

Rising Energy Costs: A Bane to Nigeria's Manufacturing Sector Transformation

Nurudeen A. Sheu

Department of Economics, Federal College of Education (Special), Oyo, Oyo State.

Abayomi S. Taiwo

Department of Economics, Tai Solarin University of Education, Ijagun, Ogun State.



Abstract

The manufacturing sector is indispensable for realising Nigeria's age-long economic transformation quest. However, the rising cost of energy, a critical input factor, continues to raise production costs and undermine the manufacturing sector's competitiveness. This paper explores Vietnam's manufacturing success to draw lessons Nigeria can leverage to become a manufacturing powerhouse in Africa and the world. The paper discusses five episodes in the relationship between energy costs and manufacturing sector growth between 2015Q2 and 2024Q1, with the general conclusion that rising energy costs inhibit manufacturing sector growth in Nigeria. Taking cues from Vietnam, Nigeria should formulate a comprehensive national strategy to reduce energy costs, diversify its energy mix towards renewable energy, and leverage public-private partnerships to mobilise the necessary funding for energy infrastructure projects.

Introduction

Manufacturing is pivotal in economic transformation and industrialisation, particularly in developing and emerging economies like Nigeria. As the country seeks to reduce its reliance on oil revenues, sustained industrial growth is crucial for creating employment opportunities, enhancing productivity, and improving the standard of living (Afolabi and Ogunjimi, 2020; Afolabi, 2022). However, Nigeria's manufacturing sector is energy-intensive and faces many challenges that stifle its growth, competitiveness, and potential to spearhead its economic transformation. One of the most significant challenges is the high and fluctuating energy cost. Energy constitutes a fundamental input for manufacturing processes, and its availability, affordability, and reliability directly affect the sector's competitiveness and overall contribution to Gross Domestic Product (GDP) (Asaleye et al., 2021). Energy costs represent a considerable proportion of the operational expenditure incurred by manufacturers and directly impact production capacity, pricing strategies, and profit margins.

Unfortunately, Nigeria's energy landscape has historically been characterised by inefficiencies, including an unreliable power supply from the national grid and high costs of alternative energy sources such as Premium Motor Spirit (PMS), diesel, and gas. These challenges result in increased production costs for manufacturers, constrained capacity utilisation, limited technological advancement, and reduced global competitiveness (Babatunde and Afolabi, 2024). Despite abundant natural energy resources, including oil, gas, and renewable energy potentials, Nigeria has encountered difficulties meeting its manufacturing sector's energy demands (Iwashokun et al., 2020).

The recent policy changes introduced by the current Nigerian administration, particularly the removal of the fuel subsidy, have introduced new dynamics into the already complex relationship between energy costs and manufacturing. To illustrate, the price of petrol (PMS) increased from an average of N238.11 in May 2023 to N770.54 in July 2024, while diesel prices rose significantly from N844.28 to N1379.48 over the same period (NBS, 2024). The fluctuating fuel prices, compounded by inadequate supply and hoarding by energy firms, have led to the frequent resurgence of fuel queues. These not only result in the loss of valuable working hours but also adversely affect labour productivity and hinder efforts to achieve economic transformation. While the recent policy reform is designed to address market inefficiencies and encourage a more liberalised energy sector, its immediate impact on the cost structure of manufacturers is significant and complex.

Consequently, this paper explores the impact of rising energy costs on Nigeria's manufacturing sector and draws lessons from Vietnam to mitigate these challenges and promote sectoral growth. This is critical in the Nigerian context, where many manufacturing firms have been forced to look beyond the unreliable national grid to power their operations. Unlike in many other countries, where manufacturing sectors primarily depend on stable electricity from centralised power systems, Nigerian manufacturers rely heavily on self-generated electricity, predominantly through diesel-powered generators. The high and fluctuating cost of diesel, which

