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Energy justice for all? Rethinking Sustainable Development Goal 7 through struggles over traditional energy practices in Sierra Leone

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ABSTRACT

With Sustainable Development Goal 7, the United Nations has declared its ambition to ensure access to modern energy for all by 2030. Aside from broad appeals to differentiated responsibilities and 'greener' technologies, however, the goal leaves significant procedural questions unaddressed. This paper argues that the basic orientation of this approach is problematic, undermining possibilities for progress toward energy justice and equitable development. First, in framing the issue of global energy distribution in broad techno-managerial terms it obscures how particular geographies of energy poverty have been shaped by critical political economic influences. Second, in privileging modern forms of energy and focusing on an end state of universal adoption, over a broader goal of eliminating energy poverty, the approach of SDG7 presents tangible hazards to many of those it seeks to benefit. Using a case study of Sierra Leonean rural cooking energy policy, we demonstrate how the underlying mentality of SDG7 feeds into existing discourses that marginalise producers and users of 'traditional' energy sources, threatening important livelihoods. With such evidence, we argue that for justice in energy policy to be realised holistically, there is a need to question *how* our knowledge of energy 'problems' have emerged to avoid epistemologically autarchic policy positions.

1. Introduction

As part of its 2030 development agenda, on September 23, 2015 the United Nations passed Sustainable Development Goal 7 (SDG7) "[to] ensure access to affordable, reliable, sustainable and modern energy for all" (UNDP, 2015a, b). In many ways, the presence of this "energy goal" within the SDGs marked the emergence of a new *cause celebre* within global energy debates, as neither the 1992 Rio Declaration on Environment and Development (United Nations, 2014) nor the Millennium Development Goals 2000–2015) mentioned energy poverty or access as major issues. While in many ways SDG7 presents an admirable vision for future global energy access and use, what is conspicuously absent from the Goal is any explicit mention of justice issues. In this paper, we examine the implications of this omission and scrutinise the relationship of SDG7 to questions of energy justice. We further ponder what true energy justice for all might look like.

Drawing on a case study of cooking energy in Sierra Leone, we present two key critiques of the Goal's formulation. First, while SDG7 embodies a clear distributive ethic (i.e. "modern energy for all") its effective silence on issues of procedural justice frames energy poverty in primarily technical-managerial terms, obscuring the political-economic dynamics of which it is a product. Second, we argue that its casting of the fact that "3 billion people rely on wood, coal, charcoal or animal waste for cooking and heating" (UNDP, 2015a, b p. 16) as a key problem and its corresponding identification of "*modern*" energy distribution as the solution is overly simplistic. While there is little question that access to industrially-produced forms of energy such as electricity is critical for certain forms of development (Bhattacharyya, 2012; Sovacool and Drupady, 2012), we find the assumption that "traditional" energy sources are inferior is problematic. We contend that there is a need to move beyond this simple binary of "modern"=good/"traditional"=bad if procedural issues of energy justice are to be addressed. More broadly speaking we argue that global energy debates must balance consequentialist ethics focused on homogeneity in energy outcomes with policy approaches that emphasise procedural justice in transition, including a voice for the supposed beneficiaries of energy transitions (i.e. recognition justice). Such a conceptual shift would open discussions allowing more respectful consideration of a wider range of energy sources, producers and users, as well as the roles they might play in addressing substantive issues of energy poverty.

The use of simple fuels such as firewood or charcoal and transitions to more "modern" forms of energy has been a key focus of national

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policies and global energy debates for several decades, not least because an estimated 38% of people world-wide rely on biomass for their day-to-day cooking needs (IEA, 2016). Indeed, while the notion of "energy access for all" appeared only recently in global discourses, international concern over fuelwood use has a much longer history, as exemplified by the prominent 1987 publication of *Our Common Future* by the Brundtland Commission (1987). Labelling them "the Vanishing Resource," the report considered fuelwood supplies to be in rapid decline "in many developing countries, especially in Sub-Saharan Africa" (Brundtland Commission, 1987, p. 159). As such, while the case study presented here focuses on Sierra Leone, it has broad salience with respect to ongoing regional and international policy discussions. In engaging the latter, in this article we employ an "energy justice" lens to interrogate mainstream discourses that have tended to frame biomass energy as an environmental or modernist development problem. Based on our findings, we move beyond the more prosaic recommendation for greater attention to procedural justice in fuelwood energy policy formulation, asserting the need to critically examine *where* and *how* conventional views of fuelwood energy issues have been (and are being) produced. Specifically, we contend that current environmentalist and modernisationist policy discourses surrounding fuelwood are disconnected from the perspectives and experiences of people who actually produce, trade and use fuelwood energy sources. In order to develop these analyses, the following section provides an overview of energy justice debates and their relevance to SDG7. Building on this foundation, the third section describes our research methodology, while the fourth presents an empirically-based investigation of cooking energy production, use and policy dynamics in Sierra Leone. The fifth section analyses the dynamics of the case study from the perspective of recent theorisations of "energy justice". Finally, the sixth section concludes the discussion, summarising our main arguments and detailing the implications of our findings for current and future evolutions in national and global energy policies.

