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Stemming the Increasing Cost of Oil Theft to Nigeria

Data from NEITI's oil and gas reports and research shows that Nigeria lost at least \$41.9 billion to vandalism and theft of crude oil and refined products within ten years (2009 to 2018). Stemming this haemorrhage should be an urgent priority for Nigeria at a time of dwindling revenues and increasing needs. This policy brief explores the data, reviews current strategies, and recommends way out.

Nigeria currently loses a sizeable portion of its crude oil to theft, vandalism and deferred production. The losses are monumental both in scale and scope. Estimates of volume of crude losses vary across different periods, with official figures showing an astronomical increase from the earliest reported figures that this paper can reference. In 1988, Professor Tam David West, then minister of petroleum and energy, estimated that Nigeria was losing N10 million annually to crude theft.¹ In 2013, key officials of the Goodluck Jonathan administration put the volume of crude losses at about 150,000 barrels per day.^{[2][3]} Audited figures published by NEITI show that this estimate corresponds to a period that was not even the peak of crude oil losses in the country.



Estimates of stolen
crude range from
**150,000 bpd to
400,000 bpd**

1 See "Impact of Oil Theft and Bunkering on the Environment". Paper presented by Zainab Ahmed, at the 10th Regional Meeting of the ACP-EU Joint Parliamentary Assembly, Abuja, Nigeria, 17th July 2013.

2 Andrew Yakubu, Group Managing director, Nigeria National Petroleum Corporation (NNPC). Submission to the Senate and House Joint Committee on the Medium-Term Expenditure Framework, October 30, 2014.

3 Okonjo Iweala, Nigeria's Minister of Finance (2013). Available online at <https://www.premiumtimesng.com/business/130288-nigeria-loses-n155bn-monthly-to-oil-theft-others-okonjo-iweala.html>.

On 29 August 2019, the Ad-Hoc Committee of the National Economic Council (NEC) on Crude Theft disclosed that that Nigeria lost about 22 million barrels in the first six months of 2019. This loss was later put at \$1.35 billion. This amount is already about 5% of the entire year's budget. Also, it is more than the capital allocations for education, health, defence and agriculture combined. Yet this is crude oil lost in only one half of the year.

But these numbers are just a fraction of the consequence. Although the figures released by the NEC committee appear to be the first major government-level attempt to empirically assess the volume of losses overtime, figures presented by Nigeria Extractive Industries Transparency Initiative (NEITI) since its 2009 audit has calculated volumes and values of crude loss on a 12-months basis. In this study, NEITI presents figures for crude losses covering the last ten years (2009 to 2018). This horizon both presents a long-term view of the problem and as well as its destructive regularity. The numbers are alarming: In 10 years, Nigeria lost more than 505 million barrels of crude oil and 4.2 billion litres of petroleum products valued at \$40.06 billion and \$1.84 billion respectively. Cumulatively, total crude and product losses for the period amount to \$41.9 billion. This is the size of Nigeria's entire foreign reserves. On average, Nigeria lost \$11.47 million daily, \$349 million monthly, and \$4.2 billion dollars every year for the past 10 years.

In fiscal terms, the country lost enough in 20 months to finance the proposed budget deficit for 2020; in 15 months to cover total proposed borrowing or increase capital budget by 100% and in five months to cover pensions, gratuities and retirees' benefits for 2020.⁴

In term of volume, 138.4 thousand barrels of crude oil was lost every day for the past 10 years, representing 7% of average production of 2 million bpd.

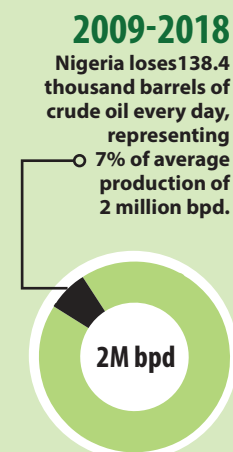
Ultimately, what is stolen, spilled or shut-in represents lost revenue, which ultimately translates to services that government cannot provide for citizens already in dire need of critical public goods.

Apparently, the opportunity loss parameters are endless. In reality, the problems and its consequences exist beyond the boundaries of opportunity loss calculations and fiscal modelling. In the 2020 budget speech at the National Assembly, President Muhammadu Buhari said that oil revenues fell below target by 49 percent as at June 2019. That is half of earnings from Nigeria's main revenue source. The reasons for the shortfall, according to the president, are "lower than projected oil production, deductions for cost under-recovery on supply of premium motor spirit (PMS) as well as higher expenditures on pipeline security/maintenance."

The two other factors, beside production losses, call attention to the fact that the problem, even in quantitative terms is much more than a 10-year \$41.9 billion headache. Pipeline repairs, a direct consequence of vandalism, is a major index of losses in the oil industry. For three years covering 2014-2016, total expenditure on pipeline repairs was N363 billion. This is excluded from the data in this paper as only losses of crude and products are considered.

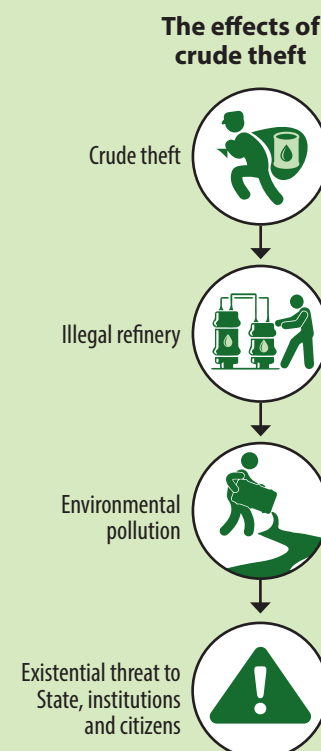
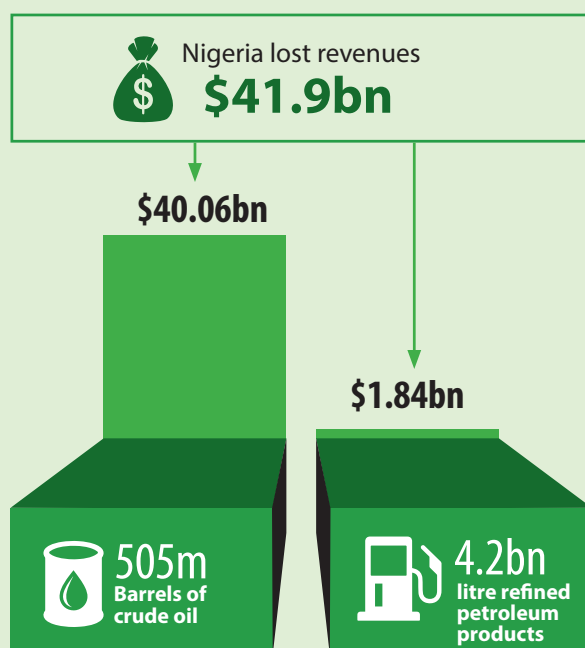
On the second scale, spilled oil degrades the physical environment in a way that further threatens not just the flora and fauna of the oil producing region but also negatively impacts the lives and livelihoods of the communities that host the damaged installations.

