Wood energy interventions and development in Kano, Nigeria:

A longitudinal, 'situated' perspective

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Abstract

This paper provides a longitudinal, critical overview of woodfuel interventions in Kano and northern dryland Nigeria. Woodfuel still accounts for up to two-thirds of energy consumption, yet fuelwood-related issues are often 'by-products' of 'higher priority' energy-environment-development preoccupations. We suggest that energy policy has historically reflected preoccupations dominated by fossil fuel and new and renewable energy concerns, thereby raising questions about whether and to what extent such interventions reflect a desire to address woodfuel in its own right. The paper adopts a selective critique of some foundational assumptions about the energy–poverty–development nexus, notably in relation to energy transition theory and practice, to explain such outcomes and their practical and policy implications. In doing so, the analysis places particular emphasis on context, to demonstrate why the role of 'situatedness' must be better appreciated in energy circles and, equally importantly, acted upon during woodfuel interventions. More meaningful interventions, the paper concludes, should be based less on insights deriving from generic (wood) energy systems, hierarchies and relations, and considerably more on the lessons to be learned from the dynamic and complex realities of actual (wood) energy practices, networks and economies. In this, as in much else, context remains key.

1. Introduction

Although Nigeria has a long-established status as a major oil producing and exporting country, successive governments have been unable to 'ensure [an] optimal, adequate, reliable and secure supply of energy to, and its efficient utilization in, the country' (ECN, 2007: 3). And yet energy is indispensable for the realisation of key policy goals and development targets. The Renewable Energy & Energy Efficiency Partnership (REEEP), for example, is unequivocal in identifying the lack of a stable energy supply as a major obstacle to Nigeria's aspiration of becoming a modern economy and industrial nation by 2015, and within the top 20 global economies by 2020 (REEEP,

undated). The effects of enduring energy problems have further included: the disruption of individual and group livelihoods; threats to environmental sustainability; and constrained economic growth and diversification. All of these energy challenges have played a role in condemning significant numbers of Nigerians to a daily existence of material and energy poverty.

Here, as elsewhere in the West African sub-region, the inability to adequately satisfy energy needs and demand is tantamount to a failure, both literally and metaphorically, to 'energise' society and nature (ECOWAS/UEMOA, 2006).[1] This is of particular interest, given the plethora of energy interventions which have been recorded or proposed to date. These range from local projects to international programmes and policies (Sambo, 2005), some of which have their origins in the colonial era and even earlier (Cline-Cole, 1994). These interventions, regardless of what form they take, aim to better equip Nigerian society to meet the challenges of its varied, interlinked and evolving energy economies and systems, and, ultimately, to achieve specific development objectives (Sambo, 2009). It is little wonder then that their seemingly limited impact continues to attract policy and academic attention (Silviconsult, 1990/91; UNDP/World Bank, 1993), most commonly in the hope of learning lessons 'to improve ongoing and future energy interventions' (van Sambeek, 2007: 3). This paper aims to contribute to this ongoing debate, by reflecting on the ineffectiveness of wood energy interventions, notably policy, with particular reference to Kano and dryland northern Nigeria more generally.[2]

Not only is Kano northern Nigeria's most populous state, but its eponymous capital is the region's largest metropolitan centre, its most important industrial/manufacturing and commercial hub and, arguably, its most diversified energy market (Figure 1). In addition, metropolitan Kano and its

[1] The expression 'to energise' is used in Nigeria to mean 'switching on' or 'operating' an appliance or piece of equipment (cooker, lighting, generator, stove, iron, etc.) by powering it with non-human energy (electricity, gas, wood, diesel, charcoal, etc.).

[2] See http://deafrica.net/Reports/Catalogue%20Synthesis%20Report.pdf

extensive and densely-populated hinterland together contain the largest and most spatially-concentrated regional woodfuel consuming population and, therefore, market. The history of Kano's long-established biomass energy economies, markets and networks, on the one hand, and its long-standing tradition of woodfuel-related interventions, on the other, are well documented (Cline-Cole, 1994; Mortimore, 1972; Silviconsult, 1991). Equally, Kano's contemporary woodfuel structures, dynamics and impacts are the subject of wider ongoing debates, that concern not only the place of woodfuel in individual and group livelihood strategies (Cline-Cole, 1998; 2006; Maconachie *et al*, 2009), but also the implication of fuelwood in wider nature-society interactions, including its link to deforestation, desertification, climate change and dryland development (Maconachie, 2007; Mortimore and Adams, 1999). It is within these debates that this paper, and the research upon which it is based, are situated.

