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Original research article

The Oil Climax: Can Nigeria's fuel subsidy reforms propel energy transitions?

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ABSTRACT

Recent studies in the field of political science and environmental resource governance suggest that oil-exporting economies have begun to implement fuel subsidy reforms. However, while most studies on this issue focus largely on the broader environmental and economic consequences of fuel subsidy reforms, few have examined specifically the effects on renewable energy transitions. Drawing insights from the literature on political economy and the multi-level perspective on socio-technical transitions, with empirical examples from Nigeria, first this study provides an explanation of which factors triggered fuel reforms on the basis of the interaction between landscape and regime elements and second the effects of such fuel reforms on renewable energy transitions. Findings suggest that landscape factors such as global oil crashes and pressures from international financial organisations played crucial roles in the drive for fuel reforms. Nonetheless, rentier regime members responded to these pressures by adopting institutional, discursive and redistributive measures. Of all three strategies, the institutional strategy was significantly pivotal in the proliferation of renewable energy in Nigeria. This study concludes by discussing lessons learned in shaping a transition away from fossil fuels in Nigeria and rentier countries in general.

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1. Introduction

Recent political discourses emphasise the need for fuel subsidy reforms in order to achieve climate change targets and make renewable energy technologies more attractive [1–3]. Putting this in context, in 2009, The Group of Twenty (G20) leaders pledged to phase out “inefficient” fossil subsidies in their respective countries.¹ Likewise, the International Energy Agency (IEA) and the Intergovernmental Panel on Climate Change confirmed in 2013 that two-thirds of existing fossil reserves must stay “unburned” in order to achieve the desired climate limit and avoid future dangerous climatic conditions. Accordingly, they advised that countries must limit their carbon emissions by actively reforming their fuel subsidy system. Importantly, at the core of these calls for subsidy reforms is the need for sustainability transitions.

In this context, several countries from the developed and developing world, including the United Kingdom, Japan, Norway, Ghana, Brazil, and the United Arab Emirates (UAE) have to an extent suc-

cessfully reformed their fuel subsidy system [4]. Importantly these countries have also significantly implemented numerous renewable energy policies and targets [5]. However, this wave of success has eluded other oil exporting economies worldwide. Global subsidies to fossil fuels have significantly increased from \$300 billion in 2009 (IEA figures) to almost \$5.3 trillion (IMF figures) in 2015 [6,7]. Five years after the G20's commitments, reforms have become increasingly difficult to achieve and production subsidies for fossil fuels from G20 governments have become more pervasive totalling an estimated 444 billion USD between 2013 and 2014.² Putting this in context and based on IEA's estimates, this figure is four times the sum provided for all global subsidies to renewables in 2013.³

Despite the growing emphasis on the need for concurrent fuel reforms and transitions to renewables, regime resistance appears to be increasingly stronger in oil exporting countries like Nigeria. To comprehend these dynamics this study adopts the multi-level perspective (MLP) on socio-technical transitions to analyse the complexities surrounding the emergence of fuel subsidy reforms

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and its influence on energy transitions. The MLP [8,9] presents an epistemological account, buttressed by various historical cases of the recursive paths through which technological and policy changes materialise in relation to broader economic, environmental, political and socio-cultural milieus. Based on this theory, long-term changes occur due to the interactions between regimes (body of rules, structures and norms), landscapes (exogenous factors) and niches (hubs of innovation). Importantly, long-term policy changes such as fuel subsidy reforms are embedded within deeply contested institutional, political and socio-cultural settings and are thus difficult to achieve. Policy changes of this type would necessitate substantial transformations in societal norms, cultures and industrial practices, which are likely to be resisted by incumbent regime members. Nonetheless, in the event of landscape pressure, for instance, the threat to energy security, the regime can be destabilised and forced to yield to demanded changes from niche actors.

It is critical to understand how this regime-landscape interaction is negotiated, as it provides insights on the influence of macroeconomic factors on policy changes like fuel reforms and the responses of actors to this change. In light of the above discussion, this study seeks to analyse (a) which landscape factors triggered fuel reforms in Nigeria and (b) what are the responses of the incumbent regime and (c) what are its effects on renewable energy transitions in Nigeria and rentier countries more generally, that is countries rich in natural resources whose social-political and economic systems are built around the extraction and the redistribution of rent from such resources.

Unlike other oil exporting counterparts in the developed world, there are some specific dimensions to fuel reforms and their effects on energy transitions that make its analysis in Nigeria an interesting case. Nigeria is a member of the Organization of the Petroleum Exporting Countries (OPEC) and it is the 13th largest producer of oil and gas in the world but imports 60% of its locally consumed oil product [10]. This creates a large opportunity for rentierism and the redistribution of national wealth through demands for subsidies. The allocation of fuel subsidies accounted for 3–4% of Nigeria's GDP in between 2011 and 2014. In Africa, Nigeria is the second largest economy after South Africa, with an estimated population of 188.5 million, [11] and a high-energy demand. Nonetheless, Nigeria is unable to meet its energy demands with more than 60% of its population relying on off-grid-generators powered by petroleum products [12]. This has created a national opportunity for a discourse on the deregulation of the energy sector and the development of renewable energy as a means of ensuring energy security while reducing the demands for fossil fuels [13]. Finally, by analysing the effect of reforms on energy transitions in Nigeria, this study is able to verify whether developed policies on renewable energy in Nigeria coincides with identified periods of reforms, while also highlighting new developments within the renewable energy (RE) sector.

