Multinational Companies and the Rhetoric of Climate Change and Sustainable Development: Evidence from Cement Production in Nigeria

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Abstract

By the proposition of the pollution heaven hypothesis, foreign MNCs operating in developing countries are greater emitters of CO2 than their local counterparts. They expectedly move their operations from countries of stringent regulations and institutional standards to those with weak institutional settings. Using the case of Dangote Cement and Lafarge Africa in Nigeria, the strength of the home (rather than host) country institutions is capable of deterring foreign MNCs from a choice of environmental unfriendly modes of production. For local MNCs, we find that the quality of home country institutions and political patronage play key role in their choice of modus of operations. In such institutionally weak jurisdictions like Nigeria, local MNCs think more in terms of finding cheaper rather than more environmentally friendly and sustainable ways of production. In doing this, they strategically engage in CSR activities that offer them government protections and shift public attention from their consequent negative externalities.

Key words: **Nigeria, MNCs, Cement Production, Coal, Third-Party Costs, and Climate Change**

1. Introduction

Climate change debate goes beyond environmental damages and extends to issues around sustainability and energy efficiency. In this debate, large businesses feature prominently because of the negative impact of their operations on the environment and the social climes. The operations of multinational corporations (MNCs), particularly the aspects outsourced to poorer countries of the world, are found to account for as much as one-fifth of global climate-changing carbon dioxide (CO2); as emissions from the likes of British Petroleum, Coca Cola, and Samsung far outweigh the total emissions from some of the poorer countries (Win, 2020). The 2017 Carbon Majors Report published by Climate Accountability Institute similarly indicates that only 100 energy companies constitute more than '70% of the world's greenhouse gas emissions since 1988' (Griffin, 2017). The situation is even worst in Africa, where the capacity of the countries to mitigate and manage climate risks is impaired by limited public awareness, lack of required institutional and governance capacity, and rent-seeking orientation of business operations. In African, the dependency of most governments on mineral resources and the engagement of large MNCs join to make climate change debate even more complex. Not only do the governments lack the capacity to effectively regulate big businesses in environmental and social issues, but such businesses are often treated by the governments as national 'benefactors' that desire the privilege of being given sufficient space and protection (Henekom and Luiz, 2017).

Although the accusing finger often points at foreign MNCs in terms of having divided loyalty and having conflicting interests against their host economies, the emergence of local MNCs does not seem to have changed the climate change rhetoric. The emerging dynamics have instead resulted to a higher incidence of climate risk; and to a situation where the CO2 emissions have on the average maintained a steady rise since the 80s, in the case of Africa (see Figure 1). Studies have also shown that the operations of MNCs and the increasing climate risks are intertwined (Hilson and Haselip, 2004; Dam and Scholtens, 2012; Neiman, 2013). Of emphasis, Dam and Scholtens (2012) utilized the case of 44,000 subsidiaries of 540 MNCs operating in 188 countries to show that 'less environmentally responsible firms are relatively more often located in countries with weak environmental regulation' (p.148).

The threats imposed by the operations of MNCs on the environment and the notable scanty commitments by governments in poorer regions like Africa have in recent times challenged the evergreen merits of MNCs presence in developing countries. The situation poses a serious challenge to the idealized premise that MNCs export best practices, skills, and technology (Pratt, 1991). It also casts doubt as to the attractiveness of MNCs (national or foreign) as agents of sustainable development. As a convention, large corporations operating in most parts of Africa have instead applied the strategy of intervening in social services delivery in place of taking direct responsibilities of the environmental and social consequences of their actions. Such a strategy means relieving the governments of their socioeconomic responsibilities, and by so doing diverting public attention from the consequences of their operations. This model of MNC engagement in Africa results to compromise of regulatory protocols in ways that increase the risk of negative tendencies such as natural resource curse, Dutch Disease, and rent-seeking (Asongu and Nwachukwu, 2016).

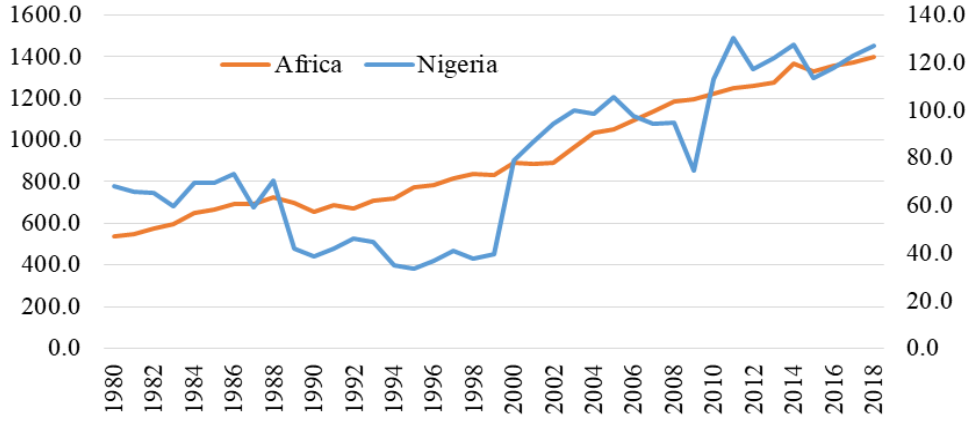


Figure 1: Annual CO2 Emissions

Shortcomings in the capacities of national institutions to effectively govern the environment and mitigate climate risks constitute by far the greatest negative exposure large-scale corporations face in Africa. The common argument centres around the claim that lack of governance capacity and ineffective commitment on the part of the firms create room for circumvention and avoidance of national and international standards (Henekom and Luiz, 2017; Szeftel, 2000). In Nigeria, for example, empirical evidence on the inability of the government to curtail the environmental excesses of oil companies in the Niger Delta region of the country is widely available (Odera et al., 2018; Boele et al., 2001; Zimmer, 2010; Uduji et al., 2017) – suggesting that in the absence of strong governance and regulatory institutions, the presence of MNCs is a source of threat to the environment.

This paper examines the level of commitments of multinational companies (MNCs) to climate change and sustainable development. Specifically, the paper focuses on the operations of one of Africa's largest mining and manufacturing sectors – coal and limestone for cement production. Coal is held to make a larger share of fossil fuels, more than gas and oil (Griffin, 2017:40); and cement production accounts for up to 8 percent of the world's total CO2 emissions (Rodgers, 2018). Both cement and coal are among the top CO2 emitters in the case of Nigeria, as the evidence in Figure 2 shows. The fact that coal and limestone are both nonrenewable energy raises greater issue against environmental sustainability. In the main, the inherent third-party costs arising from coal and limestone mining is arguably second to oil than the case in other extraction industries. Like oil, coal mining brings about "degradation of local natural resources, including air, water and soil"; and the host region suffers more severely in a situation where the environmental costs of extraction and combustion are neglected (Singer, 2011:3).