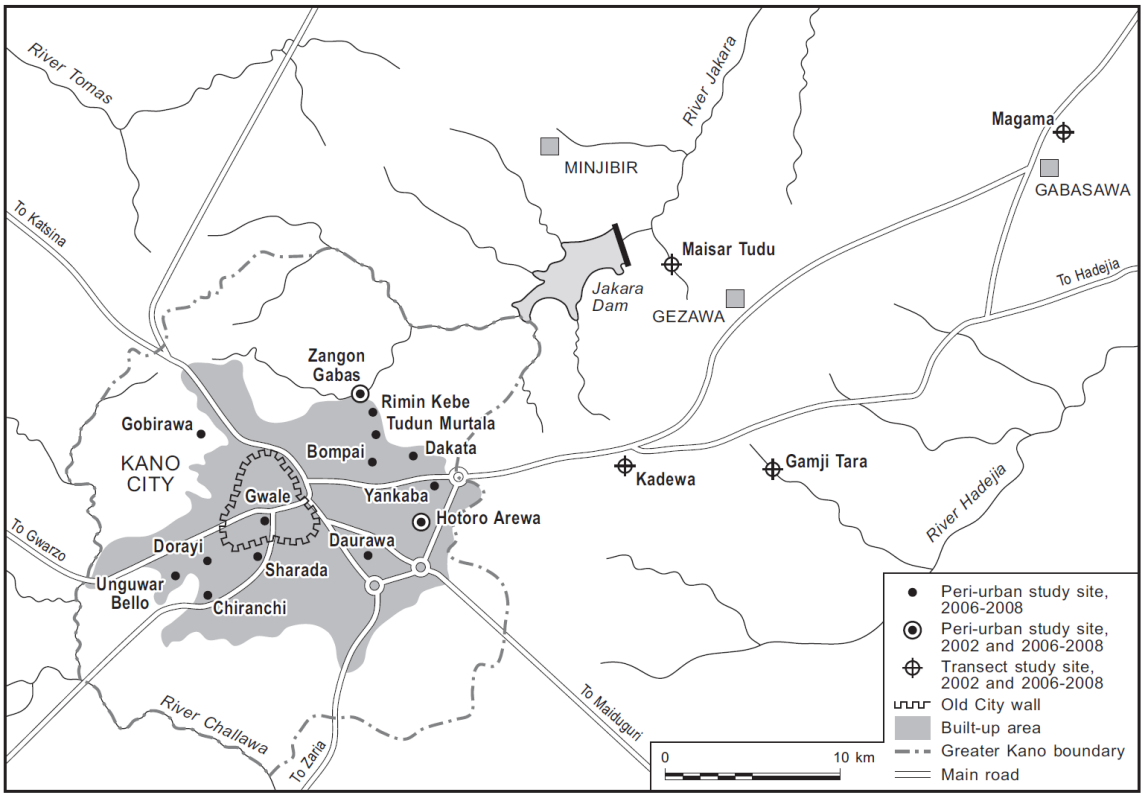

Figure 1: Urban Kano and Hinterlands

The failure to locate local voices in wood energy interventions is, of course, a reoccurring theme in many African countries. For example, in cataloguing rural energy interventions in Tanzania, the Hifab /TaTEDO Consultant Consortium noted in an observation that '[a] common denominator…was that [the government] addressed energy as a problem or a "crisis", often without assessing the perceptions of the people who were supposed to suffer from this crisis'(Hifab/TaTEDO, 1998:1). In dryland Nigeria, this has arguably been as true of policy as of practice; as relevant in the case of programmes as of projects; and as applicable to 'traditional' as to 'modern' fuels (Cline-Cole, 1998). Thus wood energy interventions here have tended to consistently react to, rather than forestall perceived crises; and have routinely sought to both reduce consumption of, and stimulate substitution away from more 'traditional' sources of fuel, such as wood and charcoal. Indeed**,** fuelwood and charcoal-related interventions have often emerged as by-products of other seemingly higher priority energy-environment preoccupations and interventions. In this vein, this paper aims to stimulate discussion about whether and why woodfuel *interventions* can be seen as possible contributors to a worsening of Nigeria's enduring and far-reaching energy crises, which they are intended to help alleviate or respond to in the first place.

As with development interventions more broadly, the potential of energy interventions to achieve desired outcomes depends largely on whether they represent the 'product of ideological fantasy or of a realistic acknowledgement of particular economies and historical experience' (Cramer, 2006: 245). Against this background, the discussion to follow is based on three main preliminary assumptions: 1) regardless of what form they take, energy interventions reflect the myriad of structural and other influences which have gone into their conception, as well as the agency which has mediated their implementation at all levels; 2) along with development interventions in general, they are the outcome of complex spatio-temporal and structural processes of contestation, competition and collaboration; and 3) taken together, the foregoing renders the *situatedness* and *context* of such interventions at least as important as their content and outcomes.

Building on these assumptions, the paper provides the beginnings of a case for the role of situatedness and context to be sufficiently widely appreciated, and acted upon in energy circles, with particular reference to woodfuel intervention. It does not, however, compile a catalogue of energy interventions; and still less is it an energy impact study or a monitoring and evaluation document. What the paper aspires to is, first, to serve as reminder that energy interventions are the outcome of complex and diverse processes of resistance, negotiation and contestation, often with unintended consequences for both nature and society. Second, the arguments presented aim to highlight the mutually constitutive nature of the multi-scale interactions at the heart of processes of woodfuel (and, by extension, wider energy) interventions. And finally, the discussion seeks to consider how best to demonstrate the value for policy of localising complex and changing political economies of woodfuel in the context of time, place and space.

Following this introduction, the paper consists of three sections and a conclusion. Section two situates woodfuel dependence in a 20th century global/local political-economic context dominated by fossil fuels, establishing woodfuel as an integral part of Nigeria's national 'energy question'. In doing so, the discussion highlights some of the (in)direct consequences for woodfuel systems, of fossil fuel and other energy interventions. Section 3 explores the contextualization of woodfuel further, by looking at 'silences' around woodfuel in popular interaction; suggesting how these might be interpreted as both reflections of, and contributors to, negotiations of complex symbolic and material meanings at the heart of processes of social intercourse; and, finally, *why* these might be read in policy-relevant ways. In Section 4, the paper then responds to Harcharik's (1995) challenge to rethink the historical association between woodfuel use and poverty/underdevelopment in two parts: first, by summarising a selection of historical and contemporary woodfuel interventions in Kano, and assessing how they may have informed received wisdom in regional and federal energy circles; and, second, by using the topical issue of energy

transitions as an illustration to highlight why it is imperative for policy interventions to be focused on *real* rather than *generic* woodfuel systems, networks and economies.

2. Woodfuel Dependence in a Fossil Fuel Era: Re-framing the 'Energy Question'?

Although it is still the case that some rich industrial economies consume significant quantities of woodfuel,[3] much of the current attention devoted to its 'sustainability' has focused on the so-called developed world. These debates have been dominated as much by discussions about the impact of non-renewable fuel dependence for climate change and global warming (Freund and Kårstad, 2007), as by conversations devoted to the economics of energy conservation and substitution (Lamb, 1995).[4] At the same time, however, the politics of energy self-sufficiency and its links to national and regional security concerns constitute an integral part of this framing of the energy question, with both USA and UK strategic oil security plans, for example, identifying West African oil and natural gas reserves as important future supply sources (Abramovici, 2004; Keenan, 2004; Paillard, 2006).[5] Nonetheless, even though high and volatile oil prices have often meant increased individual and household indebtedness, 'inflated asset prices' and balance of payment deficits, they have not yet recreated the inflationary crisis or accompanying global recession of the 1970s (Elliott, 2005). According to some commentators, they do, however, represent a significant risk to future global economic growth and geopolitical stability (Long, 2005; Zelenka *et al*., 2005).

In the global south, the impact of volatile, fluctuating oil prices has varied markedly between producer/exporter countries and import-dependent economies, leading to political economies of

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[3] Significant levels of woodfuel consumption have been reported in economies like Australia (Driscoll *et al*., 2000); Sweden, Finland and the Netherlands (Faaij, 2002); and France, Austria and Germany (Trossero, 2002).

[4] Freund and Kårstad's (2007) book combines both these concerns in its title, *Keeping the lights on: fossil fuels in the century of climate change*.

