THE IMPACT OF FUEL SUBSIDY REEMERGENCE IN NIGERIA

A. Reemergence of Implicit Fuel Subsidy in Nigeria and Its Estimates

1. Since January 2021, the Nigerian government has reverted back to providing implicit fuel subsidies. In June 2020, the Nigerian federal government (FGN) announced that it removed the fuel price cap. However, it did not follow through with introducing a market-based pricing mechanism and, as oil prices rose, considerable fiscal costs built up from implicit subsidies resulting from the difference between higher prices of imported fuel products and regulated pump prices. As there is no provision for subsidy payments in the 2021 budget, such costs are being borne by the national oil company (NNPC), which are deducted from the oil revenues accruing to the Federation Account.

2. Implicit fuel subsidies are estimated at NGN 1,912 billion for 2021. As shown in Figure 1, the cost (NGN 233) of delivering a liter of Premium Motor Spirit (PMS) in 2021 has exceeded the regulatory retail price (NGN 167) by around 40 percent. The gap (NGN 66) is estimated as a proxy for implicit fuel subsidy per liter of PMS. At this level of price under-recovery and with the assumption for consumption of about 54 million liters per day in Nigeria, the annual implicit subsidy cost is estimated at NGN 1,912 billion in 2021. Detailed methodology to calculate the implicit fuel subsidy is presented in Box 1. Monthly fuel subsidies started to accumulate in January 2021 and have continued through now (Figure 2). Most of the subsidies are for PMS, although fuel oil price is also subsidized. There is no subsidy for kerosene (a cooking/heating fuel used mainly by poorer households) whereas the PMS subsidy (used more by richer households) is very large, implying a “regressive” pricing policy, which will be discussed in the next section.

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1 Prepared by Il Jung (FAD).
3 Premium Motor Spirit (PMS) subsidy has reemerged since November 2020, and the aggregated subsidy (PMS and fuel oil) has reemerged since January 2021.
Box 1. Methodology to Calculate Implicit Fuel Subsidy

This Box outlines the methodology used to calculate implicit fuel subsidies during 2017-2021 in Nigeria since demand prices were made available in 2017. The implicit fuel subsidies are calculated for the Premium Motor Spirit (PMS) and an aggregate of PMS and fuel oil. The basic idea is to compare the cost of the refined fuel products with the demand price on the national market. The cost is defined as follows:

\[ C = P_{\text{wop}} \times (1 + Pd) \times E_{n} \times D_{o} \]  \hspace{1cm} (1)

where \( P_{\text{wop}} \) is the world price for Nigeria bonny per barrel, \( Pd \) is the cost of landing fees and product distribution, \( E_{n} \) is the naira per dollar market-based exchange rate and \( D_{o} \) is the demand for the refined oil products. The demand for PMS is available monthly through February 2021 from the NNPC website. Since February 2021, we assume that demand is flat for the rest of the year, but the data is updated as soon as it is made available. Demand for fuel oil is not readily available. For this item, we have annual data from the U.S. Department of Energy through 2018 and electricity growth assumptions for 2019-21 are made, based on real GDP growth, to project demand through end 2021. The cost is projected forward through end-year using futures oil prices and a fixed market exchange rate level. The demand value relationship is as follows:

\[ D_{v} = P_{m} \times D_{o} \]  \hspace{1cm} (2)

where \( P_{m} \) is the (regulated) national market price for PMS and \( D_{o} \) is the demand for the refined oil products.

The fuel subsidy is estimated as the gap between the two ((1)-(2)):

\[ S = C - D_{v} \]  \hspace{1cm} (3)
B. The Impact of Fuel Subsidy Reemergence: Fiscal and Distributional Impact