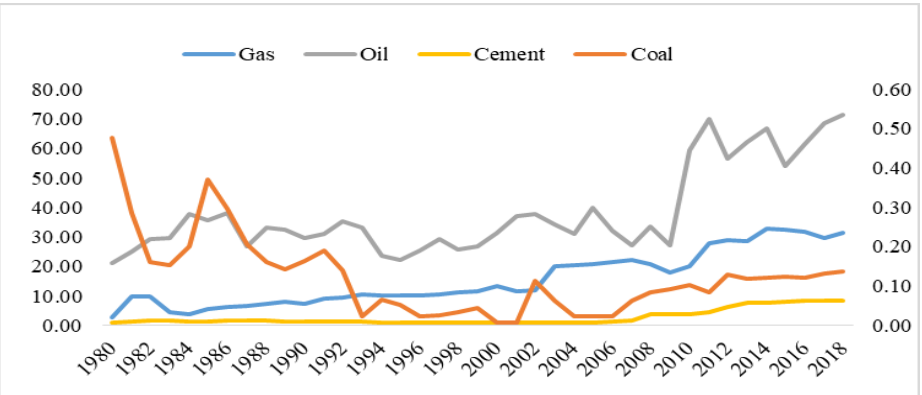


Figure 2: share of CO2 emissions are produced from different fuels
Source: https://ourworldindata.org/co2/country/nigeria

The primary line of argument pursued in our paper is that in institutionally weak jurisdictions, big businesses think more in terms of finding cheaper rather than more environmentally friendly and sustainable ways of production, while generally being laxer about the third party consequences of their operations. The firms apply a circumventive approach to undermine institutional strengths and capture state regulatory authorities. In doing this, they strategically engage in CSR activities that offer them government protections and shift public attention from the consequent negative externalities. This is more so for African multinationals who are linked to using their philanthropic activities as a tool for securing government patronage (Wiig and Kolstad, 2010). To achieve its goal, our paper makes use of two comparative cases involving two top cement companies in Africa – Dangote Cement (an indigenous Nigerian MNC) and Lafarge Africa (a French MNC). Dangote Cement is the largest publicly listed and the largest cement company in Nigeria, and controls about 71.7 percent of the cement production capacity in Nigeria. Coincidentally, the Nigerian multinational is also acclaimed the largest cement producer in Africa with operational plants in about nine other African countries (Ezeoha et al., 2020; and Akinyoade and Uche, 2017).

Lafarge, on the other hand, is the second-largest cement company in Nigeria, with six operational plants in Nigeria (controlling up to 27.3 percent of the industry) and having a significant manufacturing presence in South Africa. Whereas Dangote's operational standards are informed and guided more by local laws and regulations prevailing in its respective African host countries, Lafarge subsidiaries in Africa operate on global standards and is bound by the 2015 Paris Climate Agreement. The implication is that whereas Dangote Cement in Nigeria and other African countries run on coal (considered the least environmental friend source of energy), Lafarge Africa runs on gas. Dangote's reliance on coal is premised on the ground that the company lacks access to gas supply due to pipeline vandalization and infrastructural defects. This argument breaks down given the Nigerian subsidiary of Lafarge runs on gas despite the supply difficulties raised by Dangote. While it is not in doubt that attempts by Dangote Cement to sustain the push for backward integration in the country has facilitated the country's self-reliance on cement production (as evidence in Figure 3), the efforts have however failed to account for the environmental consequences of large scale mining of limestone and coal for cement production.

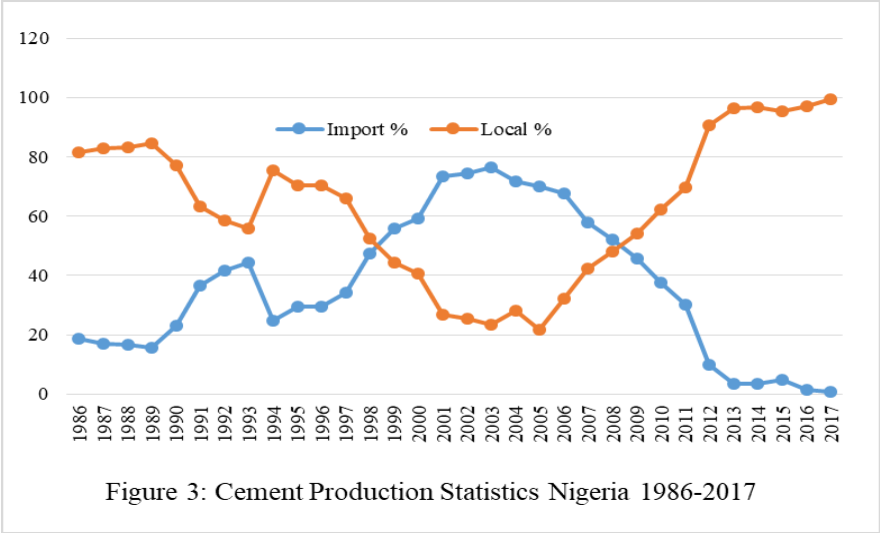


Figure 3: Cement Production Statistics Nigeria 1986-2017

Our paper closes the foregoing gap by taking on the other side of the argument and examining how prevailing institutional contexts and specificities undermine the role of MNCs to contribute to climate risk mitigation. To achieve its goal, the rest of the paper is organized as follows: Section 2 reviews the theoretical linkage between climate change and MNCs operations from the perspectives of third-party risks. Section 3 assesses the strength of the regulatory institutions in Nigeria and builds on how the prevailing structures encourage actions that generate environmental damages and induces climate risks. Section 4 contextualises the rhetoric of environmental commitments by MNCs. Section 5 critiques Dangote Cement's reliance on coal as the primary source of energy and the environmental consequences of its operational choices; and Section 6 concludes the paper.