[5] Some sources, for example, suggest that the USA is expected to import one quarter of its oil from the Gulf of Guinea nations by 2015. See http://westafricaoilwatch.org/the issues/conflict-stability/

energy which are arguably both prosaic and complex. In the case of Nigeria, energy is essential for economic growth, social development and a sustainable environment, as well as playing an important role in international diplomacy (Oyedepo, 2012). But while it is Africa's largest crude oil exporter, and also boasts more than half of the continent's domestic refining capacity, Nigeria still imports significant quantities of refined petroleum in an attempt to satisfy a large unmet domestic demand for cooking gas, kerosine and petrol. This deficit has been caused partly by the poor state of maintenance of local refineries, which have been forced to function at well below their installed capacity (Adesanya, Undated; Omeje, 2004), but partly also by a thriving illegal transborder trade in Nigerian kerosene and gas (Odihi, 2003). At the same time, and in addition to its role in region-wide ECOWAS initiatives such as ECOWAS Renewable Energy Facility (EREF) (ECOWAS/UEMOA, 2006), Nigeria is currently collaborating with Sao Tome and Principe in the exploration and development of shared oil reserves in their Joint Development Zone in the Gulf of Guinea under a treaty signed in 2001 (Brigaldino, 2005; Oduniyi, 2006). Furthermore, Nigeria also supplies petroleum products to Sierra Leone (with a non-operational local refinery recently acquired from Nigerian ownership), whose economy is, like most of its West African counterparts, entirely dependent on imports to meet its oil needs (CEMMATS, 2004).

Not surprisingly, the energy question in Nigeria coalesces as much around debates concerning the need for *wider* political, constitutional and economic reform, as around *narrower* questions that concern policy preference, technical feasibility and consumer access and choice. For example, ordinary Nigerians have found it difficult to reconcile the harsh realities of increasingly expensive but notoriously unreliable supplies of refined petroleum products and electricity with reports of high-level corruption and irresponsible government disbursement of revenues from crude oil production (Odihi, 2003). At the same time, the country's oil-producing states, which are as poorly served in modern energy as anywhere else in the federation, are demanding nearly twice the 13% share of national petroleum revenues they currently receive under existing federal resource

allocation arrangements. This is a case which local militants seem inclined to pursue using violent and disruptive means, including damaging pipelines and other installations, and kidnapping oil workers (Watts, 2004; 2007; Dowden, 2005; Omeje, 2004; USEIA, 2011). Significantly, in a recent restatement of the pressing need to pursue a sustainable national energy future, Oyedepo (2012) advocates efficiency in the use of fossil and other conventional energy resources, alongside an expanded interest in, and use of, renewable energy sources and technologies.

Formulating the 'energy question' in Nigeria in such exclusively 'modern' (and mostly fossil) fuel terms might be justified, given that the 20th Century was widely considered the 'fossil century' (Monbiot, 2008). It may also be predictable, given petroleum's contribution of 70% to federal income and 25% to Gross Domestic Product (Oyedepo, 2012). Indeed, in addition to its economic importance for attracting potential investors for industrial and manufacturing opportunities, a reliable, affordable and plentiful modern energy supply continues to be essential to modern-day living (Cline-Cole, 2006)**.** Richard Dowden (2011) captures this well in the following exchange:

> 'During the election in April [2011] I was talking to a woman in Kaduna standing in the queue waiting to vote. I asked her "What are you voting for?" she replied "Power". "What - political power?" I said. "No" she replied, "Electricity"'.

Yet, this centrality to modern life and livelihoods notwithstanding, energy remains largely taken for granted, typically attracting attention only when supplies are threatened or interrupted (Freund and Kårstad, 2007). Indeed, less than a year after this reported exchange, the local and international press was full of reports of just such a potential disruption:

> 'This week [w/c 9/1/2012], a general strike has paralyzed much of Nigeria's economy while anti-government protests have occurred in many of the country's major cities. The protests were triggered by the federal government's decision to remove a subsidy on fuel on Jan. 1. The ensuing rise in the cost of a liter of fuel, from approximately $0.45 to $0.94, dealt a powerful blow to most Nigerians, many of whom live on less than $2 a day. Some protesters, fearing for their economic survival, feel they have no choice but to take to the streets' (Thurston, 2012**)**

And yet, nowhere is energy's taken-for-granted status truer, perhaps, than in the case of woodfuel and other so-called 'non-commercial' energy sources. Although Nigeria recorded massive increases in commercial fuel consumption during the second half of the 20th century, leading to its more than 100 million citizens consuming a third of all commercial energy used in sub-Saharan Africa, Nigerians still depended on biomass for *at least* two-thirds of all energy consumed (USDoE, 2004a; 2004b; USAEIA, 2011), and in excess of 95% of all *household* energy needs (IEA, 2001). Thus, some 85% of total energy consumption in West Africa as a whole is estimated to come from wood (FAO, 2002a), with Nigeria representing the single largest regional producer *and* consumer of woodfuel (Akinbami *et al*., 2001). According to some sources, daily consumption of woodfuel in Nigeria's rural areas is estimated at 27.5 millon kg/day (Ogunsanwo and Ajala, 2002). In an attempt to better understand national consumption patterns, Nigeria's National Bureau of Statistics undertook an analysis of the relationship between poverty levels and the quantity of fuelwood consumed by region (Table 1). The study suggested that there is a strong relationship between poverty and the use of woodfuel, except for the case of south-eastern Nigeria, where poverty rates were lower but a higher percentage of cooking wood was consumed. Poorer regions, such as northern Nigeria, tended to consume the most fuelwood (Zaku et. al, 2013)..

Table 1: Poverty rate and percent of wood as fuel source in Nigeria

Region	Poverty Rate (%)	Percent of Wood as Fuel Source
North-east	72.2	95.9
North-west	71.2	95.3
North-central	67.2	86.4
South-west	43.0	54.9
South-east	26.7	78.0
South-south	35.1	72.7

Source: NBS (2007), Adapted from Zaku et al., 2013.

Not surprisingly, the United States Department of Energy has noted that 'Africa is the world's largest consumer of biomass energy (firewood, agricultural residues, animal wastes, and charcoal), calculated as a percentage of overall energy consumption' (USDoE, 2003). Relatedly, Karekezi *et al* (2004) estimate that the share of biomass in total energy use in Africa will still be as high as 60% in 2020. Clearly, in both rural and urban West Africa, woodfuel is an integral part of the 'energy question', and not, as in many industrial economies, largely a novelty activity or lifestyle choice**.** For African countries, therefore, woodfuel is as much a question of national, regional and continental economic and environmental dynamics, as of individual and household livelihood security (CEMMATS, 2004; FMEN, 2001). And this is as true today as it was some three decades ago when 'the role of firewood [wa]s so predominant that any realistic energy analysis [wa]s essentially a firewood analysis' (Brown, 1980; see also Ikuponosi, 2004). Not surprisingly, the FAO (2005) is convinced that, globally, wood energy has an important role to play 'in meeting international commitments on sustainable development, the Millennium Development Goals, and climate change'.

At the same time, scarce and more expensive petroleum products have had both direct and indirect consequences for woodfuel systems. Higher petrol or diesel prices, for example, increase production and transportation costs and, ultimately, consumer prices for firewood and charcoal.

