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The Political Economy of Low Carbon Energy in Kenya

Peter Newell, Jon Phillips and Ana Pueyo
with Edith Kirumba, Nicholas Ozor and Kevin Urama

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The Political Economy of Low Carbon Energy in Kenya

Peter Newell,¹ Jon Phillips² and Ana Pueyo³ with Edith Kirumba, Nicolas Ozor and Kevin Urama⁴

Summary

There is growing international focus on how to support more integrated approaches to addressing climate change in ways that capture synergies and minimise the trade-offs between climate change mitigation, adaptation and development. These aims are embodied in the concept of climate compatible development (CCD). But what does this look like in practice in Kenya?

With a National Action Plan on Climate Change, a Vision 2030 Strategy, a new constitution and a revised Energy Policy, Kenya is at a critical cross-roads with respect to defining its energy future for the years to come. The challenge is to enable a just transition to a lower carbon economy that delivers poverty reduction and climate resilience at the same time. But thinking about who sets the terms of transition and for whom, raises key political questions about the role of actors, interests and institutions in the energy sector. In other words, who has the power to change power?

Drawing on 29 interviews with government officials, donors and businesses conducted during 2013, insights gleaned from an interactive workshop with practitioners on the themes of the research, as well as available academic and grey literature, this paper explores the role of politics, actors and institutions in enabling or frustrating the pursuit of climate compatible energy development in Kenya. This is a critical time for Kenya in deciding its energy future and whether and how it will aim to make it 'climate compatible'. Issues of power and political economy will play a key role in determining technological and social outcomes: the winners and losers from different energy pathways and on whose terms and how the trade-offs between competing policy objectives are resolved. In particular political economy analysis helps to understand the potential for energy systems to meet climate, development and adaptation needs simultaneously.

Keywords: energy; climate change; political economy; Kenya.

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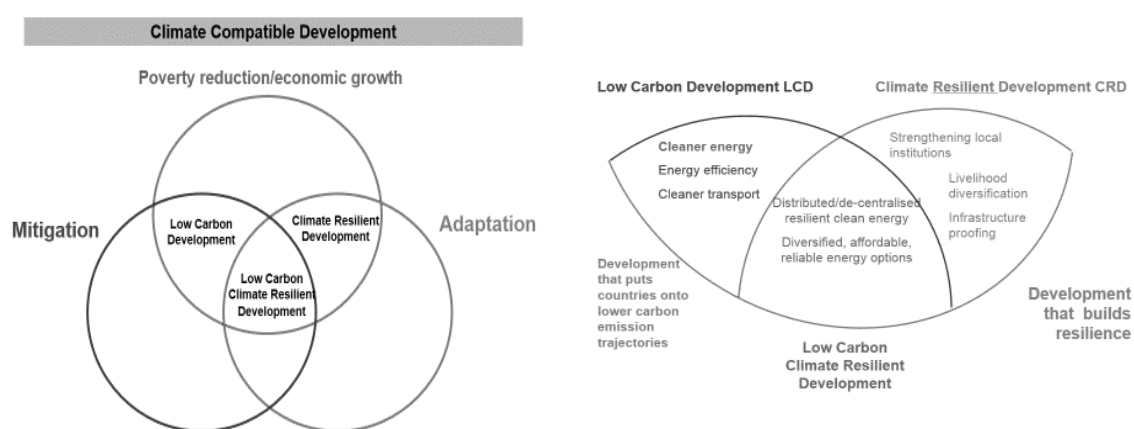
List of Abbreviations

| | |
|---------|---|
| AfD | Agence Française de Développement |
| CCAP | Climate Change Action Plan |
| CCD | Climate Compatible Development |
| CDKN | Climate and Development Knowledge Network |
| CoP | Conference of the Parties |
| DANIDA | Danish International Development Agency |
| DfiD | Department for International Development |
| ERC | Energy Regulatory Commission |
| FIT | Feed-in-Tariff |
| GDC | Geothermal Development Corporation |
| GIZ | Deutsche Gesellschaft für Internationale Zusammenarbeit |
| IFC | International Finance Corporation |
| IPPs | Independent Power Producers |
| JICA | Japan International Cooperation Agency |
| KAM | Kenyan Association of Manufacturers |
| KEBS | Kenyan Bureau of Standards |
| KENGEN | Kenya Electricity Generating Company |
| KEPSA | Kenya Private Sector Alliance |
| KEREA | Kenyan Renewable Energy Association |
| KfW | Kreditanstalt für Wiederaufbau |
| KPLC | Kenya Power and Lighting Company |
| LCOE | Levelised Cost of Electricity |
| LCPDP | Least Cost Power Development Plan |
| MEMR | Ministry of Environment and Mineral Resources |
| MoE | Ministry of Energy |
| NCCAPTF | National Climate Change Action Plan Task Force |
| PPAs | Power Purchase Agreements |
| PV | Photovoltaic |
| REA | Rural Electrification Authority |
| SHS | Solar Home Systems |
| SREP | Scaling-up Renewable Energy Programme |
| UNIDO | United Nations Industrial Development Organization |
| UNDP | United Nations Development Programme |
| UNEP | United Nations Environment Programme |
| UNFCCC | United Nations Framework Convention on Climate Change |
| VAT | Value Added Tax |

