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### Oil theft and technology deficit in Nigeria: When shall the African giant come of age?

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#### Abstract

Nigeria has huge oil mineral deposit but that is glaringly insufficient. There must be the required indigenous technology to harvest and rework it. Technology makes a huge impact on how oil is reworked and used beneficially. For over seven decades, the country has groped around the question of technology transfer or acquisition. None has been firmed up. Rather, multinationals have had a field day to their hearts' content. They have kept oil technology secretly to their chest refusing or neglecting or denying the country a complete breakthrough on the issue. They live in the country but influence its oil technology from abroad or

outside or externally. This study which adopts the doctrinal method, critically examines the origin, cause and impact of deficiency in technology in the wheel of development of Nigeria. It finds that as the giant of Africa, Nigeria is beginning to lose its pride of place to the Congo valley and direct foreign investments are beginning to be funneled there due to high cost of oil production and oil militancy in Nigeria. Consequently, it is suggested that opacity, scant investment and Federal government monopolization of the sector should be reviewed positively.

**Keywords:** Technology, Oil theft, Development, Deficiency, Oil and Gas, Nigeria

#### Introduction

The way oil impact on the life of countries is hugely determined by technology. Low prices can make firms innovate to reduce the cost of production of oil per barrel; and the critical challenges for Nigeria could be the rearing of competent workforce and the development of an indigenous technology. These two aspects should be the focus of Local Content Vehicles (Centurion, 2018) <sup>[18]</sup> which are companies relatively indigenous to Nigeria in the sense that they came into the marginal oil field space neglected hitherto by the seven sisters (the multinational oil corporations).

Technology is at the heart of existence and the survival of states such that when oil was discovered in commercial quantity and its politics of control partially led to the civil war, Nigeria was heavily imbricated in the politics of oil dependency. While the Biafra state sold out to France, Nigeria sold out to her colonial master, Britain, and fully engaged Shell to work her oil. Shell's six western sisters rolled in with joint venture and production sharing contracts volunteering to bring in their technology to harvest Nigerian oil and blindly led her into war for several months. The technical assistance later dovetailed into the war effort that Nigeria used against the Biafra Republic which made spirited attempts at developing her indigenous technology of war and oil. Biafra made tremendous efforts to hold up to her indigenous technology and later succumbed.

The Federal Republic of Nigeria has not recovered from the negative effects of the war and they have continued to dog her attempts at technological breakthrough in the oil sector of her economy. The country has become notorious for failed planning and failed administrators. It is even opined that but for her huge natural resources which is capable of sustaining the worst class of state-corporate looting in the world she would have long gone into extinction. Because her technology has been in the throes of the legacy of the past, colonialism and civil war, not much can be achieved on her own. Having sold out to the west to retain her statehood, she can no longer dictate for herself and her people, the way forward.

#### Statement of the problem

After six decades of independence coinciding with the discovery of oil in commercial quantity in Nigeria and after four decades of grappling with the framework of setting up institutions and structures for technological breakthrough in the oil and gas sector, nothing tangible has resulted as a global or regional flagship in Nigeria. Indeed, nothing in product, process, or technology can be presented to the world from Nigeria in spite of the huge successes of her citizens in Diaspora in terms of technology breakthrough. The questions that the situation donates are: Where lies the source of this deficit, is it with the State or the industry and what has become the value of the famed technology of the Nigerian civil war (1967 – 1970) if oil could be refined then but cannot be done now? Is the technology deficit that the country experiences now due to the collusion of

multinational oil companies or the deliberate policy thrust of the Federal government? Is Nigeria to rely on transfer or to develop its own or both; why has local content vehicles succeeded in Saudi Arabia, Kuwait and Venezuela but has not succeeded in Nigeria?

### **Theoretical framework**

#### ***Transfer theory***

Anytime the issue of technology deficit is raised in Nigeria, the theory of transfer crops up. The question whether transfer is possible, desirable and recommendable in Nigeria has entertained a lot of debates. Steenhuis and deBruijn (2004) <sup>[69]</sup> have addressed this question frontally submitting that it is questionable whether it was possible or effective to canvass for transfer instead of a more incremental approach of acquisition of technology believing that the frog-jumping in the process of transfer is faulty. While advanced economies pursue exploitation, commercialization and placement of high premium on R&D, backward economies reason in terms of transfer when in fact they ought to pursue technologies relevant and suitable to their conditions of development (Khurshid & Hassan, 1998) <sup>[46]</sup>.

Even as Nigeria is bent on transfer of technology, it ought to be stressed that it is a policy that is largely endorsed by multinationals because it will continue to enable them control the technologic affairs in the oil and gas sector and also sell their outdated models to the country and by so doing, it will divert the attention of the state and its citizens from the development of their own technological efforts. Rather than allow the nation to develop its indigenous technology, multinationals may prefer donating their obsolete models to the country while keeping away the latest state of the craft from the country. If it is noted that transfer is relatively easier than acquisition or indigenous effort, a legion of hurdles equally constraints transfer. Adigun has stressed four such critical constraints. First, there is a gap between policy and implementation. Secondly, indigenous firms lack adequate funds to pursue R&D. Thirdly, State corporations like NNPC Ltd have exhibited clear inefficiency in management and incompetence in human capital development and these have been accentuated by low quality education of the manpower in the industry.

On another spectrum, Hajzaler has demonstrated the typical attitude of multinationals in protection of their technology as a critical issue. This is because advanced technical skills are capital and their transfer to indigenous people can be interpreted as a potential threat to multinationals' competitiveness. He believes that when local content vehicles acquire advanced techniques, they are likelier to secure a significant portion of the indigenous and international markets which come with a huge risk for the multinationals.