Thus more expensive kerosene or cooking gas often translates into increased use of, and greater spending on, cheaper woodfuel (MEMA, Undated). Indeed, a Nigerian newspaper report notes, in an unintentional reminder of one of the main driving forces behind the continuing policy interest in, and early justifications for, development intervention in woodfuel economies, that 'the cost of kerosene [the most widely used petroleum product] has a direct impact on rural and urban poverty and [can] also account for environmental disasters through deforestation' (Anon, 2005b). This dual nature of the energy question represents an intriguing paradox, one which is succinctly expressed in the cartoon making up Figure 2. It is also strongly reminiscent of van Sambeek's (2007: 10) observation that '[t]he exact relation between energy and development and the many other factors that influence this relation is often complex and intractable'. Some of the varied manifestations of this relationship explored in more detail in subsequent sections of the paper bear witness to, and provide further support for, this observation.

Figure 2: Independence Day – Our Economic Wahala

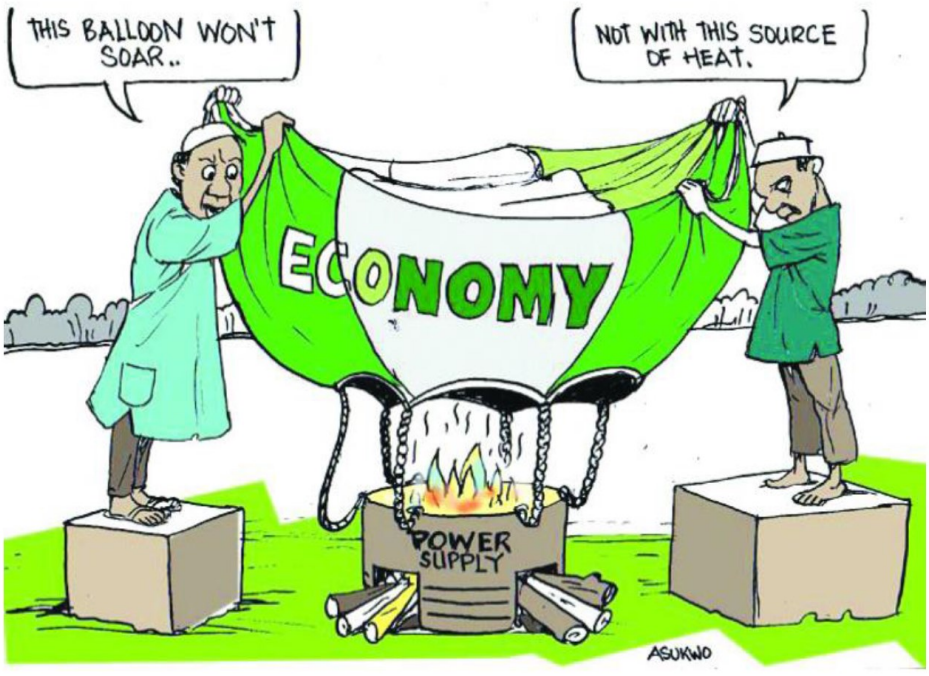

Figure 1: Independence Day – Our Economic Wahala

Source: *The Nigerian. An E-mail newsletter*. Accessed at, and reproduced with permission, from http://xa.yimg.com/kq/groups/22954470/713403175/name/The

3. Woodfuel Silences: Symbolisms and Meanings?

In energy policy arenas, the way in which woodfuel issues are discussed and framed is highly significant. Language, knowledge and discourse all play an instrumental role in shaping policy narratives and reinforcing the legitimacy of particular policy 'problems'. In this respect, it can be argued that policy problems are not given, but rather are social constructions. Equally important to the construction of these narratives, however, are 'policy silences' or the discussions that are absent from mainstream policy arenas. Following the work of poststructuralist Carol Bacchi (1999), it becomes evident that an examination of what is not said is also important for understanding how mainstream thought is reinforced, and how normative frameworks for solving problems through policy are constructed. In short, it is how a 'problem' is constructed and represented that critically determines the 'solutions' that become available in policy, and this would appear to particularly be the case with respect to energy questions in Nigeria.

Despite the continuing significance of fuelwood and/or charcoal in energy mixes at all geographic scales in Nigeria, detailed histories of woodfuel systems and/or their operators are few and far between. Where they do exist, the 'ordinariness' of the stories they relate is striking, notably the non-elite origins of their main characters, some of whom have reportedly gone on to successful careers in business and politics. There is thus nothing comparable, in fuelwood and charcoal terms, to the saturation press coverage which accompanied announcements of planned increases in the domestic price of petroleum products in Nigeria in 2003, 2005 and 2012; and, subsequently, the predictable protests which the announcements generated (Bello, 2005; Komolafe *et al*., 2005; Anon., 2005a). Nor is the subject of woodfuel mentioned in popular songs by local artists, either when these represent coruscating critiques of the political leadership and body politic or, indeed, when they explicitly ridicule and roundly condemn the poor performance of public utilities, including energy/power agencies.

Such 'selective' silence is suggestive, in addition to mirroring the privileging of modern energy within national policy and popular debates (Ikuponosi, 2004). Put differently, fuelwood and charcoal are livelihood products which seem to merit little or no unsolicited comment in quotidian interaction. This may be particularly the case with inhabitants living in relatively well-provisioned cities who have traditionally also enjoyed much greater access to electricity (however unreliable) and kerosene than their rural counterparts. In such a context, not only do electricity, kerosene and gas attract interest in a way which firewood and charcoal do not, but urban supply problems, for example, attract press coverage in a media which remains largely silent about corresponding difficulties in rural areas (Odihi, 2003). There is thus little or no history of woodfuel protests to rival those which accompanied steep increases in the price of foodstuffs in the 1980s-1990s, and more recently in 2007/2008, for example. Nor is there much to suggest that a continuing rise in the long-term upward trend in the real price of woodfuel would, as has been claimed for petroleum products in Nigeria, either risk 'provok[ing] a revolution' (Bello, 2005), or be 'rejected by various groups including the House[s] of Representatives, labour unions, civil society groups and other individuals' (Anon, 2005a).

Indeed, on the rare occasion of a 'firewood strike' in northern Nigeria in 1992, the action in question was not instigated, as one would have expected, by disgruntled consumers. Instead, it was organised by urban-based dealers who, in protest of the constant official harassment of the drivers of their long-distance delivery trucks, withheld supplies to Katsina Town in protest (Cline-Cole, 1998). Most significant for present purposes, however, was that the firewood dealers launched their protest in the middle of a kerosene and gas shortage, when it was believed it would have the greatest cumulative impact and public exposure. Indeed, Odihi's (2003) detailed description of the disruptive effect of fossil fuel shortages across northern Nigeria in the mid-1990s provides confirmation of the strategic awareness demonstrated by the Katsina firewood dealers. Similarly,

official proposals during the late-1980s and early-1990s were designed to achieve large-scale spatial reorganisation of the urban woodfuel trade in Kano as part of wider – and controversial – environmental sanitation initiatives which were themselves integral components of a state-sponsored War Against Indiscipline (Stock 1988).