Crude theft produces other effects, like the festering illegal refinery menace in the oil-bearing communities which further threatens the safety and livelihoods of the environment where these illegal refineries operate. Then there is the existential threat to the state, its institutions, and citizens. This arises from the way that crude theft, in the mould of illegal resource extraction around the world, first undermines, then seeks to profit from the diminished capacity of the state and its institutions to secure its territory and assets. Illicit mineral exploitation is typically complemented by illegal arms trade which both serves to aid the illicit exploitation and is in turn fuelled by money earned from the illegal mineral activity.



⁴ Figures for 2019 budget performance and 2020 budget estimates are extracted from President Muhammadu Buhari's 2020 budget presentation to the National Assembly. Available online at: <https://www.budgetoffice.gov.ng/index.php/2020-budget-speech>.

Government has tried to tackle the problem of crude oil theft through a variety of security and other long-term, preventive measures. However, it does not appear that the efforts have produced the desired outcome, at least going by current evidence as well as time series data presented in this paper. Part of the solution will be with taking advantage of current technology to monitor and track Nigeria's crude oil from production facilities to the point of sale. The legal framework also needs to be strengthened because current provisions of the law are clearly not sufficient to provide deterrence for beneficiaries of stolen crude. Ultimately, an effective strategy to combat crude theft would require multilateral actions, at the international level, to complement routine legal, regulatory and law enforcement activities by national institutions.



Sustained Losses: Insights from NEITI's Oil & Gas Audit Reports

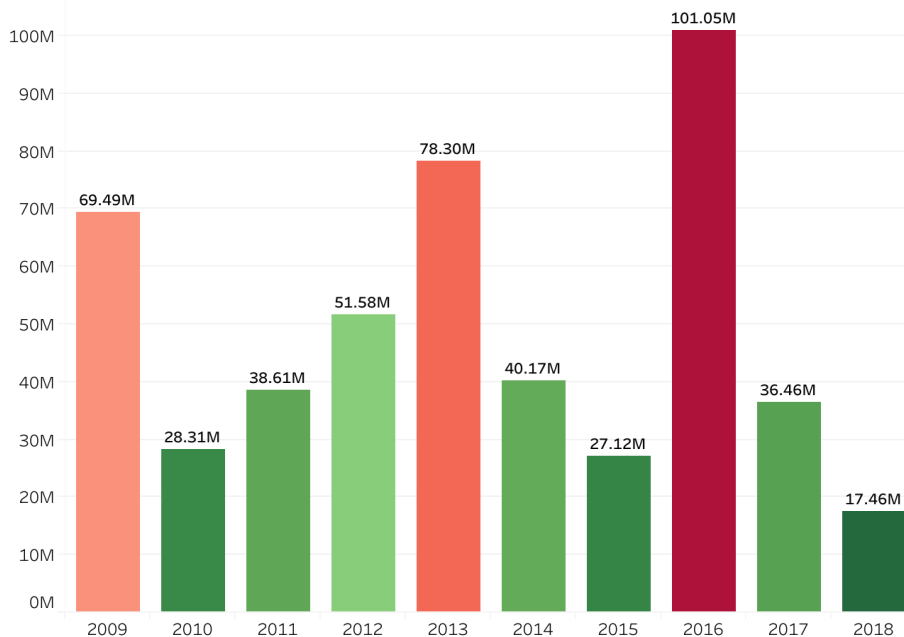
Estimates of the volume of crude losses in Nigeria have varied widely. Figures offered by past and present government officials have ranged between 150,000 barrels per day and 250,000 barrels per day. Other estimates produced by private studies have been typically higher, in the region of 200,000 bpd to 400,000 bpd, suggesting that up to a fifth of the Nigeria's daily crude oil production may be lost to theft and vandalism.

The wide variation in the numbers indicates the difficulty of producing real-time data on this highly illicit activity. However, beginning from 2009, the Nigeria Extractive Industries Transparency Initiative (NEITI) has published audited annual data on crude oil and products theft in its oil and gas audit reports. Prior to that year, NEITI first highlighted the issue of petroleum products losses in the audit report for 2005. Such losses were attributed to a variety of factors, including, pipeline vandalism, leaks, measurement error and theft. Total product losses alone for that year amounted to \$239 million.

From 2009, NEITI began to require oil and gas companies to report volumes of crude losses. The volume of losses for a 10-year period up to 2018 are presented below.⁵

⁵ Figures for 2009 to 2017 are audited figures published by NEITI in its annual oil and gas audit reports; the figure for 2018 was obtained from DPR for the purpose of this review.

FIG 1: TOTAL LOSSES FROM CRUDE OIL THEFT AND SABOTAGE (barrels)



The data show that between 2009 and 2018, a total of 488,558,873 barrels (488.6 million barrels) of crude oil was lost to theft and sabotage. Apart from the scale and consistency of the losses shown in these figures, a striking feature of the data is that there is no definite trend in a particular direction (whether it is increasing or declining). Whether it is particularly low or high for one year, it is hard to predict the scale of losses for the intervening period. However, one pattern that seems to occur with disturbing regularity is the sudden spike in volume of losses after two to three periods of comparable values. These extraordinarily high volumes occurred in 2009, 2013 and 2016.

It is important to point out that, while 2018 produced the lowest volume of crude loss and also shows a second consecutive decline from the peak of 2016, the current year (2019) appears set to dispel any real hope of a sustained decline in crude loss. This is already apparent from the figures released by the NEC committee – the reported volume of 22 million barrels for the first six months has already surpassed the entire loss for 2018 by almost 30%. There is no question therefore that urgent measures are required to reverse this pestilence.