1 Introduction

There is growing international focus on how to support more integrated approaches to addressing climate change in ways that capture synergies and minimise the trade-offs between climate change mitigation, adaptation and development. These aims are embodied in the concepts of ‘triple wins’, climate compatible development (CCD), and low carbon climate resilient development (Figure 1.1 provides a diagrammatic illustration of this). CCD is defined as ‘development that minimises the harm caused by climate impacts, while maximising the many human development opportunities presented by a low emissions, more resilient, future’ (Mitchell and Maxwell, 2010:1). But what does this look like in practice in Kenya?

Figure 1.1 The Climate Compatible Development Venn diagrams



Source: Mitchell and Maxwell (2010); Jane Clark and DfID C&E Advisers

With a National Action Plan on Climate Change, a Vision 2030 Strategy, a new constitution and a revised Energy Policy, Kenya is at a critical cross-roads with respect to defining its energy future for the years to come. The challenge is to enable a ‘just transition’ to a lower carbon economy that delivers poverty reduction and climate resilience at the same time. But thinking about who sets the terms of transition and for whom, raises key political questions about the role of actors, interests and institutions in the energy sector. In other words, *who has the power to change power?* The aim of this paper then is to understand the role of politics, actors and institutions in enabling or frustrating the pursuit of climate compatible energy development in Kenya.

The energy sector in Kenya represents a fascinating case of the potential and limits of CCD in practice because hopes for a considerable increase in renewable energy provision meet not only climate change mitigation aims, but also potentially reduce vulnerabilities to climate change and bring tangible benefits to poorer groups. This includes high levels of interest in geothermal energy plus interest in building on the successful off-grid solar market in the country (Byrne, Ockwell, Urama, Ozor, Kirumba, Ely, Becker and Gollwitzer 2014).

CCD in Kenya faces several challenges, however. The poverty dimension of CCD is apparent in the huge energy poverty facing the country. Kenya is among the countries with the lowest rate of access to modern energy services in Africa and the world, with 84 per cent of the population without access to electricity (see table 1.1). In this sense the push for renewable energy by the government is not necessarily driven by environmental concerns,

but by the need to reach the highest numbers of people within the shortest time possible. Increasing electricity generation in particular is among the current government's highest priorities and a core strategy for driving economic growth. The government's election manifesto promised at least 5000MW of additional generation capacity during its first term in office, roughly tripling Kenya's electricity capacity: a target widely seen as unfeasible, but nonetheless indicative of the political capital invested in large scale electricity generation.

Table 1.1 Populations without access to electricity

| | Without access to electricity | | Relying on the traditional use of biomass for cooking | |
|-----------------------------|-------------------------------|---------------------|---|---------------------|
| | Population (million) | Share of population | Population (million) | Share of population |
| <i>Africa</i> | 587 | 58% | 657 | 65% |
| Nigeria | 76 | 49% | 104 | 67% |
| Ethiopia | 69 | 83% | 77 | 93% |
| DR of Congo | 59 | 89% | 62 | 94% |
| Tanzania | 38 | 86% | 41 | 94% |
| Kenya | 33 | 84% | 33 | 83% |
| Other sub-Saharan Africa | 310 | 68% | 335 | 74% |
| North Africa | 2 | 1% | 4 | 3% |
| <i>Developing Asia</i> | 675 | 19% | 1,921 | 54% |
| India | 289 | 25% | 836 | 72% |
| Bangladesh | 96 | 59% | 143 | 88% |
| Indonesia | 82 | 36% | 124 | 54% |
| Pakistan | 64 | 38% | 122 | 72% |
| Myanmar | 44 | 87% | 48 | 95% |
| Rest of developing Asia | 102 | 6% | 648 | 36% |
| <i>Latin America</i> | 31 | 7% | 85 | 19% |
| <i>Middle East</i> | 21 | 11% | 0 | 0% |
| <i>Developing countries</i> | 1,314 | 25% | 2,662 | 51% |
| World | 1,317 | 19% | 2,662 | 39% |

Source: International Energy Agency (IEA) (2011)

The role that different renewable energy sources play in Kenya's massive push for expansion of electricity generation is also shaped by both energy price vulnerability and the climate vulnerability of electricity production. Droughts have long affected hydro capacity and increased the price of energy. In terms of economic vulnerabilities, the volatility of oil prices and currency exchange rates are also important drivers of the push of renewable energy sources. Kenya presents then a relatively rare case, up to now at least, in which national energy security goals (cheap and reliable electricity generation) are seen by both government and donors to be well served in part by renewable energy sources. The degree of alignment between government and donors on appropriate use of climate finance is illustrative of this consensus, both in terms of support for particular energy sources (especially geothermal) and the approach to delivering it (facilitation of private investment).