However, these initiatives threatened the survival of a significant number of small-scale wood enterprises in Yanawaki fuelwood depot, Kano's largest depot at the time (Cline-Cole, 1989). This saw the elected president of the state-wide Kano Firewood Sellers Development Association seriously considering the possibility of running for elective (local metropolitan government) office, in a search for a public platform to press his association's case for fair treatment of its members at the hands of metropolitan planning authority officials and state environmental quality enforcement inspectors. Despite the fact that the firewood profession 'performed an invaluable service to the community at large', the president insisted on several occasions during interviews and conversations, 'our commoner status means that we are never considered as important, or treated with the same consideration, as the "big men" dealers in petrol, kerosene and gas' (Cline-Cole 1989). Not surprisingly, Kano wood sellers continued to reiterate what they still perceive as the 'lowly' status of their trade as recently as November 2012, insisting that they remained 'poor' people trying to make a living under increasingly difficult circumstances. Were this not the case, according to one seller, 'my wives would be cooking with kerosene and gas [like rich people] not firewood' (personal communication, fuelwood seller, Yanawaki Fuelwood Depot, November 2012).

Anecdotes of this kind notwithstanding, woodfuel crisis narratives and discourses dating to the 1970s and earlier, but continually reworked in the years since, often misinterpret the woodfuel sector's capacity for self-effacement as an inability on the part of its practitioners to both articulate and respond to felt needs. These narratives did not just denounce perceived neglect by policy,

research and funding interests. They also assumed responsibility for speaking on behalf of woodfuel users, often misrepresenting the nature, extent and severity of existing woodfuel situations in the process. This was even the case when these involved firewood and charcoal circulating in considerably more user- and producer-friendly ways than, say, electricity and cooking gas. And, while there are many and varied reports of localised difficulties with affordability and/or availability of woodfuels in both urban and rural areas, there is also plenty of evidence of adaptive capability. This is the case not only among consumers, but also, and equally significantly, among producers, transporters and sellers. Such adaptation has sometimes involved the use of illegal tactics like poaching and intimidation of forest guards, and environmentally undesirable methods, such as the seemingly indiscriminate use of power saws (Alabe, 1996; Alieu, 2001; Odihi, 2003).

Nonetheless, the dominant concern with respect to kerosene and cooking gas during the difficult Structural Adjustment era of the mid-1980s was the scarcity and vastly-increased cost of these fuels. In contrast, explanations of a corresponding, even expanded, popularity of woodfuel across the entire socio-economic spectrum over the same period emphasise the latter's constant availability, relative affordability and widespread cultural acceptability. Furthermore, the reported attraction of woodfuel also included a perceived freedom from the irritation of price-fixing, as well as an absence of risk associated with sharp practices like the adulteration of kerosene and the sale of partially refilled cooking gas cylinders at the exorbitant black market prices demanded for full cylinders (Odihi, 2003; see also Alieu, 2001). Against this background, one in which firewood and charcoal were, as always, both first and last resort fuels, can woodfuel production and distribution systems be seen justifiably as victims of their own success, whose gloss is consistently tarnished by a widespread and insistent focus on perceived negative socio-environmental consequences of their organisation and functioning? Furthermore, can the seeming lack of popular representations of (discourses on) woodfuel be interpreted as a peculiar case of a silence born of relative consumer satisfaction, notably when compared to modern fuels? Finally, could this silence be breeding

contempt among well-meaning but sometimes ill-informed socio-economic planners, policy makers and environmental managers engaged in the continuing re(de)fining of energy policy and practice?

In any case, much of the foregoing points to both the site- and situation-specific nature of woodfuel as an energy option, and the diversity of reasons which influence its adoption and use (Horgan, 2002). In this context, it is worth noting the relevance of related notions of 'image' or 'appearance' for understanding woodfuel relations in northern Nigeria, where carefully and consistently scrutinised status markers, including choice and use of domestic fuel, are key to the complex negotiation of social intercourse. Thus, to take one example, embarrassed by their inability to 'maintain face' by using (modern) cooking fuels befitting their status, upper middle- and some upper-income earners in the region deliberately under-report the extent of their dependence on woodfuel. This is the case even while newly promoted lower-middle income earners lament the current absence of energy perks like subsidised domestic electric and gas appliances and energy supplies, which formerly came with elevation to the ranks of 'senior staff' (Odihi, 2003). Here, as elsewhere, woodfuel's 'silent ubiquity' is pregnant with interpretive possibilities, including seeming support for Harcharik's (1995) call to rethink the historical (and generally unqualified) association between woodfuel use and poverty/underdevelopment. To what extent have such insights informed received wisdom in energy circles? And how, if at all, can they be read in policy-relevant ways with particular reference to Kano and the rest of northern Nigeria?

4. 'Reading' Policy implications of/from Woodfuel Silences?

4.1 Woodfuel Discourses and Policy Interventions

While debates around the nexus between fuelwood use and environmental change in northern Nigeria have a long and rich history dating back to the colonial era (e.g. Stebbing, 1935, 1937), it was really during the 1970s that the so-called 'fuelwood crisis' increasingly began to receive international policy attention. With the 'oil boom' years came exceptional rates of urban expansion in Nigeria, as the bias in state spending towards major cities such as Kano was dramatically expressed through a proliferation of urban construction and major infrastructural projects. As the physical size of Kano expanded at an unprecedented pace, and the surrounding rural periphery became integrated into the urban system, concerns about the over-exploitation of the city's fuelwood hinterland returned to centre stage. Apocalyptic images of environmental collapse were further perpetuated by fears that the quadrupling of crude petroleum prices would lead to an unsustainable surge in demand for fuelwood, and to a lesser extent charcoal, as they became the only affordable energy substitutes for financially unobtainable – and frequently scarce – petroleum-based fuels.

During this period, perhaps the most immediate and direct form of state intervention in the fuelwood sector transpired in an attempt to stimulate wood supplies through 'better' environmental conservation and forestry management practices. Also at this time, severe droughts across the Sahel were receiving international media coverage, which served to further bolster a growing 'desertification industry', both within Africa and abroad. In Nigeria, this led to government proposals for a continuous shelterbelt stretching across northern Nigeria from Sokoto to Lake Chad (Cline-Cole, 1998) – a remedy that was strangely reminiscent of the epic solutions to degradation proposed by colonial foresters during the 1930s (Stebbing, 1935). In the second half of the 1970s, this was followed by a massive injection of government funds into environmental forestry initiatives, including the promotion of shelterbelts, woodlots, farm-tree planting and rural afforestation programmes (Hyman, 1993). Throughout the 1980s, these projects were carried out by a host of newly created government agencies (e.g. KNARDA, NEAZDP, etc.) and locally active

environmental NGOs (e.g. NEST, etc.), many of which continue to wield considerable influence today. Alongside these organisations, both national and international resources were channelled into energy research centres, experimental energy programmes and training centres for energy specialists (Cline-Cole, 2006). More recently, energy policy structures, processes and regulatory instruments have all benefited from sustained attention, to go along with long-established economic incentives of subsidies, pricing, etc. (Sambo 2005; 2009).