3. Implicit fuel subsidies have a significant negative impact on Nigeria’s fiscal position, which is estimated to increase the overall fiscal deficit by around 1 percentage point of GDP in 2021. Despite much higher oil prices, the general government fiscal deficit is projected to be significantly worse at 6.3 percent of GDP (Table 1), compared to 4.7 percent of GDP in the 2020 Article IV staff report, mainly reflecting the reemergence of implicit fuel subsidies and higher spending in the supplementary budget for security and vaccine costs. Over the medium-term, without bold reforms for tax administration and tax policy, fiscal deficits are projected to stay elevated above pre-crisis levels (4.3 percent of GDP during 2014-19). Even though we assume that implicit fuel subsidies exist only until mid-2022, as stipulated in the Petroleum Industry Act (PIA) and assumed in the draft 2022 budget, fiscal vulnerabilities remain elevated with public debt continuously increasing from 35 percent of GDP in 2020 to over 42 percent in 2026. With limited IFI funding, fiscal financing for large implicit subsidy costs is likely to depend heavily on domestic sources, including overdrafts from the Central Bank of Nigeria (CBN). Thus, the recent reemergence of implicit fuel subsidies has levied a considerable burden on the Nigeria’s fiscal position, that could have been spent more effectively on pro-poor interventions.

| Table 1. Fiscal Indicators and Medium-term Projections, 2020-2026 (in percent of GDP) |
|---------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|                                 | 2020             | 2021             | 2022             | 2023             | 2024             | 2025             | 2026             |
| Total Revenue and Grants        | 6.3              | 7.4              | 7.0              | 6.8              | 6.7              | 6.7              | 6.6              |
| Oil Revenue                     | 2.2              | 3.0              | 2.6              | 2.3              | 2.1              | 2.0              | 1.9              |
| Non-Oil Revenue                 | 4.1              | 4.3              | 4.3              | 4.4              | 4.5              | 4.6              | 4.7              |
| Total Expenditure               | 12.0             | 13.7             | 13.4             | 12.4             | 12.6             | 12.8             | 12.9             |
| Implicit Fuel Subsidies\(^1\)   | 0.1              | 1.0              | 0.5              | -                | -                | -                | -                |
| Overall Balance                 | -5.7             | -6.3             | -6.4             | -5.7             | -5.9             | -6.2             | -6.3             |
| Gross Public Debt               | 34.5             | 36.0             | 37.5             | 38.5             | 40.0             | 41.5             | 42.9             |

Sources: IMF Staff Projections and Nigerian Authorities.
\(^1\) In line with the enacted PIA and the draft 2022 budget, the baseline assumes no fuel subsidies beyond mid-2022.

4. The analysis shows that removing fuel subsidies would reduce income inequality. A fuel price increase to cost-recovery level would reduce households’ purchasing power, which calls for a distributional analysis of the impact by income groups, especially for poor households. Richer households tend to spend a larger share of their income on PMS than poorer households, while the share of kerosene expenditure is lower in richer households (above 80th income percentile) (Figures 3 and 4). The price of kerosene—a cooking/heating fuel used mainly by poorer households—is

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\(^4\) This section is based on the analysis of IMF (2019) “Nigeria: Selected Issues, Fuel Subsidies—Latest Increase and Implications of a Change in the Regulated Gasoline Price”.
higher than the subsidized price of PMS, which implies that the existing implicit fuel (PMS) subsidy is “regressive” (Figure 5). Empirical studies have also supported that fuel subsidy is inequitable, finding that it is an extremely costly approach to helping the poor, with the top income quintile typically capturing six times more in subsidies than the bottom (Arze del Granado, et al., 2012). Not surprisingly, the removal of fuel subsidies is therefore progressive. According to IMF (2019) that estimated the distributional impact of fuel price increase in Nigeria, a 40 percent increase in PMS price (recovery of current costs) reduces the disposable income of rich households and decreases income inequality (measured by the Gini coefficient) by ¼ point.

5. There is however adverse impact on the poor, which can be mitigated with a fraction of the fiscal resources currently devoted to fuel subsidies. IMF (2019) shows that removing fuel subsidies would increase the headcount poverty rate by 1.2 percentage point and the poverty gap by 0.4 percentage point (Figure 6). Simulations show a scenario (i.e., (2) of Figure 6) that keeps the poverty headcount constant, would need transfers equivalent to NGN 239 billion (0.13 percent of 2021 GDP)—much less than potential savings generated from the fuel subsidy removal (1 percent of GDP in 2021). This scenario would reduce both income inequality and poverty gap further by around 1.3 and 1 percentage points, respectively.