2. Energy Justice and SDG7

Although the notion of "energy justice" is relatively new both as an analytic frame and a normative ideal (Sovacool and Dworkin, 2014) it is rooted in longstanding philosophical debates on ethics as well as more recent work on "environmental justice" (Jenkins et al., 2014; McCauley et al., 2013). While the former encompasses 2–3 millennia of thought from around the globe, scholarship in the latter area has emerged over the past 2–3 decades, particularly in political ecology – a relatively young transdisciplinary subfield with an emphasis on revealing "winners and losers, hidden costs, and the differential power that produces social and environmental outcomes" (Robbins, 2012, p. 11). Broadly speaking, this work has been grounded in two key propositions. The first is that although they are commonly portrayed as discrete, social and environmental dynamics are fundamentally interrelated, a key consequence of which is that distributions of environmental goods and ills are profoundly linked to (frequently inequitable) political-economic processes. The second is that attempts to "solve" environmental issues are themselves shaped by these same structural political economic forces and frequently reproduce such patterns of disempowerment and injustice (Schlosberg, 2004). The core elements of these themes have been emphasized in recent scholarship on energy justice as exemplified by McCauley et al. (2013) and Jenkins et al. (2016). Developing a triumvirate framework they emphasise: *distributional justice* – a socio-spatial concept directing attention to patterns in the location and dissemination of energy goods and ills; *procedural justice* – a political concern highlighting the allocation of access to and participation in decision-making processes and; *recognition justice* – an epistemological focus on the ways and extents to which disparate forms of knowledges are valued and incorporated (McCauley et al., 2013).

As illustrated by SDG7, however, evolutions in international policy discourses on energy ethics have been considerably more limited in scope. To be sure, in seeking to "ensure universal access to affordable, reliable, sustainable and modern energy for all" (UNDP, 2015a, b: Target 7a), even in general terms the Goal implicitly embodies the distributive justice approach. Moreover, it is also exemplary in its more specific provisions, perhaps most notably those emphasizing the need to increase renewable energy dissemination (Target 7b) and improve energy efficiency (Target 7c). Since the costs of climate change will be felt most severely by the least developed countries (Thomas and Twyman, 2005) the structure of the global energy system and its climatic effects have been identified as "central justice issues of our time" (Sovacool et al., 2016, p. 18). In explicitly recognising that "energy is the dominant contributor to climate change", that "reducing the carbon intensity of energy is a key objective in long-term climate goals" (UNDP, 2015a, b) and mandating action for their resolution, therefore, the Goal also implicitly addresses the issue of intergenerational equity in the distribution of the global energy system's socio-ecological costs. In essence, although it does not directly refer to "justice" or "ethics", the text of SDG7 expresses principles consistent with a strong theory of distributive justice and closely aligned with the political ecological focus on environmental equity.

As Jones et al. have noted, however, "distributive justice is only one piece of the justice puzzle" (Jones et al., 2015, p. 149), and SDG7's weaknesses in other areas reveal its limitations as a universal agenda. First, in terms of *procedural justice* it provides very limited guidance. Admittedly it does emphasise the need to "enhance international cooperation" (7.a), particularly in order to upgrade energy supply technology in "least developed countries, small island developing States, and land-locked developing countries" (7.b). Aside from the implied invocation of "common but differentiated responsibilities" for 'developed' and 'developing' countries established under the Kyoto Protocol (Barrett, 1998), however, questions relating to the forms, principles and processes of such cooperation are left unaddressed. On one hand, since (as the name implies) the Sustainable Development Goals are ends rather than means-oriented, this characteristic is neither surprising nor problematic in itself. On the other hand, this lacuna is nonetheless considerably problematic if energy justice outcomes are contingent on political-economic processes. In essence, without a clear procedural justice agenda SDG7 would seem to be in considerable risk of becoming at best a Sisyphean Quest or, worse, a toothless expression of aspiration.