2. Climate Risk as a Third-Party Cost

Third-party cost in the sense of climate risk arises where the operations or firms affect parties other than the producer or the consumer in an industry. Here, a firm gets involves in actions that undermine the environmental wellbeing of their host societies. The theoretical framing relates to the concept of negative externalities that affect entities that are not direct beneficiaries of the firm's operations. Absence of strong regulatory and governance institutions in place to moderate the excesses of firms, as well as the existence of insufficient incentive systems that can induce them to take environmental risk mitigation actions gives rise to situations where such risks are easily transferred to the public as third party costs.

By implication, climate risk is transferable only to the extent that existing governance structures in place permit it. The easier the transferability, the more incentivized MNCs opt for the use of cheap but less environmentally friendly methods of operation. Differing

institutional quality hence translates to differences in the amount of third-party costs a country bear. Since the quality of an institution is a direct outcome of the level of economic development (Singh and Pradhan, 2020; Abdulahi, 2019; Butkiewicz and Yanikkaya, 2006), a common conjecture is that third party costs are higher in developing than in developed countries. In developed economies, both firms (in the form of increase environmental tax burden) and the government (in the form of increased cost of environmental maintenance and sustainability) naturally bear the third-party costs. The most viable way of keeping environmental costs low in those climes, therefore, is to ensure that the regulatory and governance institutions are activated and empowered to moderate the excesses of firms. In developed climes also, increase in third-party costs is punished by the actions of civil society organisations (Brulle and Jenkins, 2010), the markets (Zhang et al., 2015), as well as sanctions imposed by public regulations and multilateral agreements (Eweje, 2006). Elected political officials also bear third-party costs in the form of facing a higher risk of not being re-elected (Harrison, 2012).

On the contrary, in developing climes, especially those with records of higher incidence of corruption and absence of rule of law, third-party costs from the operations of firms are easily transferable to the public at little or no costs to the firms. This is because, in such environment, the civil rights groups are less organized (Dupuy, et al., 2015) and regulatory sanctions are rarely imposed (Haglund, 2008). Absence of rule of law is also noticeable, and the judicial system is often defective and prejudiced (Chenet al. 2018). Developing countries are less competitive in the international markets for investment finance, less selective in their choice of FDIs, and as such might be more tolerant to environmental damages and more prone to manipulating their environmental standards as to woe foreign investors. Collective actions are also weak to induce public sanctions.

Furthermore, the difference in third party risk levels between foreign and domestic firms are more pronounced in developing countries than it is in developed climes. In this regard, Ferrara et al. (2015:279) using pollution haven hypothesis (PHH) showed that the likelihood of production shifting “from countries with stringent standards to countries with weaker standards”. This is because it is easier for corporations operating in developing countries to opt for production modes and technologies that are inimical to environmental safety and sustainability. Third-party risk may also differ between local and foreign MNCs. For the former, local laws play little role in shaping the behaviours of firms, whereas the actions of the latter are guided by global standards and international best practices. Western MNC can

be punished at home due to their operational choices and behaviour in host developing countries. In some of the cases also, local MNCs are so politically connected that they tend to easily get away with environmental law breaking. Local MNCs are often detached from global chains and do not submit themselves to international protocols.

In most African countries, climate risks have continued to intensify mainly because third-party costs are not borne by the corporations. This is especially so for MNCs in the extraction and exploration industries, where the outputs are mainly for exports – meaning that both the firm and its consumers are foreign and that the local public is considered as third parties – to the extent that they are incapable of punishing corporate bad behaviours. Among others, third-party risk in the cement industry is arguably complicated because both the means of production and the outputs are considered as a major source of CO2 emission. Processing coal for industrial use involves digging up layers of earth, blasting through rock ore, extracting waste, and creating dumps (Singer, 2011:3), all of which exacerbate environmental degradation. Along the value chain operations, having to move coal from the mining site to cement production sites and having to transport cement to diverse retail points in the country imposes an inside-out impact capable of generating additional emissions (Porter and Reinhardt, 2007). With the dearth of infrastructure and lack of strong regulation, there is little motivation for cement-producing MNCs on their own to opt for choices of technology that eliminate emission-intensity candidates. As shown in this paper and typified in the case of Dangote Cement operations in Nigeria, it is easier for MNCs to profit from rather than being punished by increase in third-party costs.

The above dynamics apply more to the cement industry which is generally listed as one of the most pollution prone industry in the world. According to UNEP:

> Next to water, concrete is the second-most consumed substance on earth on average, each person uses nearly three tonnes a year. Portland cement, the major component of concrete, is used to bind the materials that make up concrete. The concrete industry uses about 1.6 billion tonnes of Portland cement and produces some 12 billion tonnes of concrete a year. The industry has a large ecological footprint: it uses significant amounts of natural resources such as limestone and sand, and depending on the variety and process, requires 60-130 kg of fuel oil and 110 kWh of electricity to produce each tonne of cement. In addition, the cement industry is second only to power generation in the production of CO2.

From the above, it is clear that cement production pollution generally occurs at two main levels: the dependence of the industry on limestone (and sand) mining and the energy-intensive nature of cement production. In this direction, it is important to note that limestone

is not a renewable natural resource. Its mining, therefore, has implications for the physical environment of host communities. Mining of limestone generally lead to the creation of huge craters that could impede host community existence directly or indirectly through environmental erosion. The excavation process which usually generates enormous dust that has negative consequences for both soil fertility and the health of residents of host communities. In developed countries where mining laws are well developed, strict mining standards are generally enforced. This, however, is not always the same for developing countries like Nigeria where mining laws may well exist, but governance institutions are weak or corrupted.

From the above, the demand for the adoption of more environmentally friendly operations by big businesses in jurisdictions with low levels of responsible governance rarely come from the inside. Such standards are only imposed by big businesses when it makes economic sense to do so. As the present case study of Dangote cement – which is the largest cement company in Africa will show, internal dynamics of the Nigerian energy sector can push a company to remodel its operations. This is the case of Gboko plant of Dangote Cement, which it acquired from the Federal Government in 2000. Initially constructed to use LPFO, the Gboko cement plant was remodeled to use coal which is cheaper than LPFO but less environmentally friendly. The company's later plants (Obajana and Ibese) were, however, constructed to use gas, which was more expensive than coal but more environmentally friendly. This was arguable because the international funders of the project-the International Finance Corporation- prioritizes the need to reduce the environmental consequences of the businesses that it funds. It therefore routinely conducts an environmental impact assessment as a necessary precondition for funding projects. Since the completion of the above projects, local dynamics has again forced the company to use coal as the major source of its energy for these new plants. Specifically, the regular disruption of gas supply to the factories which was at least in part as a consequence of the recurring vandalization of the gas pipelines forced the company to reconfigure the plants to also use coal which is a cheaper but less environmentally friendly source of energy.