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6 See IMF (2019), which assess the impact of a 40 percent increase in fuel price (recovery of costs) on households’ budgets, based on the Nigeria’s General Household Survey data and, etc. It calculated both the direct effects (for consumers of fuel) and the indirect effects (for consumers of goods and services that use fuel as an input).
6. The impact of fuel price increase is expected to be overall positive if compensatory measures to protect the poor are adequately introduced. Thus, social safety nets (compensatory transfer to the poor) should be scaled up as a mitigating measure to protect the vulnerable when the government implements fuel subsidy reforms. In the staff's recommended scenario, the authorities could increase social spending by up to 1 percent of GDP cumulatively for 2022-2026 (around 0.2 percent each year) through scaling up of well-targeted cash transfers, in consultation with the World Bank, who is also working to strengthen the delivery system through digitalization and integration of various state-level registries. Some of these could be used to cushion the negative impact on the poor from removal of fuel subsidies. Moreover, this analysis does not consider other potential positive impacts of the price increase on productive expenditures (e.g., infrastructure) that could have positive growth and distributional implications that would help compensate for adverse effects.

C. Nigeria’s Fuel Subsidy Reforms: Developments, Reversals, and Lessons

7. Nigeria has previously attempted removal of fuel subsidies without success. Nigeria’s fuel subsidies were introduced first in 1977 as a temporary fiscal response to an oil price spike, but the subsidies were continuously retained by subsequent governments (IISD, 2016). Especially, when international oil prices rise—as they did between 2000 and 2012 (with the exception of the period following the financial crisis)—the subsidy bill escalated rapidly. Since 1999, there have been attempts for upward adjustment of fuel price which have often been accompanied by civil unrest and protests. The Nigerian government has attempted to reform subsidies several times, but it has not succeeded, mainly due to a strong popular opposition to reform (Nwachukwu, et. al., 2013) and the coalition of interest groups that had worked to protect the subsidies (Akow, 2015). Moreover, the reforms were done simply by increasing to a new regulated price instead of introducing a market-
based pricing mechanism. As a result, fuel subsidies always reemerged particularly following currency depreciation and related increase in inflation (McCulloch, 2021). This section will present experiences from two of Nigeria’s past attempts towards subsidy reform, in 2012 and 2016, to seek lessons for the current context.

8. The 2012 fuel subsidy reform had a mitigating measure (SURE program) but faced strong political resistance. On January 1, 2012, Nigeria’s federal government (FGN) raised the gasoline price to a cost-recovery level, more than doubling the price from NGN 65 to NGN 145 per liter to completely remove the subsidy (IMF, 2013). Also, to mitigate the negative impact of subsidy removal on the poor, the authorities announced the SURE (Subsidy Reinvestment and Empowerment) program including a variety of social safety net programs (Box 2). However, this reform led to widespread protests and a national strike in Nigeria, with many people dead in violent demonstrations. The protests did not end until the government partially reversed the reform by lowering the fuel price back to NGN 97 per liter on January 15, 2012 (IMF, 2013). The details of the 2012 reform are explained in Box 2 below.

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**Box 2. 2012 Fuel Subsidy Reform, SURE Program and its Reversal**

Nigeria’s 2012 fuel subsidy reform

In mid-2011, the Nigerian government decided to radically curtail gasoline subsidies and pursued a campaign to convince the public during the rest of the year. The debate on subsidy removal was initially supported by several state governors, who wanted to free up resources to be able to pay their civil servants the new minimum wage. This proposal was hotly debated in the press, civil society, and the National Assembly. On January 1, 2012, the government raised the gasoline price from NGN 65 to NGN 145 per liter (a 117 percent increase) to completely remove the subsidy.

The SURE program as a mitigating measure

At the core of the government’s campaign was the SURE program, which was announced in November 2012, being preceded by public statements by the President and highlighted in budget documents. The program outlined a variety of social safety net programs to mitigate its impact on the poor, as well as the creation of a specific subsidy savings fund as follows:

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<th>Category</th>
<th>Main Contents</th>
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| Measures to protect the most vulnerable | (i) "Urban mass transit": increasing mass transit availability by facilitating the procurement of diesel-run vehicles and importing 1,600 buses within months.  
(ii) "Maternal and child health services": expanding the conditional cash transfer program for pregnant women in rural areas and upgrading facilities at clinics.  
(iii) "Public works": providing temporary employment to youth and women from the poorest and maintaining education and health facilities.  
(iv) "Vocational training": establishing vocational training centers across the country to tackle the problem of youth unemployment. |
| Subsidy savings fund          | The program envisaged the creation of a specific subsidy savings fund to finance its spending, which would be overseen by an 18-person Board.       |
9. The second attempt towards fuel subsidy reform was in 2016. In May 2016, the Nigerian government raised the petrol price from NGN 86.5 to NGN 145 per liter (66 percent increase) (Gaffey, 2016). At that time, Nigeria was experiencing a severe fuel shortage, with consumers queuing for hours outside gas stations and often paying way over the new price for black-market products. Due to the fuel shortage, the political resistance to the fuel price increase was relatively less than in 2012. However, the labor unions that went on strike in 2012 still opposed the reform. After that, as the international crude oil price rebounded, the fuel subsidy reemerged.