The objective of this study is to use this case to extensively contribute to the literature on the politics of regime-landscape interactions and regime resistance. Nigeria exemplifies the dynamics of energy "use" in developing countries due to its dual role as an energy importer and exporter. More importantly, the need to address poverty, ethnic and social inequality in a multicultural society like Nigeria notably amplifies the challenges linked with the delivery of transitions objectives in developing countries. As such, the study's core contribution is to move beyond current studies of transitions, which have often focused on technology, and finance to more nuanced analysis on the politics of transitions while highlighting the spatial configurations and dynamics at local and regional scale. In this sense, we engaged with recent key debates in the field of energy studies and social science [14] by focusing on the political economy of energy, while highlighting the role of institutions and transnational forms of energy governance on

national energy policy making. Furthermore, this study provides an imagery of how political systems correspond with energy transitions pathways, the shifts in cultural practices that occur, and how path dependencies in socio-technical regimes are often times traced to politico-economic regimes.

The research relies on both primary and secondary data. Data on fuel subsidies in Nigeria were difficult to access; hence the study relied on semi-structured interviews. Ten expert interviews were carried out between 2014 and 2015, with oil and gas experts, civil society organisations as well as policymakers. In terms of data validity, the study examined reports on budget allocations, subsidy scandals, reports of the Central Bank of Nigeria as well as the Transparency International's Corruption Perception Index (CPI). By comparing the governmental databases with reports from independent organisations, such as Transparency International, KPMG and PWC, we were able to assess the comparability of data. The study also made use of other secondary data such as database statistics on energy production and consumption from the International Energy Agency, communiqués from OPEC, the academic literature, and online sources such as newspapers and other media reports.

The study is organised as follows. Section 2 provides an analysis of regime-landscape interactions drawing from the literature on rent. Section 3, discusses factors which triggered fossil fuel reforms in Nigeria. Furthermore, we analyse the effects of these fuel subsidies reforms on renewable energy transitions. This will be illustrated by an empirical analysis of the fuel reforms process in Nigeria with a specific focus on the political economy of subsidies, the scale of reforms, and the effects on the development and proliferation of renewable energy. Section 4 discusses lessons learned and concludes the analysis.

2. Regime resistance and the invasion of landscapes

The MLP explicitly places emphasis on the socio-technical nature of societal change, denoting a complex connection between technology and society. This theory articulates that, for transitions or changes to take place, an embedded, robust regime (e.g., the fossil fuel dominant energy system) must experience symbiotic pressure from landscape and niche levels [15]. The landscape level refers to the broader socio-technical context shaped by demographic structures, culture, social values while the niche level represents ideation, networks and spaces at which innovation takes place. The underlying argument is that landscapes are beyond the direct influence of niche or regime actors and as such, they typically build up over a period of time while abrupt changes witnessed at the landscape level are mostly triggered by radical shocks or stress [16]. However, regardless of the state of landscapes i.e. slow build up or abrupt shock, landscapes can still significantly pressurise or create windows of opportunity for transformations within the regime, resulting in incremental or swift policy changes. A typical example is the 2015 crash in international oil prices leading to the removal of fuel subsidies in Indonesia, UAE and Saudi Arabia.

Regime analysis contains 'policy changes' as one element [17], but, as argued by critics, the underlying aspects of politics and power in transitions are even more significant. This perspective is slowly gaining traction in the literature and has led to a number of new studies emphasising the political nature of transitions [18,19]. Nonetheless, a number of significant questions have emerged on spaces or geographies where sustainability transitions occur. These studies have emphasised the need to assess the merits, tensions and conflicts that emerge due to social, cultural, structural and institutional influences in territories which transitions occur [20]. Highlighting this gap, Coenen et al. [21] argue that to contextualise transitions in a better way, we must connect why certain transformational instances occur due to regime interactions with

landscapes, particularly by focusing on the where who and the reason for these developments while recognizing the spatial sensitivities of such transition paths.

In this regard, while it is important to emphasise the influence of power, actors and their recursive patterns of actions, it is also pertinent to examine the spaces in which they operate. Recent scholarship on the geographies of sustainability transitions [22,23], has begun to mirror this analysis by focusing on the robustness of the material and political landscapes of the fossil fuel industry, where calls for sustainability have become more dominant. This is significant in that cultural, social, institutional and behavioural identities of global economies have been built on the affordability and availability of fossil fuels [24,25]. Unlike the developed world where the visibility of oil and its importance to the economy is manifested in the development of oil rigs, creation of social movements and countervailing lobbying groups [26], the centrality of oil to the economy is even more significant in developing oil-exporting nations or petrostates where institutions, governments and cultural identities are built around fossil fuels. Inherently, this makes the barriers to energy transitions more persistent and fuel subsidy reforms even more difficult to achieve.

To accommodate the landscapes-regime interactions in the analysis of fuel subsidy reforms in developing petrostates and its influence on transitions, it is valuable to enrich the MLP with insights from the rentier theory. The theory of economic rent captures the geopolitics of oil. Lockwood [27] emphasises the dominant nature of fossil fuel, the role of subsidies in promoting stability and its effects on the socio-political production of such states. In a nutshell, in rentier states, there is a strong link between politics and the economy and as such the presence of economic rent structures and centralises the state in such a way that it is run by a few elites [28]. This invariably creates a “hegemonic bloc” that engenders relational and structural dependencies between the state, the capitalist industry (fossil fuels) and the society [17]. This process promotes cronyism; patronage and distributive clientelism – all which have been described as strategies employed to establish some form of political stability and avoid conflicts within the state.

In fact, the distribution of consumer subsidies in the form of price control and price gaps [29] has become really dominant among developing countries. This rentier instrument is touted as being a socio-economic tool aimed at reducing the economic burden on society’s poor via the redistribution of national rent. However, empirical evidence from Commander and Victor [30,31] suggests that the essential economic welfare-based redistribution argument for subsidies usually masks a political purpose. To this end, both scholars argue that the distribution of subsidies is usually motivated by populist goals enacted by the ruling elites in exchange for political endorsements and legitimacy [31] or sometimes offered as a trade-off for civil and political liberties [32]. Hence, this creates a symbiotic relationship between the distributors and the organised interest groups (elites) benefiting from such programs. This symbiotic relationship laid on the foundation of accumulated rent engineers the process of stability proscribed by the electorate and enjoyed by rentier governments.