This apparent win-win for climate and development has to be put in the context of other policy changes, however. This includes reports of Kenya's temporary suspension of new licenses for wind and solar plants as it prioritises the development of cheaper sources to help cut electricity prices, including coal, Liquefied Natural Gas (LNG) and geothermal (Malingha Doya 2013). Such reports were subsequently denied by officials, though many observers

suggest that while the policy is not officially endorsed, it persists in practice. Recent news of the size of oil discoveries have also been met with excitement in the country which may cast doubt on the likelihood of a lower carbon trajectory being achieved (Mugalu 2014). Though oil would not be used for electricity generation, and so there is no direct competition with RE for electricity generation, widespread exploitation of oil would serve to negate any net climate benefits of a lower carbon electricity policy.

Against this background, the aim of this study is to understand the political economy of clean energy in Kenya, as a case study of climate compatible development in practice. Our analysis pays particular attention to the politics of which energy sources are prioritised and why and what this means in terms of who secures access to energy. Much of the material addresses the trade-offs between pro-poor development and the promotion of renewable energies driven by energy security priorities. In this respect, the contrasts between the level and forms of donor and government support for geothermal and solar are illustrative of the areas of Kenya's energy economy deemed appropriate for intervention. We also differentiate between solar technologies and their modes of delivery (off-grid, on-grid), which fit differently with the political economic drivers of both government and donors, serving different interests at different times. Off-grid solutions are perceived to be much more expensive than on-grid for a country like Kenya, where the population are concentrated in a small area of the country and smaller-scale pico-solar⁵ systems allow for fewer productive uses and hence their potential for income generation and 'growth' is small. Deichmann, Meisner, Murray and Wheeler (2010:22), for example, suggests that grid solutions make the most sense for Kenya: 'Our scenarios, based on realistic unit costs, also show that for a majority of households, decentralized power supply is unlikely to be cheaper than grid supplies any time soon'. This goes to the heart of some of the tensions between 'growth', 'inclusiveness' and 'sustainability'.

In his regard most studies to date on renewable energy in Kenya have focussed on their promotion, diffusion and uptake and performance (Bawakyillenuo 2012; Karekezi and Kithyoma 2002; van der Plas and Hankins 1998; Wamukonya 2007; Ondraczek 2013). One useful vein of literature for understanding the extent to which and the ways in which a shift in energy provision in Kenya is taking place is the work on socio-technical transitions. The term provides both a description of a process of transformation from one energy system to another as well as a set of tools and concepts to explain and enable such transitions (Rip and Kemp 1998; Meadowcroft 2005, 2011; Geels and Schot 2007; Scrase and Smith 2009). The term 'socio-technical transitions' refers to 'deep structural changes' in systems such as energy which involve long-term and complex reconfigurations of technology, policy, infrastructure, scientific knowledge, and social and cultural practises to sustainable ends (Geels 2011:24). The multi-level perspective (MLP) (Rip and Kemp 1998; Geels 2002, 2011) in particular analyses system changes from the level of 'landscapes', 'regimes', and 'niches' and is useful here because it attempts to capture the way in which technological and political change in Kenya is embedded within and affected by broader global processes as we see below in relation to the role of donors and international financing for renewable energy for example.

A regime refers to patterns of technologically determined behaviour which is shaped by 'cognitive routines' shared by engineers and influenced by policy makers, scientists, energy users, vested interests and other professional groups (Geels and Schot 2007:400). Though gradually evolving, events and structures within the regime are stable and fairly predictable, and protected by 'lock-in' mechanisms which produce a particular way of organising energy provision (Unruh 2000). In political economy terms this is expressed in the prior

⁵ Pico solar often refers to small PV-systems with a power output of 1 to 10W, mainly used for lighting and thus able to replace sources such as kerosene lamps and candles. Depending on the model, small ICT applications (e.g. mobile phone charger, radio) can also be added. Pico PV systems are powered by a small solar panel and use a battery which can be integrated in the lamp itself.

commitments to grid-based solutions and from sources of energy where state and business actors can negotiate and profit from determining access. A niche, meanwhile, refers to a protected space at the micro-level, where 'radical innovations' and learning such as new technologies, markets, ideas, practices and policies emerge which deviate from the dominant regime (Lehtonen and Kern 2009). These are carried out by 'small networks of dedicated actors, often outsiders' and are unstable in nature (Geels and Schot 2007:400). This is a useful way of thinking about the role of solar technologies in Kenya's energy system as they compete for attention with conventional energy technologies and sources. The 'landscape' meanwhile refers to the external environment or influences at the macro-level. Geels (2011:28) argues that it includes 'demographical trends, political ideologies, societal values and macro-economic patterns' and influences dynamics at the levels of both the regime and the niche. These form the deep structural relationships of a society and change only slowly. We draw on this understanding to show how ideological commitments, reinforced by material power, privilege some ways of organising energy over others in Kenya, as elsewhere in the region, particularly around the desirability of the private provision of energy services and the un-bundling of state energy companies.