10. The crash in global oil prices in 2020 gave Nigeria another opportunity to reform, but as global oil prices rebounded recently, implicit fuel subsidy reemerged as before. The Nigerian government had capped the regulatory pump price of PMS at NGN 145 per liter since 2016, but it lowered the pump price to NGN 130 in March 2020, and again to NGN 108 in May 2020, due to the falling global oil price (Gupte, 2020). In June 2020, eventually, the government removed the price cap for PMS. However, after that, as global oil prices rebounded, the government readjusted the pump price to NGN 167, but it is far below the imported (market) price of NGN 233, which leads to large implicit fuel subsidy since January 2021. This fuel subsidy has taken up considerable (explicit or implicit) budget costs, constituting inefficient use of resources that could have been spent more effectively on pro-poor interventions in the economy. From the past experiences, the fear of political resistance for large price increase—coupled with widespread

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7 In 2016, Nigeria, even if it was the Africa’s biggest oil producer, was unable to fully meet demand due to several factors, such as the attacks on oil pipelines in the Niger Delta and the shutdown of some facilities (Gaffey, 2016).

8 Paying more than NGN 86.5 per liter has been a reality for most Nigerians as the subsidized price has rarely been enforced outside Abuja and Lagos at that time, and except unions, some Nigerians were willing to accept a price increase if the subsidy removal was a necessary step towards relieving the fuel shortage (Gaffey, 2016).
corruption and pressure from interested groups—has made the government hesitant to reform this untargeted subsidy.

11. **Why have reform attempts failed in Nigeria? Lessons from the past reform experiences and empirical studies present implications for successful reform strategy.** From the past experiences, the main reasons for the failure of subsidy reform in Nigeria could be illustrated as follows: (i) a lack of well-designed “communication campaign”; (ii) the public unawareness of the fact that the vast majority of the subsidy goes to better-off Nigerians; (iii) the widespread public perception that the proceeds from subsidy removal may not be used for the general population. These lessons are elaborated below.

- **The authorities need to conduct a well-designed “communication campaign”, which is crucial to any reform success.** Empirical studies have also shown that “communication” is a key part of successful reforms (Beaton, et. al., 2013; Inchauste and Victor, 2017; IMF, 2013)—the government that have made clear the reasons for reforms, compensate those worst affected, and ensured that the benefits are widely shared have tended to be more successful (Kojima, 2016; Rentschler and Bazilian, 2017). While the Nigerian government campaigned for subsidy removal at end-2011 and mid-2016, the issue remained highly controversial. The backlash had been predicted, but the communication campaign lasted for a short period of time and there was no broad popular consultation. The Ministry of Finance produced a short brief to support its proposal, but this was issued several months later, and there was no comprehensive report to convince the public (IMF, 2013). There was also a lack of building a broad consensus on the reform even among all tiers of governments and institutions (i.e., federal, state and local government, CBN, National Assembly and NNPC).

- **The campaign should include information on the negative impact of fuel subsidy and the benefits from its removal and compensating measures for the poor.** Empirical study has also confirmed, for example in the case of India power tariff reforms, that when consumers were aware of the negative impacts of energy subsidies, they had a more positive attitude towards reform (Aklin, et. al., 2014). The government should strengthen campaign highlighting that subsidy is “regressive” and its removal improves income inequality and has an overall positive effect if accompanied by adequate compensatory measures.