However, the emergence of landscape pressures often leads to the need for fuel subsidy reforms. More often than not, this disrupts the cycle of demand and supply of subsidies, resulting in a halt in the stability and survival enjoyed by rentier governments and leading to resistance or conflicts [33–35]. By and large, all actors benefiting from such arrangement respond differently to attempts at fuel subsidy reforms. For instance while incumbent regime members or middlemen beneficiaries of rent (firms and industries) might respond proactively or reactively through the use of corporate political strategies (e.g. policy papers on why subsidies will boost the economy, organised financial resistance, shaping of public opinion on subsidies) to such changes [36], end-

user beneficiaries (citizens) might react differently. In this context, scholars like Bacon and Kojima, Overland and Hess [35,37,38] argue that business resistance to reforms persists when a potential realignment in the distribution of economic and political power is envisaged [30]. In this case, fuel reforms are resisted especially if they erode the incumbency of elites (or broader business interests) in the distributive structure.

Meanwhile for end-users, it is mostly a case of contradiction to their sense of ownership or a general perception that reforms would reinforce existing clientelist networks and corrupt political structures [27]. Government and industry elites who significantly make up the most powerful cadre of the regime are sometimes able to navigate their way through such difficult changes like fuel subsidy reforms. Depending on the level of landscape pressure, and the relationship between the state and industry, government elites can decide to generate deviant structures that promote or deter fuel reforms. To this end, government elites might resort to the use of short-term measures such as price increases, which does not necessarily mean the complete eradication of subsidies. This is mostly followed by the redistribution of rent through the use of cash transfer programs and other social benefits as buffers during or after fuel reforms [27]. Second, regime members might adopt a longer-term approach like institutional strategies. These include, for instance, massive employment of citizens in the public sector and dissemination of societal resources through projects, contracts, licences and a shift to alternative energy [39]. Third, regime members might adopt discursive measures or what certain scholars like Commander [30] describe as the strategy of framing. This is particularly significant as the state political machinery (such as the media or civil societies whose consent and allegiance have been purchased) is employed in shaping the content of discourse on reforms and the trajectory of these discussions (swaying public opinion to favour state decisions).

Finally, it is important to extend a note of caution that while the rentier theory is useful in the analysis of economic dependence on rent, the distribution of subsidies, struggle for reforms and the role of incumbency in shaping the trajectory of reforms, there are several shortcomings in the application of this theory when analysing its effects on energy transitions. One criticism is the little attention to the role of landscape factors such as international green movements, international hikes in fuel prices, global agendas on the environment or supranational organisations such as the World Bank in the push for subsidy reforms [27]. Second, the lack of attention to the complexities involved in the removal of fuel subsidies and rentier strategies adopted by incumbents in overcoming resistance to fuel reforms underemphasizes, the power of rentier elites to introduce new policies while also lacking sufficient veto powers to resist the removal of fossil fuel subsidies what Mahoney and Thelen [40] termed as “policy layering”.

In sum, rather than arguing the inapplicability of one theory over the other, this study presents a unified analysis of both theories. The MLP provides a clearer understanding of how external pressures influence the need for policy reforms (fuel subsidy reforms) and how this is negotiated at the regime level. The rentier theory complements the MLP by providing motivations for resistance to policy changes, responses employed by regime members and its influence on the proliferation of renewable energy. While both theories are useful in identifying important landscapes and regime interactions in policy changes and transitions, they also highlight the role of politics at the regime sphere.⁴

⁴ The research is designed to gain insights into the politico-economic dynamics at play in Nigeria by showcasing the preferred state of affairs in the energy sector (i.e. political preferences with regards to fuel reforms and measures adopted in ensuring the maintenance of such preferences).

3. The political economy of subsidies: the case of Nigeria

An understanding of the political economy of Nigeria cannot be gained without a reflection on key historical events. Nigeria's discovery of crude oil in commercial magnitude in 1956, production in 1957 and the first crude-oil export in 1958—together signalled the emergence of a fragile petrostate. Soon after independence in 1960, Nigeria began to focus on oil and gas exploration [41] while other booming sectors of the economy like agriculture, forestry, manufacturing and mining were left to crumble. The post-independence era was marked by political instability and military rule, which resulted in a civil war in 1967. By 1969, the Nigerian government enacted the Petroleum Act which granted oil exploration, licensing and production rights to enterprises owned by Nigerian citizens or incorporated in Nigeria and gave the Nigerian government rights to part ownership of new oil concessions [42]. The governments' dependence on oil rent, however, gave multinational oil corporations an outlet for political influence as they were able to create a clientelist network between them and governmental officials [43]. By early the 1970s, Nigeria still under a military regime experienced an oil boom characterised by an enormous outflow of oil exports and inflow of petrodollars. Earnings from oil exports ranged from 300 million USD in 1970 to 6.3 billion USD in 1976, by 1980 oil revenues peaked at 12 billion USD accounting for 80% of federal income [44]. While Nigeria boasted of economic success in the 1970s, the government, however, relied on instruments like subsidies, nationalisation of foreign enterprises and the creation of state-run institutions in promoting economic development [45]. In the same year, (1970) the department of Petroleum Resources (DPR) was created to regulate oil activities while the Nigerian Oil National Corporation (NNOC) was formed to build oil exploration and production facilities as well as market Nigeria's crude oil. In 1975, a probe panel was set up by the Murtala Muhammed government, which led to the establishment of the Ministry of Petroleum Resources. The NNOC was made a sub-parastatal within the new ministry, with a review of its activities; the NNOC was indicted for mismanagement of oil resources resulting in its replacement by the Nigerian National Petroleum Corporation (NNPC) created by the Obasanjo military regime in 1977.⁵ This regime also implemented a 76.3% increase in fuel prices as a way of reducing fuel subsidies. By 1979 the military handed over power to a civilian government; nonetheless, this period saw a sharp collapse in Nigeria's economy as oil prices fell slowly and adjustment was effected through a gradual depletion of the country's forex reserves [46].