In this sense this study makes a contribution to efforts to understand the politics and political economy of (low carbon) energy transitions which deal with the role of actors and interests in competing visions of energy futures and the struggle that this entails between the dominant incumbent regime and niche actors and technologies that compete for attention and support (Baker, Newell and Phillips 2014; Büscher 2009; Meadowcroft 2009, 2011; Kern 2011; Newell and Mulvaney 2013; Newell, Phillips and Mulvaney 2011).

A second set of relevant resources comes from donor studies on 'drivers of change' in particular country contexts (Department for International Development 2004; McLeod 2005). Its aims and applications are summarised in the box below (box 1). In the Kenyan context Ng'ethe, Katumanga and Williams (2004) show, for example, that:

The critical obstacles to bringing about change lie in the realm of political economy and governance. The fundamental problem in Kenya is that the political elite have been able to capture public institutions and resources to serve their private interests (...) In the past, reforms have usually occurred when the elite has come under sustained pressure from interest groups. A key challenge will be to strengthen the voice and organisation of all citizens, the poor in particular, to exert pressure on the elite. The elite have generally opposed pro-poor change where this threatens their interests and sources of patronage.
(Ng'ethe *et al* 2004: 4)

With regard to environmental issues it is further noted that 'The root causes are weak and uncoordinated policy and legal frameworks, centralisation of power, absence of public scrutiny and accountability mechanisms in the environment sector, and a lack of enforcement of environmental laws' (Ng'ethe *et al* 2004: 9). While proffering some useful insights into areas of institutional weakness and barriers to change, this type of analysis is necessarily of a very general nature, as well as reflecting a strongly-held donor-view of governance failings and where they lie, which has less to say about the role of donors themselves in restructuring key sectors such as energy and the affect this has on its availability to the poor.

Box 1: Political Economy Analysis- How to Note

'Political economy analysis is a powerful tool for improving the effectiveness of aid. Bridging the traditional concerns of politics and economics, it focuses on how power and resources are distributed and contested in different contexts, and the implications for development outcomes. It gets beneath the formal structures to reveal the underlying interests, incentives and institutions that enable or frustrate change. Such insights are important if we are to

advance challenging agendas around governance, economic growth and service delivery, which experience has shown do not lend themselves to technical solutions alone. Political economy analysis is not a magic bullet for the resolution of intractable development problems. However, it can support more effective and politically feasible development strategies, as well as inform more realistic expectations of what can be achieved, and the risks involved. It can also contribute to better results by identifying where the main opportunities and barriers for policy reform exist and how donors can use their programming and influencing tools to promote positive change' (Department for International Development 2009:1).

A third strand of academic work deals with power sector reform (Victor and Heller 2007; Cho and Dubash 2005; Dubash and Williams 2011) which has configured the energy regime in Kenya in ways which we touch upon in the paper. This usefully draws attention to the role of multilateral development institutions in restructuring and liberalising the energy sector and in so doing reconfiguring the distribution of power between state and private actors and the balance of power within the state.

Very few studies, however, have sought to develop a political economy analysis of the role of renewable energy in meeting Kenya's energy needs in a low carbon way. The analysis that follows combines analysis of the discourses, institutions and interests that shape energy policy to arrive at such an understanding. This enables us to understand the ways in which forms of power combine to determine the scope for climate compatible development: *discursive power* (who gets to define what is clean, green and affordable; how are the energy needs of the poor represented and for whose benefit?); *institutional power* (where does power lie within and across government and how far is it reinforced or undermined by actors beyond the state, especially donors?) and *material power* (who controls the finance, technology and means of producing 'clean energy'⁶ and what power does that confer upon them to shape Kenya's energy pathway?). Political relationships and struggles over competing objectives shape the tensions of CCD in practice, and derive from the particular context of the energy sector in Kenya. It is to this context that we now turn.

2 Context

Current and planned electricity generation mix

Electricity generation in Kenya increased by 37 per cent between 2005 and 2011 and the number of consumers increased by 139 per cent in the same period of time to reach 1.75 million (Ministry of Energy 2012). It is estimated that installed capacity is required to increase to 19,200 MW by 2030, from only 1,606 MW in 2012, requiring massive investments. In political terms this reinforces pressure coming from donors to develop a market and business-friendly operating environment with the incentives (tax regimes etc.), regulation and infrastructure to woo global energy investors.

The Ministry of Energy's estimates for generation capacity additions in the short to mid-term suggest that capacity will increase by 1,815MW between 2010 and 2015, with 39 per cent of the committed capacity coming from fossil fuels (coal and diesel) and the remainder from renewables (mostly geothermal and wind) (Ministry of Energy, 2011).

⁶ Clean energy tends to refer to non-conventional, non-fossil fuel sources of energy and can include a range of energy sources from nuclear and hydro energy and biofuels to a range of renewable energies such as wind, solar, geothermal, tidal power and biomass. But it can, under some definitions, refer to 'cleaner' fossil fuels such as 'clean coal' or low carbon energy sources such as nuclear power.

806 MW of the new capacity will be provided by the national electricity generation company KenGen, 809MW by Independent Power Providers (IPP) and 200MW by imported hydropower from Ethiopia.