- **The government needs to establish credibility that the proceeds from the subsidy removal will be used for the general population.** Subsidy mechanisms are notoriously prone to corruption and smuggling, which creates strong opposition to the reform (Inchauste, et. al., 2018; Coxhead and Grainger, 2018). However, the government credibility appears to influence people’s openness to subsidy reforms (Moerenhout, et. al., 2017; Inchauste and Victor, 2017), which is linked to a perception of the government’s ability to implement reforms and redistribute savings from reforms (Beaton, et. al., 2013; Bridel and Lontoh, 2014; Scobie, 2018). Some have suggested that there is a trust deficit in Nigeria (Ogbe, 2012), particularly in light of the high perception of corruption, with lots of reform opponents such as labor unions and civil right groups highlighting the inability of government to protect the poor (Soile and Mu, 2015; Bashir, 2013; Nwachukwu, et. al., 2013; Akov, 2015). Many look at the current subsidies, even if
they benefit the better-off more, as assistance that will be taken away with large uncertainties as to how the compensatory measures will work. As the 2012 experience, which included a well-designed social assistance program, shows bridging the credibility gap is as important as having a well-designed social assistance program. Empirical evidence also shows that people who believe the government is less corrupt or has the capacity to implement compensation programs appear less opposed to reform (McCulloch, 2021, Okonjo-Iweala and Osafo-Kwaako, 2007; Bashir, 2013; Akov, 2015).

12. **The long-awaited Petroleum Industry Act (PIA) was enacted into law in August 2021, which elevated the expectation of deregulation of downstream sector.** On August 16, 2021, President Buhari signed the Petroleum Industry Act (PIA) into law with the aim to improve administration of the oil sector and its investment climate (Appendix 1). Regarding the fuel subsidy removal, the PIA stipulates the “market-based pricing principles for petroleum products”, as in the 123(1) and 207 of Table 2. Exceptionally, PMS subsidy can be allowed only for a period not exceeding 6 months, as stipulated in 371(6) of Table 2. The 6-month grace period will end by mid-February 2022.

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<th>No.</th>
<th>Provisions</th>
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<td>123(1)</td>
<td>(f) Avoid economic distortions and ensure a competitive market for the sale and distribution of petroleum products and natural gas in Nigeria and (g) avoid cross-subsidies among different categories of consumers</td>
<td>Market-based pricing principles for petroleum products</td>
</tr>
<tr>
<td>207</td>
<td>Where under section 205 (2) if this Act, the authority regulates the tariffs and prices of a licensee, the authority shall allow the seller to recover reasonably and prudently incurred costs, including a reasonable return on the capital invested in the business.</td>
<td></td>
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<tr>
<td>371(6)</td>
<td>From the effective date, the Government on behalf of the Federation may request the services of NNPC Limited as supplier of last resort to ensure adequate supply and distribution of Premium Motor Spirit (PMS) for a period not exceeding 6 months. All associated costs shall be for the account of the federation.</td>
<td>PMS subsidy lasting up to 6 months is retained. (This would imply expiration by February 16, 2022).</td>
</tr>
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</table>

13. **However, despite the PIA, the existing fuel subsidies are expected to remain for the time being, pending the outcome of the negotiations with labor unions.** Contrary to expectations that the signing of the PIA would automatically commence the deregulation of the downstream sector, especially fuel subsidy removal, the federal government (FGN) said the retail...
price of PMS (petrol) will remain at regulated price until a feasible framework is developed.\(^9\) The Ministry of State for Petroleum Resources also confirmed that fuel subsidies will be lifted only after the government agrees with labor unions that they develop a feasible framework to minimize the impact of a market-based pricing policy on the masses. In the Article IV mission (November 2021) of the IMF, the authorities expressed their strong commitment to fully remove fuel subsidies by mid-2022 at the latest. To cushion the impact of higher fuel prices, they are planning to provide temporary monthly cash transfers to vulnerable urban households, and negotiations are ongoing with the labor unions.

D. Nigeria’s Conversion Plan to Natural Gas Vehicles as an Alternative

14. As an alternative of the fuel subsidy reform, the Nigerian government (FGN) announced an ambitious conversion plan from petrol- to gas-run vehicles. In December 2020, President Buhari declared the launch of the “National Gas Expansion Program (NGEP)” and “National Autogas Roll-out Initiative”, which would help accelerate the conversion from petrol- to gas-run vehicles and the deployment of required infrastructure. After that, early this year, the federal government (FGN) said it would convert one million vehicles from petrol (PMS) to gas (CNG or LNG) by the end of 2021 and aim to convert 40 percent of its fleets within 10 years.\(^{10}\) To support this financially, the federal government (FGN) and the Central Bank of Nigeria (CBN) decided to introduce NGN 250 billion’s intervention fund for the conversion program.