Second, and perhaps more concerning still, is the complete lack of attention to *recognition justice*. As is often the case with expressions of international policy, the Sustainable Development Goals (including Goal 7) were developed by groups of experts and formally endorsed by governments at the national-state level. While the assumption of a leadership role by the United Nations in this area may be taken as an encouraging development, a consequence of the approach taken is that the energy poor – the intended beneficiaries of the initiative – were marginalised in the process of its creation. The exclusion of their voices limits the range of knowledges and perspectives on which the Goal is based, with important implications for its final formulation and implications. The results are clearly evident in the text of the SDG7, particularly in terms of its dismissive approach to so-called "traditional" energy sources, an expression of modernist development ideology which has been widely critiqued for marginalising alternative approaches (Leach et al., 2008; Powell, 2006; Weber, 2004).

2.1. Methodology

To illustrate our arguments, we draw on a case study of energy policy in the West African nation of Sierra Leone where, as in most of sub-Saharan Africa, the main source of cooking fuel is biomass in the form of firewood or charcoal. Produced on farm and forest lands across the country for subsistence use as well as urban commercial sale (Munro and van der Horst, 2012a; Munro et al., 2016), the importance

of this kind of fuel is underscored by the fact that it accounts for over 80% of total national energy consumption (UNDP, 2012).

The data presented here are derived from a recent Sierra Leonean fuelwood policy review 2011–2016) and from field projects conducted over ten-months in 2011 with funding from the European Union, The United Nations Food and Agricultural Organisation (FAO), USAID and the US Forestry Service. Field research activities consisted principally of: 1) individual interviews with fuelwood vendors in urban centres across Sierra Leone; as well as with forestry staff, police, chainsaw shops, and a variety of other relevant stakeholders in the two commodity chains; 2) focus group interviews with urban vendors to produce more nuanced discussion of the trade; 3) town hall discussions with residents of villages adjacent to and/or participating in production activities in the north of Sierra Leone, identified via interviews with urban vendors.

All interviews were semi-structured based on common lists of questions to ensure thematic completeness and comparability of data, but allowing opportunities for all participants to discuss topics of interest to enhance the voice of those involved in the trade in policy-making circles. The townhall discussions emphasized inclusion of a wide range of demographic groups (youths, women, men, elders, local authorities, etc.) and explored multiple dimensions of the commodity chains. In addition, trips to production-area villages included other activities including participatory exploration and discussion of production sites in the company of local producers.

The research was conducted by an eight-person team and comprised over 200 interviews involving: 52 urban fuelwood vendors across the Southern and Eastern Provinces of Sierra Leone; 44 urban fuelwood vendors across the Northern Province; 73 fuelwood source point villages inside the Northern Province, and 32 large-scale fuelwood vendors on the Freetown Peninsula. Extensive details about the research project and methodology can be found in earlier reports (in particular see Munro and van der Horst, 2012a; also see Munro and van der Horst, 2012b; van der Horst and Munro, 2012). The following sections draw upon this data.

2.2. Cooking energy in Sierra Leone: modern and traditional tensions

Subsistence use of fuelwood has existed for centuries in Sierra Leone and commercial sale dates back to at least the 15th century when coastal populations began exchanging goods with passing Portuguese merchant ships (Fyfe, 1962). Nonetheless, for most of Sierra Leone's history the trade remained a peripheral concern to the state which viewed it as a small-scale and mundane part of rural socio-economic life. This, however, changed dramatically in the 1970s and 1980s when fuelwood consumption was suddenly recast as an issue of critical domestic, regional and international concern. The gravity of this sudden shift of perspective is well illustrated by the dramatic assessment of an influential report by the Economic Community of West African States (ECOWAS) in 1982:

> Sierra Leone is suffering from … a fuelwood crisis … Some 70–80% of the national energy balance consists of fuelwood, which is rapidly being depleted, even along the traditionally forested area on the coast. Fuelwood consumption is approximated at 2.5 million m3 annually, with forest reserves estimated at less than 6 million m^3. Simple mathematics would lead one to conclude that in 3 years there will be no forests left (ECOWAS, 1982, p. 25).