3. The Regulatory Framework on environmentally less friendly industries in Nigeria

Before 1988, Nigeria's response to environmental infringement was *ad hoc* and focused majorly on natural resource protection and conservation. The few legal instruments on environmental protection were contained only in the Criminal Code such as the prohibition of

sale, manufacture, or sale of matches with white phosphorus, pollution of water sources, and burial of corpses within a hundred yards of residential home (Ogbodo, 2009). The Koko episode[1] of 1988, however, changed Nigerian's response to environmental infringement, as the government immediately organised international workshops on environmental sustainability, established the Federal Environmental Protection Agency 1988 (FEPA), to enforce environmental laws, and enacted the Harmful Waste (Special Criminal Provisions) Act, 1988, to prohibit illegal dumping of harmful waste (Adeoluwa, 2018). The ratification of the 1999 Constitution provided the ample opportunity to infuse environmental protection as one of the core statutory functions of the government. According to Section 20 of the 1999 Constitution of the Federal Republic of Nigeria, "the state shall protect and improve the environment and safeguard the water, air, land, forest and wildlife of Nigeria". The emergence of democratic government in Nigeria also provided the National Assembly with the opportunity to ratify some of the international treaties such as the Montreal Protocol on Substances that deplete the Ozone Layer, the Bamako Convention on the Trans-shipment of Waste in Africa, the Basel Convention on the Control of Trans-boundary Movement of Hazardous Matter and their Disposal, and the Vienna Convention on the Protection of the Ozone Layer, among others (Ogbodo, 2009).

Currently, environmental laws in Nigeria include the National Environmental Standards Regulations and Enforcement Agency Act 2007, Environmental Impact Assessment Act 2004, Harmful Waste (Special Criminal Provisions) Act 2004, Endangered Species (Control of International Trade and Traffic) Act 2004, National Oil Spill Detection and Response Agency Act 2006, National Park Services Act 2004, National Park Services Act 2004, Nigerian Minerals and Mining Act 2007, Water Resources Act 2004, and Hydrocarbon Oil Refineries Act2004, among others. The National Environmental Standards Regulations and Enforcement Agency Act of 2007 (NESREA) that repealed the Federal Environmental Protection Act 1988, assigned the responsibility of enforcing all the environmental treaties and protocols, conventions, standards, and laws in Nigeria to NESREA. This presupposes that the NESREA regulates the industries, whose activities constitute a serious threat to the environment. Cement manufacturing industry falls squarely under the purview of NESREA since cement production is generally listed as one of the most pollution prone industry in the world.

[1] In June 1998, it was discovered that waste brokers dumped toxic waste in Koko, a remote town in Warri North Local Government Area of Delta State (Ogbodo, 2009).

Similarly, the Nigerian Minerals and Mining Act of 2007 is another important piece of legislation that regulates the cement industry in Nigeria. Nigerian Minerals and Mining Act of 2007 regulates mining, quarrying, exploitation, and exploration of all solid minerals, including limestone. The Act repealed the Minerals and Mining Act No. 34 of 1999 and vested the control of solid minerals on the State – Government of Federation on behalf of the people. The Act empowers the state to acquire all lands where minerals are found in commercial quantities in line with the provisions of the Land Use Act, and grant mineral title to any person by whom the mineral resources are lawfully won, for exploration and or exploitation. The Act further prohibits the granting of mineral title on any land:

> occupied by any town, village, market, burial ground or cemetery, ancestral, sacred or archaeological site, appropriated for a railway or situated within fifty metres of a railway, or which is the site of, or within fifty metres of, any Government or public building, reservoir, dam or public road; …" (p.3).

The Act further mandates the Minister to:

> (a) ensure the orderly and sustainable development of Nigeria's mineral resources; (b) develop a well-planned and coherent programme of exploitation of mineral resources taking into account the economic development, ecological and environmental factors; (c) monitor compliance with Community Development Agreements by industry operators; … (p.4).

Operators in the mining industry are entitled to "exemption from payment of customs and import duties in respect of plant, machinery, equipment and accessories imported specifically and exclusively for mining operations; expatriate quota and resident permit in respect of the approved expatriate personnel; and personal remittance quota for expatriate personnel, free from any tax imposed by any enactment for the transfer of external currency out of Nigeria, tax relief for three years and may be extended for another two years by the Minister" (p.25). The titleholder is also expected to agree and conclude a Community Development Agreement, approved by the Mines Environmental Compliance Department before the commencement of operation, in addition to compensating users of land for damage to land and property the and payment the prescribed fees before the licence is granted.

Despite the existence of these environmental laws, the effectiveness of enforcement and compliance with environmental laws remain abysmal. For instance, the use of cleaner forms of energy like gas as opposed to more pollution-intensive energy sources like coal, would have been ideal for mitigating the environmental effect of cement production. NESREA explicitly prohibits any activity that may (a) have an adverse impact on any ecosystem;

(b) lead to the introduction of any exotic species and; and (c) lead to unsustainable use of natural resources, without an environmental impact statement"[2]. In practice, however, these prohibitions are hardly enforced, giving rise to a situation where political connections, high incidence of corruption, and weak rule of law enforcement encourage firms to ignore environmental regulations and carry out their operations without according due priorities to environmental wellbeing. To shield themselves, firms opt for the kind of CSR activities that address the neglected socioeconomic needs of their host communities.

At another level, the high energy intensity for cement production is another major source of pollution in host communities. This point is even more significant in jurisdictions where cement companies are forced to generate their power. In such jurisdictions, there may be less pressure on such cement companies to use cleaner sources of energy which are always more expensive. In such places, poor national and local governance standards also make it necessary for corporations to engage in the provision of services and amenities, which should normally be undertaken by the government in their host jurisdictions. In this direction, the provision of local services and infrastructure like education, roads, water, electricity are routinely undertaken by big corporations in their host jurisdictions all in the name of CSR.