#### ***Dependency theory***

Dependency syndrome is a phenomenon that is pervasive in the third world. It is an Orientalist theory that believes that for the third world to develop, it has to follow the path and pattern the first and second worlds have gone through. In a vivid capture of the theory, it postulates that countries like Nigeria in Africa have to move from primitive society to capitalism. In the process of this thinking, the western pattern of economic activity (manufacturing with machine technology) is recommended. The economic postulation also suggests that the path and pattern of political development

should be western democracy. Copying of systems that are western is recommended to the detriment of indigenous typologies. Thus, if Nigeria has to mine and refine its oil, gas and gold it has to acquire western technology to do so. If the technique is not acquired, a better term of transfer has to be deployed.

In an era in which developing countries like Nigeria seek assistance from advanced ones and International Agencies in the formulation of technological plans, as during the Structural Adjustment Programme (SAP), classical theories and methods, ways and means, beneficial to the developed countries were advanced for them than techniques good for their stage of development. Public institutions and economic structures and models like the State refineries in Port-Harcourt, Kaduna and Warri were destabilized on the premise that it was not in the best interest of the State to engage in obvious economic activities. Divestments were encouraged and at the end, the refineries collapsed. Technical issues surrounding their maintenance were neglected by the State on the faulty classical measures dictated by International Monetary Fund and the World Bank. Nigeria technological growth is being dictated and driven by external influences as such the capacity of the country to self-develop is hampered and scuttled.

### **Conceptual clarification**

#### ***Technology***

Technology is the application of scientific knowledge for practical purposes. It is the total knowledge and skills available to any human society for industry, art, science etc. (Reverso Dictionary, 2006 – 2023). It has been at the heart of the development of human society. It informed the discovery of fire, wheel, engine, electricity, telephone, internet and artificial intelligence. It affects and can change the way we interact, how we trade and do business; how we go to war, how we are entertained, and how we understand the world (Ndukwe, 2021) <sup>[53]</sup>. Technology has elements of history, culture, nationality, environment, politics, ideology, discipline, and natural endowment. It is not an entity that can be simply procured and used once enough funds are available (Adubifa). It is the interaction of science and society.

For Smilie (1991, p. 70) <sup>[68]</sup>, technology has been a key element in the growth and development of societies. It does not always move in a forward direction. Entire eras have been named after their levels of technological improvement like: the stone, bronze, iron, sail, steam, jet, computer ages etc. It can be ignored, lost, forgotten or destroyed. It can become old and forgotten or remembered and put back into good use. It can deliberately be derided and extinguished as in the Niger Delta military bombardments. It can die due to neglect as in local, indigenous refining during the Nigerian civil war. It can be transferred, developed or retarded through war, trade, migration, art and or religion. It can be bought, copied, stolen or developed through independent invention. It can be fostered or held back by commerce, government and institutions. It can be transferred with modifications that can lead to further developments given the peculiar circumstances of the type, place, time and the availability of local 'dirty finger nail people' as in the delta (Smilie, 1991, 65 and 81) <sup>[68]</sup>. It is, according to Ibibia (2002, p. 265) <sup>[32]</sup> a host of intricate and interconnected factors that transcends equipment, patents, processes, copyrights, but more importantly, the 'knowledge of how to

invent, manipulate and use the above-mentioned factors towards the attainment of definite goals’.

Although a technique may be more important than the technology because a small change in the manner a bolt is made may make a difference between the possible and the impossible, the economic and the uneconomic (Smilie, 1991, p. 233) <sup>[68]</sup> too often, what is regarded as appropriate technology may be poorly finished or unprofessionally packaged. What is beneath the illegal refining in the delta, for instance, has been widely characterized as dangerous, degrading and unscientific. For instance, a recommendation for ‘official recognition of illegal crude oil refineries’ and ‘setting up of a development programme for crude technology to harness illegal refineries for better performance’ by government was shunned at the 2014 National Conference because the ‘technology being used by these local refineries is too crude.’

An ex-Petroleum Minister and the Amanayabo of Nembe, King Daukoru (2014) argued vehemently before that Conference that ‘without the cracking capacity...just a third of the crude oil stock put in is recovered.’ And also, ‘what is being put out in terms of quality is not friendly.’ These allegations may be charitable even though appropriate technology can be second class because it looks so or third class because it does not work. Professional finishing and packaging is a continuous endeavour. According to Smilie (1991, p. 255) <sup>[68]</sup> and this is notorious, ‘poor people are under-represented in places where decisions are made...they are simply not heard, and an appropriate technology that might benefit them often receives (scant) attention’ thus special efforts are required to encourage small producers by providing inputs and raw materials.

The *Federal Republic of Nigeria: Niger Delta Regional Development Master Plan* (2006, pp. 75 and 93) facilitated by the Niger Delta Development Commission (NDDC) in 2006 does not commit to the development of local, indigenous or domestic technology in the oil and gas sector of the Niger Delta. According to Jubrin (2004, p. 141) the NDDC was ‘established to address the development drives of the Niger Delta. But beyond acknowledging that the socio-economic problems of the region include a ‘very low level of supply of gas’ and ‘lack of adequate refining capacity’ to fill the huge domestic gaps, there is no committal in the 259 paged Master Plan to the development of oil refining technology beside the removal of ‘unnecessary regulations’ and ‘enforcement of law and order’ in Nigeria. Yet Atsegbua (2004, p. 128) <sup>[11]</sup> opines that it is the fundamental responsibility of the state, and not that of the multinational oil corporations, to advance the technological growth of the oil and gas sector in Nigeria.

### **Technology deficit**

Technology deficit for the purposes of this study describes circumstances where a country’s or an organization’s technology is unable to do what it is supposed to do. This may be due to the fact that it is out of date and no longer capable of running and sustaining current systems or solving current problems. It may also be due to personnel inability to have working knowledge about the technology in place or the technology in place cannot deliver (Shacklett, 2023) <sup>[66]</sup>. The deficit index is important in this study because one of the indices through which a country’s growth and development can be measured is not by the degree of its huge natural resources endowment but by technological

endowment and penetration (Nigerian Communications Commission, 2023) <sup>[55]</sup>. It is believed that in Nigeria, underdevelopment of technology is comingled with underutilization of technologic capacity (Adebifa). It is further believed that deficit often occurs when and where there is lack of linkages between research and development, science and innovation, resources and infrastructural commitment. It is further believed that while talents can increase profitability, technology can accomplish same, decreasing maintenance costs and extending equipment life (Vaccaro Nick).