The genesis of this newfound concern can be traced to the mid-1970s "fuelwood crisis" when a perceived gap between seemingly dwindling biomass stocks and the increasing energy needs of a growing population generated international neo-Malthusian panic (Ribot, 2001). Despite repeated predictions, however, the apparently imminent disaster never materialised and the notion that fuelwood harvesting causes mass deforestation has been thoroughly discredited by numerous subsequent studies (Arnold et al., 2006; Cline-Cole et al., 1990; Hiemstra-Van der Horst and Hovorka, 2008; Hiemstra-van der Horst and Hovorka, 2009; Leach and Mearns, 1988). A key observation has been that most (in Sierra Leone and elsewhere) firewood and even much charcoal production depends on fallen dead branches or the residues of farm clearance in shifting agricultural systems and hence involves very little additional tree-felling. Moreover, like most studies of the period, the ECOWAS report failed to appreciate that biomass is a renewable resource – that trees grow back – particularly in the fallow systems that dominate tropical agricultural landscapes and from which almost all fuelwood is produced (Hiemstra-van der Horst and Hovorka, 2009). As such, its crude calculations of static 'forest stocks' were misguided and essentially irrelevant. Nevertheless, despite its lack of empirical basis, in Sierra Leone as elsewhere across the "developing world" the "fuelwood crisis" discourse remains influential and both firewood and (particularly) charcoal consumption continue to be demonised as major causes of deforestation (see, for example, Alieu, 2011; Davidson, 1985; FAO, 2013; GoSL, 2010; Kamara, 1986).

In Sierra Leone the trade and use of firewood and charcoal went through fundamental socio-ecological changes during the 1990s largely as a result of the country's civil war (1991–2001). A key factor in this change was a rapid rise in urbanisation as rural residents, sought safety in the capital Freetown increasing its population as much as threefold (Abdullah, 2002; Boadi et al., 2005), dramatically altering the city's structure (Munro, 2009) and transforming many aspects of urban life including energy use patterns. The arrival of so many new migrants created a significant upsurge in demand for cheap household energy supplies, which in turn created vibrant new firewood and charcoal supply industries. Importantly, the demographic shift also provided the social means of organisation for these novel commodity chains as the migrants retained close ties to their villages of origin, which served as the basis for strategic trade networks linking rural producers to urban markets (Munro and van der Horst, 2015). Moreover, the establishment of camps for refugees and Internally Displaced People (IDP) augmented these patterns. Located both on the outskirts of Freetown and in the east of the country, the camps essentially became new towns, many functioning for over a decade while others evolved into permanent settlements. Growing rapidly, they became significant sites of economic activity and firewood trade became an important micro-industry (Leach, 1992; Sargent, 1993). Indeed, the national-scale commercialisation of firewood now evident in Sierra Leone was largely a product of experiences in the IDP camps where many displaced rural residents began for the first time to think of the previously subsistence product as a tradeable commodity (Munro and van der Horst, 2015).

While the reconceptualization of firewood and its attendant rapid commercialisation have been noteworthy, the rise of charcoal as a household fuel has been a still more significant socio-economic development. Until the mid-1990s, charcoal was a largely peripheral and uncommoditized material – consumed only in small quantities primarily by rural blacksmiths and of marginal importance relative to firewood which was a nearly universal household subsistence fuel (Munro and van der Horst, 2015). Charcoal is widely considered a superior fuel to firewood as it burns more efficiently, works well with stoves, is easier to transport and produces very little smoke. However, while firewood production consists simply of collecting, cutting, splitting and bundling of branches, charcoal production involves placing piles of suitably cut wood pieces inside a specifically designed oven of dirt and grass (in the form of a pit or mound). A variety of carefully sized and placed holes must be created in the sides of the oven to allow fire to burn either underneath the pile or in the middle of the oven. If the air is properly controlled, the ovens will achieve the desired state of relatively anaerobic smouldering which burns off impurities in the wood leaving coals of almost pure carbon; a process known as slow pyrolysis.

Charcoal production is, therefore, reliant on a specific knowledge and skill set, but one which was largely absent in Sierra Leone prior to the 1990s. Just as life in the camps and the growth of urban markets

engendered the commercialisation of firewood a variety of wartime population movements also gave rise to the charcoal industry (Munro and van der Horst, 2015). Though previously not widely known in Sierra Leone, the techniques of charcoal making and its profitability were well established in neighbouring countries. Fleeing to Guinea to escape the conflict at home, a number learned the trade from their hosts. At the same time, refugees (and in one case prisoners) from the contemporaneous Liberian civil war also shared their skills with residents of Sierra Leonean rural communities and camps in a number of places across Sierra Leone. Following the end of the war many people brought this new knowledge back during resettlement and started production in their home villages.