The early 1980s was a period of massive corruption within the NNPC as there were allegations of fraud and non-remittance of 4 billion USD into the federation account [47]. Due to the economic collapse in the early 1980s, the corrupt distribution of economic rent among elites and the political instability associated with the 1983 elections, the Buhari led military regime took over the governance processes in Nigeria in 1983 [44]. Between 1983 and 1985 there were attempts by the Buhari regime to sanitise the oil sector, particularly with the government's anticorruption and discipline program. This was, however, short-lived by another military coup and the emergence of the Babangida-led military regime in 1985. The Babangida regime adopted the structural adjustment policy of the IMF leading to the liberalisation of the oil sector. The liberalisation process led to the transfer of the Petroleum Inspectorate to the Ministry of Petroleum Resources, the privatisation of refineries and indigenisation of the petroleum sector. Other privatisation steps include the division of NNPC into five departments, its transformation into a holding corporation with twelve limited liability

subsidiaries, the creation of National Petroleum Investment and Management Services (NAPIMS) [48] as well as the reduction of fuel subsidies via a substantial increase in fuel prices by 97.5% in 1986, 6% in 1988, 43% in 1989 and 16% in 1991 [49]. Despite these attempts at reforms, the Babangida regime was notorious for its corrupt practices in the oil sector. During this period the Group Managing Director and other senior management members involved the NNPC in several corruption scandals such as the 41 million USD appropriated for a non-existing petroleum storage facility.⁶

Babangida's brief successor, Earnest Shonekan found the subsidisation of petroleum products fiscally burdensome and this led to a massive subsidy cut and an increase in fuel prices from 70 kobs to ₦5 per litre. Shonekan's government was soon overthrown by the Abacha led Military Junta, which initially reversed the price of petroleum products to ₦3.5 per litre to gain public support. This price reversal was, however, short-lived as the Abacha regime in 1994 increased fuel prices by 361.5% citing fiscal burden on the national budget [49]. Upon the ascension of the Abdusalami Abubakar led military transition government in 1998, oil prices were again reviewed and increased by 127% sparking public outrage and protests from the national labour union. The resistance from organised labour led to a 5% decrease in fuel prices [50]. The Abdusalami led military junta ushered in Nigeria's fourth republic. Despite attempts at reforms, successive governments in Nigeria have succumbed more to pressure for distributive rent as fuel subsidy budgets have tripled in recent years [51].

3.1. Landscape invasions: the role of international financial institutions and global crash in oil prices in pushing Nigeria's towards fuel reforms

As Nigeria's 4th republic began in 1999, the new government commenced its neo-liberal agenda with one of its first acts being a proposed privatisation of state-owned enterprises and the liberalisation of the oil sector. At this period, no less than eighty million Nigerians were absolutely poor with the poverty index pegged at 67% [52]. Concurrently, there was a decline in industrialisation due to the energy crisis; Nigeria was a country with high inflation, unemployment and economic recession. The Obasanjo administration in a bid to solve these economic problems invited international organisations such as the IMF, IFC and the World Bank to provide macroeconomic templates that could be adapted to solve Nigeria's problems [52].

This interaction with International donors came at a period when there was a reawakening about climate change and renewables from the donor community and most importantly fuel reforms as a conditionality for international lending. As part of the economic package prescribed by these international organisations, Nigeria was to enact a legislation on the liberalisation of the downstream oil sector, promote gas reforms, fiscal responsibility and transparency in the extractive sector [52,53]. These issues altered the political landscape of oil in Nigeria. Specifically, oil, which was previously perceived as a sacred property of the state was, soon liberalised to accommodate public-private partnership ventures, hence opening up the once rigid petrol-regime for transitions. However as these laws could not be easily passed, due to legislative bottlenecks, the government took a short-term approach. In this regard, the Obasanjo administration introduced fuel price increases by 50% from 20 Naira to 30 naira per litre—insisting that this was an avenue to sanitise the oil industry while promoting foreign and

⁵ Views of the government of the federation on the report of the crude oil sales tribunal 1980.

⁶ Daoukuru and five others charged with 41 million\$ fraud in 1991.

local investment [49]. This price increase sparked a public outrage resulting in a 27% reversal to ₦22 per litre in 2002.

As part of the debt relief deal Nigeria received from the Paris Club, the government was mandated to review its fuel subsidy program and this led to a significant increase in fuel prices by 18.1% in late 2002 and by 45% in 2003 [49]. These price increases were stiffly resisted leading to several protests across the country championed by the labour union and student associations. The stiff opposition to subsidy reform was based on the general public perception that the government's decision was largely aimed at entrenching the incumbency of elites in the distributive structure [49]. After a few days of protests, fuel prices were reviewed and reversed by 6%. This reversal was attributed to the president's bid for re-election in 2004.⁷ In 2006, there was a 10% increase in fuel prices. Again in 2007, the political landscape of oil began to change, placing significant pressure on Nigeria's budget. There was a push for price increases within Nigeria's domestic market as international oil prices had crashed from 75\$ per barrel to 65\$ in the global market. To stabilise the domestic market, the government increased fuel prices by 45% to meet the international market price. The reform met with several protests and there were calls for the redistribution of rent. but this time, the government did not reverse its decision [54].

However, due to a significant increase in oil prices in 2008, with the price of oil rising to a record high of \$141.7 per barrel, the Nigerian government reduced fuel prices by 10% from ₦75 to ₦65 per litre. This reversal was short-lived as fuel prices were increased again on 1st of January 2012 by 120% with the price of PMS increasing from ₦65 to ₦142.40 while diesel increased from ₦50 to ₦150 per litre [54]. The announcement led to a nationwide strike, protests and sit-ins across government buildings. The strike was effectively able to ground economic activities around the country for over a week with a recorded loss of over ₦320 billion per day [55]. The 2012 protests were deeply rooted in the presence of poor and corrupt institutions serving as a breeding ground for clientelist networks. Reforms were resisted due to the general perception of the Occupy Nigeria protesters (citizens) that subsidy reforms would only benefit and enrich existing elitists and clientelist networks especially as international fuel prices were at a record high of \$100 per barrel [56].