### **Research and Development**

Science, technology and innovation are closely linked and they drive development of products, processes and systems to guarantee human well-being and progress (Ugwuzor, 2023). Research and development is the foundation of innovation and growth. However scant attention is paid to them in Nigeria. They are kept in the background. It is believed that Africa accounts for less than one percent of global expenses on R&D in contrast to two to four percent that developed nations devote to R&D. World average expenditure on R&D as at 2007 was 1.68 percent and Nigeria had 0.13 percent. Even as Africa is a major oil producing continent, oil and gas technologies are alien to Africa and R&D is insignificant. Yet R&D determines how fast industrial processes are carried out and when R&D is not properly funded, innovations are hampered and new technologies, processes and services are stunted and this has consequently affected infrastructure ranking of Nigeria as 125 out of 142 in the world (Ndukwe, 2021) <sup>[53]</sup>.

The worst-case scenario in Nigeria as in the whole of Africa is that there is negligible linkage between government, industry, multinationals and research institutions. A major challenge to R&D in Nigeria is that funding is largely left in the purview of the government. The Nigerian Content and Development management Board (NCDMB) which had floated the Nigerian Content R&D Fund (NCRDF) to conduct research on the energy sector only devoted N0.2 million to same which is considered inadequate. Active involvement of the private sector in funding of R&D is lacking. And even when there is ample involvement of the private sector, it is restricted to multinational oil companies and even at that, such funding and R&D are handled in their foreign capitals and laboratories (Addeh, 2021) <sup>[3]</sup>.

For instance, Shell recognizes that innovation and technology are vital in providing a wider mix of energy to the world and claims to be a pioneer for more than a century in technology improvement and application to oil and gas. Currently Shell claims to be dedicating over \$1bn annually to R&D to turn ideas into commercially viable ventures. But due to the enclave-character of multinational activities in the developing countries like Nigeria, the spill-over effect of Shell’s endeavour has not been noticed in Nigerian society. What rings louder bell are accusations of degradation and exploitation. The technology of oil and gas operation in the country has not left the region of crudity (Overcoming Technology Challenges). And the country has continued to suffer from acute energy shortage and poverty (Chanchangi *et al* 2022) <sup>[19]</sup>.

To expect multinationals to transfer technology to Nigeria is to wait for eternity. It is not the aim of foreign companies to develop Nigeria technologically and ensure or encourage the growth and welfare of the Nigerians but to post profits to the

headquarters of the parent company after breaking even in the balance sheet of the company (Bush & Johnson, 1998, p. 154)<sup>[16]</sup>.

## Literature review

### *Threat to oil dominance*

A number of phenomena are threatening the space of oil in Nigeria economy in recent times. As canvassed by Addeh (2023)<sup>[2]</sup>, a critical challenge to the sector has been years of under-investment made worst by the west's desire to exit hydrocarbon to renewable. Sometimes, the threat to exit hydrocarbon is merely a political bluff to cower such oil producing nations that have next to nothing to oil wealth. Oil wealth without technology is as good as dependency. It is argued further that the influence of Computer Information Technology is beginning to take over the space of oil in the Nigerian economy. The projection of Mbachu (2022)<sup>[48]</sup> is that CIT, agriculture, banking and manufacturing have taken 93.67 percent of the economy. In the last seven years, CIT alone, for instance, has moved from zero percent to 18.44 percent in Nigeria and is beginning to shove oil to the ringside. And even as this is happening, the technology is largely alien.

The need to enhance technological development in oil and gas has been considered urgent by Umuteme because high cost of production of oil in Nigeria has led to loss of business to the next hub of oil and gas in Gabon and Congo with recent analysis indicating that the Nigerian hub has started losing its pre-eminent first position to Congo-Gabon. As a matter of fact, due to use of obsolete technology and manual processes in well management, drilling, logistics and supply chains, Nigeria is believed to have the highest cost of production of oil in the world with figures reaching \$17 per barrel. It takes Saudi Arabia \$8.38, Iraq \$10.57 and Iran \$9.08 to produce a barrel of oil.

A significant factor that has enabled Nigerian oil business and technology deficiency is the fact that Nigerian projects and prospects are of low subsurface complexity which presents low technology challenges in field development. Non-technical factors like local content, security and community agitation, and restive youth issues have more to bear on oil and gas activities challenge in Nigeria than technology (Zhenhua *et al*)<sup>[76]</sup>. Additionally, corruption and incompetence of those who head critical institution and agencies have hampered technology infrastructure (Ndukwe, 2021)<sup>[53]</sup>. Outlining the circumstances that yield to technology policy failures in the petrochemical sector, Adubifa has opined that it may not be due to lack of resources but that of lack of political will and the conversion into personal gain of the implementation of policies. All of the foregoing can be accentuated by poor understanding of the causes of the problems and policies such that wrong solutions are administered to them. And there is insufficient use of analytical methodologies in the improvement of the decision-making process.

Additionally, opacity in the sector goes up to data. Only a scant amount of data is available and invested in the process of decision making. Digital maturity is low in the oil and gas sector compared to banking and manufacturing. Investment in digital technology is crucial as there is the need to see data as the new oil. Artificial intelligence, big data analytics, internet, electronic monitoring, drone technologies, automation systems, 3D virtual modeling etc, have to replace manual way of doing things in the sector. Data

processing has become the key on issues regarding 'mean time to repair' and 'mean time before failure' in the industry (Umuteme, 2021)<sup>[73]</sup>.

