

# RENEWABLE ENERGY AND DECENTRALIZATION (READ)

## WORKING PAPER 1

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# GOVERNANCE, DECENTRALISATION AND ENERGY: A CRITICAL REVIEW OF THE KEY ISSUES

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**READ** Renewable Energy and Decentralization



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## 1. INTRODUCTION

This working paper is an output of the **Renewable Energy And Decentralization (READ)** project, a research project (EP/L002469/1, 2013-2015) funded by the UK Engineering and Physical Sciences Research Council (EPSRC), the UK Department of International Development (DFID) and the UK Department for Energy and Climate Change (DECC), and executed by Loughborough University, Gamos Ltd and Practical Action East Africa.

The goals of the project derive from a shared frustration with the general lack of attention being paid to the role of local government as an integral component of clean energy transitions across lower income and lower middle income economies, particularly in a context where the theme of political decentralisation is once again firmly rising up the political agenda. Whereas the concept of decentralisation has a long and variegated history in the field of development studies (see for example UNDP, 1999; Cohen and Peterson, 1999 for a flavour of this history) the project team suggest that there are particular reasons why decentralisation has a special relevance to energy services – the project is intended to explore that relevance, with particular reference to the renewed urgency given by rapid climate change and increases in extreme weather events and in the light of the UN’s recent SE4ALL<sup>1</sup> (Sustainability Energy For All) initiative.

The primary objective for this project is, therefore, to scope the implications for energy governance caused by the political process of decentralisation occurring across African states. As such, our objectives are to (i) assess the roles and responsibilities of local authorities in relation to energy issues across Rural Africa, (ii) to examine how the roles and responsibilities of local authorities in relation to energy issues have already been affected by the transfer of powers and budgets under decentralisation initiatives and (iii) to analyse the implications for local authorities in relation to energy issues of further, more profound, transformations that would see the transfer of more powers and budgets under current decentralisation impulses. Central to all of this is the question of what kind of capacity local authorities need in order to play the potentially crucial role of integrating clean energy transitions into local development planning and how those capacities might be enhanced. As such, the fourth objective of the project is to carry out an exploration of capacity relating to energy literacy amongst local authorities in two particular African states (Kenya and Rwanda) that have had very different experiences of local governance and decentralisation.

More broadly, by scoping the implications of decentralising processes for clean energy development, our intention is to extend ongoing work in evidence literacy for policy actors thereby contributing to more effective local action to expand clean energy access within the region. Local authorities are increasingly budget holders, and are likely to have little experience of thinking about and planning for energy as part of their relatively new governance duties<sup>2</sup>. The intention is to scope the problem through participatory processes involving the actors themselves, and on this basis to preposition findings to inform future action for clean energy governance. Our key research outcomes will be to validate the severity of the issues which we face in this area and to develop a proposed plan of action that will need to be undertaken through a larger programme of intervention.

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<sup>1</sup> <http://www.se4all.org/>

<sup>2</sup> See Hope, 2014 and Turok, 2013 for a flavour of this debate.

This paper is the first fruit of a broad context setting work package for the project and provides a deliberately broad overview of key themes that we have identified across a range of different literatures pertaining to the broad subject matter of energy and decentralisation. In particular, it highlights and explores the connections between literatures that have until now been quite separate. For example, there is a relatively voluminous literature on the advocacy, uptake and impacts of political decentralisation across the countries of the Global South, as well as a similarly large literature on the growing decentralisation of energy supply and management globally, but very few studies have explored the interconnections between these two literatures (one significant exception is a study undertaken by UNDP in 2009 which we draw on quite heavily in this paper). The urgency of doing this (the authors suggest) is obvious, particularly when one considers the vague and contested ways in which the concept of decentralisation is employed and for what purposes. For example, in just one work, Cohen and Peterson (1999: 16-18) identify six different approaches to decentralisation where the concept is defined differently (these definitions can loosely be described as those relating to: historical origins; territorial and functional decentralisation; problem and value-centered forms; service delivery forms; single country experience forms and objective-based forms). Finally, the interplay between decentralisation, the role of local government and the promotion of low carbon transitions is a theme that has been explored in some detail in the case of the industrialized countries of the Global North but it has not been anywhere near as well studied in other contexts.

Clearly the major focus of this research project is directed at those parts of the world where even basic energy access remains a significant issue for large parts of the population, in this scene-setting paper, however, rather than just reviewing literature written within that specific context, we seek to develop a more systemic approach that draws upon more generalized literatures about both political decentralisation and energy decentralisation, as well as case studies from other contexts, within an attempt to inculcate a more holistic approach towards the issues. The aim is to bring together the current learning from around the world and place its relevance in the context of Africa as explored in the other working papers being produced for the project. In effect we aim to situate the Decentralisation of Energy Governance in Africa within the broader contours of developments going on simultaneously in and across the Global North/South.

Following on from this brief introduction, the paper is structured into three basic sections. Section Two places the paper (and the project) within its wider context by defining key terms and situating the paper within a discussion of five key themes, before concluding with a brief discussion of issues of scale in decentralisation. Section Three explores the literature on Energy Decentralisation, outlining the major components underlying its gradual acceleration over recent years, before then moving on to consider some of the major controversies surrounding the issue and the key barriers to a further deepening of decentralising processes within the sector. Section Four then turns our attention to the broader literature on political decentralisation. It begins by exploring the basic cases articulated by those advocating political decentralisation, before then drawing attention to some of the key critiques of its impacts. Attention is then turned to the literature on the role of local authorities in energy transitions in the Global North and South, before then considering the implications of political decentralisation upon those roles. Finally, there is a brief discussion of the implications of political decentralisation for the current explosion of interest in the potential for the widespread adaptation of decentralised mini-grids. The paper finishes with a short conclusion.

## 1 GOVERNANCE, DECENTRALISATION AND ENERGY: SETTING THE SCENE

This first introductory section of the paper places it (and the READ project more generally) within its wider context. It is organized into three sections. The first defines several of the key terms utilized in the pages which follow, the second places the paper within the context of the contours of several of the key themes within current global debates around energy governance, whilst the third makes some points about the importance of scale in discussions of governance and decentralisation and briefly outlines the structure and contents of the rest of the paper.

### 1.1 DEFINITION OF KEY TERMS

This sub-section explores the definition of several of the key terms which recur in the pages which follow:

**CENTRALISED ENERGY SYSTEMS** generally refer to the centralised generation and distribution of electricity (based on a limited number of large generating facilities which then transmit electricity long distances from the point of production to consumption). It also applies to systems such as the provision of domestic heating via centrally distributed gas and the provision of transportation fuel via its refining and distribution through a limited number of large depots (Hunt and Milne, 2013). It also implies centralized ownership of most parts of the energy system (either via the state or most frequently the corporate sector) – i.e. concentrated ownership of resource extraction and supply, electricity generation and distribution, power plant equipment, domestic appliances etc.

**DECENTRALISATION**, the major theme of the READ project, refers to the reorganisation of a single concentrated unit (e.g. a government, an industry) into smaller more autonomous units. It is, however, used in quite different ways across a range of inter-connected but largely separate research literatures and policy contexts. In political terms, it involves the devolution of decision-making powers to institutions and actors at lower levels of government in a political-administrative and territorial hierarchy (Agrawal and Ribot, 2000: 4). It can also be defined in reference to its opposite, i.e. the very term de-centralisation implies opposition to an existing form of centralisation. Interestingly, decentralisation is, as Slater (1989) reminds us, promoted by those espousing very different ideological positions. For example, it is advocated by both neoliberal free-marketeers and some sectors of the democratic left, albeit for different purposes. The former largely for reasons of supposed efficiency (although frequently *de facto* involving replacing one form of centralised control, government, with another, corporate) and the latter in order to promote more profound processes of democratisation and popular participation within political decision-making.

For the purposes of this paper, 3 points need to be remembered:

- Decentralisation commonly refers to the reorganisation of activity from a national to a subnational level, but we must always remember it actually refers to the reorganisation of activity from any higher-level authority to lower-level authorities – for example, decentralisation refers equally to the reorganisation of activity from an international to a national level, or from a regional to a subregional/local level.

- Reorganisation through decentralisation results in the formation of a multi-level system (e.g. national, regional, sub-regional, local) of governance with complex forms of checks and balances between those levels, as opposed to the replacement of the higher-level authority (Piattoni, 2009).
- Decentralisation is commonly associated with three other terms (sometimes presented as competing levels or degrees of decentralisation). **Delegation** - the transfer of responsibility and duties from a higher-level authority to lower-level structures, with the ultimate responsibility still resting on the higher-level authority (e.g. direct placement of appointees etc.). **Deconcentration** - the dispersal of an activity from a single higher-level authority to lower-level structures, reducing the power and control because each site is responsible for part of the activity (often relates to the ceding of specific limited powers to parastatals and semi-autonomous organizations). **Devolution** – more profound transfer of power from a higher-level authority to (semi-)autonomous lower-level structures, with varying degrees of direction from, and accountability to, the higher-level authority (Evans and Manning, 2004). Rondinelli (1981) adds deregulation to this list – the transfer of previously public functions to private organizations and/or companies.

Decentralisation can also be differentiated in relation to: its **form of implementation** (eg Rondinelli, 1981) – decentralisation can be *functional* (based on reassigning specific activities) or *areal* (based on more general handing over of power to sub-national institutions); its primary **purpose** -ranging from political (a desire for broader, more meaningful processes of local democratization) to developmental (seen as part of economic development policy – promoting regional economic development although also tied to welfare concerns) or its **key components** – *political* (transformations in local electoral practice or the powers afforded to particular tiers of elected officials) *fiscal* (transfer of resources or rights to generate resources) and *administrative* (hierarchical transfer of decision-making powers etc. between different levels of government) (Manor, 1999). For further detailed discussion of the various approaches towards decentralisation refer to Working Paper 2 ‘Decentralisation in Sub-Saharan Africa: Prevalence, Scope and Challenges’ (Batchelor et al., 2014).

**DECENTRALISED ENERGY SYSTEMS** is a term that is used in dualistic opposition to the centralised energy systems described above. It is most often used in relation to the growth of new forms of electricity generation which are based on a large number of smaller generating facilities, where electricity travels a much shorter distance from point of production to point of consumption (frequently referred to as distributed generation). It can also, however, be applied to the local provision of heat (via decentralized technologies such as solar thermal, heat pumps etc.) or combined heat and power (CHP) initiatives.

**ENERGY**, according to Smil (2006:8-9) “is not a single, easily definable entity, but rather an abstract collective concept, adopted by nineteenth century physicists to cover a variety of natural and anthropogenic phenomena,” although it has frequently been reduced to the rather bland notion of ‘the capacity to do work.’ Interestingly, Varis (2013) refers to the complexity caused within international legal frameworks due to the lack of a clear universal definition for energy. Whatever its precise definition, what is clear is that the emergence of new techniques and technologies that drastically altered the relationship between society and energy generation lay at the heart of many of the economic, social and environmental changes associated with modernist transformation (Bridge, 2010). It is not too much of an exaggeration to suggest as Berman (2015) does, for instance, that “Energy is the economy”; the recent (2014) dramatic global drop in gas and oil prices and the consequent ripple effects throughout a highly-connected global economy of ‘stuff’ is just one more proof of this.

Irrespective of a refusal to be pinned down, energy continues to be presented as a highly technical subject revolving around the technologies employed in extraction of resources, the generation and distribution of

electricity and so on, as well as the dynamics of the markets within which they are situated. We think, however, that it is also important to engage with a broader visualization of 'energy' that sees it as:

- a. A social construct determined by people's lived reality, in particular as it relates to the discourse of development theory. As such, energy is best understood not just in terms of access to electricity, cooking fuel or whatever but rather as a means to realise particular social goals. As Lovins (1976:65) puts it, "(p)eople do not want electricity or oil, nor such economic abstractions as 'residential services', but rather comfortable rooms, light, vehicular motion, food, tables, and other real things"; and
- b. A social system which exists under the governance of a global energy production regime(s), with all the discursive and doctrinal complications that involves.

**ENERGY LITERACY** - at its simplest level in relation to political decentralisation, energy literacy can be understood as "the degree to which local authority officials are fluent with the nature and role of decentralised energy and can obtain, process, understand, evaluate and act on energy information to provide sustainable and efficient energy for their communities" (Batchelor and Smith, 2014). The concept of literacy itself is very much a social construct, however, which means that it has to be used very carefully; it is best seen as a multi-scalar concept that needs to be adapted to engage with the socio-cultural and political economy environments of global energy production regimes, rather than applied as some kind of universal standard. Most importantly of all, energy literacy is almost universally applied as an optic through which to examine the promotion of economic growth. Even though the increasing exigencies of global climate change pose a direct threat to mass consumer capitalism as greater numbers of people than ever before are able to access to consumer goods, discussions of energy literacy all too frequently 'invisibilize' discussions of economic growth or neutralize it by vague references to 'sustainable growth'.

**GLOBAL NORTH AND GLOBAL SOUTH** – these terms are deployed in general terms to distinguish between the richer, developed market economies (DMEs) and the poorer, Less Industrialized Countries (LICs). Whilst there is clearly a geographical element to this (and a geopolitical historical one), they are, however, not primarily geographical referents and speak as much to position on a social spectrum of inequality and access as they do to harder factual determinants such as GDP per capita and household income (Chant and McIlwaine, 2009:11). Clearly, as an increasing spectrum of nationally unique development path possibilities has become obvious since World War II, such a dualistic division of the world is over-generalised and not terribly helpful; the terms remain, however, widely used within studies of international development and have important implications for the ways in which different parts of the world are represented.

**GOVERNANCE** is a theme that is used liberally across a wide range of writings in the social sciences. At its simplest, it is used to refer to how governments exercise their authority. Thus, UNDP (1997: 5) define governance as "the exercise of economic, political and administrative authority to manage a country's affairs at all levels, comprising the mechanisms, processes and institutions through which that authority is directed" (UNDP, 1997:5). Such definitions do not, however, grasp the multi-dimensional nature of governance as it is used more broadly in the literature (Campos and Nugent, 1999: 440). Thus, whilst governance is certainly about the rules that structure how authority is exercised, it is also broader than this and relates to the "formation and stewardship of the formal and informal rules that regulate the public realm, the arena in which the state as well as economic and societal actors interact to make decisions" (Hyden et al, 2004: 16). We would add a caveat, which is that in an age of supranational governance through a vast range of conduits from foreign exchange markets to trade regulatory mechanisms such as GATS, NAFTA and the proposed TPP, administered differentially by growing numbers of extra-state supervisory bodies such as the WTO and non-state judicial mechanisms such as ISDS (Investor-State Dispute



Settlement), the continuing capacity for and capability of the nation-state as the locus for governance is a matter of dispute and the subject of a substantial literature outside the remit of this piece.

In the case of the international development arena, governance issues came to the fore through the series of state reforms enacted under the tutelage of the international financial institutions and the donor community during the 1990's under the banner of 'good governance.' The focus on governance at this time reflected the renewed recognition of the importance of the state to 'successful' developmental outcomes following the at least partial rejection of the excessive focus upon deregulation, liberalization and privatization which had occurred during the 1980s. Summarizing the voluminous literature that has emerged since then, there appear to be six broadly recognised principles of a 'good' governance regime – these principles are openness, participation, accountability, effectiveness, coherency and 'civic peace' (Batterbury and Fernando, 2006:1853); Doornbos, 2003; Benz & Papadopoulos, 2012; Fukuyama, 2013).

Few would question the intention of making institutions work more efficiently, improving their accountability etc. but there is concern over the overly technical (technocratic) way in which such goals have frequently been expressed; as if good governance was simply a question of adopting the right institutional forms, adopting the right checks and balances or embarking upon the appropriate judicial reforms. A particular case in point here has been the upsurge of global interest in corruption since 1990 and the treatment of anti-corruption as a technical exercise, with dubious effect, as the authors have pointed out elsewhere (Brown and Cloke, 2010; 2011). In reality, however, governance is a highly-charged issue, encompassing: issues of sovereignty and scale (reflecting debates over the role of external coercion in state reform processes across the Global South, as well as the relations between different levels of government); the politics of private/public relationships; questions of transparency and corruption in governance arrangements and the dynamics of the promotion of the 'networks, partnerships and deliberative forums' (Hirst, 2000) of civil society.