In the post-war context of rebuilding and ongoing urban growth the results of this technological transfer have been nothing short of revolutionary. Village-level production of charcoal for urban markets has become widespread across the country, particularly in areas within reach of major transportation arteries and urban centres. Out of the 64 charcoal production villages visited in Sierra Leone during field research, only one had been involved in charcoal production prior to the country's civil war and in interviews many rural producers emphasized that it had afforded them economic freedom. A reliable source of otherwise scarce cash income, it had allowed them to earn enough to achieve key life goals such as to marry and build houses as well as to buy costly but important items such as motorcycles and other much-desired goods. Indeed, one charcoal trading village encountered during field research was made up entirely of ex-combatants who had established their own settlement after the disarmament program and turned to cooperative charcoal production as an exclusive source of income (Munro and van der Horst, 2012a). This increase in production capacity combined with the rapid growth of many urban centres has ensured the vibrancy of the charcoal trade since the end of the civil war.

The rapid expansion and commercialisation of the firewood and charcoal trade has, however, been met with consternation by the Sierra Leonean government and many of its aid donors. In particular, both the Ministry of Energy and Water Resources (MEWR) and the Forestry Division (FD) are committed to achieving the eventual elimination of small-scale fuelwood (firewood and charcoal) production, trade and use in Sierra Leone. Although there are a number of reasons for this opposition to the fuels, the most common justification blends narratives of national development and environmental degradation into a form of eco-modernisation discourse. The FD, for example, was a colonial creation and maintains a legislative and policy framework that continues to emphasise large-scale industrial timber production under its sole authority (Munro and Hiemstra-van der Horst, 2011). The *de facto* emergence of informal, flexible and even (spatially) ephemeral fuelwood supply networks, however, represents the antithesis to the colonial model of forestry – a dramatic *de facto* contrast to the sort of *de jure* centralized control of forest resources which the agency sees as its raison d'etre (Munro and van der Horst, 2015). The FD has reacted aggressively to this situation, developing prohibitively expensive commercial licensing fees and draconian fines and even jail sentences for violation of regulations it has designed expressly to drive small- and medium-sized producers out of business (Hiemstra-van der Horst, 2011; Hiemstra-van der Horst et al., 2011). Critically, it justifies its stance with a combined appeal to the importance of economic modernisation and the outdated discourse of the "fuelwood crisis" era, framing fuelwood producers on the one hand as primitive and wasteful forest destroyers and centralised bureaucratic forest regulation as an urgent imperative on the other.

The Ministry of Energy and Water Resources (MEWR) adopts a similar discursive approach. The current energy policy, for example emphasizes the specific priority of replacing fuelwood use with "modern cooking fuels" – particularly Liquid Petroleum Gas (LPG) – in 25% of households by 2030 (MEWR, 2009).[1] Like the FD, the MEWR also weaves "fuelwood crisis" discourse into its pronouncements, stating, for example that the Government shall "promote the application of alternative of energy sources, other than fuelwood [*sic*-firewood] and charcoal in order to reduce deforestation" (UNECA and MEWR, 2011, p. 6). Encouraged by the Ministry, in the past few years major private sector actors have begun trying to promote LPG across Sierra Leone. In 2012, the foreign company AfriGas started importing LPG, teaming up with the French multinational Total to achieve nation-wide distribution of pre-filled cylinders. Likewise, since 2013 British multinational BP (locally branded as National Petroleum) has also developed its own aggressive national LPG marketing campaign (Bess and Koroma, 2014). In addition, the Sierra Leonean media has also played a considerable interlinking role in discursive dissemination (Awareness Times, 2014; Nyallay, 2016; Sierra Express Media, 2012). In an interview published as "AfriGas Minimizing Deforestation", for example, AfriGas' brand manager claimed that "deforestation can result in water shortage, erosion and climate change" and presented AfriGas LPG as an "environmentally friendly" alternative that will "reduce deforestation by being a direct alternative to firewood and charcoal use" (Samba, 2014).

3. Results and discussion

The current policies of Sierra Leone's Ministry of Energy and Water Resources in particular – and, though less directly, the Forestry Division – have a policy and program vision that aligns closely with the SDG7 target to "ensure universal access to modern energy for all." To be sure, the MEWR policy is at least partly grounded in a notion of distributive justice, seeking to provide Sierra Leoneans with access to new technologies so that they can share in their benefits. In this sense, the objective is commendable, and will surely produce a number of desirable social outcomes. Viewed through the lenses of procedural and recognition justice, however, like its international cousin, SDG7, it is problematic.