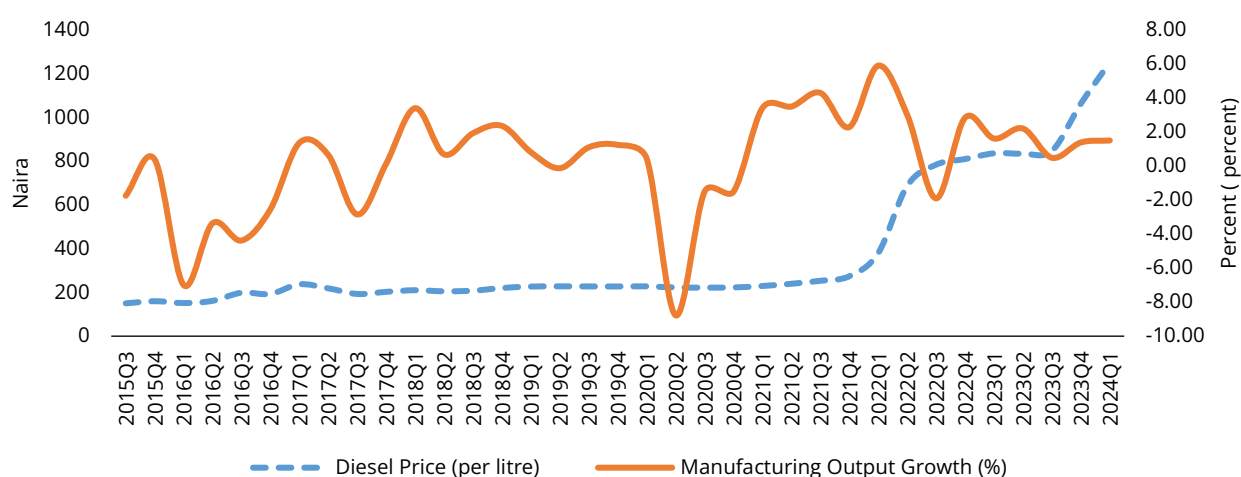
has seen sharp increases due to market dynamics and the recent deregulation of fuel prices, has introduced a distinct set of challenges that have not been fully captured in the existing studies (Iwashokun et al., 2020; Asaleyey et al., 2021). This paper takes cues from Vietnam's experience due to its successful transition from a low-income, agrarian economy into one of the fastest-growing manufacturing hubs in Southeast Asia and a key player in global supply chains for electronics, textiles, and machinery.

Energy and Manufacturing Landscapes in Nigeria and Vietnam

Figure 1 illustrates the trend of diesel prices and manufacturing output growth in Nigeria from 2015Q3 to 2024Q1, which can be grouped into five key episodes. The first episode (2015Q3-2016Q4) was marked by negative manufacturing output growth, coinciding with an upward trend in diesel prices. This period was defined by Nigeria's economic recession, caused by a sharp drop in global oil prices, currency depreciation, and rising inflation. Diesel prices, crucial for running generators due to unreliable electricity supply, drove up production costs, exacerbating the economic slowdown and dragging down manufacturing output. In the second episode (2017Q1-2019Q4), the manufacturing sector began to recover, with positive output growth recorded in most quarters despite fluctuating diesel prices. This recovery was driven by Nigeria's exit from recession in 2017, supported by government policies and an improved global oil market. Although diesel prices remained elevated, manufacturers adapted by improving operational efficiencies and adjusting pricing strategies to maintain growth.

The third episode (2018Q1-2019Q4) was characterised by relatively stable diesel prices of around N200-N230 per litre, but manufacturing output growth remained inconsistent. While stable diesel prices provided manufacturers with some planning certainty, growth was constrained by deeper structural issues such as poor infrastructure, foreign exchange instability, and reliance on costly self-generated energy. The fourth episode (2020Q1-2021Q4) saw a sharp economic shock due to the COVID-19 pandemic, resulting in a steep decline in manufacturing output (-8.78 percent in 2020Q2), even though diesel prices remained high. However, the sector rebounded in 2021 as lockdowns eased, trade resumed, and government stimulus helped reignite growth. The fifth episode (2022Q1-2024Q1) was marked by soaring diesel prices, which climbed from N379.80 to over N1,250 per litre. Despite these unprecedented price increases, manufacturing output exhibited mixed growth, with some quarters showing resilience and others struggling due to unsustainable energy costs. This highlights the urgent need for Nigeria to transition towards more reliable and affordable energy sources to reduce dependence on diesel and ensure sustainable growth in the manufacturing sector.