All of these issues take on particular relevance when we move to the specific context of energy governance where the recent literature has focused on the challenges that the highly complex nature of energy infrastructures pose for effective governance. Goldthau (2014), for example, stresses three particular features of the energy system: (i) its embeddedness within, and as he stresses, its coevolution with, the dominant "socioeconomic institutions, regulatory agencies, incumbent market actors and social norms"; (ii) the multiple scales of sustainable infrastructure solutions and (iii) the existence of "elements of common pool resource problems." For him, and others such as Benjamin Sovacool, to effectively address these challenges requires a polycentric approach to energy governance; which he characterises as implying "that the sharing of power between numerous scales of governance must be seamlessly mangled, resulting in a "polycentricity" or "nestedness" that involves multiple authorities and overlapping jurisdictions" (Sovacool, 2011:3833).

## 1.2 CONTEXTUAL ISSUES

The READ project's major focus lies on an issue which, in some senses, is highly localised – the transfer of budgets and responsibilities to the local level and the capacity of local governments to meet the energy-related needs of the communities which they have responsibility for. Nevertheless, the activities of local governments in relation to energy issues do not take place within a political and economic vacuum but rather, as explained in our discussion of energy governance, are situated within a plethora of intriguing and rapidly evolving wider contexts which are frequently outside the control of national, never mind municipal or local, foci of governance. Here we briefly

discuss five of the key contextual themes that help situate this working paper and the READ project more generally within the broader contours of contemporary debates around global energy poverty, global energy governance and decentralisation tendencies. In particular, the increase in energy demand from developing nations, the lack of access of large sections of the global population and the exigencies of anthropogenic climate change have contributed to what is being referred to as a 'new energy era' characterised by three key policy drivers (the 'energy trilemma'): energy security, climate change and energy poverty (Goldthau, 2012; Scott, 2012; Gunningham, 2013). It is to these three drivers that we first turn.

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### 1.2.1 ENERGY POVERTY AND ENERGY MARGINALITY

The first theme refers to questions of energy poverty and marginality. Until relatively recently, the continued lack of access of large sectors of the world's population to modern energy services was not an issue that figured prominently within international fora and it did not receive much attention within the major research journals in either international development or energy research circles. All that has changed over recent years, as the issue has risen up international agendas and been embraced under the UN's Sustainable Energy for All banner and its targets for ending energy poverty by 2030.

It is a commonplace in papers on low carbon transitions and energy access to give figures on the current extent of global energy poverty - approximately 1.4 billion people do not have access to electricity (IEA et al. 2010), and about 3 billion people rely on solid fuels for cooking (Bazilian et al, 2010; UNDP & WHO; 2009). According to the IEA, USD 700 billion is estimated to be required for universal electricity access by 2030 - provided that appropriate policies are in place (IEA 2009; IEA, UNDP & UNIDO, 2010). In the meantime, it is estimated that energy demand in developing nations is likely to increase by 65% between 2010 and 2040.

But what exactly do we mean by energy poverty? Official, practitioner and academic literatures are filled with attempts to construct workable definitions for the concept. These attempts come substantially from technocratic and economic viewpoints and there are two main approaches: those based on expenditure and those based on the actual physical delivery of modern energy services. The dichotomy in approaches results in a diverse range of attempts at definition. According to Barnes et al (2010:2), "(e)nergy poverty is the point at which people are using the bare minimum energy needed to sustain a healthy life, beyond this point, energy contributes to increased welfare and higher levels of economic wellbeing;" whereas Reddy et al suggest that energy poverty is "related to the absence of choice in accessing adequate, affordable, high quality, safe and environmentally benign services to support human and economic development" (Reddy et al, 2000:44). The IEA takes an engineering approach in the World Energy Outlook (IEA, 2010), which identifies a lack of access to electricity and dependence on the traditional use of solid fuels for cooking as two key indicators of energy poverty, whilst Sovacool et al (2012) add poor access to mechanical power and mobility to this definition.

Definitions of energy poverty that examine access to increased energy usage as though the barriers were largely technological and investment-based, however, ignore the non-technical socio-political, gendered and cultural topography created by the lived reality in which the majority of the poorest in the global south carry on their daily lives (see Clancy et al, 2003, Clancy et al, 2007). Energy poverty therefore relates not just to limitations on the quantities of energy used and required by households but ease of access, quality, availability and appropriateness of energy and enculturated understandings and uses of existing energy sources. In order to understand this in discrete socio-cultural settings, some understanding of 'energy marginality' is also necessary -we define this as the

processes of exclusion relating to culture, socio-economic environment and the politics of energy generation, distribution and use processes. Clearly local governance (or lack of it) has a strong influence on these issues. These aspects are just as important in terms of energy poverty as the basic cost of appropriate/ sustainable/ alternative sources and, more importantly, have a direct effect on both future cost and availability of such sources.

If the conflicting goals of securing energy supplies whilst simultaneously promoting environmental protection and providing universal energy access (World Energy Council, 2011) of the energy trilemma are to be met, it will require a far greater understanding of these socio-cultural components than has been forthcoming so far. It will also, of course, necessitate the transformation of global energy systems and the mobilization of resources on a vast, unheard-of scale, one aspect of which is of course the SE4ALL initiative. The trilemma, after all, will be played out in different ways across the states that make up the global political economy and there will be winners and losers as these profound processes of change play themselves out, these latter undoubtedly located overwhelmingly in the states of the Global South unless substantial efforts are made to redress the balance of power within global energy production systems. The ebbs and flows of that balance of power are, we would argue, likely to be substantially guided by the structures of governance within social energy systems, across multiple and interconnected scales from the international to the local.

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### 1.2.2 ENERGY SECURITY

The second of the trilemma themes is that of energy security. This concept emerged onto the international stage during the 1970s (Bradshaw, 2009) as a direct result of the OPEC oil crises and the subsequent oil price spikes of 1973-74. Its initial conceptualization reflected the concerns of Northern countries about these transformations (shared by many oil-importing Southern states) and was manifested in the dominance of aspects such as the threat to oil supplies from the Middle East, disruptions in international gas and LNG trading and the need to safeguard domestic electricity supplies. Since the 1970s however the theme has evolved from largely covering aspects of national security, to also encompass questions of human security at the household level and international peace and security; it is this multi-scalar aspect that is relevant for the purposes of this paper, covering as it does a spectrum of issues ranging from the localized consequences of energy insecurity to the globalized consequences of fossil resource use and their impact in anthropogenic global climate change (Sovacool, 2011b).

At the same time that energy security as an issue has expanded to cover a widening range of issues, however, what individual commentators understand by the phrase has become less and less clear. As with energy and energy poverty, so with energy security: “Energy security clearly means many different things to different authors and actors, and even at times to the same author or actor” (Ciută, 2010: 127). Nonetheless, the literature on energy security continues to suggest definitions that attempt to encompass both the complexity of the term and its’ multi-scalar nature – according to Sovacool, for instance, energy security means “Equitably providing available, affordable, reliable, efficient, environmentally benign, proactively governed, and socially acceptable energy services to end users” (Sovacool, 2012: 52).

Whilst energy security evolved as one more dimension in a growing multiverse of security discourses, so it gained traction in the field of development studies. Amongst the supranational development actors it became another key policy priority: Southern countries ‘needed’ technology, renewables and oil substitutes for their industrialization processes, whilst Northern countries lent the money through ‘aid’ to finance it. Thus, energy security discourses were for many years influential in promoting the rapid growth of the same centralised energy systems which had evolved in Northern states (with little apparent concern for the ability of that model to deliver

in enhancing energy access or its environmental implications). Nevertheless, there was periodic recognition of the potential role of RETS in enhancing developing country energy security, for example at the 1981 United Nations Nairobi Conference on New and Renewable Sources of Energy, although subsequent oil gluts and falling energy prices meant that such issues did not generally gain a longer-term foothold in the dominant international development agenda of the time (Kozoloff, 1995). Gradually, however, as the question of climate change has risen in importance in the international policy sphere it has acted as a reinforcing mechanism that has bolstered the prominence of RETS within the articulation of energy security discourses within the international development arena (Najam and Cleveland, 2004). It is, therefore, to this third broad contextual theme, the global commitment to addressing climate change, that we now turn.

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### 1.2.3 TACKLING CLIMATE CHANGE

The rapidly increasing rates and effects of global warming are being demonstrated through a wide variety of marine and climatic phenomena, from ocean salinity, Arctic/Antarctic ice deposition, drought and precipitation through to atmospheric CO<sub>2</sub>. As the 5<sup>th</sup> Assessment Report of the Intergovernmental Panel on Climate Change makes clear:

“Human influence has been detected in warming of the atmosphere and the ocean, in changes in the global water cycle, in reductions in snow and ice, in global mean sea level rise, and in changes in some climate extremes (.....) It is extremely likely that human influence has been the dominant cause of the observed warming since the mid-20th century (IPCC, 2013: 15).”

The principle components in the global socio-economy driving anthropogenic global warming (AGW) are firstly the global energy production regimes that have grown rapidly under globalizing capitalism since the Second World War, and perhaps more importantly the equally rapid development of mass consumer cultures globally that act directly in equating access to an unlimited supply of electricity as the quintessence of modernity. As the IEA has pointed out, however, this has led to a situation where: “Current global trends in energy supply and consumption are patently unsustainable environmentally, economically, socially (IEA, 2008:37).’ At the same time that this realization has begun to percolate into policy considerations, however, the vast and growing populations of (e.g.) China and India have reached stages of average per capita income levels where an increasing percentage of the national population can access consumerism, rapidly increasing the global demand for energy. This increased demand has occurred at the same time that the easier energy access represented in abundant pools of fossil fuels is declining and there is a movement towards ‘extreme’ energy, resources locked in more unyielding environments and requiring significant force to extract them (e.g. fracking, oil sands and deepwater drilling), whose extraction itself leaves a bigger carbon footprint.

At more or less the same time that energy became a central issue in its own right at the Johannesburg World Summit on Sustainable Development (WSSD) in 2002 (Clancy et al, 2007), therefore, the global status quo in terms of rates of consumption, energy sources and existing production and distribution structures were becoming visibly more unsustainable, even from the point-of-view of those nations that most benefited from them. The jarring contradictions this has entailed are occasionally extreme – the poorest nations globally, for instance, still generally aspire towards centralised grid distribution of electricity as somehow representing an epitome of modernity; the same centralised grid systems that lead to over half the energy in gas and 2/3 of the energy in nuclear and coal-fired generation being lost as waste heat (FoE, 2012). Just as the wealthy nations of the Global North are beginning to explore the potential of decentralised energy production and distribution, it is likely that a significant portion of

the commitments being made to rapidly enhance energy access under the SE4All initiative across the Global South will be based on the rapid expansion of centralized grid systems whose weaker infrastructural, economic and governance structures potentially render them even more expensive, resource-wasteful and energy inefficient than in other contexts.

The solutions to such energy challenges (whilst leaving mass consumer culture uncontested) are increasingly being sought within the recent doctrinal construct of the 'green economy,' itself effectively an adjunct of market-based capitalism; in effect, this suggests that the social costs of global climate change are problematic for having been insufficiently 'marketized' and can be curbed once those costs are effectively priced inside a transformed 'green' or sustainable economy. The green economy concept evolved from the OECD and World Bank's championing of the idea of 'green growth' (see for example OECD, 2011) as a way of dynamizing productivity, innovation and market creation (narrowly focused on growth and employment) and the incorporation of 'natural capital' into how we think about and measure the economy. The idea was taken up and broadened by UNEP who argued that widespread adoption of the principles of a green economy would enable a much more rapid and effective transition to greener and more poverty-focused development; this was incorporated into the Rio Plus 20 debates as a central element of 'the future we want', without much clarity being achieved over exactly what the green economy is, other than:

“one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities (...) [i]n its simplest expression, a green economy can be thought of as one which is low carbon, resource efficient and socially inclusive (UNEP, 2010: 5)”.

How this links into energy and in particular the joining of universal energy access with low carbon transitions in developing countries, is in the emphasis on the role of the misallocation of capital in the lack of progress in sustainable development (UNEP, 2011); in the green economy take, markets for energy are imperfect or prone to failure and most capital invested in energy has been poured into fossil fuels because markets are failing to take into account the costs of climate change, or the requisite markets capable of factoring in the social costs of inappropriate energy investment do not exist. It should be emphasized however that the green economy still reduces sustainable development to what are in effect technical challenges that can be overcome by technology, innovation and the right kind of investment; many NGOs are (understandably) wary of this approach and are attempting to forge a broader debate over participation in and definition and implementation of the green economy (we tackle this issue in more depth in Brown et al, 2014).

Concrete evidence of this re-focusing has been visible in the substantial increase in investment in RETs in both developing and developed countries from 2004-onwards; by 2011 there had been a six-fold increase in the global investment total in RETs from 2004, to USD 257 billion (UNEP, 2012: 5). Irrespective, investment in the OECD countries is still far greater than in developing countries and the now-popular concept of 'energy transition' (see Bridge et al, 2013) needs to be treated with some caution even though it has recently been incorporated into the national energy policies of some countries. In particular, it is not clear what 'transition' might mean in countries of the global south (particularly in areas and communities that have never had an electricity supply for example), not to mention how and by what mechanisms of governance it is to be implemented and how ownership is to be negotiated. The large commercial applications of RETs in the Global North as 'bolt-ons' to existing centralised distribution systems, for instance, is already creating resistances on the part of communities where large wind farms are located. Any insistence on a technocratic business-as-usual model in the Global South is highly unlikely to ensure the availability and accessibility of energy services in a carbon-constrained world, which of necessity will require developing new ways – and new geographies – of producing, living, and working with energy.

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#### 1.2.4 ENERGY DECENTRALISATION

As hinted at various points in the preceding sections, a fourth feature of the contemporary context is the way in which the dominant highly centralised models of energy production and supply, derived as they are from the early experiences of European primary industrializers, are gradually being challenged. At the global scale, WADE argued in 2005, on the basis of their observation of an increasing share of decentralised power generation in the world market (an increase from 7% in 2002 to 7.2% in 2004) that “the long discussed and expected transition from a central power to a ‘hybrid’ DE-central mix may possibly be underway, though slowly.” (WADE, 2005). One year later the pace of change seemed to be accelerating, as WADE recorded that:

“There was a huge surge in DE development during 2005, with the DE share in new power generation output at around 25% - up from 13% four years ago.” (WADE, 2006)

The potentially dramatic reorientation of our energy systems was also being increasingly recognised by political and business leaders at the time, not least via the incorporation of RETs into the increasingly influential promotion of green economy transitions as discussed in the previous sub-section. This example from the UK is, for example, illustrative of the tone of public policy discourse in many (Northern) countries during the mid-to-late-2000s:

“Historically, producing energy in Britain has largely been the responsibility of government and big energy companies. This process has been heavily reliant on fossil fuels and too much energy is wasted in heat loss and distributing the power to the end consumer. There is a different way, based not on large centralised providers but on small, local ones. In other countries low carbon energy sources have led a process of decentralisation [...] I want to see a similar revolution happen in Britain.” (David Cameron, quoted in *Power to the People – The Decentralised Energy Revolution*, 2007)

Whilst the decentralizing impulses are uncertain, fragile and frequently reversed, there is at the very least an increasing perception that we stand at the edge of an energy revolution:

“As [the decentralisation of the internet] took over a decade and is ongoing, the process of energy democratization will also take a long time. We will not start to see large impacts on the energy market for some time yet. At present, the democratization of energy is in a phase that is the equivalent of [the internet in] 1996 ... Yet, we are cognizant of the potential of this trend in a way that users and developers of the Internet in 1996 were simply not.” (Pike Research, 2012)

Clearly, this is not just a revolution that is happening in the industrialised world as the expansion of decentralised off-grid energy provision across the Global South referred to above indicates. Substantial questions remain, however, over how far this process of decentralisation can go; the forces that will attempt to stop it and how substantially more decentralised energy systems might be governed in different social, political, economic and cultural settings. The answers to such questions will revolve around issues such as: the extent to which energy access is an issue within a given country, region and locality; whether a nation is an energy resource exporter and whether existing energy supplies are available to localities and communities or locked into export regimes; to what extent global corporations are involved in a given energy sector and what leverage the various scales of governance have with those corporations; what the role of supranational, multi-lateral and bilateral aid actors is and which ones are involved; what is the state of development of the low carbon sector in a given state and what strategies there are in place to promote it, and finally the roles that national, regional and local governments play

within the energy sector, a point that leads us onto the final theme of our contextual discussion – that of political decentralization.