### *Corruption and deficit*

Okecha (2012, p. 44)<sup>[60]</sup> has found from his research that some of the vocal elders and youths of the delta had been compromised through bribes and 'compelled to shut their mouths' by the 'culprit and overbearing oil companies'. Yet evidence is also clear that attempts by the oil companies to crack down on corruption also impacted negatively on the operations and the staff of the companies. In bluff of corruption, Philip Watts of Shell has demonstrated that work could only go on with heavy presence of armed militias and continued civil unrest and conflicts can only result in force-majeure. Millions of dollars that the state was contractually required to pay as counter-part funds to develop reserves found their way into the Swiss bank accounts of corrupt government officials. 'A succession of Ministers not only stole the eggs; but refused to even feed the goose' (Bower, 2009, p. 66)<sup>[17]</sup>. In 2006, the oil companies had paid 90 percent of their counter-part fund of \$25 billion over three years to the Nigerian state but the state failed to contribute its share of the oilfield's development (Bower, 2009, p. 389)<sup>[17]</sup>. The Natural Resource Governance Institute (NRGI), an international watchdog has equally accused the NNPC of failing to remit \$12.3 billion into the federation account from Okono field from 2005 to 2014 in volumes totaling over 100 million barrels (Eboh, 2015)<sup>[24]</sup>.

According to Moody-Stuart of Shell, (as cited in Eboh, 2015)<sup>[24]</sup>, 'Even if the government steals the money, we cannot do anything about it. We are guests in the country and cannot intervene.' Yet, Shell and Exxon Mobil had to account for over \$2 billion (later found to be \$11.342 billion) due to NNPC Ltd on the petroleum sharing contract for Bonga and Ehra oilfields which was lost to the Federal Government. When the Ogoni-Shell debacle came to a head leading to the judicial murder Ken Saro Wiwa, Shell also maintained that 'it is not for commercial organizations like Shell to interfere in the legal process of a sovereign state such as Nigeria'. Yet, it is the same Shell that has not only held down the Petroleum Industry Act (PIA) for more than two decades from being passed into law until 2021 but also refused to make gas available for electricity generation. Characterizing the Act as a 'very flawed' new petroleum sector Energy Bill, Shell argued that it was 'a cumbersome document that lacks insight into the very basics of our industry'. Adeniyi has also referred to 'secret cables from US embassy in Nigeria published by Wikileaks' showing that Shell etc were out to ensure that the PIA was not passed and if passed, a version not in the interest of Nigerian stakeholders should be passed.

By Bower's account, 'oil had turned Nigeria into a magnet for villainy'. He indicted Ogoni tribesmen of 'systematically drilling into Shell's pipelines to divert up to 80,000 barrels of oil every day into barges moored on the creeks.' The stolen crude is traded to 'untraceable tankers chartered by European traders anchored in the delta ... and resold to un-inquisitive refineries especially in Ghana' (Bower, p. 70)<sup>[17]</sup>. As far back as 1997 evidence of large-scale oil theft had been captured by Orewa (1997, 152) in *We are all Guilty: The Nigerian Crisis* while citing the *Nigerian Tribune* of 29<sup>th</sup> July, 1993 to the effect that from littoral communities of Okitipupa and Igbokoda in Ondo State, oil was already

being illegally exported to neighbouring Gabon with Military Administrators being fingered in oil smuggling deals.

### **Political will for change**

Acemoglu and Robinson (2013, p. 75)<sup>[1]</sup> have argued that ‘a businessman who expects his output to be stolen...will have little incentive to work, let alone any incentive to undertake investments and innovations.’ They argue further that nations are poor because leaders who rule them make decisions and choices that create poverty. ‘They get it wrong not by mistake or ignorance but on purpose’ and to understand this, a careful study of how decisions are actually made, who gets them made, how and why they are made is imperative. The batons of extractive institutions that were left behind after British colonial rule were taken over by the Nigerian state and the multinational oil companies. For Acemoglu and Robinson (2013, p. 43)<sup>[1]</sup>, while economic institutions are critical in determining whether a state is prosperous or poor, it is politics and political institutions that determine what economic institutions a state chooses.

The political and economic institutions a state chooses can be inclusive and encourage growth or extractive and become impediments to economic growth. Extractive economic institutions naturally accompany extractive political institutions. On the other hand, ‘inclusive economic institutions are those that allow and encourage participation by the great mass of people in economic activities that make best use of their talents and skills and that enable individuals to make the choices they wish.’ It features secure private property, an unbiased system of law, and a provision of public services that provides a level playing field in which people can exchange and contract. It also allows the entry of new ways of doing business, and allows people to choose their careers while the state takes on regulation. Institutions with opposite characteristics to inclusion are extractive in that they are ‘designed to extract incomes and wealth from one subset of society to benefit a different subset’ (Acemoglu & Robinson, 2013, p. 75 – 76)<sup>[1]</sup>.

They further posit that inclusive economic and political institutions do not come on a platter of gold. They are the outcomes of significant conflicts between elites resisting economic growth and political change and those wishing to limit the economic and political power of the existing elites. Conflict over scarce resources, income and power translate into conflict over the rules of the game, the economic institutions which will determine the economic activities and who will benefit from them. When there is conflict, according to the authors, the wishes of all parties will not prevail. Some will be defeated and frustrated while others will succeed. Who emerges the winners will have fundamental implication for a state’s economic development path. ‘If the groups standing against growth are the winners, they can successfully block economic growth and the economy will stagnate.’ Gidado (1999, p. 7)<sup>[26]</sup> argues that as a host state invades into the exclusive preserves of multinationals they can play a win-win or win-lose or take-it-or-leave-it bargaining models.