4. The Rhetoric of Environmental Commitment as CSR

The link between environmental issues and CSR, from business ethics lens, focuses on the conventional practice of firms showing themselves as being responsible to the host societies and physical environment (Eweje, 2006:28). The extent to which firms keep to this convention is a function of the level of economic development prevailing in the host country. The specificities of the local environment also impact on the nature of the CSR activities and the strategies of businesses and entrepreneurs adopt in servicing the philanthropic demands made by various actors in their host communities. In developed country context, the government is active in its statutory duties of social service delivery; and the infrastructure profiles therein are advanced. Basic infrastructure like roads, water and electricity are not problematic and the pressure on companies to contribute to such basic needs of society is limited. In such jurisdictions, more advanced forms of CSR emerge. Consequently, attention is centred on mitigating environmental challenges in the society and on the strategic use of CSR as a tool for enhancing corporate performance, goodwill, and industry harmony (Ezeoha et al., 2020). This, for instance, could include CSR relevant to staff welfare (e.g. training,

[2] Regulation 1 of S.I. No. 30 of 2009

improved working conditions and better management-employee relations) or environmental protection.[3] According to the EU Green Book, being socially responsible means not only fulfilling legal expectations, "but also going beyond compliance and investing more into human capital, the environment and the relations with stakeholders." It is also not surprising that in such jurisdictions CSR has continuously been expanded to include contributing to social needs in jurisdictions that concerned businesses have little or no economic interests in. Along these lines, it has been argued that pharmaceutical companies since "discovered that they were expected to respond to the AIDS epidemic in Africa even though it was far removed from their primary product lines and markets."

On the other hand in developing countries, the dearth of social amenities and the quest for increased investment flows require that firms' social engagements in restricting to traditional corporate social investments in infrastructure, education, health services and the likes. To quell host governments' and community activism, large corporations strategically engage in direct provisions of social amenities in their catchments. In the case of Dangote Cement, for example. The government turned blind eyes to the arising externalities due largely to highly publicized but veiled CSR commitments of the company. It was also clear that such a gesture prejudices the associated social welfare losses, which Ezeoha et al. (2020) identified to include the destruction of competition, the imposition of implicit margins on product prices, and abuse of public governance mechanisms.

A central part of the CSR responsibility of businesses is responsible for environmental management. Whereas in developed climes, businesses continuously make efforts to curtail the negative consequences of their operations on the environment, in developing countries firms consider environmental care as the least CSR options. In general, the levels of the environmental standards that companies are expected to adhere to are determined by several factors which among others include: the level of development of the host country, the industry of operations; requirement of funders; environmental sensitivities in target markets and the level of technological development.

[3] See, for instance, Shuili Du, C. Bhattacharya, and Sankar Sen, (2010) "Maximizing business returns to corporate social responsibility (CSR): The role of CSR communication," International Journal of Management Reviews 12 (2010) 8–19 and I. Ali, K. Rehman, S. Ali, J. Yousaf and M. Zia, "Corporate social responsibility influences, employee commitment and organisational performance, "African *Journal of Business Management, 4* (2010), 2796-2801.

Under the above circumstances, the host communities naturally become grateful to the big corporations for taking over the role of the state by providing some of the basic infrastructure and services that facilitate their daily subsistence. Similarly, the ability of the host states to effectively regulate the activities of such multinational businesses are also greatly impeded. In places where the provision of basic infrastructure and services like roads, education, health care, electricity and clean water cannot be taken for granted, more complex issues like environmental pollution emanating from the activities of big businesses naturally take a backstage.

The above change has engendered very little or no interest in the wider Nigerian society. The environmental pollution that emanates from the company's limestone mining activities are also rarely seriously debated. It is this near absence of interest in environmental matters in host communities that has made it possible for Dangote Cement to start championing the construction of cement roads in Nigeria and the replacement of bitumen roads with such cement roads. Specifically, the dilapidated state of the bitumen roads that serviced its factories in Ibese and Obajana, helped make the idea of constructing concrete roads in the areas to stick to the fact that the use of such roads are less environmentally friendly. Host communities whose livelihoods have been impeded by the poor road infrastructure are simply more interested in having good roads than in discussing the environmental consequences of the roads. The Government that failed to provide the roads in the first place is also unlikely to be in a strong position to insist that such roads provided by big businesses as CSR meet some basic environmental standards.

5. The Dangote Cement Case

Dangote Cement Plc. is the largest of the subsidiaries of Dangote Group, the latter being a Nigerian multinational company founded in 1977 by Aliko Dangote. The company rose to prominence following the 2002 backward integration policy of the Nigerian government, which "discouraged cement importation and encouraged the local production of cement in the country" (Akinyoade and Uche, 2017). It is generally believed that the policy was influenced by Dangote, who used his closeness with the then President of the country to facilitate the transformation of its operations from that of bulk cement importation and bagging to local cement production. By so doing, Dangote rose to become the largest cement producer in Africa; and as expected the largest profit earner and CSR spender in the Dangote Group. In terms of its size and influence, the company controls up to 32 percent of the total stock market capitalization in Nigeria (Akinyoade and Uche, 2017).

At the moment, Dangote's influence in the continental cement value chain spans across many African countries. As indicated in Table 1 below, the company has presence in a total of 25 African countries – cement production plants in 4, cement grinding in 4, cement bagging and distribution in 3, selling and distribution in 6, and limestone mining in 2. It is also engaged in coal production and power production in Zimbabwe (and of recent in Nigeria).

Table 1: Spread of Dangote Group's Operations in Africa and Nepal

Operations	Countries	Number of countries
Cement Production	Congo, D.R. Congo, Ethiopia, Guinea, Kenya, Madagascar, Mozambique, Nepal, Nigeria, Senegal, South Africa, Tanzania, Zambia, and Zimbabwe	14
Cement Grinding	Cameroon, Cote D'Ivoire, Gabon, and Ghana	4
Cement Bagging and Distribution	Liberian, Ghana, and Sierra Leone	3
Selling and Distribution	Benin, Burkina Faso, Chad, Mali, Niger, and Togo	6
Limestone Mining	Niger and Kenya	2
Coal Production	Zimbabwe	1
Production of Ceramics Products	Nigeria	1
Power Production	Zimbabwe	1

Source: Dangote Group Annual Report 2019, p. 184

All the Dangote Cement plants around Africa incidentally runs on coal, which raises huge environmental concerns in the host communities. In most of the countries, as shown in Table 2 below, the source of Klin fuel is coal; and for Senegal and Gambia, coal is also the source of power supply. Through its operations, Dangote Cement emitted a total of 14,903,614 (tonnes CO2) across ten African countries in 2016 alone. Nigeria being the largest operational base bore the bulk of the third party costs, accounting for up to 63 percent of the total emissions. Out of the company's total CO2emissions of 9,408,204 (tonnes CO2) in the country, the Ibese plant accounted for about 33.6 percent (i.e. 4,969,937 tonnes), Obajana accounted for 29.5 percent (or about 4,435,041) and Gboko 21.4 percent (3,226,000). The climate risks imposed by Dangote Cement's operations across Africa are magnified by the very nature of the environments in those countries.