FIG 2: TOTAL LOSSES FROM CRUDE OIL THEFT (%)

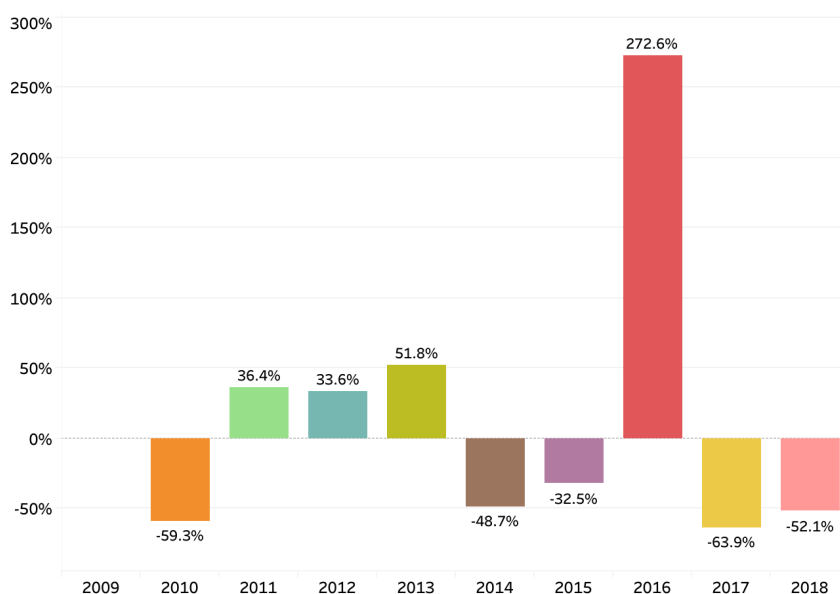


Figure 2 shows the rate of change which measures the size of increase/decrease in volume of theft and losses for each year during the period. These figures reinforce the observation above that total losses from oil theft have been quite volatile. The lowest percentage change in crude oil losses was a decline of 32.5% which occurred between 2014 and 2015. Conversely, the highest percentage change was an increase of 272.6% between 2015 and 2016, a period of heightened sabotage activity in the oil producing region. The fact that the lowest percentage change was above 30% shows the high volatility in crude oil losses.

Figure 3 shows the breakdown of total crude oil losses into the two components of theft and sabotage. Two caveats are important here:

- the data for 2012 and 2013 combined sabotage and deferred production together, and thus the sabotage figures might be overestimated;
- the data for 2015 and 2017 do not include sabotage, and thus the sabotage figures are likely to be underestimated.

FIG 3: TOTAL LOSSES FROM CRUDE OIL THEFT AND SABOTAGE (2009 - 2018) (barrels)

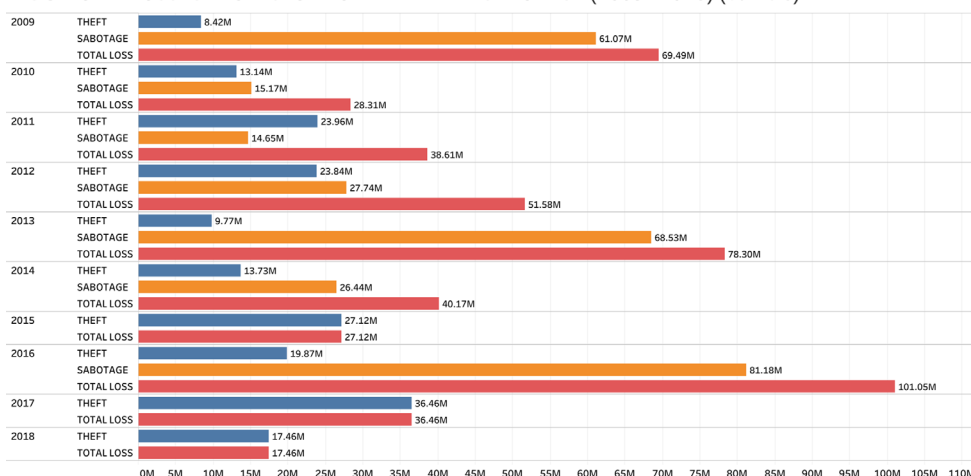


Figure 4 presents the monetary values of the total crude oil losses. The total monetary value of crude oil losses over the period 2009 to 2018 is \$38,545,164,623 (\$38.54 billion).

FIG 4: TOTAL MONETARY LOSSES FROM CRUDE OIL THEFT AND SABOTAGE (DOLLARS/NAIRA)

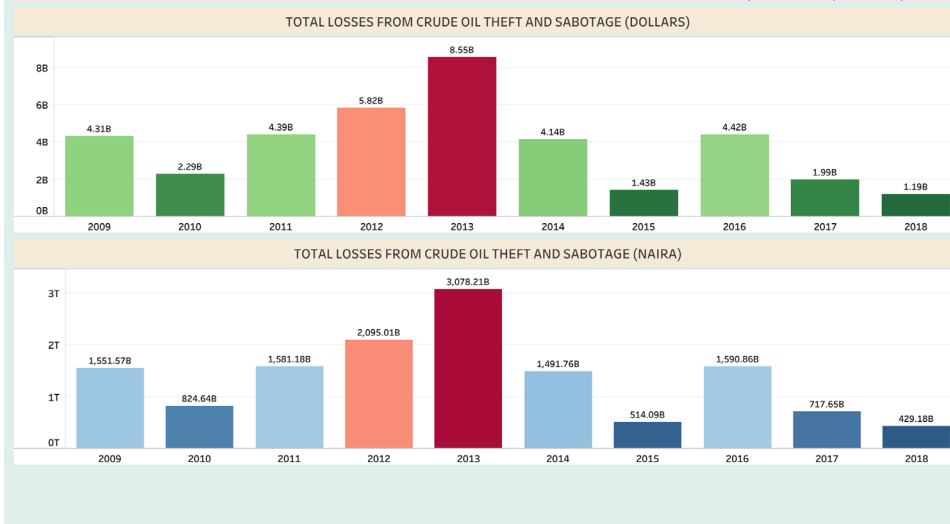


Figure 5 shows that total losses for domestic crude allocated to Nigeria's four refineries is 17.44 million barrels amounting to \$1.56 billion. The data shows losses reported up to 2015; NEITI did not obtain data for 2016-2018. This analysis assumes that, beginning from 2016, NNPC reported losses from domestic crude allocation with losses reported by the IOCs cumulatively. Otherwise, these subsequent years are excluded. When the losses reported by the oil companies are combined with the losses from domestic crude allocation to NNPC, the total crude lost between 2009 and 2018 came to 505 million barrels.