At the same time, the other main policy response to the fuelwood crisis was an attempt to reduce demand for biomass energy, primarily through the adoption of non-wood energy substitutes and the promotion of more 'modern' and renewable fuel sources. State responses to the situation were motivated by a perceived need for energy conservation, as widespread fears emerged that rising petroleum prices and imminent shortages would drive the demand for fuelwood even higher. In addition, however, particularly during the 1970s when petro-dollars were being heavily reinvested in urban and infrastructural development and a drive towards 'modernisation', there was also a strong underlying belief that traditional biomass fuel options were 'primitive' and undesirable. It was widely assumed that with modernisation would come a 'trickle-down' effect that would raise levels of income and improve the quality of life for the masses, allowing them to partake in an energy transition that would take them away from undesirable biomass energy options. Thus, even though urban and regional development plans from this era routinely included peri-urban and rural plantations and woodlots to meet rising fuelwood and pole demands in their designs, these were rarely, if ever, actually established (Trevallion *et al*, 1963). Coincidentally, new petro-dollar funded interstate roads extended the firewood catchments of growing cities like Kano into new, often cheaper, and increasingly distant supply zones, which private traders and transporters exploited to satisfy a growing and concentrated demand.

In this context, a strongly held 'modernist' belief has largely endured to this day and ties in closely with present-day notions of the 'energy ladder', a well-known model used by resource economists to predict how households will advance to more 'sophisticated' domestic fuels as economic conditions improve. While this model appears to have gained increasing currency in policy circles in recent years – underpinning the logic of many energy pricing policies – fuel substitution and subsequent movements upwards or downwards on the preference ladder are complex processes, the mechanics of which are poorly understood. While in the Kano region there is certainly some evidence to suggest that domestic fuel decision-making is influenced by price, availability and household characteristics (see, for example, Maconachie *et al*., 2009), the relationship is far from clear (Dang, 1993). As the price of crude oil soared in recent years, household energy portfolios adjusted in response, as kerosene and petroleum-based energy sources became unobtainable. It is thus apparent that individuals exercise trade-offs as they move up *and* down the energy ladder and adjust their energy mix accordingly. This is perhaps most readily seen in the rise in charcoal use in Kano since 2012, a domestic fuel that has been widely used in the South of the country for many years. However, the full impacts of the sharp decline in oil prices between July 2014 and January 2015 are yet to be known. As the price of fossil fuel products once again becomes more affordable for many Nigerians, it is likely that this will influence the preference and availability of other domestic energy products.

As Woodwell (2002) notes, however, there has been little research that has convincingly linked the price of fuelwood to the demand for fuelwood in sub-Saharan Africa. In practice, as the price of fuelwood rises, what also tends to happen is that more 'sophisticated' energy sources (e.g. kerosene or natural gas) become more cost-competitive. Under such conditions, it has been pointed out that fuel-switching is, in fact, most likely more directly responsive to income levels (Woodwell, 2002). Some observers have therefore proposed that to achieve the highest impact on people's choice of fuels, increases in income should also be accompanied by increases in the price of fuelwood and

charcoal (Woodwell, 2002). As such, one rather controversial policy response aimed at promoting alternative fuels has been to tax wood harvest from the hinterlands. Although, in theory, proponents argue that raising the price of fuelwood through regulations and harvest taxes should ensure that there is a more efficient and sustainable use of forests (Hyman 1993), in the process, the reality is that many people would be priced or regulated out of the domestic energy market. For those living in chronic poverty, an already desperate situation could become even worse.

Over the last 40 years, technological modernisation has thus been an important undercurrent that has shaped energy policy-making in Nigeria. At various points in time since the 1970s, there have been drives towards the promotion of more advanced alternative, renewable energy resources – including hydroelectricity and solar power – and Nigerian policy makers have routinely subsidised the price of 'modern' fuels in an effort to make them more accessible to the wider populace. But, at the same time, there has also been a strong realisation that fuelwood demand is unlikely to subside in the near future. Indeed, wood and charcoal still remain the only realistic option for the majority of households in and around Kano, as across large parts of the rest of Nigeria, despite their failure to benefit from direct state subsidy.

As such, one recent response by NGOs and environmental agencies has been to try and reduce woodfuel use through the promotion of improved stove efficiency. In theory, the higher the technical efficiency of a stove, the less fuel will be consumed during cooking – and therefore the less expensive it will be to operate. However, one problem that has arisen is that the initial cost of purchasing an improved efficiency stove – an alternative that is unsubsidised by the government – is still out of reach for most people. Moreover, for those who can afford the initial cost, studies suggest that because more efficient stoves are less expensive to operate (both in monetary terms and in time spent collecting wood), people tend to cook more often when they are using them (Zein-Elabdin, 1997; Jones, 1988). This may help to explain why donor efforts to reduce fuelwood use

by promoting the distribution of 'improved' woodstoves have to date not produced significant reductions in fuelwood use. Nonetheless, it is a response which, like the others identified in this section, continues to have significant policy purchase in the contemporary Kano and wider northern Nigerian contexts.

In policy terms then, and based on the foregoing, much intervention would appear to: (i) reflect a preoccupation with 'modern' energy concerns; (ii) re-act to perceived threats to the sustainability of regional environment and livelihoods supposedly posed by woodfuel production and use, rather than adopt a pro-active approach to fuelwood policy and planning; and (iii) seek to control access to, and reduce consumption of fuelwood and other biomass fuels, in preference to increasing or diversifying their supplies. In our view, this reflects a neglect of the role of situatedness, context and complexity in woodfuel systems, relations and practices *in their own right***.** A potential corrective here might be an appreciation of the existence and significance of the 'background noise' associated with woodfuel silences identified earlier and, indeed, what it might contribute to more informed policy intervention.

4.2 Fuel Transitions and Policy Implications

In both policy circles and discourse, biodiversity, conservation and natural resources issues are accorded prominence in drought-desertification debates in northern Nigeria, as is the recognition of the continuing centrality of woodfuel and wider energy questions to these and broader development and poverty reduction debates. Nigeria's National Energy Policy (NEP), for example, reflects both a desperation to attract investment funds and a determination to facilitate the expansion of local traditional and renewable energy. In addition, however, NEP also demonstrates that policy makers are confronted with the extremely difficult proposition of reforming energy markets, while ensuring the latters' capacity to maintain a 'supply [of] energy at economically

favourable cost in the long term' (FMEN, 2001: 21). The latter is unlikely to be achieved without detailed consideration of, and commitment to, an energy mix to include woodfuel in its various forms. Indeed, policy and allied official statements like NEP, and the Electric Sector Reform Bill, are instructive in this respect (FMEN, 2001; Ikuponosi, 2004):

(i) they recognise that woodfuel markets (continue to) cater to the cooking fuel requirements of the vast majority of the country's rural and some of its (mostly 'poor' or 'low income') urban households; and

(ii) they appear convinced that firewood/charcoal networks, which are assumed to operate excessively high consumer prices, are in urgent need of regulation and improvement, including the wider adoption of improved biomass technology to enhance the efficiency of woody biomass production and use, and, ultimately, of substitution by 'modern' energy alternatives.