In other words, ‘the process of economic growth and inclusive institutions upon which it is based create losers as well as winners in the political arena and in the economic market place’ (Acemoglu & Robinson, 2013, p. 84)<sup>[1]</sup> and as argued further by them the ‘fear of creative destruction is

often at the root of the opposition to inclusive economic and political institutions’. Technological breakthrough does not only make states prosperous but involves the replacement of the pre-existing order with a new one and the constructive or creative destruction of the economic and political powers of the privileged (Acemoglu and Robinson, pp. 431 and 184)<sup>[1]</sup>.

With a population of over 220 million Nigeria ought to be determined to fashion out measures for value addition to her industrial and economic activities by employing science and technology to transform raw materials into products even if they are semi-finished (Ugwuzor, 2023). This issue is not lost to the Federal government. Ex-President Jonathan (2015, p. 288) states, ‘we must do things differently...begin to add value to our resources through research and development. We must industrialize and the Nigerian Industrial Revolution Plan (NIRP) is our agenda to achieve this. His predecessor, ex-President Yar’Adua was equally not far from value addition and chains by ‘opening up horizons for wider participation of stakeholders and entrenching transparency’ (Adeniyi, 2011, p. 34).

Ex-President Jonathan (2003, p. 359)<sup>[42]</sup> during whose administration the oil theft scourge reached its crescendo, argued pointedly that the state plays a significant role in the development of an economy by providing an enabling environment even though it is driven by the private sector. Thus, in the petroleum sector, ‘we are shedding monopoly that the government once had ...we have a new Petroleum Industry Bill (PIB) which would help make the sector less bureaucratic when passed into law’ (Jonathan, 2013, p. 365). By 11<sup>th</sup> March, 2010 the Jonathan Administration (as cited in Igodo, 2010, p. 96)<sup>[34]</sup> had ‘insisted that international oil companies seeking renewal of their acreages must first demonstrate serious commitment to investing in private refineries. But in *President Explains: Transcripts of Presidential Media Chats*, ex-President Jonathan explained that licenses had been issued to the private sector but not much encouraging response was got from transnational and indigenous concerns due to subsidy regimes. He claimed that ‘to attract the private sector to...build refineries...subsidy must be reviewed. People are afraid to invest where what they will get will depend on whether government has money to pay them or not. It is a risk...’ (Jonathan, 2014, p. 196)<sup>[43]</sup>

Studying Mexico in the 1980s, Grindle (1996, p. 83 -84)<sup>[29]</sup> submits that Mexican ‘government policy had created a vast web of restrictions and licensing mechanisms that necessitated a large bureaucratic apparatus’ that ‘encouraged extensive rent seeking ...by public officials’ such that ‘only government could exploit an extensive list of basic petrochemicals.’ To curb ‘the absurdities of the regulatory system much of (which was) patently illogical’ deregulation was introduced. Without deregulation, Grindle (1996, p. 79 - 80)<sup>[29]</sup> and Dible, 2007, p. 23<sup>[22]</sup> argue further, institutions of state dominance over the market and the society cannot be authoritative and ‘rules that structure the interaction of state, economy and society will always be contested’ leading to ‘conflict and uncertainty over whose rules would (prevail) and be accepted as legitimate’ between the formal and the informal markets.

When this scenario is compounded by ‘ethnic conflicts, sectarian claims, armed subversion and other institutional instability’ as in the Niger Delta where oil theft and illegal refineries have grown ‘a rogue economy’ and politics

involves 'ethnic rivalry, turf wars and a bitter struggle for power' according to Ishiekwene (2008, p. 26)<sup>[36]</sup> the concept of a soft or a weak state comes full circle. A soft state lacks the capacity to enforce obligations over its citizens (Grindle, 1996, p. 79)<sup>[29]</sup>. It is unable to govern except by force. For Ikenberry (1996, p. 285)<sup>[35]</sup> the 'weakest kind of state is one that is completely permeated by pressure groups' whose central institutions 'serve specific interests within the country rather than the general aims of the citizenry as a whole.'

### **State response to deficit**

What agencies has the State propped up to tackle the problem of technology deficiency in Nigeria? Not much. The point has to be established that the aim of colonialism was never to develop Nigeria industrially. The mission of the colonialists was not scientific and technological development of Nigeria. It was commercial and for the purpose of transporting and transferring agricultural feedstock for industries in Europe. It was essentially a transactional economy and this has not changed any significantly till now. The highest industrial development policy of the Nigerian colonial state was in early 1950 adoption of the import substitution strategy.

The most phenomenal environmental legal policy instrument and technique that the Nigerian state has adopted against the scourge of oil theft and illegal refineries in the delta has been one of coercion and confrontation instead of collaboration (Heidenheimer *et al*, 1990, p. 310)<sup>[31]</sup>. The policy it has adopted against technology deficit is disinterest and non-committal. Even when Industrial Training Institutes numbering over 300 units have been built across the country, their products have neither been commercialized nor have their proto-types been mass produced or show-cased for international approval. The National Office for Industrial Property that was to ensure that indigenous investors keyed into the industrial sector of the oil economy could not even recruit its staff for over four years (Adubifa) and could not factor Nigerians into the enclave economy until recently when Gen. Sani Abacha began the marginal fields development leading to the entrances of the Nigerian local content vehicles like Seplat, Midwestern Oil and Gas, Matt Resources, Oando, Pillar, Chorus Energy, Sterling Global, Bogel, Energia etc.

Even with the creation of the Petroleum Technology Development Fund PTDF in 1973, use of update techniques as the key to the transformation of the country's energy sector has remained mired in scarcity and conflicts (Binniyat, 2007)<sup>[14]</sup>. Suspicion also greets the recent \$50m announcement by the Junior Minister in the Petroleum industry as funding for R&D. Desired to support accelerated research findings and commercial viability in idea generation, incubation, funding, collaboration, legal and commercial frameworks, infrastructure and enforcement, critical stakeholders have not taken the announcement with much hope but consider it as one of those flashpoints in a usual Nigeria ministerial environment and a pronouncement full of sound and fury signifying nothing. It is believed that the fund called Nigerian Content Research Development Fund (NCRDF) may just be such add on to the Frontier Development Fund (FDF) created by the Petroleum Industry Act (2021) to be funneled into the never-ending search for petroleum in the northern zones of Nigeria or even

investment schemes for Niger Republic to develop oil blocks in the Lake Chad basin (Evans, 2021)<sup>[25]</sup>.