15. The switch to gasoline provides some advantages but has large fiscal costs. Main advantages of natural gas are that it is relatively cheaper than the PMS, and it creates less pollution. However, the conversion plan is costly and has a long implementation period. In the context of Nigeria, according to the Department of Petroleum Resources (DPR), it would cost $400 (or around N164,000)\(^{11}\) to convert one vehicle from running on petrol to running on either CNG or LNG (Azeez, 2021). Considering Nigeria’s per-capita GDP of slightly above $2,000, the cost of $400 per vehicle (mainly for three wheelers) will likely be a sizable fiscal burden. The detailed conversion plans are not yet available, but ballpark estimates are large (Table 3). If we assume converting 8 million public vehicles currently present in Nigeria to gas-powered vehicles, the cost is cumulatively estimated at $3.2 billion (Azeez, 2021). Currently, there are 22 million vehicles in Nigeria (including 14 million private vehicles). If we assume the government gives the incentive for conversion equivalent to the full cost ($400) per vehicle and plans to convert all 22 million vehicles, the cumulative cost will be estimated to increase further to $8.8 billion. Moreover, there will be large additional costs to develop the infrastructure (such as CNG filling stations, storages, and etc.), which might vary dependent on the country-specific infrastructure plans. Thus, if the Nigerian government decides to

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\(^{10}\) Source: Reuters (December 2, 2020), “Nigeria launched ambitious plan to convert car fleet to gas”.

\(^{11}\) National Gas Expansion Program (NGEP) manager said the cost was between N190,000 and N250,000, depending on the vehicle (source: Punch (2020.10.16) “Auto-gas: Nigeria moves to tap environmental and cost benefits”.

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pay support for the conversion and infrastructure, careful consideration should be given to costs relative to the benefits.

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<th>Calculation</th>
<th>Estimated cumulative costs</th>
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<tbody>
<tr>
<td>Vehicle Conversion costs</td>
<td>(i) Public vehicles</td>
<td>8 million vehicles (public vehicles currently present in Nigeria) × $400 (conversion cost per vehicle)</td>
<td>$3.2 billion</td>
</tr>
<tr>
<td></td>
<td>(ii) All vehicles (public + private)</td>
<td>22 million vehicles (= 8 million public vehicles + 14 million private vehicles) × $400 (conversion cost per vehicle)</td>
<td>$8.8 billion</td>
</tr>
<tr>
<td>Infrastructure costs</td>
<td>(iii) CNG filling stations, storages, and etc.</td>
<td>Additional costs vary, dependent on the country-specific infrastructure plans. (The detailed plan is not yet available)</td>
<td></td>
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</table>

Sources: Azeez, (2021) “DPR: Petrol Price may Increase to N1,000 per liter If Subsidy is Removed”, July 19, 2021, and the Department of Petroleum Resources.

Note: The detailed conversion plans are not yet available for now, since the Nigerian government has not yet announced the details. The above estimated costs are just ballpark figure as an example.

16. Cross-country experiences show that successful conversion plans have the following common features. The governments have continuously been implemented in the medium-term perspective (since end-1990s or early-2000s), and they have launched several incentive programs to promote the conversion to natural gas vehicles (NGVs) (i.e., Argentina, China, India, Iran, and etc.). Some countries (like India) have mitigated large fiscal burden for the conversion by gradually removing the existing fuel subsidies at the same time (“subsidy swap”). The details of cross-country experiences of the conversion to NGVs are illustrated in Annex II.

E. Policy Recommendations

17. Nigeria should implement simultaneously both energy reforms——i.e., (i) “the short-term fuel subsidy removal (market-based pricing) with mitigating measures to protect the poor” and (ii) “the medium-term conversion plan from petroleum to natural gas vehicles (NGVs)”. These two are not replaceable, but rather, complementary. As discussed in section II, fuel (PMS) subsidy is “regressive” and generates large fiscal burden and distortion of resource allocation. Through eliminating fuel subsidy, the Nigerian government can create fiscal space to protect the poor and prepare for the medium-term conversion plan. Regarding conversion plan to CNG, its costs and benefits should be analyzed, and the plan should be accompanied by the fuel subsidy reform to have fiscal space to implement it.