This might appear, at first glance, to augur well for woodfuel prospects. However, on closer inspection, the policies and declarations in question *are characterised by a paucity of detailed official knowledge of,* as well as a noticeable seeming lack of *genuine* curiosity about, the structure and functioning of *local rather than generic* woodfuel markets and related networks (Ikuponosi, 2004). Not surprisingly, they continue a long tradition of representing poverty as the dominant, frequently sole, driving force behind the continued and even expanding use of fuelwood, charcoal and other biomass fuels (cf FAO, 2005; Lamb, 1995). In tracing the contours of this woodfuel-poverty link, Arnold *et al*. (2003: 24) note that the widespread dependence of poor people on woodfuel for cooking and heating is effectively dependence on a low density – and therefore inefficient – fuel which, because it is more often than not used in 'thermally inefficient devices', translates into high real energy costs. Moreover, they argue that this in turn acts as 'an important constraint to livelihood enhancement and broader economic improvement'. Taken together with its high real cost, they conclude that this helps to explain the attraction for energy *policies*, of

encouraging woodfuel consumers to shift to more efficient fuels or devices. It is, in fact, this discourse which Figure 2 reproduces and summarises so trenchantly, and which is itself an indication that the breadth of its appeal extends well beyond the policy and planning arenas.

The notion of such an energy transition rests, as we have already seen, squarely on the assumption that as individuals, families and countries become wealthier, they are more likely to trade up from low(er) value to high(er) value fuels (usually from wood and charcoal to kerosene, cooking gas and electricity). Significantly, Martinez-Alier (2005) has referred to this as a '"natural" and universal hierarchy in the use of domestic fuel'. However, this relationship is mediated by a host of factors including: housing quality, design, and levels and intensity of occupancy; fuel preference and availability; household size, structure and organisation; and the distribution of responsibility for domestic tasks, including cooking and fuel collection or purchase, within the household (Cline-Cole, 1989). Furthermore, as the pace of the transition is influenced by energy pricing and policy which may either accelerate or slow it down, most commonly through subsidising the price of favoured fuels and thereby promoting their use at the expense of others, Martinez-Alier (2005) argues that contrary to World Bank objections to energy subsidies in principle, such subsidies are important in responding to the needs of both poor people and the environment. Work by Cline-Cole (1989) and Odihi (2003) is instructive here, particularly in providing a wider regional context for situating earlier observations about Kano's 'energy ladder' (see Section 4.1). First, they describe the 'class-based' structure or 'stratified' nature of domestic cooking fuel consumption up to the 1980s (Cline-Cole) and 1990s (Odihi) in northern Nigeria: low income households overwhelmingly consumed woodfuel but also some kerosene; middle income earners consumed more modern energy than woodfuel; high income earners represented the single most important group of modern energy consumers, although they did also consume woodfuel. They then explain this partly with reference to the relative affordability and availability of different fuels; and partly by way of policy initiatives favouring the once common practice of providing 'senior staff' employees in both the

private and public sectors with subsidised accommodation, which came furnished with modern appliances like air conditioners and kerosene stoves, electric and/or gas cookers and, where appropriate, gas cylinders.

Yet, as both authors also note, and as Section 4.1 suggests, *dependence on woodfuel is not simply a temporary phase in a unidirectional energy transition occurring as part of complex long-run processes of socio-economic transformation*. Energy transitions are *not* unidirectional; they are capable of being reversed. Regular or periodic disruptions to, or frequent increases in the price of, electricity, kerosene and gas supplies, for example, encourage individuals and households to 'trade down' to either cheaper or more readily available woodfuel, for shorter or longer periods of time. However, it is worth remembering too that increased petroleum or diesel prices often *also* result in increased consumer prices for firewood and charcoal (through increased transportation and other costs). Thus Maconachie *et al* (2009) have demonstrated how (increasingly) expensive kerosene, gas or electric stoves have left many Kano consumers with little choice but to resort to the use of cheap wood or charcoal stoves and/or the 3-stone fireplace. Indeed, this reverse switch has also been in response to an increase in fossil fuel prices during the decade of the 1990s, even though a residual state subsidy on kerosene ensured its continued use, particularly for lighting. Consequently, large numbers of households which consumed kerosene and gas for cooking during the 1980s, have subsequently switched to wood and charcoal. Similarly, Odihi (2003) has described in some detail how, more generally, the 'unfavourable socio-economic conditions' which accompanied Structural Adjustment and economic reform in Nigeria – mass retrenchment and unemployment, low wages, irregular payment and non-payment of salaries, and sharply increased food prices – impacted on regional urban energy use. This had a particularly profound impact on middle income households in urban areas of the northern drylands, which formerly consumed kerosene, gas and electricity but subsequently switched to firewood. Among the poor and low income earners, Structural Adjustment Programmes reinforced dependence on fuelwood (Cline-

Cole, 1989). Indeed, as Odihi (2003) has observed, after 1988 firewood became the most affordable domestic fuel, even if its price increased in tandem with (and, in some cases, was driven by) that of alternative fuels.

There is, therefore, a strong case for seeing the much-resisted 2012 increases in the price of petroleum products in Nigeria (see Section 2) as representing some of the most recent manifestations of energy pricing policies which had their origins in the 1980s and even earlier. Indeed, an oft-repeated complaint of pro-subsidy protesters concerned the perceived 'remoteness' of the lives of politicians and the policy-making classes from the everyday existences of ordinary people. Consequently, for protesters, these 'elites' are unable to understand the complexities of household or domestic energy economies and, within these, the significance and value of the residual fuel subsidies which were under threat.