Figure 1: Trend of Diesel Price and Manufacturing Sector Growth



Source: National Bureau of Statistics (NBS), 2024

Vietnam has transitioned from being an agrarian economy to a critical global manufacturing powerhouse. **Table 1** compares its energy and manufacturing profile with Nigeria's. The comparative data reveals significant disparities between Vietnam and Nigeria regarding their energy and manufacturing sectors. Vietnam's energy mix is diverse and robust, with substantial contributions from coal (124.31 TWh), hydropower (76.79 TWh), and solar (25.46 TWh), resulting in 100 percent electricity access and high per capita electricity generation of 2,688 kWh. In contrast, Nigeria heavily relies on natural gas (32.30 TWh) and struggles with only 59.5 percent electricity access, leading to a low per capita electricity generation of 182 kWh. Vietnam's manufacturing sector also accounts for 86 percent of its merchandise exports. It contributes 25 percent to GDP, growing at 8.2 percent annually, whereas Nigeria's manufacturing exports comprise just 5 percent of its merchandise exports and contribute 14 percent to GDP, with a lower growth rate of 2.4 percent. These figures underscore Vietnam's successful economic transformation through manufacturing, highlighting Nigeria's urgent need for reforms and investment in its energy infrastructure and industrial policies to enhance its economic development.

Table 1: Energy and Manufacturing Profile and Nigeria and Vietnam

Category	Vietnam	Nigeria
Energy Mix (2023)	Coal: 124.31TWh	Gas: 32.30TWh
	Hydropower: 76.79TWh	Hydropower: 8.28TWh
	Solar: 25.46TWh	Solar: 0.05TWh
	Gas: 26.52TWh	
	Wind: 10.02TWh	
Electricity Access (2021)	100 percent	59.5 percent
Per capita electricity generation (2023)	2,688kWh	182kWh
Energy use (2021)	12,399kWh	2548kWh
Manufactures exports (percent of merchandise exports) (2022)	86 percent	5 percent
Manufactures imports (percent of merchandise imports) (2022)	75 percent	45 percent
Manufacturing, value added (percent of GDP) (2022)	25 percent	14 percent
Manufacturing, value added (annual percent growth) (2022)	8.2 percent	2.4 percent

Source: Our World in Data & World Development Indicators

Economic Transformation through Manufacturing: Lessons for Nigeria from Vietnam's Success

Vietnam's economic transformation over the past few decades illustrates how a strategic focus on manufacturing can propel a nation from low-income status to a competitive player in the global market. It is important to note that Vietnam is rich in coal and sources much of its electricity from this natural resource. Vietnam's government has played a crucial role in maintaining low energy costs, significantly contributing to the country's rise as a global manufacturing powerhouse. Vietnam ensures manufacturers benefit from lower operational costs by implementing direct energy subsidies for industrial users, especially those in energy-intensive sectors such as electronics, textiles, and consumer goods (Iram and Malik, 2017; Eckardt et al., 2018).

These subsidies often provide industrial consumers with energy at rates below those paid by residential users, making the country a competitive destination for foreign investment. In addition to subsidies, the government also established long-term energy contracts that offer price stability, protecting manufacturers from the volatility of global energy markets. This predictability in energy costs is essential for manufacturers planning long-term investments. Moreover, the government introduced regulatory frameworks that promote energy efficiency and offered tax breaks and incentives to companies that adopt energy-saving technologies (Rand and Tarp, 2020). These measures allow manufacturers to reduce their energy consumption while maintaining high production levels, further enhancing Vietnam's attractiveness as a manufacturing hub.

In addition to government policies and subsidies, Vietnam implemented a strategy to diversify its energy mix, given the risks of over-reliance on traditional energy sources such as coal and hydropower (International Trade Administration, 2024). Historically dependent on coal and hydropower, Vietnam aggressively expanded its renewable energy sector, particularly solar and wind power, to reduce its vulnerability to energy supply disruptions and price fluctuations. Its rapid renewable energy development has been a cornerstone of its strategy to manage energy costs and support its manufacturing sector. Over the past decade, Vietnam has emerged as a leader in Southeast Asia's renewable energy market, driven by favourable government policies such as the feed-in tariff (FIT) scheme, which guarantees long-term, above-market prices for energy produced from renewable sources. This policy has attracted significant domestic and international investment in solar and wind energy projects, leading to a surge in renewable energy capacity.

The country's geographic advantages, including high solar irradiance and a long coastline, make it well-suited for renewable energy development. This diversification of energy sources enhances Vietnam's energy security and stabilises energy prices for manufacturers. It also has the dual benefit of reducing dependence on imported fuels and aligning the country with global sustainability trends, making Vietnam a more attractive destination for multinational companies seeking to lower their carbon footprints. In addition, the Vietnamese government focused on expanding energy generation capacity by building both traditional power plants and renewable energy facilities to meet growing industrial demand (Electricity and Renewable Energy Authority and Danish Energy Agency, 2022). The government also upgraded its transmission and distribution networks to reduce energy losses and improve the reliability of power delivery to manufacturers. The government leveraged public-private partnerships to finance these infrastructure improvements and attract foreign investment and expertise. The result is a modern, resilient energy grid that supports the high demand of Vietnam's growing manufacturing base.