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#### 1.2.5 POLITICAL DECENTRALISATION

At the same time that energy decentralization appears to be slowly gaining momentum, political decentralisation remains a significant trend within the political economy of the contemporary state (Brenner, 2004) across both Global North and South (Rodriguez-Pose and Gill, 2003), and Africa has been no exception to this trend (Public Administration and Development, 2003). Most countries have some kind of formal decentralisation programme involving the transfer of (some) powers to subnational administrative units (Pike et al., 2006). That said one of the most important points to remember is that political decentralisation is geographically uneven – both temporally and spatially.

This is important because it is easy to fall into the trap of thinking that political decentralisation has clear historical parameters. In modern times it is all too easy to relate political decentralisation to the period post-1970s when the collapse of the nationally-configured Fordist-Keynesian model was accompanied by the rescaling of political and economic activity to produce an increasingly multilevel hierarchy running from the global to the local. This was particularly evident in Europe, where the rescaling of political and economic activity to the supranational level helped to accelerate the European political project in the 1980s, and to the subnational level gave rise of the notion of a ‘Europe of the Regions’. The latter was significant because it purported to be the manifestation of a process of political decentralisation to the regional level sweeping across Western Europe from the 1980s onwards (Keating, 1998). Yet this is not the only period in history when decentralisation has been advocated (see Fawcett, 1919 on England; Maddick, 1963 on developing countries).

Moreover, despite the existence of a broad trend towards political decentralisation globally as part of the state reforms promoted from the late 1980s onwards as a second wave of neoliberal reforms, there have been very specific dynamics and trajectories within different parts of the world. Using the example of Europe once more, while it is true to say that there was a broad trend towards political decentralisation from the 1970s onwards, place-specific interests led to political decentralisation being rolled out at different speeds and producing markedly different outcomes across space. In the UK, for example, political decentralisation did not take place until 1997, and even then, it was not spatially even. Scotland, Wales, Northern Ireland and London were all granted additional elected political representation that resulted in constitutional change of different degrees (political decentralisation) whereas England and its regions only saw further administrative decentralisation – a process which had actually been unfolding across the UK throughout the 20<sup>th</sup> century. Since then, as elsewhere, there has been a process of constant evolution as social actors lobby to renegotiate the terms of political decentralisation. The result is different institutional settlements resulting from political decentralisation in countries and between countries. In short, each territory has its own trajectory, albeit within a broader national (for the component territories of the UK), European (for the UK as a whole) and global trend towards greater political decentralisation. What asymmetrical political decentralisation across territories also reminds us of is that political decentralisation must always be considered as an ongoing process (of political contest and negotiation) between different actors and not a one-off event. There is nothing natural about the outcome; it is process which is constantly in flux, always being defended and challenged.

### 1.3 THE IMPORTANCE OF SCALE IN DECENTRALISATION

The core of this paper (and indeed of the READ project more generally) revolves around the bringing together of discussions surrounding two quite distinct and previously seen as quite separate forms of decentralisation – energy decentralisation and institutional or political decentralisation. Both are concerned fundamentally with the changing relationships between different scales of activity and both revolve around enhancing the importance of smaller scale levels of activity over larger. There are obviously clear points of connection between the two processes. Nevertheless, enhancing the powers devolved to local governments will not automatically lead to greater promotion of energy decentralisation. Clearly, what might be the most appropriate scale for energy decentralisation might not be the most appropriate scale for political decentralisation and vice versa. Furthermore, as we have suggested above, both forms of decentralisation are themselves highly complex in form and both involve highly complex questions about the inter-relationships between different scales of operation within individual contexts.

As Maggie Koreth-Baker (2012) states, we know that “decentralised generation means making electricity on a smaller scale than we generally do today. But how small is small?” This is perhaps the key question being debated amongst the advocates of community energy within both Northern and Southern contexts – although clearly it will generate different answers within different country contexts. We return to this debate later in the paper in relation to current decentralised energy interventions in the global south (which range from household scale SHS and solar lanterns, through a whole plethora of mini, micro and nano-grids serving communities of very different sizes) and the implications of this for questions regarding the most appropriate scale(s) for political intervention in energy governance (see also Cloke et al., 2014, on how the various actors within these initiatives conceive of the notion of community that is so central to many of these interventions).

There are no simple answers to these questions. Indeed, the questions themselves will be framed very differently in individual national contexts where different scales of government work in very different ways, have very complex histories and inter-relationships and divergent political and cultural traditions. For example, a “state such as China in which governments exist at five levels (central; provincial; prefectural; county; town or village) has a more vertically decentralised governmental system than one which has only a single tier of government (Singapore), or just a central government and municipalities (e.g., Slovenia)” (Triesman, 2002) but clearly the degree of decentralisation also strongly relates to the levels of autonomy and/or accountability of each of these different tiers (which feeds back into our initial discussions over delegation and devolution, terms which have more to do with the actual location of power to act and undertake change). This relates to what became known as the **POLITICS OF SCALE** debate in the 1990s which revolved around the argument that the present location of any activity is not natural but the outcome of past political struggle and has to be continually reasserted. More recently, MacKinnon (2011: 22-23) has argued in favour of ‘scalar politics’, which is a position that suggests that “it is often not the scale *per se* that is the prime object of contestation between social actors, but specific processes and institutionalised practices that are themselves differentially scaled.” What such perspectives suggest is that whilst there is a very strong tendency in discussions of decentralisation to place emphasis on the dynamics of particular scales of governance (e.g. local authorities, regional governments, national ministries etc.), the most interesting questions are those concerning how individual scales inter-relate with each other and are constituted by each other.

As Bulkely (2005:876) explains in relation to environmental governance more generally,



“Within analyses of environmental governance, concepts of space and scale are usually taken for granted as synonymous with the nested territorial containers within which social and political life takes place. As a consequence, “levels of decision making have been conventionally examined as if they were independent” (Adger et al., 2003 : 1101.....), with the concomitant assumption that decisions are cascaded from international, to national, and then local scales.... (S)uch understandings of the spatial and scalar configurations of environmental governance obscure the manifold ways in which such issues are created, constructed, regulated and contested between, across and among scales, and through hybrid governing arrangements which operate in network terms.”

In the pages that follow we provide a more detailed discussion of the relationship between decentralised energy and political and institutional decentralization. In the next section, our focus is on the growing momentum behind the growth of decentralised energy and some of the key controversies surrounding its advocacy, culminating in a discussion of some of the key barriers mitigating against its further acceleration (including its relationship to questions of governance). This sets the stage for the following section which turns the focus more directly onto political decentralization. It begins by tracing the key arguments surrounding the intentions and outcomes of political and institutional decentralization in general terms before moving on to explore the role of local authorities in promoting decentralised energy generation and the implications of political decentralization for energy governance. Finally, there is a short concluding section where we draw together the major issues identified in the paper and illustrate how we intend to explore them in more depth over the length of the READ project.

## 2 GENERAL DEBATES SURROUNDING DECENTRALISED ENERGY

Michael Wilson (2002) argues that rather than being something new, decentralised energy systems are an 'old concept', one which is becoming popular again. He reminds us that before grid systems were developed in the 19<sup>th</sup> and 20<sup>th</sup> centuries, all electricity generation occurred where the electricity was to be used, and this remained the case in many US rural areas right through until the middle of the 20<sup>th</sup> Century (see Yadoo and Cruickshank, 2010 for an interesting discussion on this). In this section we explore the various arguments being made globally for the decentralisation of energy systems, before moving on to consider some of the controversies that have arisen in the literature and the major barriers that might act to limit any further acceleration in energy decentralisation tendencies. It should be noted that much of this debates centres around questions of electricity production and distribution and this is reflected in the discussion which follows, we do recognise, however, that decentralised energy encompasses a far wider set of issues and elements than those related to electricity alone.

### 2.1 THE DECENTRALISED ENERGY REVOLUTION

As suggested in the preceding section, recent years have seen a growing realization of the limitations of the highly centralised energy systems which continue to characterise our economies across the globe in responding to the wide-ranging energy challenges described in the previous section. This has resulted in a growing range of calls for radical transformations in those dominant energy systems and engagement with more decentralised forms of generating and distributing energy. At the same time, there has been a gradual expansion in the actual presence of decentralised energy initiatives across the energy sector globally. Despite presenting some global figures estimating the growth of decentralised energy by the middle of the last decade in the previous section, in reality it is very difficult to estimate with any level of accuracy the total amount of decentralised energy production which has been developed over recent years, not least because of its decentralised and uncoordinated nature. What is clear, however, is that there has been significant, if highly uneven, growth in decentralised energy initiatives over the past decade or so, with some countries seeing significant increases in for example, small to medium scale RE generation plants, district heating systems, urban CHP initiatives and the spread of household-scale technologies for heating, cooling and electricity generation (the differential growth across Europe, for example, reflects differential levels of legislative support for community/local authority initiatives in individual countries (or indeed active opposition: Roberts et al, 2014). At the same time, there has been a similar growth in the presence of a range of different off-grid initiatives across the countries of the Global South (see Bhattacharyya, 2013) ranging from small-scale domestic PV systems to a range of nano, micro and mini-grid initiatives adopting a range of different technologies (frequently in hybridized combinations).

Given these developments, something of a polarised debate over the relative merits of centralised and decentralised energy systems has emerged across academic and policy discussions. That said, the nature of this debate differs quite markedly within individual national contexts. In Northern countries the debate centres mostly on questions regarding the ability of more decentralised approaches to accelerate low carbon transitions, to exert greater consumer control over energy consumption, to reduce system-wide losses and accelerate the development of new energy generation and other technologies that can make our use of energy cheaper, cleaner and more efficient. In most Southern countries the potential roles of more decentralised approaches in expanding

access, increasing overall supply and making energy systems more reliable are of course much more central to the debate. Despite these differences, it should not be forgotten that many of the central issues that emerge are the same – for example, questions of ownership, responsibility, affordability, security and resilience.

There are a number of key themes that frequently recur within the literature advocating the development of more decentralised energy systems; we subject each of these to a little closer scrutiny in the pages that follow:

**Greater democratisation:** One of the key arguments frequently articulated about the benefits of decentralised energy systems is that they put energy production in the hands of many small producers rather than a few big national/international companies or a centralised state system; suggesting that the democratisation of energy will promote democracy and territorial justice – a “just distribution [of energy] justly achieved” (Harvey, 1973 quoted in Morgan, 2004). The assumption is that there is a dispersal of power because rather than the control over energy generation being concentrated within a few big companies, local people/communities gain direct control over how they generate their own energy and what they then do with it – for example, individual households may generate/consume their own energy, or they may pool their resources to fund a single energy generating scheme for the community (if so, then the key question is how the energy generated is then distributed among the community) or connect into a wider regional scheme. The argument that decentralised energy systems being about greater democratisation is therefore closely linked to notions of greater choice and flexibility.

Of course in reality, undemocratic forms of centralised control may simply be replaced by undemocratic forms of local control (community energy initiatives across the Global South have as frequently been characterised by unequal decision-making processes and operational difficulties as they have by strongly participative management practices). As we will discuss in greater depth in the next section, there is a certain naivety in the literature on decentralised energy that assumes that decentralization automatically means greater democracy, community cohesion and so on. The reality, as has been debated in the broader literature on administrative and political decentralization, is far more complicated than this and there is a great deal of scepticism that devolution / decentralisation necessarily brings about a uniform democratic and economic (development) dividend. Morgan (2006) has called this devolution’s ‘dirty little secret’. This is not to say that decentralisation of energy (governance) cannot lead to a democratic dividend, but that much of the evidence which is used by advocates to promote the decentralisation of power is evidence of association rather than causation.

**Greater efficiency:** As outlined earlier, much of the impetus towards decentralised energy is based on the assumption that a decentralised system will be inherently more efficient and therefore more sustainable and more suited to enabling our societies to meet the challenge of responding to global climate change and other sustainability objectives.

There is significant merit in this argument. For example, one doesn’t have to look far to find evidence from Northern countries that point towards old centralised (electricity) distribution systems producing a lot of waste. In the US, for example, figures suggest that in 2009, 94.6 quads of energy were produced yet only 39.97 quads were used (Lawrence Livermore National Laboratory and US Department of Energy, 2010). In other words, 54.64 quads of energy (what is termed ‘rejected energy’) were lost/wasted within a centralised system (see Figure 1). This supports Dan Arvizu’s (Director of the National Renewable Energy Laboratory and advisor to the White House on energy policy) observation in 2007 when he claimed that 62% of energy consumed in the US is wasted, through “transmission and general inefficiency” (quoted in Kanellos, 2007).

It is worth giving a couple of illustrations of the waste present in centralised energy systems. The first is its extent. 62% sounds high but interestingly even this doesn’t illustrate the full scale of the losses. The full extent of the

problems only become apparent when one considers that the centralised system in the US wastes 650% more energy than is produced by its nuclear power plants, 280% more energy than is generated from coal, 235% more than is produced by natural gas (i.e. fracking), and 150% more than it produces from other petroleum products (Naked Capitalism, 2011). The second comes from the National Research Council illustration shown in Figure 2, which visually represents where energy is 'lost' – and by implication wasted – in centralised energy systems in the journey from the original energy source, through to energy conversion and transmission, before the energy can finally be consumed. This example – the energy required to power a single light-bulb – shows an energy loss of 98%.

The ability of decentralized energy solutions to combat some of the extraordinary waste within the current centralized energy systems is clear. Decentralised electricity production, for example, avoids transmission and distribution costs, it can generate heat which can be used locally to replace centrally provided forms of heating (via, for example, district heating, CHP etc.). Efficiency gains do not, however, necessarily translate automatically into sustainability gains (particularly where these are seen in a broader more socially-oriented context). Kager and Hennings (2009) explore this issue in considerable detail and conclude that whether decentralised energy generation is as or more sustainable than a centrally controlled grid remains "under debate". For example, they argue that whilst strategies that incorporate strong development of CHP (combined heat and power plants) would provide efficiency benefits in terms of fuel consumption and carbon emissions, the energy required to construct the larger number of these much smaller CHPs outweighs the energy required to build a smaller number of large plants. Based on their research into alternative scenarios involving greater or lesser degrees of decentralization in Germany, the authors conclude their analysis by stating that "decentralised power generation cannot be rated as clearly better or worse than a central grid. Much depends on other conditions, such as the operating conditions of the decentralised plants or the economic climate" (Kager and Hennings, 2009). It is also important to point out that there is a tendency to equate decentralised energy with renewable energy but not all decentralised energy is clean and not all clean energy is decentralised (e.g. large industrial scale hydro, wind farms/parks, Desertec).

**Greater access:** Over recent years a very strong argument has emerged suggesting that it is only decentralised electricity provision that can bring supply to areas where there is currently no supply or likelihood of it from larger centralised grids – energy access for all in other words. In larger centralised grid systems, the only way of accessing electricity comes from obtaining a connection to the grid. If the resources are not there to extend the national infrastructure then there is no access to the grid. Moreover, access to the grid is controlled by the power companies and/or central government because it is they who decide when and where to invest in the infrastructure and by implication who is, and is not, connected to the grid.