18. The following policy measures are important. First, with the “Petroleum Industry Act (PIA)” that has the provision of market-based pricing for petrol products should be adhered to with the authorities reaching an agreement with labor unions by early next year. Second, to persuade the
public and unions, a well-designed “communication campaign” needs to be conducted. Third, to
 cushion the impacts of higher fuel prices, well-targeted cash transfers programs need to be in place
 in consultation with the World Bank, who is working to strengthen the delivery system through
digitalization and integration of various state-level registries. Fourth, building a broad consensus on
the reform is also needed among all tiers of governments and public institutions (federal, state, and
local government, CBN, National Assembly, NNPC and etc.).
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Appendix I. The Petroleum Industry Act 2021

On 16 August 2021, the Petroleum Industry Act (PIA) was enacted into law, which contains the following 5 chapters, 319 sections and 8 schedules.

**Ch.1. Governance and Institutions**
- The objective is to ensure good governance and accountability, and create a commercially oriented national petroleum company, and foster a good business environment on petroleum sector.
- Dual regulatory agencies are created: the Nigerian Upstream Regulatory Commission (the “Commission”) and the Midstream and Downstream Petroleum Regulatory Authority (the “Authority”).
- “NNPC Limited” is to be incorporated within 6 months and replace the NNPC entirely within 18 months. NNPC Limited is operated on a commercial basis without government funding and must publish annual reports and audited accounts. Government owns all shares in NNPC Limited through the Ministry of Finance & Ministry of Petroleum as shareholders while also controlling the selection of its management team. This structure is expected to pave the way for an invitation to the Nigerian public to own shares in the company in the future.

**Ch.2. Administration**
- The objective is to promote exploitation of petroleum resources for the benefit of Nigerian people and for sustainable development of the industry and to ensure transparency in the administration.
- Avoid economic distortions and ensure a competitive market for the sale and distribution of petroleum products and natural gas in Nigeria and avoid cross-subsidies among different categories of consumers (market-based pricing principle for petroleum products).
- Pricing principle of petrol products: When the authority regulates the tariffs and prices of a licensee, the authority shall allow the seller to recover reasonably and prudently incurred costs, including a reasonable return on the capital invested in the business.

**Ch.3. Host community development**
- The aim is to foster sustainable prosperity within host communities and harmonious co-existence.
- A company that has been issued with an oil prospecting license or mining lease or an operating company is required to set up a host community development trust fund to support sustainable development within host communities. The company will contribute 3% of its actual operating expenditure in the preceding calendar year in the upstream petroleum operations to the trust fund.

**Ch.4. Fiscal framework**
- The objective is to establish an adaptable fiscal framework to promote investment in the petroleum industry, given the changing global outlook for the sector.
- The new fiscal terms will provide greater incentives to invest in the oil and gas industry but could reduce the government take from new and converted fields, with the short-term revenue impact dependent on the pace of conversion of existing fields to the new terms (text chart).
A new royalty combines a base rate with a variable rate linked to oil prices. The Petroleum Profits Tax (PPT) is replaced by the regular CIT at 30% and a new Hydrocarbon tax at rates from nil for offshore production to 15% or 30% for onshore production. This reduces the average effective tax rate for companies in the upstream sector to around 60–70% as opposed to the previous 85% rate.

The Commission will collect rents, royalties, and production shares as applicable while the Authority will collect the gas flare penalty from midstream operations.

A Frontier Exploration Fund will be financed through a 30% deduction of profit oil and gas in the production sharing, profit sharing and risk service contracts, which will be administered by NNPC.

Gas flaring penalties will no longer be transferred to the Federation Account and will instead be used for gas infrastructure development or environmental remediation in the host communities.