Although the governor of the Central Bank argued that spending one-third of the budget on fuel subsidies by depressing official fuel prices was harmful to the allocation of resources to other capital expenditures, citizens were still sceptical about the true intentions of the government. This attempt at reform became more problematic due to massive shortages of oil within the domestic market. This problem was attributed to the illegal exportation of oil to neighbouring countries. Oil marketers to create an illegal market with high prices often adopt this approach. Even after a fixed government price was announced at ₦97 per litre, a number of petrol stations either refused to sell to citizens or sold at prices way above the government stipulated rate. As such, the removal of fuel subsidies without dealing with the racketeering problems of the sector was seen as an attempt by elites in collaboration with policy makers in the state to recapture revenue. There were two main streams of public opinion regarding the reforms. One perception was that reforms were influenced by international organisations as a conditionality for loans to the federal government. This was particularly reflective in the public opinion of Nigerians to the classic "shock therapy" approach adopted by the government on January 1st, 2012. The other widely held perspective was the premise that fuel subsidies did not exist in Nigeria and the purported subsidy

payments made were to none existing elitist firms (Civil Society Representative 1).⁸ The protests led to several fraud investigations [57] in the oil industry ultimately leading to a reversal of petroleum price to ₦97 per litre while also highlighting several fraudulent transactions purportedly made by the NNPC to oil marketers for non-supplied oil products.

Finally, the most recent attempt at fuel subsidy reform seems to be the most somewhat "successful" till date. The announcement of reforms emerged after six months of unending fuel scarcity, high-priced black market sales and a record crash in the price of oil per barrel at \$40 on the international market. By May 2016, it was evident that Nigeria's economy could no longer survive with the application of subsidies as budget deficits grew to a daunting ₦2.2 trillion (US\$10 billion) [58]. With an impending economic recession, a reduction in oil production due to militant activities, a devaluation of the naira and pressure from international financial institutions like the International Monetary Fund (IMF) and others advocating for reforms, the government was under immense pressure to act. Although slightly resisted with labour unions calling for strikes, however resistance to these reforms was limited as a number of citizens argued: "they would prefer to have access to petroleum products at a higher rate than spending hours on queues".⁹ Nonetheless, it is impossible to currently measure the success of this reform, as different government spokespersons have presented conflicting information on the scale at which subsidies have been removed. For instance, the Vice President in an open letter to the public stated that "*permit me an explanation of the policy. First, the real issue is not a removal of subsidy. At \$40 a barrel, there isn't much of a subsidy to remove.*"¹⁰

In sum, while the observed landscape factors, i.e. crash in global oil prices and calls for reforms by international financial institution were able to create opportunities for fuel reforms (i.e. destabilization of the regime) and even provide arenas for energy transitions, reforms remained significantly difficult to achieve due to competing rentier interests between the citizens and the business elites. As seen from 1999 to 2016, attempts at reforms were mainly pursued via price adjustments and not a complete removal of fuel subsidies.

Hence, these attempts at reforms cannot be fully classified as successful. Nonetheless, this study is not only interested in the success or failure of the reforms but aims to also understand how incumbent regime members negotiated resistance to fuel reforms. Based on this, the next section examines regime responses to resistance to fuel reforms.

3.2. Overcoming resistance to fuel reforms: rentier regime responses promoting the status quo or delivering incremental changes

In recent years, numerous studies have begun to analyse measures by which resistance to fuel reforms have been addressed by national governments (see [59–62]), yet a number of these studies are focused on net oil importing states (non-rentier). In this regard, this section analyses responses of rentier regime members (government) to resistance to fuel reforms using the case of Nigeria. Based on our theoretical framework and the empirical findings in Nigeria, three strategies were predominantly adopted by the government as a response in overcoming resistance to reforms. These include the redistribution of rent, use of discursive framings and the enactment of institutional strategies.

⁸ Civil Society Representative 1. 2014. Interview conducted in person on 13 June 2014.

⁹ Public opinion polls.

¹⁰ www.naijaloaded.com.ng/2016/05/13/osinbajo-explains-reasons-behind-new-fuel-price/.

⁷ Policymaker 1, 2015. Interview conducted in person on 11 March 2015.

3.2.1. Redistributive measures

Between 2000 and 2001, the Obasanjo regime implemented a “jumbo pay packet” otherwise known as “gbemu aremu” under the “pay as you can afford policy” which led to a 100% increase in federal workers salaries. This was followed by the recalibration of the Petroleum Development Trust Fund (PTDF) to finance the development of human and institutional capacities of the oil sector. So far, this program has financed over 2417 MSc and 642 PhD graduates [63]. In 2012 after an unsuccessful attempt at reform, the government adopted a more redistributive approach that included the introduction of entrepreneurial and graduate empowerment scheme such as the Youth Enterprise with Innovation in Nigeria (YOUWIN) and the Subsidy Reinvestment and Empowerment Programme (SURE-P). A total of ₦400 billion was spent on these programs between 2013 and 2014, but the programs have once again been fraught with allegations of corruption and fraud.¹¹ In 2016, after initial public outcry at price adjustments and in order to gain the support of the public, a microcredit scheme for 1.5 million people, and an educational support grant for tertiary students in science technology engineering & mathematics were announced. Furthermore, a home grown school feeding program for 5.5 million primary school children and conditional cash transfer to over one million people was proposed by the government.¹² These had little effect on the proposed fuel reforms as most citizens had already accepted the government’s policy stance on the fiscal burden created by subsidies.