Table 2: Profile of Dangote Cement Production in Africa

Country	Total Capacity	Total Market	Dangote Capacity	Klin Fuel	Power	Market Share
Nigeria	48.3Mta	21.2Mt	29.3Mta	Gas and Coal	Gas and Disel	66.51
Tanzania	11.3Mta	4.45Mt	3.0 Mta	Coal and Gas	Gas	26.97
South Africa	16.8 Mta	12.4Mt	16.8Mta	Coal	Grid	22.58
Ethiopia	15.2Mta	7.6Mt	2.5Mta	Coal	Grid	26.32
Cameroon	15.0Mta	2.8Mt	1.5Mta	n/a	Grid	39.29
Congo	3.2Mta	0.736Mt	1.5Mta	Coal	Grid	27.17
Ghana	11.6Mta	6.7Mt	1.5Mta	n/a	Grid	7.46
Senegal	8.2Mta	6.6Mt	1.5Mta	Coal	Coal	21.21
Zambia	4.6Mta	3.5Mt	1.5Mta	Coal	Coal	28.57
Sierra Leone	1.6Mta	0.7Mt	0.5Mta	n/a	Grid	40.00

Source: Dangote Cement Group Annual Report and Financial Statements, 2019

The implication of this on climate change and sustainable development agenda of the country is enormous. However, the source and efficiency of energy used in heating the kiln is an important determinant of the quality and quality of emissions (Energy Brief, 2018). As evidence in Table 1, the main sources of fuel for heating in clinker production in Nigeria are coal and natural gas, both of which are major CO2 emitters. Dangote Cement started on the platform of gas as the main source of its power. The company's preferred fuel was gas because they acknowledge that that the use of natural gas is a more efficient energy source.

Among the company's three largest production plants in the country, the Gboko cement plant, which is the oldest was remodeled to use coal which is cheaper than LPFO, although less environmentally friendly. Alternatively the later plants (Obajana and Ibese) were constructed to use gas, which was more expensive than coal but more environmentally friendly. This was arguable because the international funders of the project – the International Finance Corporation – prioritizes the need to reduce the environmental consequences of the businesses that it funds. It therefore routinely conducts an environmental impact assessment as a necessary precondition for funding projects. The Obajana Cement plant, which has a production capacity of 5 million tons per annum, was designed to be powered by a 135 megawatts gas-fired power plant and a natural gas pipeline. Similarly, Ibese production capacity is 3 million metric tons per annum and was to be powered by a dual firing plant (Natural Gas and LPFO) capacity of 112.5 megawatts (Dangote Cement, 2011).

The original design was however altered between 2012 and 2015, following disruptions in gas supplies due to pipeline vandalisation. It was specifically in 2013 that the company indicated its willingness to adapt their plants to coal, which is considered cheaper than LPFO. In its 2013 annual report, the company observed thus that:

> The availability of gas is a major driver of margins at our Obajana and Ibese plants, which together account for 16.25million tonnes of the capacity that we operate in Nigeria. Gas is substantially cheaper per tonne of cement than alternatives such as low-pour fuel oil (LPFO), being about 7x cheaper at Obajana and around 5x cheaper at Ibese. The chart … shows the gas utilization at each plant during 2013 and represents a significant improvement over supplies in 2012, particularly at Ibese, which enjoyed more than 98% gas supply for most of the year. Across Ibese and Obajana, the overall gas mix was 83% gas and 17% LPFO (2012: 75% gas and 25%LPFO). The gas infrastructure serving Obajana experienced significant disruption as upgrades to pipes and equipment continued. However, we believe that once these necessary works have been completed, our gas supply to Obajana will be much more robust than at present. As an alternative to fuelling kilns with LPFO we will continue to adapt our plants to use coal, which is cheaper than LPFO per tonne of clinker produced. We are commissioning coal mills at Ibese and at Obajana Line 3 (Dangote Cement 2013: 6).

The implication of the development was the diversification of fuel sources to LPFO (as back-up fuel) and embarking on coal milling and mining initiative. This change in strategy informed the company's announcement of an extensive investment in coal, emphasizing that:

> We have accelerated installation of our coal mills and coal mining initiative in Nigeria and now expect to begin mining our own coal in November. Most of our production lines are now capable of running entirely on coal and this drive towards self-sufficiency will almost eliminate our dependence on gas supplies, imported coal and, more significantly, LPFO. Own-mined coal will be cheaper than gas, which is priced in US$ but paid in Naira. Furthermore, being transacted entirely in Naira, it will reduce our need for foreign currency at this difficult time for the Nigerian economy (Dangote Cement, 2016: 1).

In 2016, the company completed its long-range coal initiative, and as a result converted from gas to the use of coal as a source of fuel in their plants across Nigeria. By the end of 2016, most of the company's production lines had migrated to a level of complete reliance on coal, resulting to the elimination of its erstwhile dependency on gas supplies, imported coal and, more significantly, LPFO. The company, along this line, noted that:

> We have now converted all our large Nigerian lines to run on coal as well as gas – a project we began more than two years ago as part of our efforts to diversify fuel supplies, reduce costs and mitigate risks. By sourcing coal from our parent company, Dangote Industries, we achieve several competitive advantages

> in Nigeria: protection from disruption of gas supplies, margin improvements compared to gas, elimination of highly expensive LPFO and a significant reduction in the need for foreign currency in a time of shortage (Dangote Cement , 2016:28).

The company's Chief Executive Officer, Onne van der Weijde argued that the conversion will benefit not only the company but the national economy as exchange rate cost is reduced and jobs are created and sustained. On the whole, the energy mix of Dangote Cement since 2016 favours coal at the expense of LPFO and natural gas, which suggests more emissions. The implication of this on environmental sustainability can be enormous and it seems to negate the company's self-imposed commitment. The company pledged to maximise energy efficiency and minimise the environmental impact of their operations, and they also noted that the ways of reducing GHG emission at their plants are the use of natural gas, while practical and monitoring of CO2 emissions reduction in line with the guidelines of national and international bodies. The later actions from 2016 rendered this mission mere rhetoric.