The National Energy Policy indicates that the additional required capacity will be obtained from geothermal (26 per cent), nuclear plants (19 per cent), coal plants (13 per cent), hydro plants (5 per cent), thermal plants (9 per cent), gas turbines (11 per cent), wind (9 per cent) and imports (8 per cent). Therefore, a large share of the planned future capacity (40 per cent) will come from renewable sources, although fossil fuels still play a significant role (33 per cent capacity) as well as nuclear power, still not present in the country. These priorities are set up in the Least Cost Power Development Plan 2011-2030 – LCPDP (Ministry of Energy 2011). The present value of the capacity development plan amounts to \$41.4 billion.

The LCPDP ranks candidate projects to meet generation capacity targets according to the levelised cost of electricity (LCOE), measured as US\$/kWh through the life cycle of the project for a given load factor of the power plant. The load factor chosen is the highest one attainable for each type of candidate, taking into account scheduled and unscheduled outages as well as the availability of water for hydro candidates and wind for wind candidates. Tables 2.1 and 2.2 show the prioritisation of power generation technologies for base and peak load according to their LCOE and with two different discount rate assumptions at 8 per cent and 12 per cent, as presented in the LCPDP.

Table 2.1 LCOE and ranking of base load projects for discount rates of 8 per cent and 12 per cent

| Table 3- LCOE and ranking of base load projects for discount rates of 8% and 12% Technology | LCOE US\$/kWh 8% Discount rate (ranking) | LCOE US\$/kWh 12% Discount rate (ranking) |
|--|--|---|
| Imports from Ethiopian hydro | 6.5 | 6.8 |
| Geothermal | 6.9 (1) | 9.2 (1) |
| Wind | 9.1 (2) | 12.2 (3) |
| Low Grand Falls | 9.3 (3) | 14.1 (4) |
| Nuclear | 10.2 (4) | 14.5 (5) |
| Mutonga | 11.1 (5) | 16.8 (7) |
| Gas Turbine- Natural Gas | 11.3 (6) | 12 (2) |
| Coal | 12.7 (7) | 14.9 (6) |

Source: Authors' own based on data from Kenya Ministry of Energy (2011)

Table 2.2 LCOE and ranking of peak load projects for discount rates of 8% and 12%

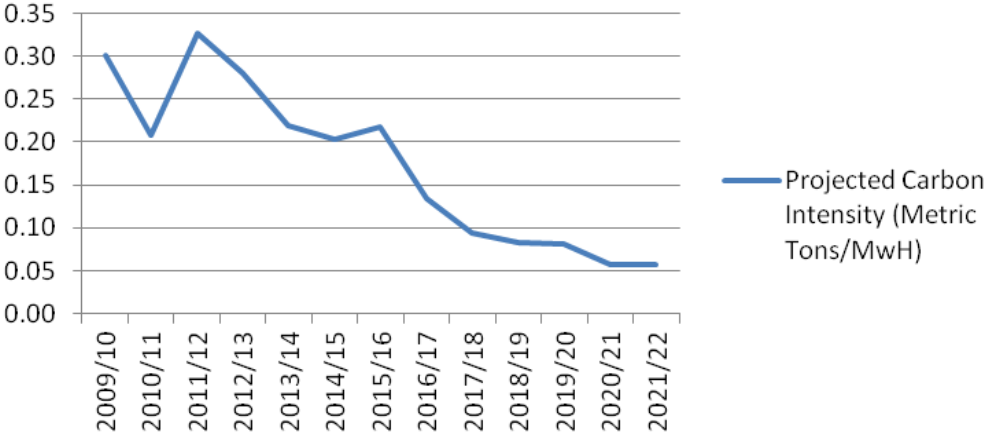
| Technology | LCOE US\$/kWh 8% Discount rate (ranking) | LCOE US\$/kWh 12% Discount rate (ranking) |
|--------------------------|--|---|
| Gas Turbine- Natural gas | 15.1 (1) | 17 (1) |
| Medium Speed Diesel | 21.7 (2) | 24.1 (2) |
| Gas Turbine- kerosene | 30.2 (3) | 32.1 (3) |

Source: Authors' own based on data from Ministry of Energy of the Republic of Kenya (2011)

The National Energy Policy presents geothermal resources as the choice for the future generating capacity in Kenya, with its capacity expected to increase from 198MW in 2010 to

5530 MW in 2030, representing 26 per cent of the peak demand. As a result of Kenya’s heavy reliance on renewables, the projected carbon intensity of the electricity grid is projected to decline sharply in the coming decade, though (as noted above) the discovery of fossil fuel reserves could significantly alter that trajectory.

Figure 2.1 Projected carbon intensity of Kenya’s electricity grid



Source: Authors’ own based on data from World Bank (2012)

Yet the majority of the Kenyan population does not have access to grid electricity. For many Kenyans, like others in sub-Saharan Africa, the main source of energy is biomass, providing 76 per cent of primary energy consumption, with 19 per cent provided by fossil fuels (such as Kerosene for cooking) and 4 per cent provided by electricity for services such as lighting.