In the Sierra Leonean policy context (Alieu, 2011; Davidson, 1985; FAO, 2013; GoSL, 2010; Kamara, 1986), international discourses such as that expressed in SDG7 (UNDP, 2015a, 2015b) and even a surprising amount of academic literature (see Ribot, 2001 for a critique), firewood is presented as a deeply problematic fuel. A key concern is the empirical evidence (e.g. Bruce et al., 2000) that women and children are particularly affected by fuelwood-related hazards and burdens. This is because most fuelwood-dependent societies – including those of Sierra Leone (Munro and van der Horst, 2012a) – are strongly gendered and it is women and children who mainly harvest and make use of the fuel. These activities are not only labour intensive but also involve regular smoke exposure which can cause respiratory ailments. While claims of firewood-related environmental degradation are largely spurious, therefore, there is certainly a strong ethical case to modify or reduce its use (Guruswamy, 2010; Hiemstra-van der Horst and Hovorka, 2009). Complicating the issue, however, is the fact that the sale of firewood to rural transporters, highway travellers and urban market goers is an important income source for many poor rural women in Sierra Leone – providing money for small food stuffs, medicine as well as for schooling requirements. Policies that seek to reduce or eliminate its production and use are therefore also problematic, entailing a considerable socio-economic cost for some of the most economically vulnerable.

Similarly, charcoal production is also often condemned – often via simple conflation with firewood under the broader umbrella term 'fuelwood'. This is also unfortunate, as charcoal production in Sierra Leone operates with a completely different dynamic. For one thing, as

[1] Current LPG use is below 1% and is largely restricted to upper-income households (Bess and Koroma, 2014)

men *and* women are both involved its production, harvesting and sale it involves fewer gendered concerns (Munro and van der Horst, 2012a). Furthermore, charcoal produces vastly less smoke than firewood and in displacing firewood as a cooking fuel actually reduces domestic respiratory hazards. Indeed, a part of the reason why charcoal has become so widespread in Freetown over the past decade is because landlords have increasingly required tenants to use charcoal instead of firewood to minimise smoke damage to their properties (Munro and van der Horst, 2012a). Although charcoal and firewood are both forms of biomass energy, therefore, their socio-ecological dynamics are therefore quite distinct. Moreover, charcoal production offers a still more important source of income for cash-poor and economically vulnerable rural populations. As a result, while neither of the two types of fuelwood is completely problem free,[2] each affords advantages and generates important livelihood opportunities for some of the poorest rural societies in the world.

Further complicating the issue has been the promotion of LPG as the designated 'modern' alternative – an effort which, in Sierra Leone at least, is deeply problematic. First the desired "energy transition" from fuelwood to LPG sits in tension with the SDG7 target (7b) of increasing renewable energy use. Despite its elevation as an environmental saviour, LPG is a fossil fuel and it is actually its supposedly "inferior" competitors in the fuelwood category that are renewable resources. This fact, however is generally either quietly ignored or outright denied in Sierra Leone and (surprisingly without the slightest note of irony) promoters of Liquid *Petroleum* Gas regularly denounce the fuelwood industry as a dangerous contributor to climate change. Second, imported LPG is produced and transported via a commodity chain linked to numerous conflicts and environmental justice issues around the world (Bebbington and Bury, 2013; Mitchell, 2009; Watts, 2004a, 2004b). Third, it should not escape notice that since major promoters of LPG in Sierra Leone are Total and BP, a mass shift to LPG would not only transition the household energy market from domestic self-sufficiency to import dependence but would also displace most of its profits from rural communities to major foreign multinational corporations – an outcome of questionable developmental value indeed.

In terms of recognition justice, it is quite clear that the above-noted forestry and energy policies are rooted in modernist development ideology and were crafted by policy elites with little or no input from those directly involved in the trade or consumption of local fuels. To be sure, the evolution of rural-urban fuelwood commodity chains in Sierra Leone has been a story of ingenuity, entrepreneurship and adaptation in the wake of a devastating civil war. Despite considerable empirical data to the contrary (Leach and Mearns, 1988; Munro and van der Horst, 2011), however, mainstream narratives in Sierra Leone continue to demonise the trades, as exemplified by a recent article in the local newspaper *Politico SL* which stated plainly that "it is *common knowledge*…that felling trees for wood and charcoal destroys the environment [in Sierra Leone]" (Nyallay, 2016). Simply put, though it has been repeatedly discredited, the "fuelwood discourse" which remains as a residue from the 'crisis' era of the 1970s and 1980s continues to marginalise all other knowledge claims in direct conflict with the principle of recognition justice premised on "epistemological pluralism" (Healy, 2003, 2009). Indeed, what is occurring in Sierra Leone could be better termed epistemological imperialism, the dominance of a modernist vision of external origin. Moreover, the dissemination of SDG7's universalist discourse of 'modern energy' reinforces the pattern of marginalisation – directly implying that fuelwood producers need to be eliminated by 2030 if Sierra Leone is to reach its development goal.