Why is this important? To put this in context, as explained in the preceding section of the paper, the World Bank (2011) estimates that over 20% of the world's population are still without access to electricity worldwide (World Energy Outlook, 2011: see Figure 3). Almost all of these 1.4 billion live in the Global South – including approximately 550 million in Africa and over 400 million in India. The World Bank estimates that to deliver universal access to electricity by 2030, new annual capital investment of \$35-40 billion is required in addition to the annual investments of \$450 billion required simply to sustain energy services at current levels. There is also an important urban/rural divide. Over 80% of people without access to modern energy live in rural areas i.e. located away from the larger centralised grids. Moreover, interestingly, despite the growth of decentralised energy provision, around two-thirds of the people gaining access to electricity since 2000 have been in urban areas, with the population without electricity access becoming more and more concentrated in rural areas. Expanding

decentralised energy systems is increasingly presented, therefore, as the only viable solution for enabling those people in rural areas to access electricity, although most country strategies for achieving electrification targets appear to continue to rely quite strongly on national grid extension (Hankins, 2013).

**Greater security/resilience:** A further common argument in support of decentralised energy revolves around the scale of risk involved when large numbers of people/industries are all connected into one centralised grid. The argument goes thus: if you have 100 people connected into one grid, a single problem affecting that grid will directly impact 100 people. If the same 100 people were divided between 10 mini-grids, the same single problem affecting one grid will impact 10 people with the remaining 90 people unaffected. In this discourse, as Verclas (2012) argues, decentralised energy is all about security. This is further evidenced by military installations being at the forefront of the development of microgrids in the US, closely followed by universities – the US Department of Defence has committed to obtaining 25% of its' energy requirements from alternative sources by 2025 and the US Army is committed to reaching zer-net energy consumption by 2030 (ACORE, 2014), a substantial reduction given that in 2012 the US Armed forces used as much energy and emitted as much carbon as the nation of Nigeria<sup>3</sup>. The focus then is on securing the supply of energy to key strategic infrastructure and business interests, not households, communities and citizens. It is difficult to disagree with the logic that a single problem with a smaller grid will have a smaller impact on the security of energy supply vis-a-vis a larger system. However, this question of whether decentralised energy is more secure becomes more controversial when considering how the smaller facilities are organised. For example, if smaller facilities are centrally controlled – in a Russian Doll model where a small facility is controlled locally, the local grid is controlled regionally, the regional grid is controlled nationally – then any problem with the controlling facility will impact all the way down the scalar hierarchy, with much the same result (Karger and Hennings, 2009).

A further connected argument advanced in support of decentralised energy relates to the reliability of fuel supplies. In a world of increasing global energy demand, there is a greater reliance on imported fuel. Decentralised energy systems are seen to be more resilient because they are much less reliant on geopolitical stability for their supply. Similarly, whilst decentralised energy systems do not automatically have to be more strongly based on renewable technologies than centralised grids, there is clearly a strong relationship between decentralised energy systems and renewable energy technologies – which suggests a further decline in reliance of energy supply on exogenous factors beyond community/local control. In sum, threats to energy sources come in many forms – natural, military threats, sabotage, geopolitical, supply vulnerability – and there are arguments that smaller, decentralised, renewable, community-level energy systems are either less of a target or, when a threat does strike, the effects are not as widespread. By extension, increased reliance on decentralized renewable systems should also have a substantial contribution to make in the mitigation of conflicts caused globally by struggles over the control and supply of 'centralizing' sources of energy

Finally, those decentralised energy systems involving community-grids have the added advantage that they do not employ the same large labour force as centralised energy systems, and can themselves constitute useful sources of skilled local employment. Labour disagreements in one country can not only impact energy supply within that country, but can also affect supplies and push up energy prices elsewhere in the world because of the global energy market. The argument is that decentralised energy systems, particularly where they are characterized by small-scale communal ownership, are more immune to labour disagreements.

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<sup>3</sup> Energy Today (2013) "U.S. Armed Forces Double Down on Energy Efficiency", September 17, 2013, <http://www.yourenergyblog.com/u-s-armed-forces-double-down-on-energy-efficiency/>, accessed 28/4/15.

**Greater affordability:** This final argument in favor of energy decentralisation focuses on the affordability of energy at the point of production, point of transmission, and point of consumption. At the point of production, advocates of decentralised energy point to the huge set up costs associated with the power stations at the heart of large centralised grids. A nuclear power plant with a single reactor requires an up-front, multi-billion pound investment to build – i.e. before a single MW of energy is produced – and even that does not budget for the ongoing costs of maintaining the site over the 25+ year lifespan of the plant.

At the point of transmission, decentralised energy systems have the advantage over centralised systems of requiring fewer infrastructures to move the energy from the site of production to the site of consumption, thus reducing cost. This saves money in three ways: first, there are far fewer transmission infrastructures to construct; second, the transmission infrastructure that is required does not need anywhere near the same capacity to transmit electricity; and third, the less transmission required the less energy that is lost, wasted.

At the point of consumption, companies are increasingly requiring governments to guarantee the unit price of electricity secured from large centralised systems in order that they gain a guaranteed return on their investment (namely, the up-front cost of building and maintaining the production/transmission of energy). This guaranteed unit price is usually set much higher than the wholesale price today – it constitutes an economic gamble on the price of energy 10, 20, 30 years down the line.<sup>4</sup>

## 2.2 BARRIERS TO THE IMPLEMENTATION OF DECENTRALISED ENERGY

Drawing upon our discussion of the main arguments surrounding the supposed benefits of decentralised energy systems and some of the key debates within the literature in the preceding pages, we now move on to briefly consider some of the arguments

### 2.2.1 BARRIERS TO THE IMPLEMENTATION OF DECENTRALISED ENERGY SYSTEMS

A number of studies identify barriers – real or potential – to the implementation of decentralised energy systems.

In 2006, WADE suggested four:

- Widespread policy/regulatory barriers in every country/region
- Lack of awareness among policymakers/opinion formers over economic effectiveness of decentralised energy
- Scepticism of environmental NGOs about the environmental benefits of decentralised energy
- Failure of industrial end user sector to support decentralised energy.

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<sup>4</sup> One illustration of this is the UK Government's deal with EDF. EDF will foot the £16bn cost of two new reactors at Sizewell B: Hinckley Point and wants the UK government to sign 40-year contracts committing to the plants. In return the UK Government has guaranteed to pay £121 per megawatt hour when the plant opens. The current wholesale price is £60 per megawatt hour, so for customers to avoid paying higher bills the wholesale price of energy will need to rise by 127% in the next ten years (Evans, 2013).

To these we would add a number of additional barriers:

**The political economy of global energy production regimes and the short-term profitability of an entrenched centralised energy production paradigm:** This refers to the continued dominance of the entrenched centralised energy paradigm which means the power over energy systems is held by power companies and/or governments. Rather than ceding power in and through processes of decentralisation, power companies, governments and other key actors have remained active progenitors in shaping the form that decentralised energy systems take. Naturally they have sought (and will continue to seek) to exert their influence over such changes in order that, if there is to be a transition towards more decentralised energy systems, they are decentralised energy systems which enable them to maintain control over managing and regulating the energy sector.

**Technological barriers:** the two main technological barriers to accelerated adoption of decentralised energy that are identified in the literature are issues surrounding energy storage and energy transmission. Renewable energy (from CHP - solar, wind, waste) is an intermittent energy source so the ability to store energy locally is essential if decentralised energy is going to be successful and efficient in the longer-term (Taylor et al, 2013). Alternatively, transmission lines which allow electricity to be fed in and withdrawn from a larger grid are a possible option, as are a variety of hybrid systems that do not depend on renewable energy by itself. Both are available but would need to be rolled out on a larger scale for decentralised energy to be a viable alternative to centralised energy systems (Verclas, 2012).

**Centralising forces:** there is a tendency when thinking about decentralisation to only look at power being reorganised downwards. There are, however, powerful re-, or alter-centralising forces at play. For example, in countries such as Germany (where in 2011 it was decided to phase out nuclear by 2022) the large utilities currently running nuclear energy systems are making strong moves to make renewable energy production more centralised (Verclas, 2012). There is a range of literature (beyond the scope of this paper) discussing the relative weakness and decline in importance of the nation-state (see for instance Maus, 2006; Lenhard, 2010) which analyses the ways in which power globally has been re-located to other actors, actants and supranational organizations, ranging from supranational institutions such as the World Trade Organization to powerful financial services actors such as the largest investment banks, private equity firms and hedge funds

**Responsibility avoidance:** in any decentralised model there is the potential for one unit to think it is the responsibility of another unit to deliver on a particular objective unless there are clear guidelines on who is responsible for what. The potential is that 'work' falls in the gaps, causes delays, and ultimately inhibits delivery within a decentralised system.

**Not always being able to sell surplus energy back:** the ability to sell surplus energy from a community grid is important for two reasons – first, it can generate funds which can be used to support non-energy related services; second, it avoids the financial/practical challenge of how to store surplus energy. The barriers are that the option to sell surplus energy may not be permitted, or when it is permitted, surplus energy is sold at the lowest wholesale price as opposed to commercial tariffs – both are political decisions.

**Lack of motivation:** decentralised energy will always be one of a number of priorities facing individuals, communities or authorities so the question is how motivated are such entities to make the decentralisation of energy a priority among many competing pressures.

**Lack of leadership:** if there is a political battle between the advocacy of decentralised energy systems that involve ‘decentralisation within’ (more of the same) or ‘decentralisation beyond’ (something entirely new) do those leading arguments in favour of the latter have the evidence, knowledge, and political skills necessary to influence policymakers/opinion makers.

**Lack of resource, capacity, and expertise:** do individuals, communities, and local authorities have the resource, capacity, and expertise to implement decentralised energy systems?

**Partnership fatigue:** there is evidence from Northern countries that the need to establish partnerships on a range of different public policy issues means there is partnership fatigue. This can be the result of the range of public policy issues, but also because the same actors are required to participate in a multitude of different partnerships. For example, an energy partnership will need local representatives from housing, forestry, water etc. but then a housing partnership will need a representative from energy, and so on and so forth.

**Too much focus on electricity:** decentralised energy is never only going to be concerned with questions of electricity; however, most of the literature and most of the available data supporting decentralised energy systems focus almost exclusively on electricity.

## 2.3 DECENTRALISED ENERGY: SOMETHING NEW OR MORE OF THE SAME?

Over the preceding pages we have briefly explored the growing momentum behind the growth of decentralised energy systems across the globe and interrogated the relationship between centralised and decentralised approaches to energy management. In particular we have focused on some of the key claims made by those promoting the benefits of decentralised energy as well as considered some of the key barriers to further growth in its implementation. What is clear from the discussion thus far is that it is impossible to discuss fundamental restructuring of our energy systems without considering how those systems connect into the broader social patterns of our societies and indeed how those systems help to constitute them. Drawing together some of the threads from the discussion so far, Maggie Koreth-Baker (2012) helpfully suggests that there are two potential forms of decentralised energy system. On the one hand, a decentralised energy system could evolve where the result is a decentralised version of the existing system of energy generation. Here decentralisation results from the energy companies (and their central government partners) reorganising their previously centralised system into a more localised model. The result in a political economy sense is more of the same – control remains with the energy companies and state agencies (who largely remain the producers and distributors of energy) and there is little or no hope for more fundamentally changing the relationship between energy production and energy consumption and energy system governance, ownership and cost/benefit distribution.

On the other hand, Koreth-Baker (2012) argues that a decentralised energy system could also involve the creation of an entirely new and separate system. Here decentralization would not be limited to the reorganisation of the activities of energy companies or national agencies, it would be based on other actors mobilising to create their own business models / community energy systems and the economic benefits of energy production could be much more widely dispersed amongst the population. The result would be starkly different patterns of ownership and governance – ranging from small domestic units through to nano-grids, micro-grids, and mini-grids where power from a single or even multiple sources is distributed among clusters of households and/or industries. Control of these decentralised production units and the electricity which they distribute would be dependent upon the type of ownership/regulative structures that are put in place within each individual initiative. What is clear, however, is



that such a model whilst still potentially involving large energy companies as partners, developers of technology and so on provides a plethora of opportunities for the development of innovative new governance arrangements involving local authorities, community organizations, individual householders etc. with the potential to fundamentally recast the relationship between energy production and consumption in ways that are more likely to help meet the range of major global energy challenges outlined in earlier sections of the paper.

Of course, Koreth-Baker's dualistic distinction between a corporate-focused and a community-focused decentralised energy system is, as she herself goes on to explain, too simplistic and what eventually evolves is likely to be something of a hybrid version of these polar opposites and also starkly different in nature in individual national contexts. As she argues, "(t)his future--in which electricity is made close to home, as well as far away, and where people who used to be only consumers have become citizens of the grid--will also change what it means to be an energy utility company." Whatever the case the continued growth of decentralised energy initiatives will certainly provide a growing challenge to the dominance of the centralized model of energy supply. Quite how far the new model differs from the old, what forms of governance it will be characterised by (for example will it be accompanied by institutional decentralization such that local or regional governments will be able to influence their own localised energy markets?), who will control it, who will gain from it and to what degree it will be more successful at addressing the major global energy challenges that we face than the current status quo remains to be seen (for some initial reflections see Catney et al, 2014; Muller, 2012).

In those parts of the Global South where large sectors of the rural population currently have no access to electricity then the situation is somewhat more straight forward since the question is not over how we transform one energy system into another but rather how we design, in the case of electricity at any rate, an energy system where it did not largely previously exist (or at least where large tracts of the country lay beyond the reach of the centralised national electricity distribution system). Of course, this also brings with it its own issues and questions over the most appropriate forms of regulation and ownership, the distribution of costs and benefits and the longer-term sustainability of the solutions being implemented (Gollwitzer, 2014; Minogue, 2012).

This section has shown the deeply political nature of energy decentralisation. Moreover, it has begun to highlight how energy decentralisation and political/decentralisation are actually two sides of the same developmental coin because one cannot be considered without the other. That said, and reiterating our opening argument for undertaking this research project, there has been up to this point a limited awareness of the role of the various scales and dynamics of local government as an integral component of clean energy transitions across lower income and lower middle income economies.<sup>5</sup> In short, work on energy decentralisation and political decentralisation have been seen by research teams (and policy teams) as an 'either/or', that is, you focus on one or the other to a much greater extent with little or no cross-fertilization of ideas between people working in the energy and governance camps. The READ project considers energy decentralisation and political decentralisation to be a 'both/and'; it is about the relationship and interaction between both aspects of decentralisation that is key if the arguments made in support of the decentralised energy revolution can be realised in any significant sense. Remembering that decentralisation is always a process and not simply an event, the other important aspect here is that it is fine at one level to consider *how* energy and political decentralisation interact to enable/prevent certain actions; far more

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<sup>5</sup> There is an argument that this is also the case in middle and higher income economies. Keirstead and Schulz (2010) identified that in 206 academic papers published in the international peer-review journal *Energy Policy* in 2007 only 10% focused on subnational energy policies, with 59% focusing on national and 26% on international policy issues.

important, however, is the capacity to understand *why* these actions are enabled/prevented. The relationship between decentralised energy and decentralised governance is complex, emergent and multi-scalar. The aim of the READ project is to begin do just this – understanding the process of undertaking a decentralised energy revolution, all the time identifying the barriers, obstacles, opportunities to achieving these developments goals in such a way as to enable stakeholders to navigate and progress towards these goals of decentralised energy.