FIG 5: DOWNSTREAM CRUDE OIL PIPELINE LOSSES (volume and monetary)

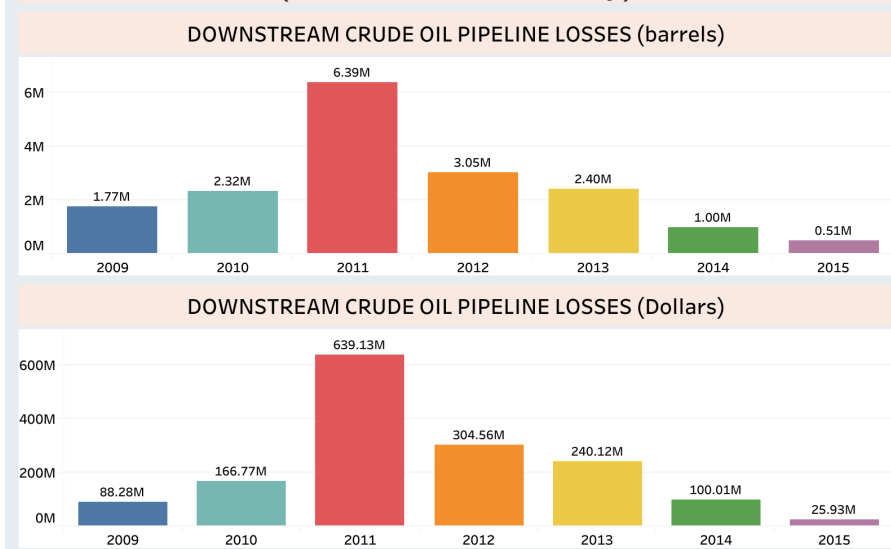


Figure 6 shows data for products losses. For the period covered, total losses for PMS (petrol), AGO (diesel), and DPK (kerosene) is 4.2 billion liters valued at \$1.84 billion. Figures for four of the years reported (2009, 2010, 2011 and 2014) show only losses for PMS, as data was not obtained for AGO and DPK. This brings the total value of losses to \$41.9 billion for the ten-year period (2009 to 2018), broken down as follows: crude theft (\$38.5b), domestic crude losses by NNPC (\$1.56b) and product losses (\$1.84b).

FIG 6: LOSSES OF REFINED PETROLEUM PRODUCTS (DOLLARS)

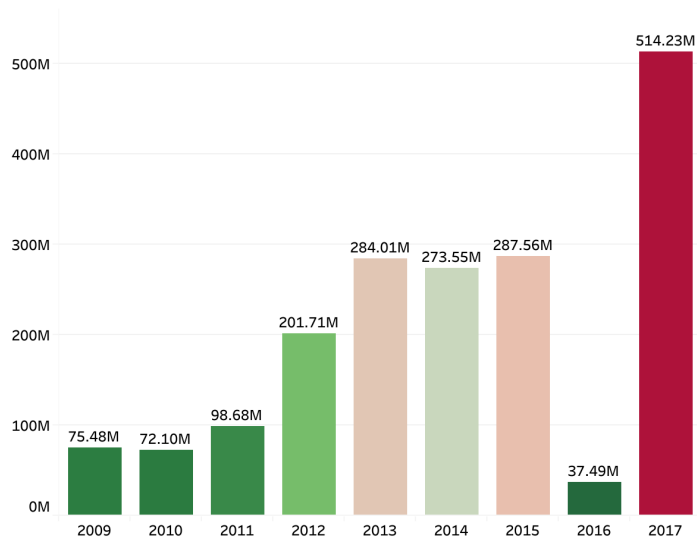


Figure 7 presents total pipeline breaks over the period 1999 to 2017. Curiously, the volume of losses does not particularly reflect the rate of pipeline breaks for the corresponding years, suggesting either that the criminals are becoming more efficient, or crude theft is occurring increasingly elsewhere. This may require further probing.

However (notwithstanding the source of losses), there is little doubt that crude theft is currently happening at unsustainable level, hence there is urgent need for review of current remedial strategies.

FIG 7: TOTAL PIPELINE BREAKS (1999 - 2017)

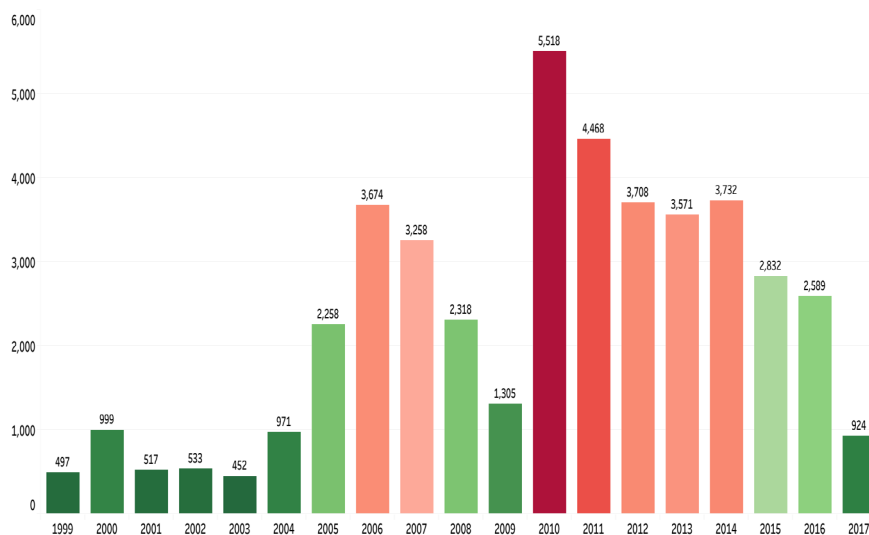




PHOTO: thetrentonline.com// Getty Images

Crude Theft Containment Strategies and Challenges

Successive governments in Nigeria have made efforts to curb the incidence of crude and product theft in the country with varying degree of success. Each has used a myriad of tools or methods to combat this menace. The recognition of the oil theft problem has produced both legal and policy responses.