Beyond knowledge recognition, however, current approaches also present considerable procedural justice issues of immediate practical concern. As an example, LPG has been uncritically presented as the "poster-child" path to 'modernisation' of household energy consumption, a techno-managerial problem to be resolved through a simple combination of material distribution and social "sensitisation".[3] As noted above, however, such a transition would involve a shift from renewables to a fossil fuel and from local entrepreneuship to economic domination by some of the largest multinationals in the world. It would also introduce dependence on an imported commodity that is entangled with numerous environmental and social justice issues around the world. In this light, therefore, what has been represented as a simple bureaucratic initiative is illuminated as a multi-dimensional political-economic conundrum. As noted above, a core assumption of the environmental justice literature is that attempts to "solve" environmental issues are often shaped by the same structural political economic forces that caused the problems in the first place, meaning that there is a tendency for environmental solutions to reproduce associated forms of disempowerment and inequity (Schlosberg, 2004). The question we might therefore want to ask is who are "winners and losers" and what are the "hidden costs" and "differential power relations" (Robbins, 2012, p. 11) that shape energy use patterns and transitions. 'Modernisation' may confer some advantages but it can also be a highly dubious pathway to energy justice.

Indeed, efforts to transition away from fuelwood as a cooking energy source in Sierra Leone present a clear example of how "energy poverty solutions" tend to reproduce forms of disempowerment and inequity that characterise current geographies of energy poverty. The energy-poor in Sierra Leone are neither involved in nor empowered by the current energy transition policy. Rather, they are constructed as a key problem: "environmental destroyers" that require paternalistic oversight and intervention and whose knowledge, experience and voices are marginalised. In the end result, the elite-constructed notion of a fuelwood problem has produced a paradoxical situation in which multinational fossil fuel producers can be celebrated as "environmental saviours", themselves now in turn empowered to shape both material and discursive outcomes. In questions of energy justice, therefore, we argue that "recognition justice"– how disparate forms of knowledges are valued and incorporated (McCauley et al., 2013) – is a particularly critical pillar of energy justice. Policies and programs – both in terms of process (i.e., procedural justice) and objectives (i.e., distributional justice) – are generally founded on dominant knowledge claims but energy policy formulation must begin with epistemological reflexivity, focusing first on a single critical question: how do we know what we (believe we) know?

4. Conclusions and policy implications

In the preceding sections we have described key dynamics of cooking energy use and policy in Sierra Leone over the past 40 years, illustrating its multiple entanglements with questions of energy justice. Fuelwood, which has served as the primary source of cooking fuels in the country for over a millennium, emerged as critical area of environmental, development and energy policy in the 1970s due to outsiders' flawed assumptions of a "fuelwood crisis" – primarily that the harvesting of firewood would soon devastate the country's forest stocks. These concerns were further accentuated in the course of the country's civil war (1991–2001) during which large sections of the country's populace, displaced and economically devastated, turned to fuelwood production as a source of income. This included the increasing commercialisation of firewood as a resource to be sold to urban centres, as well as the rise of charcoal production, a superior fuelwood type introducing considerable social benefits. The official response to these dynamics, however, has been to lambast fuelwood producers as

[2] Like any other energy source, it should be noted.

[3] A profoundly patronising term, but a favourite for governments, donors and NGOs in the development and environmental fields in the 'developing' world, used to describe programs of discursive indoctrination

"environmental destroyers", seeking the promotion and dissemination of LPG as an alternative and more "environmentally friendly" fuel. Framing these developments in terms of "energy justice", we have shown how such policies are the products of elite interpretations of modernist development ideology, excluding the voices of those involved in local fuel production and use. The result has been the emergence of an energy policy that seeks a shift: from renewables to fossil fuel; from local to global commodity chains and to entanglement with numerous environmental and justice issues around the world – a questionable outcome at best.