Since 1999 according to Azikiwe (2009, p. 191 -192)<sup>[12]</sup> and Atsegbua (2003, p. 45)<sup>[10]</sup> the people of the 'oil producing Niger Delta have been clamouring for greater control of the oil resources from their region in the true spirit of Nigerian's federalism'. But when the Nigerian soft state failed to address the case, 'their legitimate agitation was hijacked midway by criminals and militants who later engaged in destructive activities'. By 2006 the militants 'advanced from vandalism of oil installations to kidnapping of expatriates and local oil workers to put pressure on the government, and draw the attention of the international community to the plight of the Niger Delta people' leading to the Proclamation of Amnesty in 2009.

With issues of criminality, justice, peace and security commingling, a spate of state agencies were propped up to address the crisis including State Mineral Oil Development Commissions like Delta State Oil Producing Development Commission (DESOPADEC), and Federal government development agencies like the Niger Delta Development Commission (NDDC) and the Ministry of Niger Delta (MND). Even the International Crisis Group (ICG) called for the amendment of the NDDC Act to involve multinational oil corporations in Nigeria in contributing to the Commission's funding. But the remediation agencies have not performed above expectations because 'traditional bureaucratic governments' according to Osborne and Gaebler (1993, p. 219)<sup>[40]</sup> 'focus on supplying services to combat crime.' To deal with crime, the state funds more police agencies. Rather than being anticipatory and 'use an ounce of prevention' the state 'uses a pound of cure.' Rather than 'build foresight into their decision making' the agencies lurch from one crisis to another because more premium is placed on dishonesty and corruption. Prevention is a hard sell in the Niger Delta legal and political environment because it is quiet and cheaper than treatment. It is threatening to the industry as it requires difficult changes in production practices and subversive to agencies that sell remediation. Agencies and politicians who mount all-out attacks on symptoms rather than causes generate greater publicity (Osborn & Gaebler, 1993, pp. 222, 235 - 236)<sup>[40]</sup>.

The growing awareness of the informal sector which is 'unorganized, disorganized, clandestine, and usually illegal' has also been 'neglected by ... agencies, denigrated by economists and harassed by officialdom...yet increasing number of studies are revealing how widespread and ...important it is' (Smilie, 1991, p. 96)<sup>[68]</sup>. While the role of the delta creek oil economy sustained by the local, indigenous technology has been widely acknowledged as the mainstay of the economy of the people on the one hand, there is equally no doubt that transnational oil corporations and the state, on the other hand, have a 'positive role to play in the industrialization process' of the Niger Delta. This is because according to the Commonwealth (1977, p. 61)<sup>[20]</sup> and Newell (2002, p. 173)<sup>[54]</sup> transnational oil corporations have great 'command over finance, technology and access to establish and manage complex operations.' They can hardly be challenged or overreached by the local, indigenous technology of the creek. Transnational companies are critical players in delivery of sustainable development, exporting great improvements in technology although

sometimes at the expense of communities and their environment.

### ***Does deficit cause underdevelopment?***

One of the greatest causes of the under-development and poverty of Nigeria and by extension the southern hemisphere, as opined by Momah (1999, p. 25) <sup>[49]</sup> is the 'non-fusion of indigenous technology with modern technology' the non-fusion of the informal with the formal economy. This is because 'technology is the dividing line between the developed and the developing world, it determines whether a country is in the first, second or third world.' He canvasses further that because of the 'lapses in our technological development our oil boom has become an oil doom.' And to him, 'a nation that is unable to develop the skill and knowledge of its people and utilize them effectively in the national economy will be unable to develop.' This is because 'the state of the world and the way its governments and institutions function and relate to one another has everything to do with the technologies they choose to solve their problems' (Smilie, 1991, p. viii) <sup>[68]</sup>.

Over the years, according to ex-President Jonathan (2015, p. 314), 'In spite of abundant oil and gas resources... we have grappled with inadequate energy supply for ... domestic and industrial use. This has slowed down the industrial goals of past administrations and impacted negatively on our socio-economic growth'. Over the years Nigeria has shown lack of technical expertise and structural ability to regulate the oil industry particularly the control of the multinationals due to lack of technical know-how and inability to change the natural form of her mineral resources through value addition (Ighodalo, 2006, p. 325) <sup>[33]</sup>.

Smilie (1991, p. 77) <sup>[68]</sup> has argued that the 'importance of government in the advancement of technology cannot be overemphasized'. 'Government protects new technologies with patent legislation and through erection of tariffs against competition'. General technical backwardness of the tropical world as a whole has been identified by Gourou (1980, p. 8) <sup>[28]</sup> as the reason for the 'feeble development of industry in the south' and not climatic conditions, lack of raw materials or the inability of the people to master the existing industrial techniques and improve on them.

Yet, Rahman (1993, p. 135) <sup>[63]</sup> has also identified the fact that development will not be brought about by statistics or machines but by the people themselves. In the peoples' collective self-determination for authentic development, the people would 'want to stand up, take control over what they need to work with, to do things themselves in their own search for life, to move forward, supporting each other.' Nigeria should endeavour to strengthen its local capability in respect of oil technology according to Gidado (2006, p. 258) <sup>[27]</sup>.

One of the features of the development taking place in the delta creeks of Nigeria in the emergence of heightening levels of oil theft and illegal refining has been 'a local, indigenous technology' beneath the scourge. Madeley (1995, p. 122) <sup>[47]</sup> has argued that 'the poorest cannot afford complex and expensive technologies. They are often not interested in or do they care to bother with grandiose technology irrelevant to their existence.' Therefore, industrial projects and technologies for regions such as the Niger delta which is widely known to be poor and dependent on oil ought to be low cost, simple and appropriate.