The Laws

Since 1975 at least, the laws of Nigeria have attempted to address the problem of oil theft. The Petroleum Production and Distribution (Anti-Sabotage) Act 1975 contains provisions against pipeline sabotage and provides penalties of up to death penalty. However, this provision applies only to pipelines conveying petroleum products, not crude oil. On the other hand, the Crude Oil (Transportation and Shipment) Regulation 1984 explicitly provides measures that sought to prevent ships, tankers and vessels from engaging in unauthorized loading of crude within Nigeria or outside any loading ports or terminals in Nigeria. The provisions also cover prohibition against false declaration of cargo volumes and mis-invoicing. However, the law provides for penalty of just N100 or six months in prison. Outside this provision of court-imposed penalty though, the Minister is empowered by law to impose sanctions including, but not limited to, seizure of ship and withdrawal of license.

On its part, the 1978 Exclusive Economic Zone Act empowers officials to curtail access to the waters around oil wells, pipelines, terminals and other infrastructure. But the law provides for punishment of only N5,000 or imprisonment up to 12 months or both.

Security measures

Security represents perhaps the greatest challenge for government in the region considering the different types of security arrangements that have been implemented to combat various kinds of security issues ranging from ethnic conflicts, kidnappings, militancy, crude theft etc. in the region. While some of these issues appear to have been controlled over time, the scourge of oil theft and sabotage persists, and even appears to be rising.

Of the several security arrangements in the region, the most notable has been the Joint Task Force (JTF) comprising personnel from different security agencies. Other security measures have included increased surveillance of vessels and enforcement on maritime



Crude Oil (Transportation and Shipment) Regulation (1984) penalty:

**N100 fine or
6 months in
prison**

**Exclusive Economic
Zone Act penalty:**

**N5,000 fine or
12 months in
prison**

trade between Nigeria and other countries (especially sister West African countries).

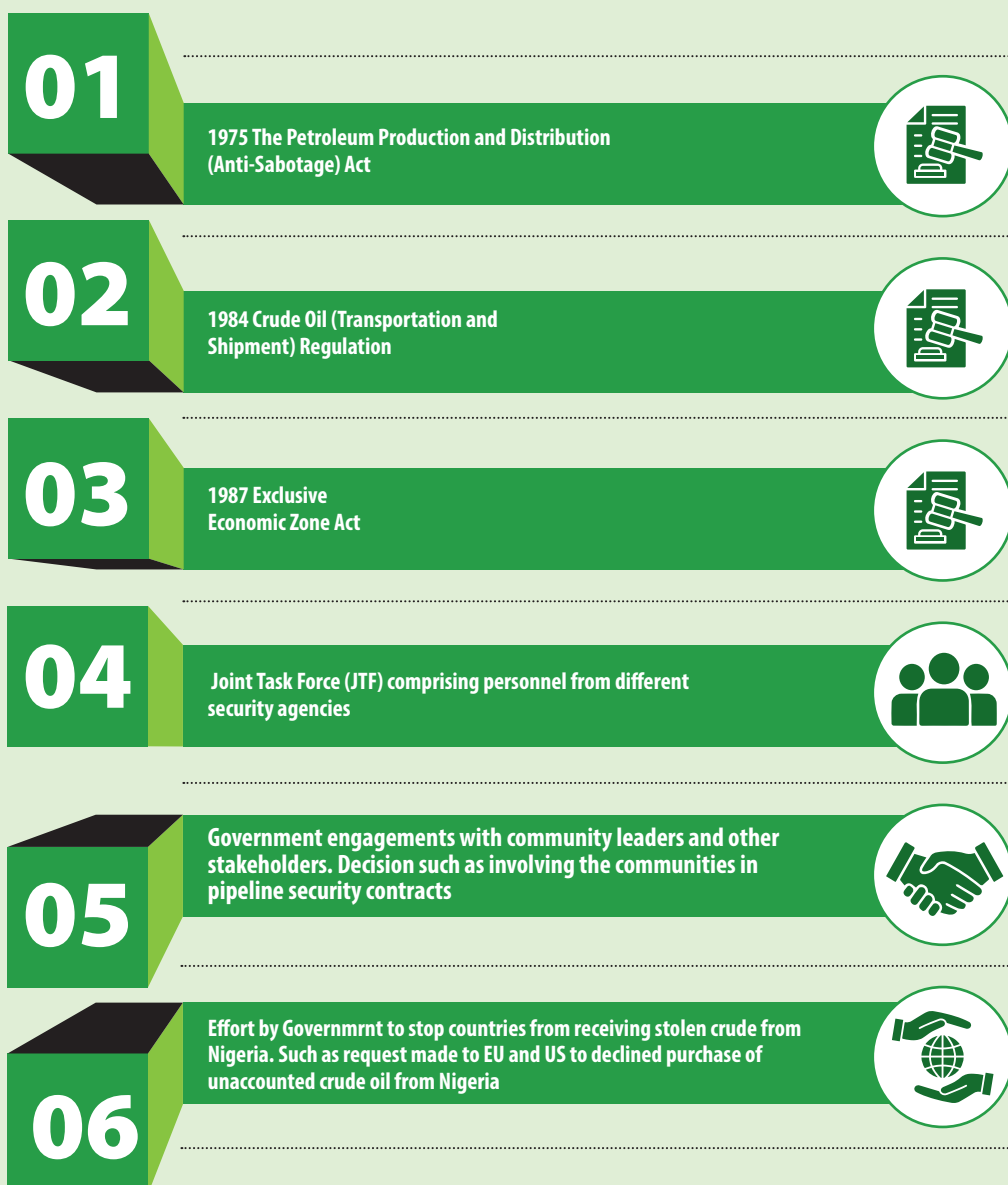
Community engagements

Government has also embarked on engagements with community leaders and other stakeholders in the region to create trust and seek cooperation and collaboration from communities in addressing the problems of the oil-bearing region. The decision as some point to involve the communities in pipeline security contracts represents one of the concrete signs of the policy of engagement.

Diplomatic approach

Measures such as “warning countries receiving stolen crude from Nigeria especially those within the sub-region” were employed in combination with the above approach. Nigeria has also reached out to countries within and even beyond the sub-region suspected to be destinations for Nigeria’s stolen crude or havens for funds derived from illegal bunkering and the likes. In 2014, Nigeria’s government requested the support of the EU and the United States in non-purchase of unaccounted crude oil from Nigeria. The current government has also continued to reach out to the West to assist in combating crude theft.