While Dangote Cement made efforts to transform its operations from reliance on gas and LPFO to coal as a major source of energy, the reverse was the case for Lafarge Africa who at that time was facing similar challenges. The two are major cement producers in the country, accounting for as much as 86 percent of the industry production (Akinyoade and Uche, 2017:4). Although both companies operate in the same environmental setting, the reactions of each seem to be driven by the strength of the host-country institutional settings and the extent of compliance to home-country's and global standards and operating protocols.

Arguably, Dangote's conversion to coal was premised on two exigencies – frequent disruption in gas distribution infrastructure and high cost of importation of LPFO. In terms of cost, it is understood that LPFO is most expensive among the fuel sources in Nigeria manufacturing sector, followed by gas. "Gas is substantially cheaper per tonne of cement than alternatives such as LPFO, being about 7-times cheaper at Obajana and 5-times cheaper at Ibese (CDP, 2013, p.13). Yet, gas is still adjudged costly because it is priced in US dollar and paid for in the devalued naira, thereby, making it expensive though locally sourced in Nigeria. Again, disruptions in supply of gas due to interruptions in the gas distribution facilities and the vandalization of gas pipelines by militants, coal seems to become technically cheaper. The logic that costs emanating from fuel are transmitted to an increase in the cost of cement, which end users bear eventually. To reduce the financial impact on the consumer, the

company reasoned to convert to using coal against gas and LPFO, but without constructive consideration of GHG implications and a sustainable environment.

While the vandalization argument, as a justification for plant conversion coal, seems plausible, Lafarge African Plc. plants are currently running on 88% gas and 12% biomass. A more economic reason for Dangote Cement's reliance on coal might be simply because it is more profitable to do so. The income records show that, except of recent, the company maintained significant positive growth in before and after tax profit; and that in most of the years, over 50 percent of the profits have been paid out as dividends to shareholders (see Figures 4 and 5 below).

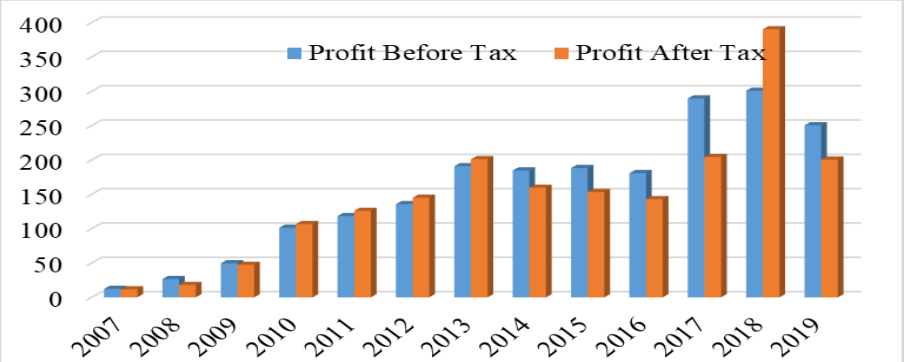
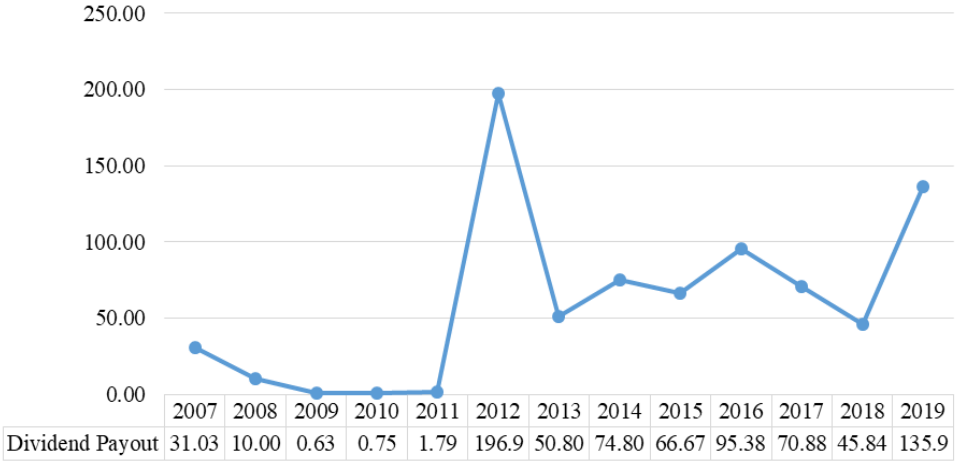


Figure 4: Dangote Cement's Profit Trends (in ₦'billions)



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Dividend Payout	31.03	10.00	0.63	0.75	1.79	196.9	50.80	74.80	66.67	95.38	70.88	45.84	135.9

Figure 5: Dangote Cement Dividend Payout

For instance, it is extremely easy to corrupt in a backward integration process, through tax evasion, benefits from pioneer status, and increase in prices of final goods due to outright ban or imposition of high tariff to discourage importation. Itaman and Wolf (2019), along this line, argued that:

> While observing substantial changes to the political settlement in Nigeria since 2015 towards competitive clientelism, which could increase informal rent-capture …rent-seeking and corruption in Nigeria was not necessarily predatory, a number of emerging domestic capitalists like Dangote growing their businesses in productive directions, substantial rents through government involvement notwithstanding (p.10).

Aside from the rent opportunity from backward integration, Dangote's close ties with every government in power arguably helps the company enjoy some form of political patronage and escape regulatory sanctions. Aside from being used as the face of African industrialization in the PDP-led Obasanjo and Goodluck governments, and being appointed as the Vice Chairman of National Industrial Policy and Competitiveness Advisory Council in 2017 by the APC-led government, the effective taxation of the cement business between 2010 and 2017 also reveals Dangote strong ties with the Nigerian government. For instance, Itaman and Wolf (2019) argued that:

> … between 2010 and 2017, Dangote cement earned ₦1.7 trillion in profits before tax and paid just ₦90 billion in taxes, i.e. a tax rate of just about 5%. Ultimately this was possible because Dangote skillfully played the pioneering tax exemption scheme on new plants, claiming pioneering status on the same plant by extending the plant and by scheduling new extensions when pioneering status on other plants was ending (p.17).

Figure 6 also validates the above claim – indicating that for most of the years between 2007 and 2019, the company's actual tax payment was zero or negative.