Ch. 5. Miscellaneous provisions

The PIA repeals about 10 laws including the Associated Gas Reinjection Act; Hydrocarbon Oil Refineries Act; Motor Spirits (Returns) Act; NNPC (Projects) Act; NNPC Act; and PPPRA Act.
Appendix II. Cross-Country Experiences of Conversion to NGVs:

1. India’s “Delhi Pollution Control Program” and “Subsidy Swap”

In 1999, the Supreme Court of India made its landmark decision to adopt “Delhi’s pollution control program”, which included converting Delhi’s bus fleet to CNG, defining CNG as an approved type of clean fuel, and providing financial incentives to replace existing autorickshaws and taxis with those operating on CNG. This program became the basis for other cities to adopt similar efforts. Also, India has mitigated the large fiscal burden for the conversion by gradually removing the existing fuel subsidies at the same time (“subsidy swap”), which created fiscal space to transfer to clean energy including natural gas and resulted in a shift in public financial resources from petrol to natural gas. As a result, during 2014-2017, India’s support to petrol fell by almost three quarters—reflecting a combination of policy reform and lower world oil price—while support for clean energy including natural gas has increased almost six times (IISD, 2019). As the Indian government continues to promote a gas-based economy, highlighted with the “Gas4India” campaign launched by the Ministry of Petroleum and Natural Gas in 2016, its NGV market is continuously growing.

2. Argentina’s “Liquid Fuel Substitution Program”

In 1984, Argentina launched the “Liquid Fuels Substitution Program”, which aimed to replace diesel with natural gas in public transportation through vehicle conversions to run on the CNG. The program focused on maintaining favorable CNG prices through establishing standards for CNG equipment, filling stations and support for vehicle conversion. Credit lines were also extended for the conversion of the taxi fleet in Buenos Aires, and the funding of three fueling stations in key parts of the capital mitigated the fears of the public about the use of natural gas as a transportation fuel. In Argentina, the price advantage of CNG over diesel or gasoline was the strongest driver for the increase in conversion rate. Argentina’s NGV growth spiked in the early 2000s when Argentina faced an economic crisis. However, the price factor was impacted by the country’s natural gas supply shortage thus leading to a stagnation in its fleet from 2004. Despite these challenges, Argentina continues to support CNG vehicles, and eventually Argentina tripled its NGV to 1.6 million vehicles during the past 20 years.

3. Iran’s Plan to promote NGV by “Iranian Fuel Conservation Organization (IFCO)”

Although Iran is rich in crude oil, the lack of oil refineries forces Iran to refine part of its own crude oil in Europe. When international sanctions banned gasoline sales to Iran, it had to look for alternative sources to meet growing fuel demands. Natural gas provided an easy option as Iran holds one of the world’s largest gas reserves. The government first introduced its plan to promote NGVs by establishing the “Iranian Fuel Conservation Organization (IFCO)” in 2000. The IFCO focused on retrofitting existing vehicles for CNG use and constructing CNG refueling stations. In 2006, the Iranian parliament voted to pay the equipment expenditure costs for all CNG stations, triggering a rapid growth in NGVs. Iran’s NGV

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policies were a success; the number of NGVs grew from almost zero to 3.5 million in just over a decade, making Iran a global leader of NGVs. Despite the shortage of refueling stations, NGVs are likely to remain popular in Iran as CNG is significantly cheaper than gasoline. Moreover, Iran’s “Sixth Country Development Plan” mandates domestic manufacturers to have 50 percent of their annual vehicles produced be CNG compatible, ensuring the availability of NGVs for willing consumers.


With the world’s largest NGV fleet at 6 million NGVs—approximately 3.7 percent of the country’s total vehicles—China has supported natural gas in transportation to curb air pollution. In 1999, China introduced the “Clean Vehicles Action” for 12 demonstration cities, which established the percentage targets for alternative fuels including CNG in bus and taxi fleets and provided R&D funding for industry and financial subsidies for buyers. Until 2015, the government had regulated the CNG prices to be lower than gasoline. Central and local governments have established development plans to promote NGVs in public transportation, supported refueling infrastructure construction, provided financial support through subsidies and tax exemptions, and relaxed restrictions on CNG conversions. The growth of the NGV market has also been indirectly supported by China’s efforts in developing natural gas infrastructure, such as “West to East Gas Pipeline Projects”. These pipelines have ensured that provinces that lack natural gas resources are able to have access to it. However, remote areas are still far from this gas grid, and there are safety concerns with CNG vehicles in dense cities (some cities have strict mandates against CNG conversions). Also, to tackle pollution from diesel, LNG was introduced for heavy-duty vehicles in 2012. In its 13th “Five-Year Plan for Natural Gas Development”, China set a target of 10 million natural gas vehicles, doubling its 2016 NGV population, and 12,000 refueling stations for vehicles by 2020.