3.2.2. Discursive framings

Price adjustment policies were supported with *discursive framings* within the media. For instance, in 2001, the government revamped the News Agency of Nigeria (NAN) a government controlled media body, which helped in rebranding fuel reforms and other privatisation reforms of the government as a political necessity (Policy Maker 1).¹³ Between November 2011 and January 2012, the government facilitated numerous discourses on the need for subsidy reforms via a town hall meeting between civil society members, members of the trade and labour union and the federal government.

For instance, the Newspapers Proprietors Association of Nigeria (NPAN) organised a town hall meeting which included the Minister of Finance, the Central Bank Governor; the Minister for Petroleum Resources and the Vice Chairman of the Nigerian Labour Congress and other Civil Society Organisations discussing the pros and cons of subsidy removal.¹⁴ Yet again in 2016 under the Buhari led administration, and after the initiation of fuel subsidy reforms, there was a significant push to implement campaign promises such as the creation of one million jobs. The government seized this opportunity by launching series of campaigns (such as participation in town hall meetings; presentation of ideas to legislators and the use of social media) on how an estimated 16.4 billion (\$82 million) previously directed towards subsidies on a monthly basis will be redirected to social projects and capital expenditure [58]. The government’s attempt at promoting positive discourses around fuel reforms had little effect, as there was a general perception that such reforms would have little or no impact on the citizens (Civil Society Representative 3).¹⁵

3.2.3. Institutional strategies

Between 2002 and 2007, the government employed numerous institutional strategies which were templates borrowed from the IMF and the World Bank. Examples include the introduction of the National Economic Empowerment Development Strategy (NEEDS) and other privatisation programs aimed at freeing up resources tied down by public enterprises, making government efficient while reducing corruption and economic waste [52]. This process also spurred the introduction of renewable energy as part of Nigeria’s energy master plan in meeting its energy demands. In effect, by 2005 renewable energy became a preferred government option in meeting Nigeria’s energy needs while also placing a huge focus on the development of biofuels in solving Nigeria’s fuel transport demand. In 2012, after a failed attempt at reform, the government introduced an employment scheme (later found to be a Ponzi scheme which resulted in over 800,000 graduates being defrauded by the Minister for Interior)¹⁶ and the dissemination of societal resources through projects, contracts and licences to corrupt rentier political elites.¹⁷ At this period, top government officials also became more vocal about the expansion of Nigeria’s energy sector to include renewable energy. This led to the revision of Nigeria’s renewable energy master plan. To ensure the survival of the Jonathan government, few weeks to the 2015 general elections fuel prices were once again officially depressed from ₦97 to ₦87 per litre (Fig. 1).

Total investment in renewables

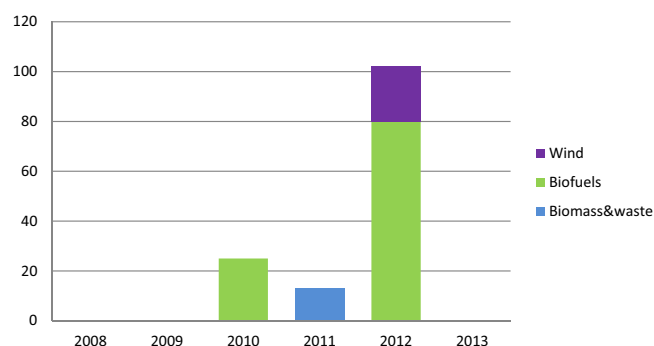


Fig. 1. Total investments in renewables in Nigeria is 140.3m USD (2008–2013). Source: (Climatescope, 2014).

In 2016, as a follow-up to the planned deregulation of the oil sector and the adjustment of fuel prices, the government introduced social investment programs like the Youth Entrepreneurship Support (YES) Program, managed by the Bank of Industry.¹⁸ In addition, direct job creation platforms such as the N-Power Teach, which would employ 500,000 Teacher Corps, N-Power Knowledge and N-Power Build, which would cumulatively train 100,000 unemployed youths were proposed. Finally, within this period, the government began to actively seek collaborations with developed countries like the United States, and the United Kingdom in developing Nigeria’s renewable energy sector.

Redistributive measures, discursive framings and institutional strategies were three strategies adopted to overcome resistance to fuel reforms or attempt at reforms. The use of institutional strategies became significant and helped shaped government pol-

¹¹ <http://thenationonlineng.net/nothing-sure-in-sure-p/>.

¹² <http://www.thisdaylive.com/index.php/2016/06/09/fg-recmmences-recruitment-of-500000-teachers/>.

¹³ Policy Maker 1. 2015. Interview conducted in person on 11 March 2015.

¹⁴ <http://www.vanguardngr.com/2011/12/what-fg-must-do-before-subsidy-removal/>.

¹⁵ Civil Society Representative 3. 2016. Interview conducted in person on 3rd of May 2016.

¹⁶ <http://leadership.ng/opinions/editorial/379760/immigration-job-scam-forgotten>.

¹⁷ <http://www.premiumtimesng.com/investigationspecial-reports/190179-investigation-jonathan-alison-madueke-tunde-ayeni-named-in-fraudulent-oil-contracts-that-cost-nigeria-billions.html>.

¹⁸ <http://onlineregportal.com/YesProgramme/Home>.

icy trajectory towards renewable energy. For instance, between 2000 and 2003 the government adopted redistributive measures, by 2005, there was a pivotal shift to institutional strategies one of which was majorly centred on the diversification of Nigeria's energy sector to include more renewable energy sources (Policy-maker 2).¹⁹ The inclusion of renewable energy in Nigeria's energy mix became even more prominent after the failed attempt at reform in 2012 (Policy Maker 3)²⁰ and in 2016 after attempts at reform, the Vice president became more vocal about the role of renewable energy in Nigeria's energy sector. As such, this study evaluates the effects of regime attempts at navigating pressures for fuel reforms on the proliferation of renewable energy in Nigeria.