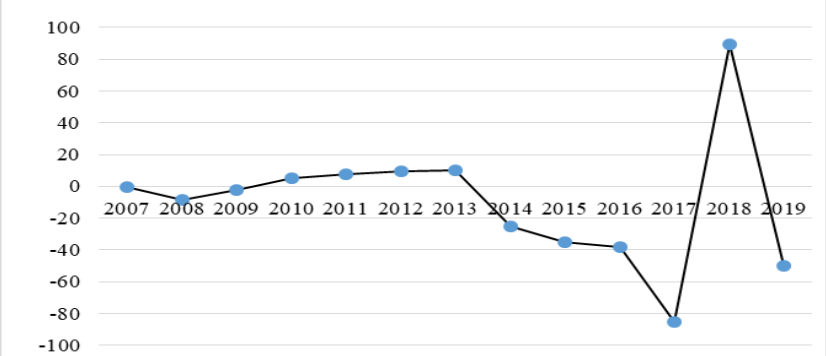


Figure 6: Dangote Cement's Tax Payment (in ₦'billions)

Dangote Cement has therefore enjoyed low tax regime at a time carbon pricing is globally used as an effective policy instrument to reduce global mean temperature to at most CO2 above pre-industrial levels (Sen and Vollebergh, 2018). Environmental policy or tax regime that grants incentive to coal mining, storage and consumption are inadvertently promoting

environmental pollution since studies have shown that burning coal have adverse environmental and health consequence. Unfortunately, coal mining in Nigeria is generally regulated by the NESREA and Nigeria Minerals and Mining Act of 2007, in contrast to developed economies with different regulations for different stages of coal mining and usage. In the United States, for example, the Reclamation Act of 1977 regulates mining operations and abandoned sites, fuel and emission standards set by Environmental Protection Agency regulates the transportation coal either by trucks or train, and the Clean Air Act regulates the combustion of coal. These layers of regulation were put in place because of the substantial harm of coal mining. Jha and Muller (2018) estimated the pollution cost of coal storage and handling in the United States power plants and found:

> … that a 10% increase in the coal stockpiles held by U.S. power plants results in a 0.09% increase in average PM2.5 concentration levels within 25 miles of these plants. Unlike most sources of variation in local air pollution, coal storage and handling impacts PM2.5 but no other pollutants such as SO2 and NO2. Consequently, using coal stockpiles as an instrument, we show that a 10% increase in PM2.5 causes a 1.1% (3.2%) increase in average adult (infant) mortality rates. Using a value of statistical life approach, our estimates indicate that a one ton increase in coal stockpiles results in local air pollution costs of $197 (p.1).

Again, the national climate action policies also had implication on the DCP's choice fuel. Nigeria's 2017 Nationally Determined Condition (NDC), a strategic approach towards, among other things, promoting a low carbon for national sustainable development. Yet, in a seeming counter Coal Power Project under the nation's Economic Recovery and Growth Plan (Medium Term Plan 2017-2020), the government plans to generate about 30 per cent of electricity through coal. This is a paradox in that whereas the NDC plan to reduce carbon emissions, coal mining and use as a source of energy in cement production is the highest source of GHG emissions. This suggests that the government is directly or indirectly supporting the use of coal in clinker production in cement manufacturing in the country.

This points to the fact that in the jurisdiction where the environmental laws are weak and corrupt, strategic infrastructure are not effectively policed, and firms maintain strong ties with the government, indigenous companies capitalize on this institutional weakness for personal benefits, without any long or short-term welfare benefit for the citizenry. In such jurisdictions, it is therefore not surprising that big businesses think more in terms of finding cheaper ways of production rather than more environmentally friendly and sustainable ways.

Evidence from Dangote Cement and Lafarge case study is consistent with the findings of Haung and Change (2020) in China that foreign-owned firms tend to have low environmental pollution, while state and privately-owned firms have relatively high environmental pollution across all industries. The Nigeria and China evidence supports the pollution halo hypothesis that foreign-owned firms strive to comply with global environmental concerns because of advancement in technology, pressure from the home country, financing channels like the international financial market, superior management and network (Horstmann & Markusen, 1989; and Caves, 2007). In the case of indigenous firms, evidence from Jingchao et al., (2019) tends to suggest that local environmental peculiarities rather than global environmental concerns influence the choices of energy consumption. The economic rent from backward integration policy on coal mining pursued by Dangote may be the added incentive to covert the plants to coal since such backward integration offers substantial rent-seeking opportunities for the company.

6. Conclusion

The foregoing analysis suggests that the motivations for using coal are both institutional and structural. Institutional because regulatory enforcements in an operating environment may be defective; and structural in the sense that there might be dearth of relevant infrastructure to support decent choices of production technology. In the case of Nigeria, Dangote Cement (the largest cement manufacturer in the country and Africa generally) claimed that disruption of the pipeline drove up production cost for cement, and by so doing created more incentive for the use of coal. Regardless of its merits, this argument collapses when examined from the perspective that Lafarge (the second-largest producer of cement in the country and a French MNCs) runs all its production plants in the country using gas. By far, the most viable drivers of the choice of coal-based production technology by Dangote Cement is a political connection and the push for maximum profits. These factors join to exacerbate the level of third-party costs. Evidence from the Dangote-Lafarge case analysis, therefore, appear to support the hypothesis that foreign-owned firms strive to comply with global environmental concerns because of advancement in technology, pressure from the home country, financing channels like the international financial market, superior management and network.

Gas technology is generally considered more environmentally friendly than coal, however, Rego et al. (2020) advocate for the use of biomass and waste as the most effective energy source for reducing carbon intensity in cement production. In developed countries where mining laws are well established, strict mining standards are generally enforced. This is not

always the same for developing countries like Nigeria where mining laws may well exist, but governance institutions are weak or corrupted. Dangote Cement is making extensive investment in backward integration through the mining of coal to substitute coal importation, an indication that the use of coal is a long-term objective for the company. On the alternative, Lafarge African Plc. currently runs on gas and is aggressively moving away from gas to more friendly energy sources as the use of wastes and biomass. Lafarge commitment to environmentally friendly energy sources is further demonstrated in the company's Geocycle brand, which offers an efficient and environmentally friendly waste management service. The arising evidence from this analysis is two folds – the strength of the home (rather than host) country institutions is capable of deterring foreign MNCs from choice of environmental unfriendly modes of production; the quality of home country institutions and political patronage play key role in their choice of production techniques; and in an institutionally weak jurisdictions, local MNCs think more in terms of finding cheaper rather than more environmentally friendly and sustainable ways of production. Until local MNCs are induced to sign in to international environmental standards and protocols, therefore, their approaches to climate change challenges will remain self-defeating.

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