In this context we find the following anecdote important in emphasising the importance of always considering *both* political decentralised *and* energy decentralisation as two sides of the same coin: in the mid-1980s, the Danish Government mandated a large scale and rapid shift to decentralised energy such that 50% of Danish energy comes from decentralised energy, while in the United States, CHP capacity doubled in the 1990s but failed to take off because there was no political will. Presented with this evidence WADE concluded: “The data shows that given sufficient political will it is possible to quickly shift to a more decentralised energy paradigm” (WADE, 2007: 20). The clear inference is that without political will the pursuit of decentralised energy is a non-starter; all the more reason to ensure the mechanisms are in place, and aligned, to enable political *and* energy decentralisation to happen in a mutually reinforcing way.

### 3 IMPLICATIONS OF POLITICAL DECENTRALISATION FOR ENERGY SYSTEMS

The previous section outlined some of the major conceptual debates regarding energy decentralisation. Here we move on to explore how those debates relate to broader themes concerning political decentralisation by considering the importance of local governance in responding to the major challenges identified in the introduction to this paper and how such roles are affected by the continuing impulses towards political decentralisation observed in many parts of the world. As such, our particular interest here lies in exploring what the implications of the continuing trend towards political decentralisation are on the types of roles played by regional and local governments in relation to energy issues. Before moving on to look in detail at the relationship between political decentralisation, local governance and energy issues, however, it is worth spending a little bit of time exploring some of the key dimensions of the broader literature on decentralisation in so far as it relates to its implications for key themes such as economic development, democratic participation, poverty alleviation and equity.

#### 3.1 KEY DEBATES OVER POLITICAL DECENTRALISATION

Decentralisation is a highly complex issue. As hinted at in the brief discussion of its definition presented in the second section of the paper, decentralisation means very different things in different places and individual governments, international agencies and other stakeholders pursue it for very different motivations. Moreover, individual countries have inherited very different political systems, some have long traditions of important forms of regional autonomy (or perhaps have adopted some kind of federal structure), others have traditionally had just one or two tiers of government, whilst others have four or five or more. Thus, in one context political decentralisation could consist of the creation of new tiers of regional government, whilst elsewhere it might be comprised of significant devolution of powers away from regional entities to smaller local authorities. Also, the broader motivations underlying political impulses towards decentralisation (and therefore the intentions of the programmes implemented) can themselves obey a wide range of different logics with consequent impacts upon their dynamics and outcomes.

Clearly, however, whatever its specific dynamics and the underlying motivations of those promoting it within particular locations, what is readily apparent is that political decentralisation remains a significant trend within the political economy of the contemporary state across many parts of the world. As explained above, whilst there continue to be significant processes of political decentralisation in the Global North (although the global financial crisis has seen some recent reversals, CEMR, 2014), it has perhaps been in the Global South where the idea has been pursued most aggressively (sometimes as part of national political dynamics and motivations but frequently under the influence of international institutions such as the World Bank). Most Southern countries have, therefore, experienced some kind of formal decentralisation programme involving the transfer of powers to subnational administrative units over recent decades. Interestingly, this has also led in many cases to an increase in the number of political units at each level of sub-national governance, as well as an enhancement in their powers (Grossman and Lewis, 2013) – over half African countries have, for example, experienced this phenomenon since the mid-1990s.

There are a variety of supposed benefits put forward by the proponents of political and institutional decentralisation (which in general terms correlate quite closely to the arguments in favour of decentralised energy reviewed in the preceding section: for example efficiency in service delivery, challenging entrenched interests, democratization and so on) although the emphasis placed upon each will differ according to the orientation of those promoting reform and the particular dynamics of individual programmes of political decentralisation will reflect the differential pursuit of these benefits. The key argument for one set of supporters is that decentralisation leads to greater efficiency in the delivery of public services (including energy services) because more localised forms of governance, it is argued, make it far more likely that local service delivery will be more attuned to local needs and wants and that empowering local governments will mean that resources are used more wisely and equitably. Thus, for example, Faguet (2004:867) finds that in Bolivia “investment patterns in human capital and social services changed significantly after decentralisation in ways that were strongly and positively related to objective indicators of need.” For others, the key driver is not so much efficiency in the delivery of public services, although this is welcome, but rather the strengthening of democratization and the enhancement of the involvement of local communities in political decision-making and priority-setting (Regulska, 1997). It is also sometimes argued that political decentralisation can promote national unity and overcome ethnic or regional tensions and barriers by meeting some historical demands for regional autonomy (although others have argued that it can actually serve to strengthen regionally-based oppositions and conflicts: Grasa, and Gutiérrez, 2009; Siegle and O’Mahony, 2006).

The institutions promoting decentralisation make very strong arguments as to the record of decentralising initiatives in delivering these benefits, yet in reality the evidence underlying these claims is mixed at best (see Cabral, 2011; Jutting et al, 2004; Scott, 2009; Steiner 2005). A significant literature has grown up raising some serious doubts about the reality of the benefits claimed for decentralising initiatives. Some of the themes raised within this literature include the following.

1. One of the most frequently recurring critiques of decentralisation programmes is that they are invariably insufficiently resourced to deliver on either their efficiency or participatory objectives. Thus new institutions might be created or existing institutions granted more powers but they are starved of the resources necessary to carry out their responsibilities effectively through a lack of transfer of budgetary power and/or restraints on resource generating activities. The legal framework governing decentralisation and other forms of institutional change is therefore an absolutely crucial issue. Rodriguez-Pose and Gill (2003) provide a useful overview of the conflicts of interest between different levels of government revealed in these relationships and how it affects what can be achieved through decentralisation:

“The complexity of the devolution process derives from the interest conflicts of the actors involved and the differences in legitimacy that they share. Most importantly, the interests of subnational and national governments tend to be at odds across the component factors of devolution. Although national governments would prefer, *ceteris paribus*, to devolve responsibilities (authority) to their regional or state governments with as few accompanying resources as possible, the subnational governments would prefer the opposite case. The balance between these extremes will depend upon the relative strength, or, in political terms, legitimacy, of the two tiers of government” (Rodriguez-Pose and Gill, 2003: 334).

2. More broadly, this issue of the relationship between responsibilities and resources actually keys into a wider set of debates about state reform more broadly and in particular the role of decentralisation in

either strengthening or, as is frequently argued is more often the case, dissipating national opposition to the neoliberal rollback of the economic and social role of the state (Featherstone et al., 2012).

3. There has also been a strong critique of the supposed efficiency benefits of decentralisation. For example, Sharma (2005) argues that: “spillovers, common pool problems and problems with soft budget constraints result in efficiency losses;” that decentralisation has been associated with slower levels of economic growth and that fiscal decentralisation can threaten the quality of service delivery, cause economic instability and negatively impact upon the ability of states to respond to external shocks. This can also be linked to claims that rather than reducing corruption (as claimed in much of the literature: Arikian, 2004, Fisman and Gatti, 2000; McGuire, 2010) decentralisation can be associated with rising corruption and greater state capture (Asthana, 2012; Baardon and Mookherjee, 2000).
4. These kinds of arguments can, however, become a kind of self-fulfilling prophecy whereby reactive forces opposed to deepening decentralisation point to the lack of capacity of sub-national institutions to implement policies effectively, which in turn has been caused by the insufficient resourcing of those institutions. This relates to a more general point about the need for decentralisation initiatives to incorporate a significant component of institutional strengthening – there is a strong argument to be made that lack of training and expertise in local and regional governments should promote ameliorative action by central government rather than promote reticence in adequately transferring powers and resources.
5. It has also been argued that there are very few instances where the reality of decentralisation on the ground has lived up to the promise of what has been legislated. Thus, for example, reforms may be foiled by those preserving power and privilege within centralised institutions that feel threatened and hence do not cooperate with the process, which is only ever partially implemented. Similarly, if not properly resourced decentralisation can be used to as a means of garnering local support for national policies, rather than as a mechanism for developing alternative locally-specific policies etc.
6. For decentralisation to have a significant impact on expanding political participation requires a significant level of high-level political support and political will to create a political platform to support the process and encourage public participation in the vision to make it work. There also needs to be sufficient budget devolved to invest in meaningful consultation processes, properly resourced elections and training in effective public consultation particularly in relation to the planning process (Conyers, 1999). A lack of political continuance (for example where incoming administrations fire existing workers and replace them with political appointees) and poor professionalism in the civil service can also mediate against the promotion of any meaningful democratisation.

7. It is also important to realise that not all decentralising impulses have democratic objectives at heart – “As one Colombian general pointed out at the end of the 1970s, to allow an excessive or unnecessary distance to arise between the government and the governed is to encourage disorder; he was referring not just to material distance but to strategic time and the speed that is necessary in the flow and execution of decisions, as well as in the maintenance of order. And if one of the key aspects of order is obedience to the law this obedience can be more effectively inculcated when authority is nearby rather than remote” (Slater, 1989: 511).
  
8. Along similar lines, it can also be argued that decentralisation can just create a new focus for existing exclusionary patterns of local power and there can be no automatic assumptions that it will lead to any real strengthening of local democracy, citizen participation etc. (Smith, 1988:217). As the economist Keith Griffin argued nearly thirty five years ago, “(i)t is conceivable, even likely in many countries, that power at the local level is more concentrated, more elitist and applied more ruthlessly against the poor than at the centre” (Griffin, 1981:225).

Despite the difficulties and partial success stories, Robinson (2007:13) amongst others suggests that decentralisation remains an important development principle (that its potential benefits outweigh the problems identified above) but argues that the challenge is for policymakers to help create the broader conditions which will help decentralisation to succeed by addressing the necessary “political, institutional, financial and technical factors” that will determine the direction of its impacts. Agrawal and Ribot (2000) suggest that the eventual outcomes of decentralisation initiatives will stem from the interactions between three distinct dimensions of those initiatives. These are: (i) the actors involved (“who gets to exercise power and the accountability relations to which they are subject” p.7), (ii) the types of powers that are transferred (they mention the powers to create rules, make decisions, ensure compliance and adjudicate disputes) and (iii) the forms of accountability that are applied to the exercise of those powers. Drawing together the issues, Figure 4 provides a further illustration of the factors that affect the way in which decentralisation initiatives are viewed within the countries where they are implemented and how this affects their legitimacy; whilst Figure 5 summarises a recent analysis of attempts to politically decentralise powers in the UK over the past thirty years which highlights a series of obstacles to decentralisation (Gash et al., 2014), which show a strong correlation to the issues explored in the preceding paragraphs.

### 3.2 POLITICAL DECENTRALISATION AND DECENTRALISED ENERGY

Returning to our central preoccupation with the nature and dynamics of decentralised energy, we can make some observations regarding the controversies over the political, technical and institutional challenges of building support for meaningful decentralised energy transitions and the systems of government through which those transitions are to be enacted and located. At one level there are points of conflict and disagreement over decentralised energy itself – the choice of technology, how it is to be implemented and what can actually be (realistically) achieved (as explored in Section 3); at another level there are also points of conflict over the impacts and implications of political decentralisation for issues such as efficiency in service delivery (including energy services), the governance of that service delivery and how costs and benefits are distributed, access to decision-making processes and democratic participation and accountability as explored in the preceding discussion here in

Section 4. Some of the time these points of conflict revolve around the same questions (for example, what is the most appropriate scale of activity/intervention?), other are quite different, even unique, to one or other component. What we want to highlight is that the answer to these questions cannot be achieved by looking at one or other of decentralised energy and political decentralisation in isolation. One always needs to consider the other and work towards an iterative understanding. For example, attempting to answer the question “What is the most appropriate scale for energy interventions?” necessarily requires political representatives to have an understanding of governance mechanisms *and* the type of decentralised energy model being implemented.

The key is ensuring that the most appropriate scale for political intervention in decentralised energy is aligned with where the resource, knowledge and expertise is, but also where it acts as an enabler (rather than inhibitor) to the take up and roll out of decentralised energy. If this were to be achieved, there are strong arguments that this will allow for more effective targeting of government policies and resources, and enhanced stakeholder understanding of the broader systems of governance within which decentralised energy practice is necessarily located, and the way in which those structures impact upon, facilitate or hinder their endeavours to implement decentralised energy systems.

The international community has long recognised the importance of local governance in addressing key questions regarding the pursuit of sustainable development. Thus, for example, the local dimension was given special acknowledgment during the 1992 Rio Summit as the scale at which most meaningful transformation and adaptation would evolve (Agenda 21):

“Local authorities construct, operate and maintain economic, social and environmental infrastructure, oversee planning processes, establish local environmental policies and regulations, and assist in implementing national and sub-national environmental policies. As the level of governance closest to the people, they play a vital role in educating, mobilizing and responding to the public to promote sustainable development” (UN, 1992).

As energy has risen up the international development and environmental agendas over recent years, it is surprising that the issues of local governance, which have been at the forefront of other discussions over resources management and infrastructure development for many years, do not appear to have been anywhere near as prominent. Particularly within the Global South, discussions of energy issues have generally continued to be conducted at broad national levels or at the scale of the individual consumer. This is, of course, a lacunae that this project is designed to help overcome. In the ensuing sections of the paper we move on to look more specifically at the roles of local authorities (at differing geographical scales according to the nature of the patterns of local governance in individual locations) in addressing energy issues (particularly within the context of the moves towards energy decentralisation discussed in section three) and how those roles are being (or stand to be) affected by further processes of political decentralisation. In what follows, it is important, however, to remember as we pointed out in section two, that a focus on local energy governance should not merely focus on the capacity and attributes of local government itself but also on how local authorities inter-relate with and are co-constituted by other scales of governance. Whilst, given the focus of the READ project, most of our attention is focused upon local energy governance in the Global South, to begin with we briefly explore some aspects of local energy governance within Northern contexts.

### 3.3 LOCAL AUTHORITIES AND DECENTRALISED ENERGY TRANSITIONS IN THE GLOBAL NORTH

Over recent years there has been a growing focus on the local scale as a key component within the transition to a low carbon economy across the industrialised world and it is within this context (the search for appropriate local responses to climate change) that the majority of the existing academic work that has been done on energy and local authorities can be located (Allman et al, 2004; Bulkely and Kern, 2006; Comodi et al, 2012; Kelly and Pollitt, 2011; Neves and Leal, 2010; Peters et al, 2010; Smith, 2007; Sperling et al, 2007). In Europe, the work of *Energy Cities* - the European Association of local authorities in energy transition<sup>6</sup> - is particularly significant in its championing of these issues at the city scale. Their approach has involved recognition of the fact that a city's approach to its energy supply can no longer be interpreted as a sectoral problem or examined through the lens of a single discipline (e.g. engineering, social and political sciences) but requires an integrative approach to be effective and meaningful. This requires the active involvement of energy and political actors at all stages, not operating in their own silos but with an awareness and understanding not only of *what* they are doing and *where* they are doing it, but *who* is doing it, *why* they are doing it, and *how* they are doing it.

What we have also seen in different national contexts over recent years, such as the UK, is governments pinpointing what they see as the significant role to be played by local authorities in such activities as encouraging energy conservation and efficiency and developing enhanced community partnerships in accelerating take-up of decentralised energy generation opportunities (Energy Saving Trust, 2012). While it is straightforward, however, to say that local authorities have been seen as having 'responsibility for' these processes, it is often less clear who has the 'power to' influence these processes between the different actors/communities involved in decentralising energy and the different levels of government. In this way it is important to look at case studies where local authorities have (or have not) been able to show leadership in enacting change for the better.

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#### 3.3.1 THE VAUBAN DISTRICT, FREIBURG, GERMANY

Perhaps the most well known example of local authority leadership in low carbon energy transitions comes from the example of Freiburg in Germany. In 1991 the city of Freiburg bought the Vauban area (previously an army camp) from the Federal Government of Germany and, due to a housing shortage in the city, developed it as a new planned residential area for 5000 inhabitants. Significantly, a citizens' forum extended local forms of citizen participation into the planning process itself (so much more than the legal requirement) and played a major role in the evolution of the development. There was more demand than there was space available so a certain selectivity needed to be exercised in the choice of developments that were approved and preference was given to those which were seen as the most environmentally sustainable, even though they were not necessarily the most economically profitable ventures (though it should be added that the success of the Vauban has, over time, increased the value of developments so while it may not have been an aspiration it has been an outcome). The Vauban district also developed its own heating grid fuelled by a woodchip CHP and 65% of its electricity needs is generated on site through this and solar panels.