This case study speaks to all of the five challenges outlined in this special issue. In *thinking across energy types*, we show how the different rural cooking fuels of firewood, charcoal and LPG are entwined with a range of different social, political and environmental dynamics. As there is likely no energy source that is justice-neutral, it is ultimately necessary to examine the different contextual histories of each and how they are situated in particular and changing political economic processes. In terms of *learning from national policy contexts,* as Jenkins et al. (forthcoming) note, many national energy "'solutions' both cause and fail to recognise widespread externalities, including issues of social justice." Sierra Leonean cooking energy policy is exemplary of this and in the quest to modernise energy use (in part to promote better development outcomes) justice issues have been ignored or marginalised. It is an issue that speaks quite directly to the *legal and regulatory context* of energy policies in Sierra Leone which have been formulated at considerable distance from the voices and needs of its supposed beneficiaries. As such, in terms of developing *methodologies for energy justice*, we are of the view that questions of "recognition justice" are critical, and should be a starting point for realising a more just energy system. Whose knowledge counts has great implications in terms of how energy problems and solutions are constructed. The final challenge of *temporal approaches,* and specific concerns about the "pace of our transitions" and "the different temporal questions of justice they create" (Jenkins et al., forthcoming) is a key concern for thinking about household energy. Our position is not to simply oppose potential energy transitions away from fuelwood as a major energy source in Sierra Leone (and elsewhere in the world), but rather to consider how these transitions may or may not take place and the implications they may have. Fuelwood is inter-twined with the livelihoods of many Sierra Leoneans in complicated ways and the promotion of simplistic techno-bureaucratic solutions risk the creation of considerable and pernicious injustices.

In terms of Sierra Leone's current energy policy, our findings indicate that there needs to be a fundamental reorientation of energy policy formulation. There is a need to bring fuelwood producers, traders and users into policy debates to disrupt the epistemological modernism that so far has dominated energy policy design. These findings, moreover, are relevant far beyond Sierra Leone. As mentioned in the introduction, around 38% of the world's population relies on some form of fuelwood as a primary energy source and fuelwood crisis narratives have continue to shape policy development in many different parts of the developing world (for example see Leach and Mearns, 1996; Benjaminsen, 1993, 1997; Robbins, 2000; Ribot, 2001; Walker, 2004; Hiemstra-van der Horst and Hovorka, 2009; Arnold et al., 2006; Adger et al., 2001)). Each national scenario, of course, will have its own nuances, but what we have shown in this paper is how an "energy justice" lens can aid in unpacking the critical social and political economic issues surrounding fuelwood dynamics.

The title of the paper implies that we undertake the ambitious proposition of presenting what energy justice for all might look like. As our case study suggests there may well be no neat picture to paint, but rather a messy process of attending to the different political economic processes that shape energy outcomes. Nevertheless, we argue, there are some key themes to reflect on. First, global energy debates need to be re-oriented to balance consequentialist ethics seeking homogeneity of outcomes with deontological principles giving place to procedural justice in transition and to more open and inclusive discussions – the potential for which seems to exist in seed form within the SDG initiative itself. Without a clear procedural and recognition justice agenda, however, SDG7 will likely be unachievable and/or induce perverse effects. Like national and international discourses of energy poverty and its solutions (Guruswamy, 2011; Kaygusuz, 2011; Sagar, 2005) it is obsessed with a narrow vision of "modernisation", disregarding the roles, relations and importance of other fuels – particularly for the poor, and risking the destabilisation of important livelihoods and life maintenance strategies. A more comprehensive approach to energy justice would shift focus away from simple "technological fixes" towards broader matters of political economy and energy governance – the roles that different actors, institutions and processes play in shaping energy decisions and outcomes (Bazilian et al., 2014).

In order to support more sensitive approaches, however, there is a need for more detailed critical research on *specific* political economies of energy and related justice issues. As the approach of SDG7 illustrates, at present the energy geographies of much of the developing world are poorly understood and policy development occurs in a relative empirical void (Nussbaumer et al., 2012). What is needed is much more nuanced and inclusively produced knowledge of current patterns, relations and dynamics of both 'modern' and 'traditional' energy production, distribution and use and the justice issues they – or policies intended to transform them – present. This includes the understanding of actual, rather than presumed, political economic forces that shape energy access, as well as the kinds of energy futures that particular communities desire (O'Brien et al., 2007); a form of 'recognition justice' that helps to articulate voices and knowledges from people experiencing energy poverty. While the importance of these questions ought to be self-evident, at present they are rarely treated seriously in the formation of energy policies.

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