3.3. Effects of fuel reforms (price adjustments) on renewable energy transitions in Nigeria

As earlier stated, renewable energy transitions began to emerge as part of an institutional response aimed at overcoming resistance to fuel reforms. To examine this pattern of institutional response, this study developed a timeline on fuel reforms, generated via a process tracing method, which examined historical data in the past fourteen years in Nigeria. This includes a search on speeches and policy statements made by political office holders on the use of renewables in increasing energy access pre-post fuel reforms (See Table 1). Based on the information gathered, the study's measurement of the effects of fuel reforms was limited to a period of ten years (2004–2014). Based on this analysis, the study observed two main effects of attempt at fuel reforms on renewable energy transitions in Nigeria: policy and economic.

3.3.1. Policy effects: renewable energy policy development post-subsidy reforms in Nigeria

After the 2002 subsidy reform and the subsequent protests, there was a significant change in the Nigerian government's approach to subsidy removal. By 2003, the government approved the National Energy Policy—focused on the development of alternative energy and the expansion of existing energy options. This policy motivated by economic concerns, paid specific attention to short and long-term renewable energy goals of Nigeria while actively engaging the private sector in the pursuits of a sustainable energy system [64].

Also in 2003, the government adopted the National Climate Action, which emphasised on the impacts of fossil subsidies on the environment while highlighting the potential benefits of a transition to renewable energy technologies. In 2006, after yet another fuel price increase, the Energy Commission of Nigeria collaborated with the UNDP in drafting the Renewable Energy Master Plan (REMP). REMP was created to provide a roadmap for the implementation of Nigeria's renewable energy policies and targets [65]. The policy envisaged a 13% targeted share of renewables in electricity generation by 2015, 23% by 2025 and 36% by 2030 [66].

After the 2007 fuel price increase and the ensuing protests, the government became proactive in the development of alternative sources of energy by providing both fiscal and regulatory incentives within the sector. In 2007 the federal government approved the National Biofuels Policy which stipulates a 10% mix of ethanol with PMS (E10) and a 20% mix of biodiesel with solar diesel (E20) [67]. Support for this policy was more aggressive and institutionally based which included the creation of an implementing agency, and collaboration with foreign organisations with best practices on biofuels like PETROBRAS.

In 2009, the president commissioned the vision 2020, a roadmap of the energy sector with stipulated mandates on the development of solar, wind and biofuels technologies [68]. By 2010, the Nigerian government ratified the IRENA statute while renewable energy accounted for 19.4% of electricity production [69]. The government in 2011 introduced the Renewable Energy Feed-in Tariff system with the aim of increasing domestic production of energy from distributed renewable energy sources. Subsequently, the REFIT methodology was reviewed and launched officially in May 2012 [70], two months after the initiation of fuel reforms. Although the initial push for REFIT came from a coalition of individuals within the Manufacturers Association of Nigeria (MAN) and civil society groups, nonetheless these groups were excluded in the consultation process until the design was nearly concluded. In addition, the discrepancy over the legal obligations of electricity distribution companies with regards to the renewable energy power purchase created more uncertainties [70]. By late 2014, the policy document was once again reviewed mandating electricity distribution companies to acquire at least 50% of their total electricity purchase from renewables. This new document favoured small renewable energy generation companies as electricity bought from small plants (up to 30 MW) will automatically be integrated; a competitive bidding system is envisaged for larger projects while the REFIT will determine the adoption of auctions for large projects. Barely a year after the policy revision, Nigeria received renewable energy investment pledges of over \$7 billion from six energy companies to set up a total of 5.2 GW of large-scale power projects as well as distributed solar power projects [71]. Also within this period, a Memorandum of Understanding was signed with foreign investors on the development of a 13,000 MW solar plant and the distribution of 750,000 units of clean cooking stoves and 18,000 wonder-bags to rural women. Although the new government (Buhari administration) has not fully stated its commitments to fuel reforms, the administration has signed an agreement with the United Kingdom's department of international development on the deployment of solar technologies for electricity generation. In addition, between 2005 and 2014, Nigeria deployed a total of seven regulatory and fiscal policies on renewable energy. While Nigeria ranked as the 12th country with clean energy value chains and global carbon businesses, fuel subsidies still accounted for more than 3% of its GDP in 2015.

3.3.2. Economic effects: renewable energy firms and investments post-subsidy reforms

The study also measured the effects of fuel reforms on the development of the renewable energy sector by examining the latter's influence on the economy. Economic effects were operationalized by (i) total number of renewable energy companies that have emerged between 2004 and 2014, (ii) total number of jobs created in the renewable energy sector since 2004, and (iii) total amount of investment in renewable energy. Economically, there has been an influx of new start-ups within Nigeria's renewable energy sector. As of July 2015, database searches revealed that there were 115 and 27 small and medium-sized companies in the solar and wind industry in Nigeria. In a study by the United Nations Industrial Development Organization Regional Centre for Small Hydro Power in Africa a micro hydro plant of 100 KW generates an average of 160 direct energy infrastructure jobs [72]. Based on this projection and current data on small hydro generation in Nigeria (45 MW) – a total of 7200 direct jobs has been created in this sector (construction, installation, operation and maintenance). Added to this an additional 27,333 indirect jobs have been created in supporting supplier sectors such as local fabrication enterprises and agrif-processing. Nonetheless, this is marginal especially in an economy where unemployment is pegged at 12.1% and underemployment at 19.1% [73]. Available data from [74] shows that Nigeria has a total

¹⁹ Policy Maker 2. 2015. Interview conducted in person on 27 March 2015.

²⁰ Policy Maker 3. 2015. Interview conducted in person on 10 May 2015.

Table 1
Timeline on Nigerian consumer subsidy program in the past fourteen years in tandem with renewable energy development.