Vaubun is an incredibly significant example of what can be achieved by individual local authorities but the wider picture is of course much more complex than this; for every story promoted as an exemplar of good practice, there

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<sup>6</sup> <http://www.energy-cities.eu/>



are many other examples of cities where little progress has been made in making energy use more efficient or encouraging the development of decentralised energy initiatives. Nevertheless, there are some interesting trends emerging. Across Europe a number of municipalities are taking decisions to invest in their own alternative generating facilities within an attempt to secure a certain level of independence from what are sometimes seen as archaic, over-centralised and uncompetitive national energy systems. In Germany, for example, when fixed-term 20 year contracts for running the local grid come to an end local authorities have to invite bids for those who wish to take up the next 20 year contract. Since 2007 over 150 German municipalities have bought back the grid from the private sector and in 2013 the citizens of Hamburg “voted to re-communalise electricity, gas and district heating networks currently in the hands of multinational energy companies..... (whilst) (c)ities such as Frankfurt and Munich, which always kept their energy companies in public hands, are now showing healthy profits while working towards 100% renewable energy targets” (Henderson, 2014). Meanwhile in the UK, the first faltering steps in similar directions can be seen as “(a)longside encouraging a more influential role for local authorities in improving energy efficiency within their local area... some local councils have begun to initiate and regulate decentralized forms of energy distribution and supply, demonstrating workable alternatives to the UK’s traditional energy infrastructure.” (Fudge et al, 2012; Hetherington, 2013). Although, as noted above, activities of this type are still the exception rather than the rule. Findings from a recent Edinburgh University study show that whilst “almost one third (30%) of the UK’s 434 local authorities are actively planning, and investing in, energy productivity and provision. Most of this activity is on a limited scale with only 9% of UK authorities showing evidence of significant numbers of energy project investments” (Hawkey et al, 2014:1)

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### 3.3.2 THE COMPLEXITIES OF LOCAL-NATIONAL GOVERNMENT INTERACTIONS: THE CHAMPIONING OF ENERGY DECENTRALISATION IN THE UK

Clearly there are some examples of individual local authorities in Europe, such as the one in Freiberg described above, that have played a leadership role in promoting decentralised energy and addressing the urgent challenges of reducing the carbon footprint of their communities, tackling fuel poverty and encouraging energy efficiency. In some cases these activities have been facilitated via processes that have granted greater powers to subnational governments or engaged them as significant players within national energy strategies (see Sperling et al 2011 on Denmark for example) and there are some interesting examples of supportive collaborations across different levels of government (see the COOPENERGY project: <http://www.coopenergy.eu/content/about-coopenergy>) but this is not an automatic or simple process and there is also evidence of ways in which the deepening of decentralisation can, if not effectively resourced, monitored and managed, actually work against the likely success of such initiatives. This is perhaps exemplified in relation to the rhetorical championing of energy decentralisation by the now UK Prime Minister, David Cameron referred to in the introduction of this paper. In his 2007 statement from *‘Power to the People – The Decentralised Energy Revolution’* he referred to “a different way, based not on large centralised providers but on small, local ones. In other countries low carbon energy sources have led a process of decentralisation [...] I want to see a similar revolution happen in Britain.” This view was echoed by the UK’s Department for Environment, Food and Rural Affairs under the previous Labour administration when they stated “Local Authorities can make a significant impact on emissions reductions in residences, businesses and transport in their community” (DEFRA, 2008: 3) – a point which chimed with the Committee on Climate Change (2012) who argue their influence over housing, land-use planning, transport and other policy areas, means sub-national authorities have the necessary levers to assist in mitigating CO2 emissions and increasing local climate resilience.

When in Government, the Cameron-led Coalition Government in the UK has clearly emphasised Local Authorities having a major role in energy use reduction policies. However, despite the rhetoric of a decentralised energy revolution being to the fore, the reality has been somewhat different:

- Alongside their promotion of decentralised energy, the Cameron-led Government continued to promote centralised energy systems – most notably, fast-tracking the building of new nuclear power plants.
- At the same time that local authorities have been charged with having a major role in energy reduction policies, programmes of fiscal austerity have seen local authority budgets cut back. So *pace* Rodriguez-Pose and Gill (2003) what we see is the decentralisation of responsibility but not power.
- Energy governance is not a high priority. Under the previous Labour Government, local authorities were provided with 198 National Indicators against which they could choose 35 to have their performance monitored against. There was therefore no obligation to choose NI186 (per capita CO2 emissions in Local Authority Area). Moreover, although there had been a growing interest in the relationship between economic development and environmental sustainability by Local Authorities, there was little interest in pursuing the primary CO2 emissions indicator because of (i) concerns over data availability appropriate to the local economy; (ii) the lack of funding available to deliver beneficial outcomes; (iii) concerns with target setting for energy efficiency policy interventions, specifically the ability to calculate the CO2 emission reductions that are a direct result of Local Authority policy action; (iv) politicians being elected on short terms have little incentive of risking short-term hardship in pursuit of a long term target; and (v) although they might be encouraged to regard themselves as at the forefront of the decentralised energy revolution, there are substantial aspects of energy (governance) that are beyond their control – a situation made worse as local authorities “are encouraged to draw boundaries around what they are and are not responsible for in relation to emissions and transitions” (Webb, 2011: 27) (DCLG, 2009; Morris, 2013; Travers, 2011).
- “Despite the importance of city-level action in the UK, we still know very little about the bigger picture of how cities across the UK are responding to the low carbon and climate change agendas” (Royal Institution of Chartered Surveyors, 2011: 27).
- “English local authorities are now under a duty to cooperate on planning issues ... Nonetheless, it is unclear what form of cooperation this should entail or what potential it offers as a platform for sub-national authorities to collaborate effectively on climate change.” (Pearce and Cooper, 2013: 438)

For some this may appear to paint a bleak picture of what can(not) be achieved through decentralisation, but it is a reality of our complex, emergent and multi-scalar modern world and one which must be confronted by intellectual and practical debates over energy and decentralisation. There is no blank slate so we have to work to find workable solutions for the world in which we operate. This includes researchers and policy elites alike, but with local authorities being thrust to the forefront of energy and decentralisation debates then it is a growing imperative that we understand the world in which they operate.

Continuing with the UK example, recent work aimed at developing a benchmarking tool for local authorities to track domestic gas and electricity consumption has attempted to do this. The aim was to work with local authorities to design a model which could account for variations in domestic gas and electricity consumption, thus allowing the local authority to target areas which had higher than expected consumption while learning from those areas with lower than expected consumption. Given the constraints faced by local authorities, making the model usable led the team to only use publicly available data, and construct the model in such a way that the local authority could annually update the index independently by simply inserting the new figures. This also allows local authorities to track changes over time (i.e. to track if interventions in an area resulted in a change in consumption,

or identify any large changes which might need to be investigated). Working within the constraints of what local authorities are able (or could be reasonably expected) to do, the modelled benchmark accounted for 65% gas and 73% electricity variation across England (Morris, 2013, Morris et al., 2014).

There is a lot more that we could say about the complex relationships between different tiers of government in individual Northern countries in responding to the energy challenges of the twenty first century but there is insufficient space here to do justice to that literature. Hopefully, this brief discussion has highlighted both the importance of local leadership, innovation and alliance building in spear-heading particularly successful examples of local authority action on energy initiatives but also the absolutely crucial task of understanding the complex nested network of relationships, regimes and responsibilities within which they are each situated. We develop these themes in more detail in relation to the energy roles of local authorities within the Global South in the next section.

### 3.4 LOCAL AUTHORITIES, DECENTRALISATION AND ENERGY IN THE GLOBAL SOUTH

Clearly, local authorities across the Global South face a whole host of strongly contrasting challenges in relation to energy issues. At a superficial level we could contrast the debates over energy efficiency, reducing emissions and addressing fuel poverty that characterise discussions about the role of local authorities in Europe with the much starker questions surrounding the lack of access to electricity and dependence upon biomass combustion with its consequent health implications that characterise many energy debates across the Global South. However, what is perhaps more important to point out is that municipalities in different Southern countries face very different legislative circumstances in terms of their legal responsibilities for addressing the needs of local citizens (and the degree to which energy issues feature within those responsibilities), the budgets they are assigned from central government and their ability to generate their own resources. Even within the same country municipalities face sharply divergent circumstances, for example in relation to the incomes of their citizens, their levels of access to basic services (including electricity) and a whole host of other socio-economic indicators, cultural and political differences and resource endowments.

What it is true to say, though, is that those places globally which currently have the poorest and most marginal conditions in relation to the ability of their citizens to access modern energy services are frequently also poorly serviced in relation to a whole host of other infrastructures (transport, water, education, health etc.) and are served by public authorities that frequently lack resources, training, professionalism etc. Whilst many of the most significant challenges are faced by those authorities serving remote rural communities, it is also worth bearing in mind that poor energy access can also be a massively significant challenge for communities in urban, peri-urban or less remote rural areas where poor access to energy services is as frequently a function of poverty and a lack of ability to pay, as it is a question of a lack of physical access. Suffice it to say that even where, for example, there is grid connection, many of the poorest sectors are unwilling or unable to access energy services (many households cannot afford to pay the connection fees charged) and the services that they are offered can be highly irregular, of poor quality and expensive (Lee et al, 2014).

Within these circumstances what then are the likely implications of the transfer of powers and budgets to local authorities under decentralizing impulses? The broader literature on decentralization suggests several ways in which local energy governance across the Global South might be enhanced by continuing trends towards further political decentralization.

- First, it is argued that enhanced political decentralisation should allow local governments greater leeway in tackling the specificity of energy issues within their constituencies (in consort with other local actors), particularly where local citizens indicate that such issues are a priority and where decentralisation processes give local authorities decision-making powers and funding to allow them to meet those needs. In some cases this might involve a direct role in providing energy services to citizens; in others it might be acting as a facilitator for others to meet those needs.
- Second, decentralisation should also encourage local people to play a more active role in articulating local solutions to the challenges which they face including those relating to energy (this assumes that political decentralisation is accompanied by the encouragement and facilitation of local consultation and priority setting which is, of course, not always the case) and it should (via enhanced responsibilities and even more importantly resources) help local authorities forge stronger partnerships with other local and national-level actors in facilitating those solutions.
- Third, if local governments are effectively supported and resourced under decentralisation, then it should enhance the efficiency of local planning based on good local knowledge of needs, actors, funding possibilities etc. Local authorities empowered through decentralisation should be able to provide “an efficient delivery window at the local level and a coordinated approach to identifying, providing and monitoring local energy needs and services” (UNDP, 2009:12). In turn this should improve the targeting of national policies.
- Finally, taken together, it is argued that these factors should also help to enhance the quality of the delivery of energy services.

Nevertheless, as explored in detail in more general terms earlier in this section, the intended and theoretical benefits of political decentralisation are one thing; the actual impacts of decentralisation are something else entirely. What then do we know about the actual relationship between processes of devolution and political decentralization and the effectiveness of local energy governance and to what degree are the changing patterns of multi-sectoral governance being taken into consideration within the analyses and recommendations of key energy sector stakeholders charged, for example, with implementing commitments under the UN’s Energy4All initiative etc.? The answer, unfortunately, appears to be not very much. Despite the fact that continued moves towards political decentralisation are clearly a massively important component of the rapidly changing context within which energy governance across the Global South is occurring, on embarking upon a contextual literature review for this project, we discovered that there had been surprisingly few studies of the relationship between political decentralisation and energy issues in the Global South. One of the very few was the previously mentioned study conducted by the UNDP in 2009 which explored the degree to which energy issues had been specifically addressed within the official legislation from political decentralisation programmes conducted in over sixty countries. The following subsection of this paper draws extensively on the findings of that study, as well as a range of other literature, to present a summary of key themes relating to the role of local authorities in relation to energy issues across the countries of the Global South and the potential implications of further decentralization tendencies upon those roles.

#### (a) Overview: Energy in Decentralization Documentation

We begin by exploring the presence of energy issues within the official formulation of decentralization strategies themselves. The only work that we have found exploring this issue is that done within the 2009 UNDP study. The authors of that study found that even in cases where local authorities have come to play significant roles in

relation to energy issues following processes of decentralisation, the specific addressing of energy issues has not necessarily been integrated into the original rationale and/or design of the decentralisation strategy itself. In fact, the UNDP study found that “for most of the countries reviewed, formal consideration of energy is largely missing in their decentralisation policies” (UNDP, 2009:7), and their study of 64 cases only found 4 official decentralisation documents that explicitly discussed energy as an issue for devolved institutions. It is worth taking note of these four cases briefly here:

- (a) In Madagascar the 2006 decentralisation strategy explicitly laid the ground work to introduce local level management of electricity by 2012-15. This was to involve finance and staffing being transferred to local levels (UNDP, 2009:20) and there is certainly some evidence that local authorities have begun playing quite a substantial role in the developing of energy initiatives (<http://www.gret.org/projet/village-hydroelectric-grids-energy-and-respect-for-the-environment/?lang=en>).
- (b) In South Africa, the 1996 constitution gave local governments “executive authority and rights to ‘administer’ electricity” (UNDP, 2009:9) reflecting the historical role of municipal authorities in electricity generation in the country. Since then, South Africa’s regional and municipal governments have continued to play quite significant roles in electricity distribution, grid extension and other forms of electrification and energy efficiency initiatives (Sustainable Energy Africa, 2007).
- (c) In Nepal the 1999 Local Self-Governance Act gave district-level committees specific responsibilities for formulating, operating and maintaining small-scale hydropower projects (this was facilitated via clear demarcation of local/national areas of responsibility and budgets followed suit: UNDP, 2009:21; UNEP, 2014).
- (d) In Sudan the 2005 constitution established that, “the national and local authorities have ‘concurrent’ powers in electricity generation” (UNDP, 2009:9). More recently, the 2013 South Sudan Infrastructure Action Plan refers to how “the Minister, in consultation with the governments of each of the States of South Sudan, may incorporate separate State Electricity Distribution Companies. Electric power distribution services will be managed by State Electricity Distribution Companies, rural electricity cooperatives, and community-owned and operated distribution entities, as approved and licensed by MoED/Regulating Authority” (ADB, 2013).

We have not at this stage conducted a follow-up to this survey of the presence of energy issues within decentralization legislation, although this would be an interesting activity to undertake. We would point out, however, as the UNDP report authors themselves indicate, even where energy issues do not feature within the legislation itself, this does not mean that decentralization processes do not have strong impacts upon energy governance or that local authorities have not played significant roles in energy initiatives. The UNDP (2009:9) study concludes that where they work effectively “national decentralisation policies *can* (our emphasis) facilitate the participation of local actors in development planning and help scale up energy service delivery for the poor through sub-national utilities, energy cooperatives and private suppliers.” They draw most extensively here on experiences in Bangladesh, Nepal and Mali where they argue that decentralisation has, in different ways within each context, clearly enhanced the engagement of local actors within a variety of stages of energy planning and implementation. Interestingly, only one of these cases is derived from one of the four countries where energy was consciously incorporated into the drafting of decentralization legislation. This is not to argue that the incorporation of energy roles into decentralization legislation is unimportant. Far from it, it is clearly highly significant and the fact that so few decentralization processes have actively addressed energy issues is indicative of the lack of attention paid to local energy governance more generally. We share UNDP’s conclusion that the extremely limited

presence of energy issues within the legislation suggests that “synergies between decentralization policies and energy initiatives are not being fully exploited” (UNDP, 2009:iv).