The IEA and the Kenyan Government provide different figures of access to electricity: 18 per cent by the former and 29 per cent by the latter. This could be due to the inclusion or not of off-grid and illegal connections, as well as different definitions of access. It is estimated that only 61 per cent of people accessing electricity are getting it officially through the Kenyan Power and Lighting Company. The rest are getting access under non-regulated conditions, including illegal connections⁷ or private off-grid systems (de Gouvello, 2006). The number of grid electricity consumers in 2011 reached 1.8 million in 2011 (Ministry of Energy, 2012). The non-connected urban population is concentrated principally in Nairobi (40 per cent of the total), whereas the non-connected rural population is more evenly distributed among provinces, with the most populated provinces (Rift Valley, Nyanza, Eastern) having the largest number of non-connected users, and the least populated provinces (Coast and North Eastern), having the lowest number of non-connected users. 82 per cent of the Kenyan population resides in 7 per cent of Kenya’s land area, with 56 per cent living at densities of more than 500 people/km². The bulk of the population are in the Western portion of the country, including the city of Nairobi and high density rural regions which surround it. The national grid is concentrated in the South and West of the country, covering only around 25 per cent of the national territory.

The combination of high population density and proximity to the grid in the South West of the country should make it technically and economically possible to rapidly increase the number of grid connections, which should be more cost-effective than off-grid options for most consumers (Parshall, Pillai, Shashank, Sanoh, and Modi 2009). However, the pace of access expansion through connections to the grid has remained very low for decades. The Government has set up a number of electrification targets, with an overall goal of the Rural Electrification Authority to increase connectivity to 100 per cent by 2030 and an interim goal of 50 per cent by 2022 (Ministry of Energy of the Republic of Kenya 2012).

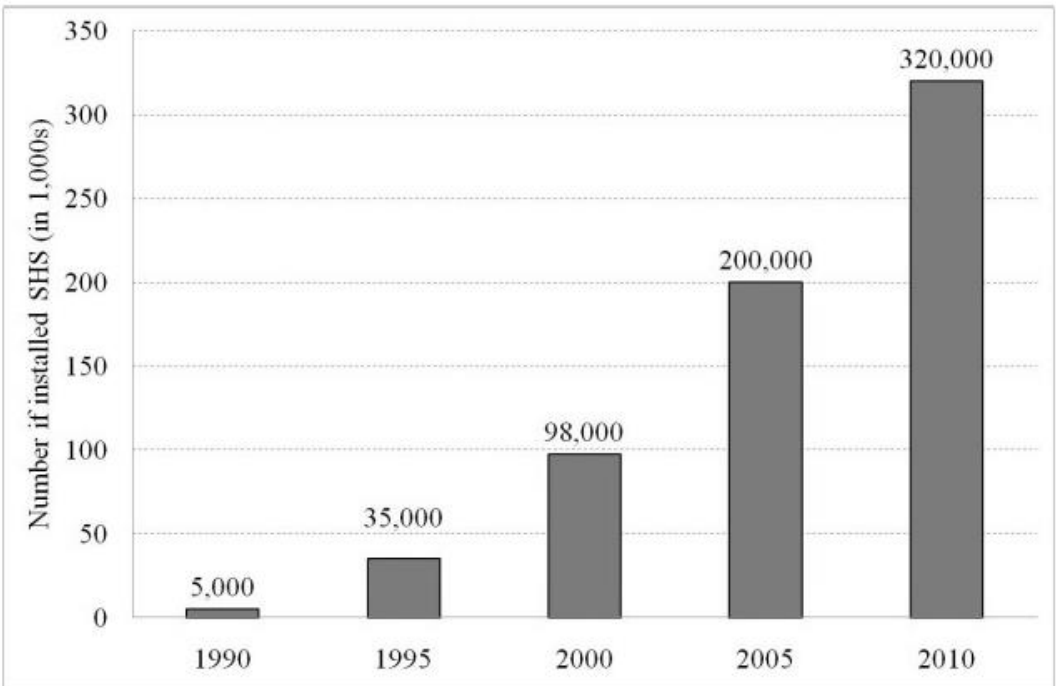
⁷ Most illegal connections in Nairobi take place in informal settlements or slums where majority of the urban poor live.

Kenya’s Least Cost Power Development Plan includes plans to further develop the transmission and distribution networks during the period 2011-2031 with 1 million service lines at a cost of US\$3.116 billion and to expand the national power distribution grid to connect one million new customers in 5 years starting from 2009, mostly financed by international development donors.