CRUDE THEFT CONTAINMENT STRATEGIES OVER THE YEARS



4,441 km
length of pipelines

5,120 km
of refined products

124 km & 164 km
of condensates and
liquid petroleum gas

2,000
wellheads spread
across 258 oil fields

Challenges of Combating Crude Theft and Vandalism

There are various challenges which have limited the impact of the strategies deployed over time. They include the following:

Scale, Spread and Location of Oil Installations

In terms of the size and extent of the infrastructure from which crude oil is stolen, Nigeria has about 4,441 km length of pipelines conveying crude oil and 5,120 km for refined products. This is in addition to 124 km and 164 km for condensates and liquid petroleum gas respectively.⁶ There are also about 2,000 wellheads spread across 258 oil fields.⁷

The vastness and remoteness of Nigeria's network of pipelines and oil installations, mostly in very difficult terrains, no doubt presents its own challenge to effective policing of these assets and the products they convey from points of production to sale destinations. This makes them vulnerable to activities of thieves and vandals.

Market for stolen crude

The market incentive for stolen oil can be analysed in two parts. The first insight comes from available data in which rise in volume of theft appear to have sharply followed a corresponding significant rise in international crude prices. This is largely a supply-side factor that increases the vulnerability of the producing country in direct proportion to price movements. The second dimension of the role the market plays in incentivising oil theft is found in the considerably lower prices which oil thieves are willing to sell their products to middlemen and end users. Very low capital costs, coupled with zero taxes and royalty payments, means that cost recovery threshold and hence the price for stolen crude is quite low. In practical terms, crude oil thieves can sell their products at half the market price and still make a significant profit. The added incentive of almost zero transaction cost offered by spot market conditions makes the market for stolen crude very attractive for buyers.

Market for refined products

Suppliers of stolen crude also profit from the existence of illegal refineries which produce and supply 'black market' fuel especially, but not confined to, the local market for petroleum products. In the areas where this black market thrives, the informal market for petroleum products developed and flourished to fill the gap in the market for legally distributed market for the products. The informal distribution channels that emerged to facilitate the trade in black market fuel have largely provided a support system for illegal refining business. The illegal refineries have no other means of sourcing for their raw material for their refining business except supplies from crude oil thieves.

Measurement Infrastructure

Nigeria currently relies on operators to provide data on crude production and crude losses. These figures are not independently verified by government agencies. The situation creates opportunities for possible understatement of production or export figures, which may simply be attributed to theft and vandalism. A study released by an AU-UNECA high-level panel on illicit financial flows found that under-declaration of value of crude oil at export terminals constitute the bulk of \$217.7 billion 'stolen' through such mis-invoicing of export between 1970 and 2008.⁸ Similarly, in 2016, Nigeria instituted a case against some oil companies for recovery of \$12.7 billion lost to under-declaration and/or illegal shipment by the companies between 2011 and 2014.⁹ These incidents would



In 2016,
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⁶ Data from CIA World Factbook, available online at <https://www.indexmundi.com/factbook/fields/pipelines>.

⁷ Department of Petroleum Resources, Nigeria Oil and Gas Industry Annual Report, 2007. Available at: <https://www.dpr.gov.ng/wp-content/uploads/2018/10/2017-NOGIAR-WEB.pdf>

⁸ "Report of High-Level Panel on Illicit Financial Flows from Africa". Study commissioned by AU/ECA Conference of Ministers of Finance, Planning and Economic Development. https://www.uneca.org/sites/default/files/PublicationFiles/iff_main_report_26feb_en.pdf

⁹ "Nigeria Claims Oil Majors Illegally Exported Crude". Wall Street Journal, September 30, 2016. Available at: <https://www.wsj.com/articles/nigeria-claims-oil-majors-illegally-exported-crude-1475256018>.

most probably be prevented if the country has infrastructure to independently track and monitor crude oil from point of production through flow channels to point of export.

Weak, Inadequate Sanctions and Enforcement

A review of the legal provisions against crude theft and vandalism shows that there are at least six legal codes dating back to 1975 that provide punishment for these crimes. However, some of the laws were found to be outdated, for example with stipulation of prison term of 12 months or fine of N5,000 for offenders. Provisions of sanctions in the Economic and Financial Crimes Commission (EFCC) Act are relatively less weak but manifestly inadequate. Overall, the legal environment does not provide sufficient deterrence for oil theft.



Conclusion and Recommendations

The paper set out to provide empirical multi-year data of crude losses over time, to identify the enabling factors and to recommend strategies for curbing crude theft. The results show that the phenomenon is neither hypothetical nor episodic. It is real and endemic. And the numbers are truly alarming. In one year (2016), the average daily loss was 276,000 barrels, exceeding the highest reported official estimate by 26,000 barrels. Cumulatively, Nigeria lost in ten years an amount significantly in excess of its largest budget proposal in history. However, the total costs to the country exceeds the quantifiable losses of hundreds of millions of barrels or tens of billions of dollars. Data presented in this paper show that greater volume of crude is spilled, causing large-scale damage to the environment, resulting in extensive destruction to lives and livelihoods. Stolen crude also threatens national security as criminal gangs and syndicates acquire lethal weapons to secure their operations and even to engineer sufficient insecurity needed for illicit activity to thrive. Decades of conflict in the oil-bearing region attests to the real and present danger presented by the menace of crude theft.

The menace of theft and sabotage have been difficult to control partly because the problem is multidimensional (comprising national, international and market driven factors), but also because of gaps in current remedial instruments. The underground crude business involves a range of actors and participants who make up the illegal oil ecosystem. It includes the network of bush refiners, suppliers, distributions and array of support services. This paper posits that effective long-term solutions will have to recognise these related dimensions of the problem.

RECOMMENDATIONS

Our recommendations for stemming crude and product losses consider factors that account for theft as well as sabotage. The recommendations consider operational, security, legal and global governance instruments. Generally, the recommended measures seek to present short to long-term remedies for combating crude theft.

1. Deploy proactive leak detection and localisation methods to improve response and containment time.

A review of current measures against crude theft and pipeline vandalism by oil companies shows that most adopt reactive and containment strategies after the leaks have been detected through visual, observation method. This method fails to take advantage of several proactive leak detection and localization methods currently being deployed in the oil and gas industry worldwide. Leak Detection (and localization) Systems (LDS) are generally classified into three categories, namely exterior, visual and interior methods.¹⁰ This paper found that a few companies adopt the visual method by deploying helicopters fitted with surveillance cameras to patrol their pipelines. However, the scale of current losses clearly shows that these measures are not sufficient nor effective to contain the problem of theft and vandalism. Therefore, the companies, in collaboration with industry regulators, should take advantage of current technology designed to swiftly detect, localize and cut off flows to specific pipelines as soon as leaks or breaches occur.