What this does mean, however, is that in what follows it is quite difficult to effectively separate discussions about the implications of political decentralization from those that relate more generally to the role of local authorities within energy governance (where changing roles may or may not have been directly affected by political legislation involving institutional political changes under formal decentralization programmes). It is worth noting at this juncture that the UNDP study also found this issue difficult to deal with, in that during the detailed discussions around the key themes identified in the study it appears sometimes that the mere presence of a form of sub-national government’s involvement in a particular sector is interpreted as being evidence of decentralisation and yet this is explicitly warned against in the introduction to their study (i.e. they emphasize that decentralisation by its very definition refers to a *change* in political governance and yet the discussion in much of the UNDP document simply refers to the presence of subnational administrative units rather than any changes to the powers exercised by those units – a semantic difference perhaps but nonetheless perhaps an important one).

#### (b) Direct Local Authority Roles in Relation to Energy

What is clear from the UNDP study and our review of more contemporary literature is that in general terms, regional and local governments in most countries of the Global South do not tend to have any direct legislated responsibility for meeting the energy needs of their citizens. Therefore, there are, for example, very few examples of authorities who play a direct role in electricity generation or distribution (although interestingly, as was the case in much of Western Europe, there are some countries where the history of energy supply bears the imprint of previous roles played by local authorities). There are, though, some significant exceptions to this – these are generally the cases of regional governments playing a role in energy distribution (and less frequently generation) and electrification strategies in the case of larger federal states. Examples of such roles include that of state level utilities in India and local governments in South Africa (Trollip et al, 2014).

In the latter case, municipal governments have long played a major role within electricity distribution and this has continued into the post-apartheid era where local authorities either individually or, following the 2003 policy on electricity distribution, collaboratively in the form of regional electricity distributors, continue to play a major role in the sector (UNDP, 2009: 26). It is true to say that there have been strong pressures towards the restructuring of the sector over recent years and many local governments have struggled to maintain effective services but local government roles in electricity distribution look likely to continue to be a feature of the sector in South Africa for the foreseeable future (municipalities continue to provide around 40% of the electricity supplied to end users: Montmasson-Clair and Ryan, 2014). Municipal government has also played a strong role in electrification strategies, particularly following the restructuring of local government in 2000 which led to a much closer integration of electrification initiatives into other rural development programmes whereby “all implementers... are required to situate electrification projects within the applicable Integrated Development Plan developed by local government” (Bekker et al, 2008:3130). Municipalities also administer the government’s Free Basic Electricity scheme, which provides qualifying households 50kWh of free electricity per month.

There are, however, few other examples of nationwide local government-run electricity distribution or generation schemes or electrification programmes, although the UNDP study does highlight a number of other countries that have also legislated to give rights and responsibilities over electricity generation and supply to sub-national governments – e.g. the right to own and operate power plants and distribution systems (or to award concessions to private operators). Examples given include Mozambique, Burkina Faso and Ghana, to which we can add the Sudanese and Madagascan examples noted above. In general, however, the main story that emerges in these cases, is not so much of local governments successfully taking on new roles and responsibilities in relation to energy but rather it is frequently of local governments struggling to even maintain inherited infrastructures rather than actively seek to expand their role (UNDP, 2009:26).

There are, however, some significant examples of electrification schemes where local governments have played really important supportive roles, rather than being directly involved in the generation or distribution of electricity. For example, regional governments played an interesting role in the often-lauded Chilean rural electrification process during the 1990s. This was a private sector-led approach but involved strong state coordination at both national and regional levels. In 1992 just under half of the rural population in Chile had no access to electricity and yet by 1999 this had fallen to 24% (Jadresic, 2000) and is now as low as 1.6% (<http://global-climatescope.org/>). The state provided a one-off subsidy to cover part of the investment costs of new rural electricity ventures, as well as the costs of managing the scheme. The scheme was, however, run by regional governments who allocated funds competitively according to criteria such as the level of investment of the private company bidding, projected social impacts etc. Funds were distributed between regional governments on the basis of electrification progress made the preceding year and the overall number of households still lacking access to electricity.

Another really interesting example comes from the previously-mentioned Nepalese programme of micro-hydro development which has been highlighted as an example of highly successful capacity building by the UNDP. Strong funding of local capacity building here helped to break through problems there had previously been in coordination of energy planning at local levels. Prior to this, direct collaboration between centralised institutions and NGOs and communities meant a lack of coordination to electrification initiatives and “many initiatives were implemented in a scattered unfocused and unsustainable manner” (UNDP, 2009:34). UNDP’s Rural Energy Development Programme set up an institutional system which transferred responsibilities to local authorities and further decentralised the responsibility to manage and deliver energy services to individual communities under the oversight of local authorities, and village/district development committees with well-defined roles (UNDP 2007a, EC 2007). UNDP (2011:53) catalogues a substantial learning process in this initiative as the capacity of organizations to deliver the schemes and integrate local communities was enhanced over time suggesting the importance of long-term capacity building initiatives in the successful outcome of decentralised energy schemes (further evidenced by the fact that a large portion of overall project costs went in capacity building of the local and district committees etc.).

Clearly the examples discussed above are only those relating to national programmes that have involved the evolution of local authority roles in electrification and electricity distribution. There is little evidence of widespread involvement of local authorities as major agents in the delivery of other areas of national energy policy, although there are some exceptions to this (e.g. there is strong local authority involvement in the delivery of some national biogas programmes (e.g. Tumwebaze, 2014 on Rwanda; Deng et al, 2014 on China).

### (c) Other Energy-Decentralisation Linkages

Two further aspects highlighted by the UNDP study are worth highlighting here. Firstly, circumstances where the energy industry itself has become more decentralised and, for example, worked directly through local

communities even where there has not been a concomitant process of political decentralisation or even close rapprochement with the relevant local authorities. Secondly, circumstances where decentralisation (or deconcentration) of other state responsibilities/services has implications for energy issues.

In relation to the former, it is clear that in some countries the energy sector itself has become quite decentralised, even if this hasn't been connected to any broader processes of political decentralisation. This process may take very different forms in different countries, depending for example on the level of privatization of energy production and distribution systems. Energy ministries do not themselves frequently have significant local staffing but they may work through other ministries that are more devolved and there may be a whole host of different types of relationships between national ministries, national utilities, semi-autonomous entities, regional and local governments, private companies, NGOs and energy cooperatives in delivering a wide variety of energy services locally. For example, in Bangladesh central government provides direct support to energy cooperatives that are independent and community managed. These Palli Bidyut Samities cooperatives (UNDP, 2009:36) extend grid electricity within particular zones, constructing, managing and operating the facilities under the supervision of the national Rural Electrification Board. There are 70 of these currently operating (Palit and Chaurey, 2011). For our purposes the interesting thing is the relationship of these entities to elected authorities and the role of those authorities in strengthening and supporting (such as in the Nepalese case discussed above) or indeed alternatively weakening such initiatives. Where connections to formal local governance structures have been weak, the key thing for the success of these kinds of initiatives appears to be involvement of national organizations that can support local committees (eg the National Association of Community Electricity Users in Nepal). – in other instances community managed schemes have failed due to lack of wider support, skills etc.

Turning now to the second set of issues, those relating to the implications of the decentralisation (or deconcentration) of other state responsibilities/services for energy issues, the UNDP study concludes that “(s)ector-specific policies... are more likely” (than decentralization legislation itself) “to consider energy within the context of decentralisation” ( UNDP, 2009:7). What this means is that decentralization legislation may tackle other issues which connect directly to energy issues (relating to, for example, water, forestry or natural resources) and that other sectoral policies/documentation relating to those sectors do frequently make reference to decentralisation contexts. Thus, for example, recent years have seen considerable expansion in the development of community forestry schemes within overall forestry management strategies. This has sometimes involved a significant role being played by local authorities which clearly suggests clear potential for developing a more coordinated and decentralised approach towards fuelwood management. Unfortunately, there appear to be few forestry policies which make this direct connection, although the UNDP report cites the example of Guinea’s initiation of a more decentralised forestry policy which has explicitly involved “regulating and controlling wood charcoal exports and promoting the use of alternative energy sources” (UNDP, 2009:25). Other examples discussed related to local authority involvement in regulating liquid fossil fuels for transport (where Kenya and South Africa are mentioned) and one initiative in Mali where a “multifunctional platform programme, which provides milling, grinding, rice de-husking and other services to rural communities using motorized equipment, has developed a local, regional and national management structure for delivery of services to local communities” (UNDP. 2009:16). It is particularly revealing that this is the only instance of policy development related to mechanical power which they encountered in the study, given the potential role that such programmes could play in improving livelihoods across rural communities. Finally, it is also striking that the UNDP study found scarcely any mention of sector strategies relating to decentralized approaches towards domestic energy needs relating to heating and cooking. This is one area where there certainly seems to have been significant activity in the period since the UNDP study since, for example, local authorities have been active players within the promotion of clean cookstoves in both the



Kenyan and Rwandan contexts which we will be exploring in more detail within this project (Accenture Development Partnerships, 2012).

(d) Individual Municipal action and more indirect roles:

Moving on from discussions of the incorporation of local authorities into national legislation and/or initiatives, we now move on to briefly touch on developments where individual local authorities have shown strong individual leadership in relation to energy issues. Much like the European examples mentioned in the preceding section, which have been featured as exemplars by organizations such as Energy Cities, there have been a number of initiatives undertaken by individual local governments or regional authorities across the Global South which have illustrated what can be achieved by forward-looking administrations whatever their circumstances. Examples include the development of waste to energy schemes by some urban administrations (see Kadir et al, 2013 on Malaysia; SIDA, 2014 on Indonesia) as well as cases where individual rural municipalities have played a role in providing off-grid electricity or other energy services (sometimes in collaboration with other actors such as NGOs and/or SMEs) to communities where there is little possibility of the national grid or private sector actors providing access. In these cases it is often difficult to get a clear sense of the role that local authorities have played within these initiatives – for example whether they have been the instigators of projects and the degree to which they have played an active role in the implementation and management of projects or whether their role has been limited to a more general facilitation or supportive role.

Outside of direct roles in the provision of electricity and other energy-related services, local authorities do often play a range of more indirect roles in relation to energy issues. For example, some local authorities have played important roles in ascertaining the types of needs that communities and local businesses express in relation to energy and how they rank those needs against other necessities and desires. In other words local authorities can carry out social and economic diagnostics to ascertain the levels of energy need and its spatiality amongst their citizens and businesses (e.g. as described by the municipality of Niquinihomo in Nicaragua, Energy Central, 2008: Workshop Report 28th February 2008). Where local authorities take such roles seriously and devote resources to them, they can make a significant contribution to, for example, connecting decision makers working at national levels to the lived realities of local communities. In the Central African Republic, for example, “consultations with local communities led to energy sector reforms nationally and also created a space for building partnerships with local authorities and organizations involved with productive activities at the local level” (UNDP, 2009:30). Clearly, local authorities are not the only bodies that can play these kinds of roles; they may delegate responsibility to other institutions or organizations (or work in tandem with them). Similarly, not all local authorities show any inclination to prioritise this kind of information gathering activity, or at least not in relation to energy issues.

Local authorities can also play important roles in supporting the sustainability and viability of decentralised energy provision interventions of other actors (be they international agencies, private companies or NGOs) by ensuring that such initiatives are connected adequately into local and regional development strategies and local programmes in water, education, health etc. (Schafer et al, 2011) and that projects are aware of each other’s activities. In other words local authorities can play important roles in connecting and coordinating actors more directly involved within the energy sector. “Local planning offers opportunities to coordinate local energy interventions with other sectoral interventions that require energy such as agriculture, water, health and women’s empowerment” (UNDP, 2009:32).

At the same time, some local authorities have played strong informational roles acting as local providers of information and training about energy issues (for example about specific technologies, companies operating in particular fields, funding possibilities etc.). They have also provided or facilitated access to 'complementary services' where, for example, new electricity users provided with grid or off-grid connections are given support in identifying the potential uses of electricity (and its limitations), as well as access to wider services such as business development services, microfinance etc. (Cook, 2011). Finally, local authorities can also play important 'demonstrator roles' in promoting new technologies or the adoption of particular techniques via the use of low carbon technologies in the delivery of services to local citizens – eg the use of new technologies in powering municipal buildings, the adoption of energy conservation measures, the development of active policies regarding the use of municipal waste in energy generation or policies promoting the use of biofuels in official transport etc.

Despite these examples of the potential ways in which local authorities can play important roles in facilitating improved energy access, it is also true to say that more often than not local authorities have not played these kinds of roles. The majority of local authorities (in North and South) have not shown a strong inclination to devote time and resources to addressing energy issues. Most are characterised by low levels of knowledge about energy – be it with regard to technological possibilities, national policy frameworks or national/international funding schemes. Given this reality, there have been a number of examples of schemes designed to raise awareness of energy issues amongst local authorities and/or provide training for civil servants carried out by national local government associations – e.g. that carried out by AMUNIC in Nicaragua a few years ago (Energy Central, 2008) but these have been relatively few and far between (other examples include the REEPASA project in Southern Africa, <http://ec.europa.eu/energy/intelligent/projects/en/projects/leepasa>; the University of Twente's e-mind set initiative on the disconnect between central energy policy and implementation and local development planning and policy and the current CES-MED project in North Africa; <http://www.ces-med.eu/>). Of course, the potential positive roles that local authorities might play in relation to these issues is heavily conditioned by the broader national circumstances within which individual local authorities are situated in terms of the level of powers devolved to local governments, the budgets that they can draw upon and or the powers that they have to raise their own resources but even where national circumstances are not particularly conducive for effective interventions from local governments, local authorities can play a major role in campaigning for positive changes at the national level (for example in relation to securing changes within the regulation of the energy sector).

We began this paper by emphasizing the existence of relatively voluminous (and rapidly growing) literatures on both (a) the advocacy, uptake and implications of political decentralization and (b) the growing global trends towards decentralisation of energy supply and management but also the lack of inter-connections between those literatures. Over the preceding pages we have attempted to lay out the major contours of both literatures and to begin the task of elaborating their main points of connection.

In section three we explored the debates over decentralized energy. This traced the growing recognition of the limitations of our dominant highly centralized energy systems, the calls for radical transformations of those systems and the emergence of the first tentative steps in those directions in industrialised economies (via community energy schemes, small to medium-scale RE plants, district heating systems, urban CHP systems and the spread of household-scale technologies for heating, cooling and electricity generation). At the same time as these first steps are being taken in countries with long-established national grid systems, there has also been recognition that the same kinds of technological and organizational innovations that lie behind the potential for transforming those systems also provide significant potential for the emergence of innovative new, significantly less centralized, energy systems within countries where significant numbers of people currently live outside of the reach of national electricity grids (which are themselves frequently highly inefficient) and frequently without access to other modern energy services.

We also explored some of the claims being made about the potential benefits of enhanced energy decentralization (ranging through questions of efficiency, security, affordability and enhanced access, as well as opportunities to significantly democratize energy system governance, ownership and the distribution of costs and benefits), as well as some of the key barriers to its accelerated uptake. The section closed by highlighting the impossibility of discussing significant restructuring of our energy systems without considering how those systems connect into the broader social patterns of our societies and stressing how many of the controversies surrounding the potential futures envisioned under decentralized energy are actually intimately connected to broader long-running debates over the nature and implications of political decentralization. In Section four, therefore, we explored some of these broader debates and outlined some of the key claims made for the developmental impacts of political decentralization (relating to such issues as the efficiency of service delivery, the strengthening of democracy and the enhancement of participation within decision-making processes etc.), as well as some of the main arguments surrounding its ability to deliver on those promises.

This then led into an extended final section where we looked at the role of local authorities in addressing energy issues (within the context of the debates over energy decentralization explored in section three) and how these roles are being (or stand to be) affected by further processes of political decentralization. This began by briefly exploring the role of local authorities in promoting decentralized energy initiatives and low carbon transitions in the Global North. The leadership role played by some local authorities in accelerating innovation (from taking on direct roles in energy generation and distribution to spear-heading programmes designed to change citizen and business energy-usage behavior) was recognized, as well as the promotion of these kinds of activities by some national governments as part of the empowerment of sub-national authorities or at least their strong engagement as partners within national energy strategies. Although, it was also emphasized that rhetorical commitments by

national governments to local management of developments in decentralised energy have also been frequently contradicted by continued promotion of centralized energy models, lack of resource transfer to sub-national levels and a lack of coordination of different levels of energy governance and that, as a result, in general terms local authority action in this area continues to be highly fragile, fragmented and reversible.