Years	Product subsidized	Subsidy Reforms/Attempts	Post Reform Renewable Policy/regulations
2000	Gasoline, diesel and Kerosene	Increase in fuel prices by 50%	None
2001	Electricity	National Electric Power Policy	None
2002	Gasoline, diesel and Kerosene	Increase in fuel prices by 18.18%	None
2003	Gasoline, diesel and Kerosene	Increase in fuel prices by 45%	National climate action, Approval of National Energy Policy
2004	Gasoline, diesel and Kerosene	None	None
2005	Electricity	Electricity power sector reform act	Rural Electrification Agency
2006	Gasoline, diesel and Kerosene	Increase in fuel prices by 10%/oil and gas reform	Renewable Energy Master Plan
2007	Gasoline, diesel and Kerosene	Increase in fuel prices by 45%	Biofuels Policy (E10/E20)
2008	Gasoline, diesel and Kerosene	None	National Energy Development Project
2009	Gasoline, diesel and Kerosene	Vision 2020 on energy sector	None
2010	Gasoline, diesel and Kerosene	None	Ratified IRENA statute
2011	Gasoline, diesel and Kerosene	None	Development of FIT for solar, wind and hydro Reviewed FIT tariff came into effect
2012	Gasoline, diesel and Kerosene	Increase in fuel prices by 120%	20% Renewable energy targets in total primary energy supply, Capital subsidies
2013	Electricity	Roadmap for power sector reforms	Public investments, loans and grants, Capital subsidies
2014	Gasoline, diesel and Kerosene	None	None

Compiled by Authors.

Table 2
Operationalisation of the effects of fossil fuel reforms on the development of a renewable energy sector of Nigeria.

Dimensions of the Renewable Energy Sector	Indicators (first level of operationalisation)	Nigeria
Economic	Total number of renewable energy companies	There are 115 and 27 small and medium-sized companies in the solar and wind industry in Nigeria.
	Total number of jobs created in the renewable energy sector since 2005	Small hydro generation in Nigeria has generated a total of 7200 direct jobs and an additional 27,333 indirect jobs
	Total amount of investment on renewable energy	investments in renewable energy increased to a sum USD 140.3 million

of USD 358.7 million investments in numerous renewable energy projects (Table 2).

4. Conclusion

This study has argued for the need to understand the interplay between regime-landscapes interaction, by focusing on the influence of landscapes on regime policies like fuel subsidies and its impacts on socio-technical transitions. The paper suggested that while the literature on sustainability transitions helps to understand the role of landscape pressures in triggering change, exposing the linkages between domestic and external drivers of reforms, it becomes limited when exploring spaces of transitions like petrostates that are largely dependent on weak institutional and political structures. The study further argued that the literature on rent provides a more grounded analysis on regime stance in rentier states as it offers insights on the interests of regime members—strategies adopted in resisting landscape pressures while allowing incremental changes, and the implications of these strategies on the proliferation of renewable energy in Nigeria. More importantly, the fusion of the rentier literature and that of the MLP proffers multiple insights on how power relations and access to political resources are depressingly part of the transitions order in countries with difficulties in promoting energy transitions like Nigeria. Without disregarding, social, political and historical contexts, this approach might be valuably applied in rentier countries (Arab Gulf states or Venezuela), countries with mineral-energy complex, or countries with huge energy deficits like those in the sub-Saharan Africa where transitions are beginning to occur. For Nigeria, a look at its historical past, particularly the country's relations with IMF structural adjustment policies and association with western multinational organisations offers a deep insight into why citizens' were suspicious of the intent of the state and other international organisations when it came to fuel reforms.

Overall, it is evident that the role of landscape factors such as crash in international oil prices, global green awakening, pressure from international financial institutions and domestic insurgencies were quite significant in stimulating reforms. As a response to these landscape pressures, regime members were decisive on the tools to adopt in guaranteeing the initiation of a minimally resistive process while also ensuring that their positions within the economic order are safe. To gain significant traction and control of the reform process, incumbent regime members in response to fuel reforms adopted three major strategies: the redistribution of rent, the use of discursive measures and institutional strategies. Despite the application of these strategies, Nigeria has been unable to significantly downplay both populist and most especially clientelist claims to oil resources (Civil society representative 2).²¹ For example, numerous militant activities in the Niger-Delta (oil producing region) and oil bunkering in the last decade points to an overwhelming sense of oil ownership by the elites and the populace. This, however, explains the level of violence witnessed in 2012 when the government announced its fuel subsidy reform agenda.

Besides the application of institutional strategies in maintaining stability while navigating landscape pressures, this long-term strategy also influenced the proliferation of renewable energy technologies and green policies pre or post-subsidy reforms. Between 2000 and 2011, particularly for periods where reforms were not stiffly resisted, a renewable energy agenda was not vigorously pursued. However, after the violent resistance to reforms in 2012, the government began to actively push for the development of alternative sources of energy. Although lauded as progressive, these strategies failed to achieve the desired reforms, as there was a divergence in public opinion on the real motives for fuel subsidy reform.

²¹ Civil Society Representative 2. 2014. Interview conducted in person on 13 June 2014.

Although it appears that Nigeria has exhibited some level of political will to reduce/remove fuel subsidies (either for regime survival or fiscal and economic needs) while tackling the ensuing protest and improving the deployment of renewable energy technologies, the implementation of subsidy reforms still requires a shift in public perception on fossil fuel. A conscious effort on the path of Nigeria in reducing the dominance of fossil fuels must be made while creating enabling environments for the development of alternative sources of energy.

In sum, our analysis demonstrates that for rentier economies like Nigeria, even in the presence of resistance to fuel reforms and a possible manoeuvre through the strategic use of distributive, institutional and discursive measures; a maximum shift to renewable energy sources still depends on (i) a willingness to increase public knowledge on key renewable energy resources, (ii) reaching a general consensus on the economic and socio-political impacts of fossil fuels and its negative externalities on country expenditure. This, in a way, holds the key to shaping a transition away from fossil fuels.

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