This paper evaluated 18 Leak Detection (and localization) Systems under the three categories listed above. We found that visual/observation methods alone are inadequate given the vastness of Nigeria's pipeline network with additional challenges posed by difficult terrain in some sectors. Overtime, the system also becomes compromised once thieves and vandals can figure out surveillance schedules, taking advantage of fairly regular intervals to target oil and gas installations. Thirdly, this visual system also has limited efficacy against vandals using the cover of darkness and periods of diminished visibility caused by adverse weather conditions. On the other hand, exterior methods like infrared cameras, radars, fiber optic and acoustic sensors etc. are themselves vulnerable to vandalism and sabotage as long as they are visible to the criminals.

We therefore recommend a combination of the following two widely used, cost-effective interior detection and localization systems which would utilize the comparative strengths of each method.



2 COST-EFFECTIVE METHODS

Negative Pressure Wave

A technique utilises the effect of change in pressure which occurs when there is seepage of crude oil or its components from a pressurised pipe

Mass-Volume Balancing

A technique employs the fairly simple scientific logic that the amount of crude oil that enters the pipeline is equal to the amount that exits at the other end

10 Adegboye, Fung and Karnic (2019). Recent Advances in Pipeline Monitoring and Oil Leakage Detection Technologies. *Sensors*, Vol. 19. June 4, 2019.



RECOMMENDATIONS

01

Deploy proactive leak detection and localisation methods to improve response and containment time.



02

Embrace Genetic Finger printing of Oil



03

Review Current Security Organisation to Enhance Rapid Response



04

Review legislation on crude theft and enhance enforcement



05

Local community participation and stake holding strengthen



06

Increase and distribution to eliminate market for illegal products



07

Seek global partnership for combating crude theft from Nigeria



08

Use molecular markers to monitor and track petroleum products



a. Negative Pressure Wave (NPW)

This technique utilises the effect of change in pressure which occurs when there is seepage of crude oil or its components from a pressurised pipe. It also utilises the change in speed of flow and pressure wave coming from the leak area to locate the point of leak or seepage. The method is widely used in the oil and gas industry due to the speed of response and location of hydrocarbon seepage. It is also cost-effective given its minimal hardware requirement for installation and use.

b. Mass-Volume Balancing

The mass volume balance technique employs the fairly simple scientific logic that the amount of crude oil that enters the pipeline is equal to the amount that exits at the other end. Using flow meters installed at different points in the pipeline, hydrocarbon seepages can be located within the area between any two devices in the pipeline. While this method lacks precision in pinpointing the location of seepage, it has a major advantage of calculating the exact volume of crude oil lost from the pipeline. This is useful for properly accounting for crude oil produced, rather than the current practice of simply attributing (and the regulator accepting) the difference between production and custody as volume of crude lost or stolen. However, we further recommend that information from the devices should routinely be transmitted (remotely) to a central control in the custody of the industry regulator. This will help to eliminate or at least reduce incidences of over-lifting or theft at the terminals which may be attributed to theft and sabotage.

2. Embrace Genetic Fingerprinting of Oil

Crude oil fingerprinting is a technique used to analyse the geochemical properties of a given sample of hydrocarbon. These properties are unique to every crude reservoir, and hence can be used to pinpoint source of a given batch of crude.¹¹ This technique is currently being used to detect source of spilled crude and to allocate production between reservoirs and for general reservoir management. While there is current debate about its application for identifying stolen crude,¹² there is little argument about the reliability of the technology. Recognising that the main challenge lies in making buyers of Nigeria's crude to adopt the technology as part of a due diligence regime to detect criminal crude, we propose that Nigeria's government should seek the creation of a coalition or multilateral platform of kind that gave birth to the Kimberly Process to regulate trade in diamond from conflict areas. Nigeria has a compelling argument to make given that it experiences the highest rate of crude theft, on such industrial scale that is currently being reported.¹³ This coalition will no doubt begin with traditional stakeholders like the EITI, UNODC, global partnerships on combating illicit financial flow and other countries currently experiencing illegal mineral exploitation/theft. This coalition would form the base of the global governance institution to adopt such fingerprinting technology to keep out stolen crude from the international market.

But beyond a market mechanism proposed here, the international community, through the instrument proposed here, should be persuaded to criminalise, with enforceable sanctions, trade in stolen crude and other minerals in the way that the international community was mobilised against illicit drug trade, human trafficking and money laundering in the aftermath of the September 11, 2001 terrorist attack in the US. The corollary can be seen in the way that al Shabab utilises sea piracy, or ISIS reportedly engages in crude oil theft in Iraq to fund their operations. With international terrorist franchises manifesting in north-eastern Nigeria and the West African Region in the form of ISWAP, and with this networks constantly exploiting illicit revenue sources to expand their coverage and influence, it would be short-sighted for the international community to treat the billion-dollar criminal crude oil enterprise as a local problem.

3. Use molecular markers to monitor and track petroleum products

Markers are molecules which are added to petroleum products to monitor distribution and sale. They are used in tiny concentrations and do not affect the chemical properties or physical characteristics of the products. This technology is used around the world to combat petroleum products theft and adulteration with remarkable effectiveness. Considering the proven efficacy of this technology, we recommend that the Department of Petroleum Resources and other relevant agency in the products supply chain should deploy molecular marking technology to check products theft. To enforce system, the agency should commence or scale up unscheduled spot checks on products retail outlets to determine sources of products stocks at retail locations. Molecular marking of petroleum products can also be used to check diversion



"DPR and other relevant agency in the products supply chain should deploy molecular marking technology to check products theft"

11 Pavlov, D., & Vasiliev, A. (2017, October 16). Oil Fingerprinting Technology for Well and Reservoir Management. Society of Petroleum Engineers. doi:10.2118/187781-MS

12 See C. Katsouris and A. Sayne (2013). Nigeria's Criminal Crude: International Options to Combat the Export of Stolen Oil. https://www.chathamhouse.org/sites/default/files/public/Research/Africa/0913pr_nigeriaoil_es.pdf

13 See "Report Reveals Nigeria Records Highest Oil Theft Rate in the World. Published by Economic Confidential. Available at: <https://economicconfidential.com/2019/10/nigeria-highest-oil-theft-rate/>

of products to neighbouring markets across Nigeria's borders.