Off-grid electricity

Given limited grid-connectivity, off-grid solutions, mostly Solar Home Systems (SHS), have thrived in Kenya. This success has been driven by a thriving demand of energy services, mainly lighting, TV and mobile phones (Jacobson 2007). Data on off-grid access to electricity is mostly provided by academic and donors’ documentation and largely absent in Kenyan governmental sources. Figures suggest SHS constitute around three-quarters of the solar PV capacity in the country, or an estimated 6-8MWp (GTZ, 2009). Annual sales of SHS are estimated to have grown from 1000 systems in the late 1980s to around 20,000-25,000 systems in the last years and the estimated number of SHS installed in Kenya by 2010 amounts to 320,000 (Ondraczek 2013). This represents nearly 20 per cent of total electricity grid consumers. But despite the market size and potential, only around 4.4 per cent of total rural households (on and off grid) had an SHS by 2011 (Ondraczek 2013). Even though this number is likely to be even higher now, it means that SHSs are still a niche technology which has not yet replaced the more common practices for lighting and phone charging that are usually met by kerosene and batteries.

Figure 2.2 Estimated number of SHS installed in Kenya since 1990



Source: Ondraczek (2013) (Reproduced with permission from Elsevier)

Nevertheless, Kenya is seeking to diversify its electricity generation against a backdrop of very low electrification rates across the country and expanding economic growth in key productive centres of the country. As in other counties, the cost of generating electricity is a key driver in deciding between sources in energy policies. It is important to note, therefore, that climate change mitigation does not provide the primary driver of diversification of energy sources to include new renewable resources. Both the vulnerability of hydropower to rainfall variation, and the price of oil imports for electricity generation that plug the electricity

generation gap, impact on the electricity prices paid by Kenyan industry, playing a more important role in driving the embrace of a range of electricity sources that can provide power at scale, and can be constructed quickly.

What is particularly relevant in Kenya is that some new renewable energy sources have come to fit with the dominant framing and government priorities of energy generation for economic growth, as outlined in the Least Cost Power Development Plan (LCPDP) for example. In terms of climate compatible development, there are possibilities for low cost renewable energy that might achieve overlaps between climate change mitigation and development, and Kenya is considered a leader in the region for its development of renewable energies. Yet implicit in the seeming consensus over low carbon energy, development and national energy security are a set of trade-offs, many of which mirror long lasting debates over the definition of development itself, and whose interests are served by prevailing conceptions of the relationship between energy and development. In the section that follows, we discuss some of the trade-offs that are inherent in the pursuit of energy, and importantly, some of the power relations through which these trade-offs are resolved.

3 Competition and conflict

Kenya has a range of renewable and potentially lower carbon energy options at its disposal, but their attractiveness or otherwise (rhetorically at least) is centred on their affordability compared with fossil fuels and their compatibility with grid expansion plans. While grid connected solar power is perceived to remain a costly option within traditional frameworks of price estimation, the same calculations typically find geothermal, wind, and imported hydropower-generated electricity from Ethiopia to be comparable to, and in some cases, cheaper than options for domestic or imported coal (Wendle 2013; Ministry of Energy of the Republic of Kenya 2011). Fossil fuels might come to be preferred by commercial and state elites for their ability to serve broader growth objectives through the scale of generation capacity. There may also be a rent-seeking dimension in terms of the ability of government officials to maintain control over access to sites, infrastructures and profits flowing from fossil fuels more easily. This could explain part of the appeal of geothermal: its ease of control by state elites. It is generally the case that fossil fuel plants are cheaper on paper, as initial investment and cost of finance is much lower than for renewables. The political economy of access, control and rent collection could well feature in decisions about which energy options Kenya adopts moving forward.

Below we identify a series of sites of conflict and contention where the political economy of clean energy and the broader pursuit of CCD reveal themselves.

3.1 Low carbon *and* affordable? Access to low carbon electricity

Contentious price increases and the role of ERC

If there is a confluence of agendas around 'clean energy' and energy security as noted above, the trade-offs to pro-poor energy are perhaps more stark. There are competing representations of which policies and interventions serve the poor. With some policies it is less clear— without additional grid connections, capacity serves mainly to improve the quantity and reliability of supply for those already connected, and without income generating potential from electricity the rural poor are unlikely to ever be able to pay for it. This is especially the case since efforts to make the sector more attractive to independent power producers are highly dependent on cost-reflective pricing of electricity, free from social

protection measures, in order to generate an attractive rate of return for the private sector.⁸ Efforts to ensure the financial sustainability of the electricity distributor KPLC have been central to efforts at making the energy sector more attractive to independent power producers. For a number of years, KPLC has been moving towards cost-reflective pricing, reducing subsidies to low-income consumers and seeking to charge customers the full cost of connecting to the grid (The Standard 2014a). This is especially the case given the prevailing corporatist principles of connection and service delivery being pursued by the Energy Regulatory Commission (ERC), Ministry of Energy (MoE) and Kenya Power and Lighting Company (KPLC) such as cost recovery or profit in connections and plans to reduce the lifeline tariff for electricity prices.⁹ KPLC is permitted to charge customers the full cost of connecting to the grid (around KSh 35,000 though they had wanted to charge KSh 85,000) (The Standard 2014a). Kenyan tariffs are set at a level that should be able to cover total costs (contingent on their ability to collect bills) (Briceno, Garmendia and Shkaratan 2011).