Much of this is a useful reminder of the abiding wisdom in Karakezi *et al*'s (2004) observation, that two of the most pressing needs to be addressed in post-Adjustment national, regional and continental African economies are raising incomes and alleviating poverty. Indeed, in seeming support, Nigeria's National Energy Policy notes that economic and development strategies adopted in pursuit of such goals 'must focus on initiatives that will increase and diversify supplies – including alternative and renewable energy – and use existing resources more efficiently' (FMEN, 2001). However, on the assumption that woodfuel will remain price-competitive for the foreseeable future, given current socio-economic conditions and energy pricing policies, addressing these needs must involve making individual and group livelihoods more generally secure. It follows from this that in Kano and the rest of northern Nigeria, such a process will need to ensure – among other initiatives – that key natural capitals (e.g. forest, farm and woodland resources) which support woodfuel-based livelihood activity, are more accessible, diversified and sustainable. Nonetheless, dominant policy discourses continue to privilege new and renewable energy interventions, while

failing to reflect critically on the historical association between woodfuel use and poverty/underdevelopment (Harcharik, 1995), even as they restate a commitment to poverty reduction, livelihood security and the evolving post-2015 SDG agenda.

And yet, two independent assessments of the global prospects of woodfuel, offered a quarter of a century apart, arrived at the common conclusion that a wood energy future built on an informed reading of history and a detailed understanding of the present can be eminently suitable, maybe even desirable, *in the right circumstances and context*. The first was advanced by British geographer W. B. Morgan (1980), and formulated against a combined backdrop of the oil crises of the 1970s, the discovery of the so-called 'other' energy or firewood crisis, and the promotion of renewable energy substitutes and improved energy technologies. The other is credited to an anonymous forester, who was addressing the FAO's governing body for forestry in early 2005. Against a background of a long period of competitive woodfuel prices and unreliable modern energy supplies, his vision was formulated in the context of an international forestry establishment seeking to foster commitment to sustainable forestry management, the achievement of the MDGs and the reframing of derived wood energy as an economically viable, technologically feasible and environmentally benign substitute to fossil fuels (Anon 2005c). Significantly, however, while both assessments arrive at roughly the same conclusion, they do so from radically different starting points, via separate routes, and for diametrically opposite reasons.

Thus although both visions are justified on grounds of (varied) readings of the role of fossil fuels in (local) energy transitions, there is little agreement over the exact dynamics, composition and content of the respective woodfuel futures envisaged. The forester's vision favours a truncated energy transition which largely obviates the need for an intermediary fossil fuel phase in the shift from direct (firewood, charcoal, etc.) to derived (biofuel, biogas, etc.) woodfuel dependence. In contrast, Morgan's alternative woodfuel future revolves around the notion that, along with the early

adoption of new and renewable sources of energy, an intensified dependence on direct woodfuel could act to limit, and maybe even prevent or stall, a nascent transition away from such fuels and in favour of modern or renewable replacements in the first place. While these visions recall the complexity, diversity and dynamism characterising discourses of transition in general, the specifics of the Kano and wider northern Nigeria transitions highlight the need to *localise* such discourses in space, place and time – notably within complex and changing regional, national and global political economies and ecologies of energy in which extra-local influences impact on local policy and practice and are impacted in return.

As Ikuponosi (2004: 3) has perceptively noted, '[r]enewable [e]nergy has been talked about for more than thirty years while fossil fuels have increased in use and declined in supply'. Similarly, fuelwood has neither lost prominence nor been 'transitioned' out of existence by the increased use and/or popularity of either fossil or renewable fuels, and/or the sheer force of (stated) policy hope and aspiration if not (implementation) will. Indeed, fuelwood has increased both in use and supply in Kano as, in a development reminiscent of Morgan's woodfuel future or vision, has charcoal, which has not typically featured in the (domestic) energy mix of Kano residents until recently. Here, there is much to suggest that energy policy and other interventions in Kano and the northern drylands (as elsewhere in and outside Nigeria) would do well to start by interrogating what might be described as **'**first principles' (understood as including any and all relevant 'pregnant silences').

5. Conclusion

International policy concern with the impact of sharply-increased crude oil prices on the poor in Africa and elsewhere propelled the so-called 'firewood crisis' to prominence, starting in the 1970s. The response to this recognition of the significance of woodfuels for both livelihoods and regional/national economies – even in major oil exporters like Nigeria – was the appearance of a

wide range of technical recommendations for reducing woodfuel demand in the short term, and policy proposals for increasing sustainable supplies over the long term. However, many of these remain largely unimplemented or are still at an experimental stage in northern Nigeria. In this context, fossil fuels continue to dominate commercial energy consumption despite long-standing proposals for reducing global and local dependence on fossil and other non-renewable fuels, and expectations of widespread energy transitions to modern fuels notwithstanding, woodfuel continues to dominate domestic energy consumption.

Recent government policy preference for a reduction of state subsidy on petroleum products has once again elevated energy questions to prominence in a manner reminiscent of various periods during the 1970s, 1980s and 1990s. It has also given added impetus to on-going debates on the role of energy in poverty reduction and sustainable development, as well as in countering global warming and climate change. In turn, the perceived desirability of reducing reliance on both fossil fuels and fuelwood is once again well and truly to the fore, with *derived* woodfuel a favoured substitute candidate, in some international energy and related policy circles, including national policy declarations like Nigeria's NEP. At the same time, much energy intervention is reactive rather than proactive; while the primary purpose of fuelwood planning and policy appears to be to restrict access to, and reduce consumption of fuelwood, instead of increasing or diversifying supplies in a way designed to make them sustainable over the long term. This raises questions about whether and to what extent such interventions reflect a desire to address woodfuel in its own right, rather than as an unintended and/or unpredictable outcome of other 'higher priority' energy-environment interventions.

Thus in preference to the compilation of a catalogue of (wood) energy interventions *per se*, this paper has adopted the selective critique of some foundational assumptions about the energy–poverty–development matrix to argue for (i) the role of *situatedness* and *context* to be appreciated

in (wood) energy circles and acted upon during woodfuel interventions, and (ii) for these to be considered as relevant or important as the content and intended outcomes of these interventions. In doing so, we have suggested that energy interventions are the outcome of complex and diverse processes of resistance, negotiation and contestation, often with unintended consequences for both nature and society. In turn, as with development interventions more broadly, the potential of energy interventions to achieve desired outcomes depends, albeit partly, on the extent to which they are based on either 'ideological fantasy' or a careful and discriminating reading of particular political economic and historical realities (Cramer, 2006). Clearly, the (wood) energy interventions in Kano and the wider northern Nigerian region highlighted in this paper cannot justifiably be described simply as products of ideological fantasy. But likewise, they have equally not always been based on a sufficiently sympathetic interpretation, for energy intervention, of relevant characteristics of dryland economies, societies and historical experience**.**

Informed by this belief, therefore, this paper has set out a case for interventions to be at the very least as embedded in local and regional political/economic and social/cultural contexts, as they are technocratic in design and transformative in intent. The case advanced is deliberately partial in its privileging of *context* of intervention over structure and process of the latter's formulation and implementation. Yet, this is not to downplay the significance of the multi-scale interactions at the heart of such structures and processes. Rather, it is to demonstrate, in addition, the potential value *for policy* of localising complex and changing social/cultural economies of woodfuel in the context of time, place and space.

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