Similarly, molecular markers can also be used for tracking Nigeria's crude oil illegally sold in international markets. This is recommended as an option to fingerprinting technology recommended above to achieve better uniformity of products from Nigeria, as geo-chemical characteristics of crude oil may vary between reservoirs.

4. Review Current Security Organisation to Enhance Rapid Response

The current security arrangement for securing pipelines and crude oil in the Niger Delta is organised around the task force comprising the army, navy, police, civil defence and the customs service. The activities rely on land, sea and air surveillance of the entire Niger Delta, Ondo and Akwa Ibom states.¹⁴ A review of the operations of the task force shows that the mandate covers other security issues in the region, including kidnapping and cultism. This paper finds that this coverage area and terms of reference are too broad to achieve the kind of special attention and specialised security that oil theft and vandalism require. It also dilutes accountability for pipeline security as it takes some of the focus away from the core deliverable of minimising oil theft and crude losses. The task force currently lists its achievements to include arrests of kidnappers and cultists.

To streamline the mandate and improve efficiency and effectiveness, government should review the current security architecture for combating crude theft and vandalism. Government should reconstitute a special security task team for Nigeria's oil and gas assets, with a specific mandate to minimise crude theft and vandalism. This task team should include the oil companies and technical expertise in relevant field. Command and control responsibility should be manned by professional intelligence personnel. The key mode of operation should be based on seamless communication to improve response time. The command and control should have direct real time access to information produced by the leak detection and localisation systems installed and operated by the oil companies. The task team should receive specialised training on security of oil and gas infrastructure and remote installations. The team should be equipped with land, air and sea transportation facility with high mobility to complement intelligence operations for rapid response to incidences of theft, vandalism and illegal crude oil movement.

5. Review legislation on crude theft and enhance enforcement

A review of some of the laws on crude theft shows that provisions on sanctions do not provide sufficient deterrence. Such laws as the ones which prescribe fines of N100 – N5,000 and prison terms of six months to 12 months have little or no effect on an activity that offers huge payouts for perpetrators. The result is that most of the cases are currently being prosecuted under the EFCC Act, which has the strongest provisions for sanctions.

We reviewed a sample of 25 crude theft convictions secured by the Economic and Financial Crimes Commission involving 103 individuals, six companies and one vessel. Thirty-five of the accused were sentenced to two years in prison with an option of fine between N50,000 and N100,000; six individuals were sentenced to one year with option of fine between N100,000 and N1,000,000; 59 were simply fined N100,000; two were fined N50,000 and N500,000 respectively. Only one person was sentenced to one year in prison without option of fine. Three companies were fined N500,000 while three others were fined N1,000,000. One vessel was fined N5,000,000.

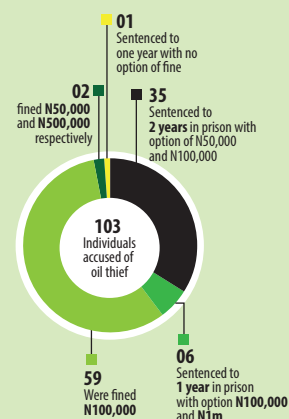
These sanctions are clearly not sufficient to produce deterrence and the cases only address a small aspect of crude theft. Firstly, out of 103 individuals convicted, only two (less than two percent) are likely to serve compulsory jail term of one year, and even this cannot be sufficient deterrence. Secondly, all the accused were convicted for possession and sale of illegally refined petroleum products. None of the cases pertain to direct theft of crude oil, most of which is sold in the international market.

We recommend that, first, the National Assembly should review, update, harmonise and strengthen existing laws with stiffer sanctions to provide stronger deterrence. The Federal Government should expressly mandate law enforcement and anti-corruption agencies to prosecute more cases of crude theft. They should be evaluated on their ability to arrest and



"Government should reconstitute a special security task team for Nigeria's oil and gas assets, with a specific mandate to minimise crude theft and vandalism"

OUTCOME OF THE REVIEWED SAMPLE OF 25 CRUDE THEFT SECURED CONVICTIONS BY EFCC



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Vessel was fined N5m

14 GlobalSecurity.org. (2016) "Operation Delta Safe". <https://www.globalsecurity.org/military/world/war/op-delta-safe.htm>

prosecute cases of crude oil theft.

6. Local community participation and stake holding strengthen

As this paper acknowledged, one of the strategies that government and oil companies have attempted to combat crude theft and vandalism is through award of contracts to local communities to help police the pipelines. Evidently, this strategy has not produced the desired result as crude theft and vandalism persist. It is conceivable that these communities do not feel invested in the assets enough to seriously confront or harm those among them who benefit from illegal oil business. Nonetheless, we believe that there still exists a real potential for community participation as a viable strategy, given local knowledge, experience and potential influence. We propose raising of the stakes by introducing stake holding to community participation. Rather than continuing to incur costs for pipeline security, then suffering product losses for failure of this strategy, and then incurring more costs to repair of vandalised pipelines, operators and government can create opportunities for communities to participate in equity ownership of oil assets or assets linked to operations within the designated areas where the community is located. One way to implement this policy may be by working out the projected cumulative value of future costs of existing pipeline security contracts, then assigning a portion of the net present value of this expected cost as equity in the name of the relevant communities. This, or any alternative participation arrangement, should be done in a way that the community would bear part of the cost of lower production and also experience the benefit of increased production due to fewer disruptions to production. In other words, the communities should be given a skin in the game.

7. Increase energy supply and distribution to eliminate market for illegal products

Illegal refineries have thrived partly due to the development of the black-market for petroleum products during periods of scarcity. Government should design a strategy to ensure constant availability and efficient distribution of products in the oil communities to curtail the market for illegal supply. This strategy can be partly achieved through establishment of more retail outlets by the Nigeria National Petroleum Corporation around areas more prone to sale and distribution of illegally refined products. Government should also design a programme to improve power supply, including off-grid solutions to the area, to reduce demand for fuel needed to power private generators.

8. Seek global partnership for combating crude theft from Nigeria

Beyond just appealing to foreign governments to intervene in tackling crude theft, the Nigerian government should take steps to build multi-stakeholder partnerships – oil traders, refineries, foreign governments, trade regulators, relevant global governance institutions – to curtail the trade in stolen crude from Nigeria. Partners would be required to undertake specific responsibilities including comprehensive documentation consisting of detailed and disaggregated data for individual shipments received, free sharing of data etc. Nigeria should then design a programme for periodic reconciliation of export-import and other types of relevant data to identify discrepancies in volumes declared and/or delivered as well as culprits.



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