Although, in the 1960s, Schumacher (as cited in Smilie, 1991, p. 78 – 79) <sup>[68]</sup> has queried the 'idolatry of (the) large' it is not being argued that 'small, simple and cheap' technology must necessarily be preferred or is it apparently being submitted. An attack is also not being launched at the 'behemoths' oil 'dinosaurs' that the current refineries in Nigeria are. This is because simple technologies could be derived from intensive research and development.

The quandary is not the choice between complex and simple technology that works. Rather, the problem, according to Smilie (1991, 224) <sup>[68]</sup> is that many poor countries like Nigeria have 'enacted or inherited laws which are directly antagonistic to micro-enterprise development and appropriate technology' yet, the future of technology development in the south, especially in places like Nigeria, will be 'determined to a large extent by the incentives and stimuli of the policy environment in which key players operate' (Smilie, 1991, p. 221 and Omorogbe, 1995, pp. 118 – 119) <sup>[68, 61]</sup>. That is the state, the institutions, the multinationals, the independents and the people.

### ***Red-tape and technology deficit***

Smilie (1991, 224) <sup>[68]</sup> submits further that it is incumbent on the state to 'cut red tape...simplify procedures, regulations and permissions.' Revise 'laws and regulations that impede innovation in new and appropriate technologies.' Use incentives to encourage appropriate technological change. Support research and development into appropriate technologies and use government procurement to encourage them. This is because a wide range of regulations and laws has important bearing on the choice of technology. Genuine interest in micro-enterprise development and the growth of technological capacity requires an enabling regulatory environment that encourages rather than discourage talent and industry (Omorogbe, 2003, p. 159 and Smilie, 1991, p. 223) <sup>[62, 68]</sup>. Nwoke (2005, p. 111) <sup>[56]</sup> has canvassed the phasing out of mineral exports gradually and progressively. Instead, 'policies for local geological exploration using indigenous expertise' should be vigorously pursued for a complete inventory of independent, indigenous technological culture.

### ***Impact of deficit on oil theft***

Identifiable technology deficits have impacted on oil theft and the integrity of the sector making it a space of sleaze. Arguments have been raised that innermost players in the industry and on the corridors of State power are responsible for plethora of problems affecting the sector with identifiable government agencies being deeply involved in the technology malaise (Bello, 2017) <sup>[13]</sup>. Government front row officials also play to the gallery on the critical national issues giving sanctimonious dirge to the degraded communities. For instance, on the part of the ethnic communities of the delta, ex-Senate President, Saraki (2012) <sup>[65]</sup> believes that they 'must begin to appreciate that they have a role to ensure that they do not encourage or protect nefarious activities or individuals and criminals who seek to vandalize and sabotage oil installation for their selfish ends and resolve to work as partners in protecting the environment' when in fact, the technology for such security and scrutiny of the pipelines are in deficit.

Sweet Crude (2013) <sup>[70]</sup> seems to have also captured oil theft more poignantly as being improper for citizens to destroy oil installations in a bid to steal crude oil as feedstock for illegal

refineries just because there is a significant imbalance between projected refining capacity and existing capacity such that it becomes tempting to boil crude in drums to meet market demands. That it is lawless to set up any kind of oil refinery without due process even though small-scale refineries can be profitably sited close to flow stations and terminals. That it is most inappropriate for Nigerians or foreigners to steal crude with impunity and that it degrades the environment even though it is unwise to throw out the technology behind the criminal activities. These and similar homilies do not also address the technological deficits behind the activities.

Even ex-Governor Uduaghan (as cited in Odivwri, 2014)<sup>[37]</sup> for instance believes that the extant laws and legislations for prosecuting oil thefts are grossly inadequate and 'a strong legal framework is needed to be created so that kingpins and promoters of crude oil theft can be prosecuted'. In this respect, the House of Representatives in 2013 set up a 17-member panel to find legislative solution to oil theft by defining how deep pipelines are laid for accessibility to thieves, determining how stolen crude is transported, identifying the illegal vessels and their owners, and ascertaining the status of impounded vessels for confiscation (The theft of crude oil..., 2013). Yet, scant attention was paid to the technological deficits behind these problems.

### **Opacity of oil theft**

The tendency is also patently clear that when it suits the State and international oil companies to inflate the quantity of oil stolen in order to magnify the enormity of the scourge and justify the need for deploying armed forces of the republic to storm the delta against oil thieves and illegal refineries, it gladly does so. When it suits them to minimize the quantity stolen in order to attenuate the adverse publicity it exposes the industry internationally and in order to attract direct foreign investment and technology they will gleefully do so. Yet, it does not suit the state and the multinationals to invest in the sector to develop local technologies in refining business.

In fact, the opacity and deficiency in sector was long highlighted negatively in the classified Pearson Report in the US as far back as 1966 which was commissioned to assess the impact of increased oil revenues in Nigeria. The report revealed that the official Nigerian government statements concerning the anticipated Nigerian oil revenues were substantially lower than what the oil company officials knew could be forecasted, and that both of these projections were lower than the figure estimated by oil field operators. The report concluded that these may in due course have extremely explosive results and now (in the 2023s) the chicken is coming home to roast with conflicts resulting in oil theft and illegal refineries in the creeks (US oil companies...2013, pp. 155 – 165).

