserve. No doubt, that there are challenges in developing steel, studies have proven that taken cognizance of the abundant opportunities in the steel sector which has the capacity of stimulating the economy to prosperity, no sacrifice is too much to make to ensure its success especially if the nation involved has the needed political will to muster as Ponds succinctly puts it, it is gratifying and psychologically fulfilling to own a steel industry.

Conclusion

The strategic importance of steel to the economic development of a nation cannot be overemphasized as steel is the bedrock of industrialization. Little wonder the industrial revolution in Britain which extended to most parts of Europe in the mid-18th century was as a result of development in iron where machines were fabricated to perform industrial labour with ease thereby leading to industrialization. Steel development has enormous advantages as it spells economic prosperity for nations that possess it. Africa is lagging behind in this all important sector despite the huge potentials she has. This gap was succinctly filled with the Chinese steel which had claimed hegemony over Africa's steel market and inadvertently had thwarted the industrialization drive of Africa. While several studies on steel had neglected the huge impact of importing to steel into Africa as against developing her steel potentials, It is the opinion of this paper that this strategic steel sector should be harnessed for the continent to achieve industrialization, economic prosperity, national pride and prestige and indeed curb the unmitigated rise of her unemployed populace. In view of the huge benefits of steel development, it is believed that the nations of Africa should confront the militating problems of governance, corruption, steel colonialism, finance amongst others and muster the needed political will to revamp their steel industries.

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