Conclusion and Policy Recommendations

Nigeria's path to economic transformation through manufacturing can benefit significantly from the lessons from Vietnam's success. The following recommendations could ensure Nigeria replicates Vietnam's success to become an African and global manufacturing powerhouse:

- Nigeria should formulate a comprehensive national strategy that directly targets reducing energy costs for industrial users, particularly manufacturing. This strategy should prioritise establishing long-term energy

contracts for manufacturers to provide stability and operational expense predictability. It should be reviewed and adjusted regularly based on energy market trends to maintain effectiveness. This would make Nigeria a more attractive destination for foreign investment, especially in energy-intensive manufacturing sectors.

- Like Vietnam, Nigeria should diversify its energy mix beyond traditional sources like oil and gas. Vietnam's push towards renewable energy (solar and wind) significantly contributed to stabilising its energy costs. With its rich renewable energy potential (solar, wind, and hydropower), Nigeria can prioritise the development of these sectors through government incentives like feed-in tariffs and attractive investment policies to draw local and international investors into renewable energy projects.
- The energy infrastructure in Nigeria needs to be modernised through investments in power plants, renewable energy facilities, and upgraded transmission and distribution networks to ensure reliable power for manufacturers. Nigeria must prioritise similar investments by upgrading its national grid, reducing transmission losses, and increasing the reliability of power delivery to industries. Public-Private Partnerships (PPPs) can be instrumental in mobilising the necessary funding and technical expertise for such infrastructure projects, as demonstrated in the case of Vietnam.

References

- Afolabi, J.A. (2022). Diversification towards industrialisation: A pathway to building a resilient Nigerian economy. *Economic and Policy Review Journal*, 20(2), 8-14.
- Afolabi, J., & Ogunjimi, J.A. (2020). Industrialisation: A roadmap to inclusive growth in Nigeria. *Economics and Policy Review Journal*, 18(1), 20-28.
- Asaleye, A.J, Lawal, A.I., Inegbedion, H.E., Oladipo, A.O., Owolabi, A.O., Samuel, O.M., & Igbolekwu, C.O. (2021). Electricity consumption and manufacturing sector performance: evidence from Nigeria. *International Journal of Energy Economics and Policy*, 11(4), 195-201.
- Babatunde, M.A., & Afolabi, J.A. (2024). Advancing sustainable industrial development in Africa: The role of institutional quality and renewable energy. *Environment, Development and Sustainability*. <https://doi.org/10.1007/s10668-024-05170-8>
- Chinedum, E.M., & Kenneth U. Nnadi, K.U. (2016). Electricity supply and output in Nigerian manufacturing sector. *Journal of Economics and Sustainable Development*, 7(6), 154-163.
- Eckardt, S., Mishra, D., & Dinh, V.T. (2018). Vietnam's manufacturing miracle: Lessons for developing countries. <https://www.brookings.edu/articles/vietnams-manufacturing-miracle-lessons-for-developing-countries/>
- Electricity and Renewable Energy Authority (EREA) and Danish Energy Agency (DEA) (2022). *Vietnam Energy Outlook Report 2021*. https://ens.dk/sites/ens.dk/files/Globalcooperation/vietnam_energy_outlook_report_2021_english.pdf
- International Trade Administration (2024). Vietnam - power generation, transmission, and distribution. <https://www.trade.gov/country-commercial-guides/vietnam-power-generation-transmission-and-distribution>
- Iram, N., & Malik, M.H. (2017). *Vietnam as a new manufacturing powerhouse: Key lessons*. SBP Staff Notes: 01/17. <https://www.sbp.org.pk/publications/staff-notes/SN-1-17-Vietnam-Manu-Powrhouse.pdf>
- Iwashokun, A.F., Adejumo, A.V., & Olayiwola, A.S. (2020). Energy sector development and manufacturing output in Nigeria. *International Journal of Economics and Financial Issues*, 1(4), 217-235.
- NBS (2024). E-library. <https://nigerianstat.gov.ng/elibrary>
- Rand, J., & Tarp, F. (2020). Eight lessons on small and medium-sized enterprises in Vietnam. <https://www.wider.unu.edu/sites/default/files/Publications/Policy-brief/PDF/PB2020-1-Eight-lessons-on-SMEs-in-Vietnam.pdf>