Duncan (2008, p. xiii)<sup>[23]</sup> has argued that extreme confidentiality, state secrecy in oil business and a paucity of suitable data has inhibited serious study of African hydrocarbons. The writer further traces this to the cold war era which was froth with both political and military conflicts across Africa which tended to becloud what was happening in the oil sector and the challenges attending to same. As recently as 2015, Professor Anikpo (as cited in Ewhrudjakpor *et al*, 2015, p. 1)<sup>[9]</sup> has lamented the scarcity of written record on the early history of oil theft arguing that the earliest version of the crimes involved highly technical

operations for which information was only available to the criminals. Citing Naanen and Tolani, Anikpo (2015)<sup>[9]</sup> seems to hold the views of the two authors that the practice originated in the 1970s dominated by theft of refined petroleum products, attracting military involvement in the crime by the 1980s and local youths by 2007. The youths popularized the crime by siphoning condensates (Asari fuel) from the Soku fields in Asari Toru Local Government Area of Rivers State.

For Obasanjo (2014, pp. 301 and 304)<sup>[57]</sup> the worst hit states are Rivers, Bayelsa and Delta. For the ex-President, the suspicion was that the Governors of these states (Alameisagha, Ibori and Odili) were afraid of taking firm and decisive action against the thieves for fear of reprisal having used them as thugs to fight their political campaigns. Evidence of suspicion of direct corrupt practice between some state governors and oil companies has even been presented by Bower (2009, p. 317)<sup>[17]</sup>. Bower has opined that in West Africa, Chevron and Shell collaborated to bribe James Ibori by hiring house boats from the ex-Governor in return for paying \$2.3 million into the Governor's account with MER Engineering at Barclays Bank in London.

Upon the emergence of his administration, Buhari (2015)<sup>[15]</sup> revealed that some affected officials were involved in illegal sale and diversion of crude oil monies of the Federal government into multiple private foreign bank accounts. He stated, 'we are looking for evidences of shipping some of our crude, their destinations and where and which accounts they were paid and which country'. 'When we get as much as we can get as soon as possible, we will approach those countries to freeze those accounts and go to court, prosecute those people and let the accounts be taken to Nigeria.' There is no debate on the position of President Buhari. This is because Okenwa and Nwosu (2013)<sup>[59]</sup> have stated it inquisitively, 'If stealing crude oil robs the nation of income, what does stealing revenue earned from the sale of crude oil do to the nation'? Till the conclusion of this study, no one was brought to justice rather the President had to go back to his vomit by re-engaging oil militants that he had previously revoked their contracts for corruption allegations, international fraud and money laundering.

However, the case of stealing crude oil and illegal refineries begs for a different consideration because of the technology behind them. Sudouwei Eris, 50 years, states to Akinleye (2013)<sup>[7]</sup>, 'We know the crude oil theft is bad but we have been pushed to the wall to do it... If not for the oil bunkering, we would have no shelter in this community'. Government has not even provided a school to his Baberagbeme Community. Another, Chisco, 35 years, says: 'I was jobless, but I have a younger brother who read geology at University, and he taught me the process!' The process in this case is the technology behind oil theft and illegal refining.

Articulating the nature of the development that people of the Niger Delta will pursue, Smilie (1991, p. viii)<sup>[68]</sup> zeros in on a development that is 'relevant to their resources and needs, and to the hopes (they) have for their countries and children...It is about how what has become known as appropriate technology' can fit into their environment and accomplish the fight against poverty. It is what Fredrick Schumacher (as cited in Smilie, 1991, p. 83)<sup>[68]</sup> characterizes as a 'crusade to support and improve the productive efforts of the people as they are struggling for their livelihoods now. Find out what they are doing and help

them to do it better. Study their needs and help them to help themselves' under a regime of law.

Akinyemi (2015) <sup>[8]</sup> submits that bombing and smashing refineries have been the standard solution to the problem of illegal refineries. But 'the problem is that it is not the solution.' The solution is that 'we should stop burning and destroying as a policy. Licenses have been given over the years (to) people to build refineries and apart from Dangote others have not utilized their licenses.' And yet, 'here are Nigerians who obviously understand the rudimentary process of producing refined PMS and instead of encouraging them, we punish them.' 'Let us regard building our own domestic technology as a priority and start pursuing policies towards that end.' Akinyemi's legal policy and framework are endorsed. But they are at violent odds with the present legal remedies and technological framework being pursued and applied by the Nigerian state which is transfer.

### Conclusion

One of the points which have been made many years ago by Adubifa is still relevant till now: that Nigeria has failed in the development of its oil and gas technology because of lack of adequate framework of decision making and absence of national consensus in decision making and political will rather than lack of adequate resources for technological improvement. This point has further made attempts at importation of foreign technology and development of indigenous ones well-nigh impossible. The teeth of this point is that technological policies are often considered not to have existed long enough to be evaluated before that are altered, reviewed or changed for having been labeled a failure or obsolete. The level of inconsistency in the political and ministerial decision-making lieu is so mercurial that so much is on quick sand and temporal.

A second point that has been made by researchers in the course of this study which is adopted is that ownership of production cannot be divorced from the technology of production necessitating the need for a State backed institutional framework for sustainable indigenous technology development and local content promotion. And that this cannot be achieved through legislative framework only but by balancing the interest of investors with national interest. Attempts at speaking to national interest only without consideration of the investors' interest can only give way to non-linkages. Private sector participation should therefore be encouraged while public ownership should be de-emphasized as the role of private capital is crucial (Olawoyin, 2020) <sup>[38]</sup>.

### Recommendations

1. The allocation and vote to R&D and infrastructure should be increased.
2. Private sector participation in R&D and infrastructure should be encouraged. This should be in the form of private public partnership as started in UK in 1993.
3. Mineral exports should be gradually and progressively phased out, and policies for local geological exploration using indigenous expertise should be vigorously pursued for a complete inventory of independent, indigenous technology culture.
4. There is the need to see data and data generation as important and key in the industry instead of opacity.

5. In an environment of national survival, emphasizes should be placed on encouraging local content vehicles to merge to build capacity as had been done with the banks. Consolidation is a lookout for them.
6. The State should give its national oil companies out to the competitive environment and should cease being over-protective of them with harmful policies that discourage foreign competition.

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