We then moved on to explore the role of local authorities in relation to energy issues in the Global South and the potential implications of the continued advocacy of further processes of political decentralization. This began by exploring UNDP's (2009) assessment of the degree to which responsibility for energy issues had been incorporated into the legislation governing political decentralization initiatives. Their exhaustive survey confirmed that in only 4 out of 64 cases had energy issues been formally mentioned, confirming that there is at present very poor connectivity between national approaches towards decentralization and local governance and national energy policy (mirroring the lack of cross-fertilization of ideas within the academic and grey/policy literatures addressing both topics). This lack of connectivity was borne out by our review of current local government involvement within the energy sector which emphasized the limited involvement of local governments within energy generation, distribution and electrification initiatives and other areas of national energy policy.

Nonetheless, a few important exceptions were highlighted relating to local government involvement in some specific national programmes relating to electrification, fuelwood management, liquid fossil fuel policy and access to mechanical power. These few national programmes and a host of case study examples of actions taken by some individual local authorities help illustrate how national political decentralization processes if they are resourced and designed effectively *could* play highly significant roles in helping to facilitate the evolution of effective, decentralized energy systems across the Global South through their potential role in such areas as: equipping local authorities to play important roles in assessing energy needs and aspirations, acting as information and training hubs, coordinating local energy actors, connecting energy interventions into local and regional development strategies (and local planning relating to water, health and agriculture etc.) and in some cases as direct implementers of energy interventions. The most successful and sustainable local authority interventions within the energy sector appear to have occurred where (i) there has been sufficient local/regional control of budgets, (ii) where there has been a strong coordinated programme of capacity building for local institutions and (iii) where it has occurred as part of a multi-level collaboration with clearly defined roles for each actor. Nevertheless, it is important to emphasize that most local authorities as suggested above are, for a host of different reasons (e.g. lack of political will, enabling structures, training, knowledge, resources, legitimacy etc.), not currently playing these roles.

How, then, might the capacity of local governments across the Global South to play the positive roles in relation to energy issues described above be accentuated and what might the implications of further waves of political decentralization towards those aims be? We conclude with a few final thoughts on these issues.

1. One of the major conclusion of the 2009 UNDP study was that “(e)nhancing energy service delivery at the local level will require better coordination and accountability mechanisms between national and local institutions, and across sectors, as well as empowerment of local authorities to plan and manage energy” (UNDP, 2009:7). We agree with this observation and suggest that there has been little progress towards that end over recent years; although we also concede that there is clearly a need for more coordinated cross-country comparative work tracing the legal responsibilities for energy issues across different levels of government, as well as updating UNDP's work on the degree to which energy issues have been incorporated into decentralization legislation.

2. Of course even where legal responsibility has been established and effective multi-level governance for energy issues created, without adequate resource transfers and training and capacity building elements for local government, they are unlikely to be successful.
3. This paper and the UNDP report which we have drawn upon significantly are both extremely general (we also recognise that much of the literature that we have reviewed is overly focused on electricity to the detriment of other types of energy service). There remains an urgent need for further in-depth studies of how decentralization has affected energy governance within specific national and sectoral contexts. The READ project is making some small steps towards this objective through our focus on the Kenyan and Rwandan contexts (see other READ working papers and workshop reports).
4. Since the UNDP study was published in 2009, there do not appear to have been any further significant research studies of the relationship between energy and decentralisation undertaken. At the same time, however, the interest in decentralised energy within the Global South has exploded with a particular emerging interest in the potential proliferation of mini-grids as a major contributor to the meeting of Energy4All access targets. Despite a clear relationship between the potentially extremely large-scale development of community-scale energy initiatives like mini-grids and the continuing advocacy and indeed adoption of political decentralisation (the recent Kenyan devolution process being a case in point), most of the considerable literature in this field does not specifically look in detail at the question of how the governance of decentralised energy relates to the formal structures of political governance. This is an area that we are exploring in detail to be published as a further READ working paper.
5. Far too often in the literature discussion of both political and energy decentralisation is stripped of its political context. It must be remembered that decentralization is an ongoing process not an end-state and one that is ultimately highly political and contested between different actors and not a one-off event. There is nothing natural about the outcome; it is process which is constantly in flux, always being defended and challenged. The *what* and *where* of political/energy decentralisation is only the starting point (the rhetoric) - questions of agency (who is involved, what factors are at play), process (how is it being pursued/achieved – i.e. through what mechanisms), and specific interests (why are they doing it) are ultimately the key to understanding what is possible/not possible.

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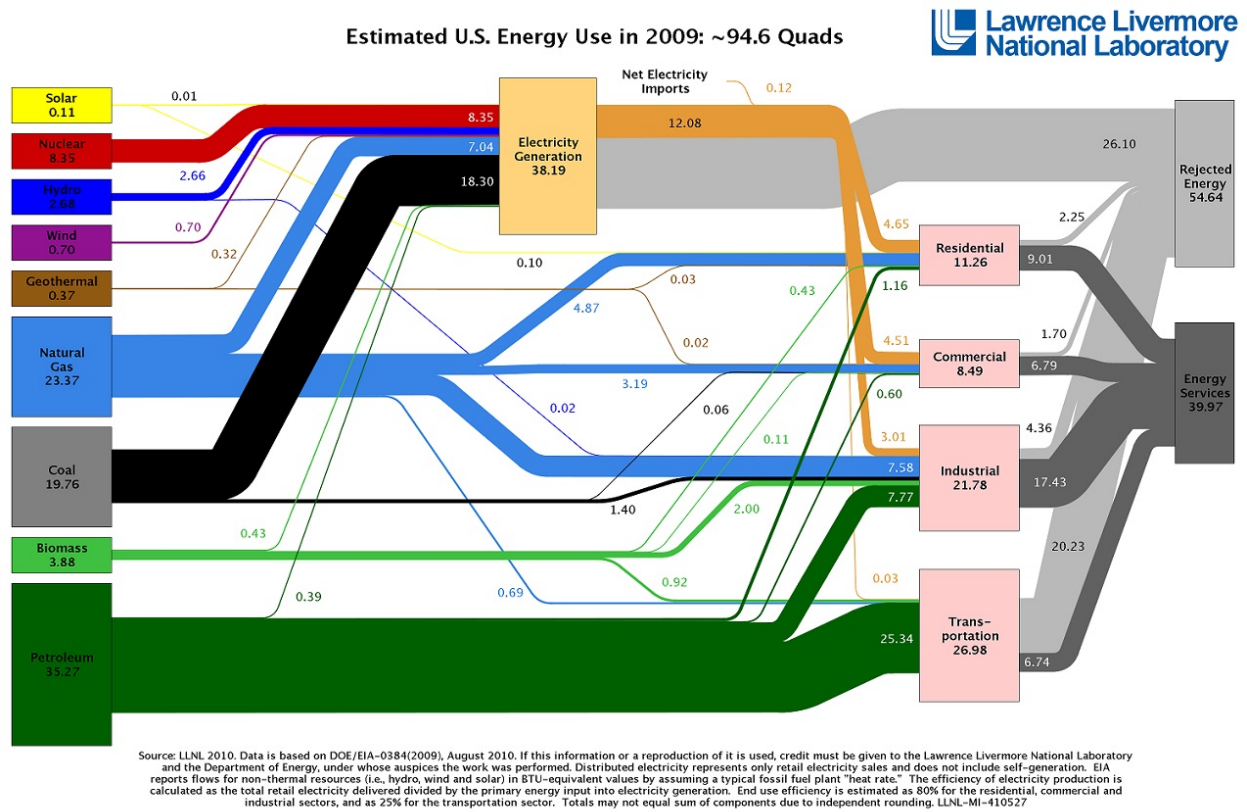
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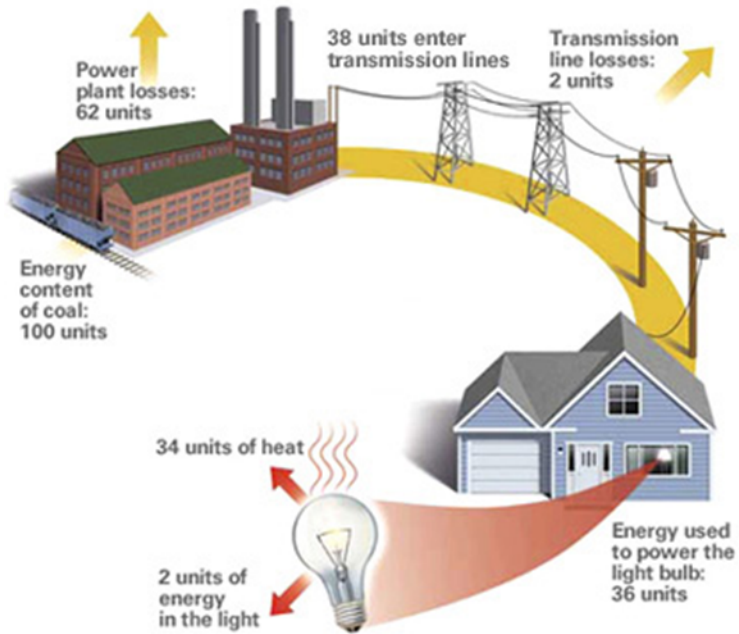
6 FIGURES

FIGURE 1: THE INEFFICIENCY OF THE US CENTRALISED ENERGY SYSTEM



Source: LLNL (2010)

FIGURE 2: AN EXAMPLE OF THE INEFFICIENCY OF CENTRALISED ENERGY SYSTEMS



Source: National Research Council (2008)

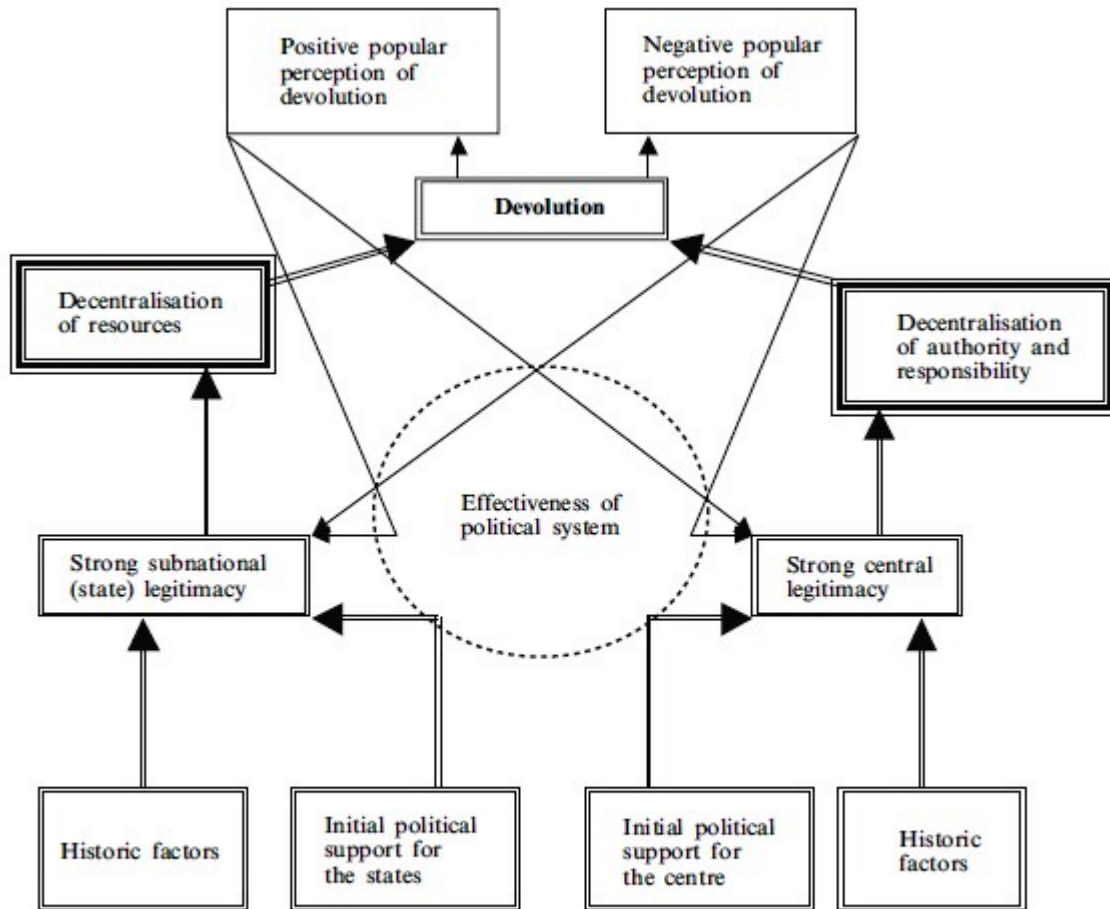


FIGURE 3: PEOPLE WITHOUT ACCESS TO MODERN ENERGY SERVICES BY REGION, 2011

	Without access to electricity		Traditional use of biomass for cooking*	
	Population	Share of population	Population	Share of population
<b>Developing countries</b>	<b>1 257</b>	<b>23%</b>	<b>2 642</b>	<b>49%</b>
<b>Africa</b>	<b>600</b>	<b>57%</b>	<b>696</b>	<b>67%</b>
Sub-Saharan Africa	599	68%	695	79%
Nigeria	84	52%	122	75%
South Africa	8	15%	6	13%
North Africa	1	1%	1	1%
<b>Developing Asia</b>	<b>615</b>	<b>17%</b>	<b>1 869</b>	<b>51%</b>
India**	306	25%	818	66%
Pakistan	55	31%	112	63%
Indonesia	66	27%	103	42%
China	3	0%	446	33%
<b>Latin America</b>	<b>24</b>	<b>5%</b>	<b>68</b>	<b>15%</b>
Brazil	1	1%	12	6%
<b>Middle East</b>	<b>19</b>	<b>9%</b>	<b>9</b>	<b>4%</b>
<b>World***</b>	<b>1 258</b>	<b>18%</b>	<b>2 642</b>	<b>38%</b>

Source: IEA (2011)

FIGURE 4: FACTORS AFFECTING THE LEGITIMACY OF DECENTRALISED POLITICAL SYSTEMS



**Figure 1.** The complexity of devolution. Note: double-lined boxes and arrows indicate initial factors and processes, respectively; single-lined boxes and arrows indicate subsequent factors and processes, respectively.

Source: Rodriguez-Pose and Gill (2003:335)

FIGURE 5: OBSTACLES TO DECENTRALISATION

### **National Government**

1. No trust in subnational government competence, and no trust that accountability for these failures won't 'default' back to central government.
2. Different parts of government are more/less convinced by decentralisation. Departments leading reform often cannot persuade others to give up powers.
3. Constitutional arrangements mean subnational governance can (and often will) be reorganised by central government without consultation or warning.
4. The different actors involved in decentralisation often have very different ideas over what is the right scale/geography to devolve, delegate or deconcentrate to.

### **Local Government**

5. If powers are not decentralised from a higher level authority (central government) to the lower-level authority (e.g. regions) the danger is the powers will be upscaled from local government to 'fill the gap'.
6. Any changes to the political boundaries threaten minority-controlled units.

### **Public**

7. The public is interested in national government reform, but less interested in changes to subnational government and will therefore tend towards the status quo.
8. People will only support a new institution or set of decentralised measures if they see that it makes a direct difference to them. The challenge in this context is energy literacy.
9. People are often sceptical that decentralised systems creates more elites (e.g. more politicians, more institutions) – all of which costs more money to support.
10. Concerns over identity (does this threaten their traditional identity/culture) and control (who is in charge).

Source: Gash et al (2014)