But pressure to recover costs and to maintain the current charges to avoid going under comes up against strong pressures from Kenyan industry to reduce the price of energy. In an indication of the importance of price to energy planning, the Permanent Secretary is reportedly required to report the price of energy to the Minister directly on a weekly basis. In 2013 the ERC was tasked to review electricity tariffs and to consider KPLC requests for an increase, taking into account the company's progress in eliminating system losses as part of the criteria for whether price increases for consumers could be justified. However, before the ERC could complete its report, the Deputy President announced that an increase would not be borne directly by electricity consumers. This intervention derived from the fact the government had directed KPLC to reduce electricity prices based on election campaign promises. Reduced prices were assumed to be possible on the basis of the addition of cheap generation capacity from geothermal and imported hydropower from Ethiopia. But until these new sources come online, KPLC wants to increase income for further investments.

There has also been huge public pressure on KPLC over poor service delivery during 2012 and 2013 making price increases more controversial still. The KPLC CEO left after poor performance (though he was then appointed as Principal Secretary, Ministry of Energy and Petroleum) (Burkeywo 2013). The former Managing Director of KPLC, Mr Jasper Oduor, had previously (in 2007) been indicted for 'extremely low quality of power supply and disappointing consumer connectivity for the last two years in spite of availability of all the necessary resources'. Poor performance and public anger led to a statement from parliamentarians committing to 'break the monopoly' of KPLC following earlier claims of the 'looting of a troubled corporation in which billions of shillings of public investment have been stolen' (Mati 2007). Yet parliament's control over the role of KPLC in the market is limited since although KPLC provides its service without competition, it is a publically listed company in which the government is a shareholder. Nevertheless, the Ministry of Energy appoints senior KPLC staff and the government has, in the past, heavily influenced where KPLC distributes electricity, a practice that is supposed to be addressed through the Rural Electrification Master Plan.

Picking winners and the role of the entrepreneurial state

Debates about energy policy and politics often focus on the political economy of 'picking winners': the merits or otherwise of providing state support to energy sources or technologies that governments believe can best meet a series of policy objectives simultaneously. Here

⁸ Although Kenyan tariffs are being set to allow for cost recovery (Kapika and Eberhard, 2013), KPLC claims that prices below cost recovery are preventing it from providing connections to new consumers. See Herbling (2014)

⁹ Although Kenyan tariffs are being set to allow for cost recovery (Kapika and Eberhard 2013), KPLC claims that prices below cost recovery are preventing it from providing connections to new consumers. See Herbling (2014).

we consider how the Kenyan state has played such a role in relation to geothermal energy in contrast to the case of solar, where, in practice, it has delegated this supportive role to the private sector, and importantly, to donors.

Despite the overriding emphasis on price and affordability in Kenya's energy policies including the Least Cost Power Development Plan, the new government's statements around energy rarely refer to energy access for the poor. Rather, they make the case for reducing electricity prices through additional capacity generation, and frequently cite the prospects of energising the development of Kenyan industry. To achieve this, the Government plans 5000MW of additional capacity within 40 months by 2016 (Ministry of Energy and Petroleum 2013). This is very ambitious from a base of 1500MW and is widely perceived to be unattainable by interviewees based on the previous experience of similar ambitions. Massive energy targets mean that all energy sources are on the cards, but feasibly the only energy options that can produce at this scale and speed are geothermal, gas, coal and diesel.

The particular resource potential of geothermal, wind and hydro, has led to a situation where several low carbon options are cost competitive with fossil fuel development. Geothermal and hydroelectricity at good sites are the cheapest way to generate electricity in Kenya (IRENA, 2013). High winds in the North of the country mean that the wind power project at Lake Turkana is considered to be able to cover its costs within months of completion. In cases such as this, where renewable energy at scale provides a relatively low cost option and an attractive investment for independent power producers, a confluence exists between the energy security and climate change priorities of government and donors. But this is a fragile situation: renewable power generation is particularly vulnerable to high interest rates, due to high investment costs and low operational costs, opposite to fossil fuel alternatives. Also, the economics of Kenya's coal resources are yet to be determined, depending on the costs associated with complementing lower quality domestic supplies with higher quality imports from South Africa. With access to oil and gas, Kenya and Tanzania are likely to shift priorities in the near future as is discussed further below.

Energy sources and technologies compete for the attention and support of policy-makers and the prospects of CCD in Kenya will be shaped by the constantly evolving landscape of opportunities that present themselves. In this regard there is potential for the huge wave of interest in geothermal in Kenya at the moment to 'crowd out' attention to other forms of renewable energy discussed above.¹⁰ If energy is the number one priority for the President, geothermal is the number one priority for energy.¹¹ Areas of overlap between poverty, mitigation and adaptation feature in this discussion, but it is not at all clear that geothermal meets all these criteria more easily than other energy options on the table. What geothermal does provide, is a scalable source of low emission domestically available electricity supply, in which donors and government interests align.

All this might mean that what gets implemented is what will be quick and easy to build. Long lead times for geothermal make it a challenge too, despite its popularity, and it has attracted some controversy around land acquisitions on Masai territory for geothermal projects.¹² Technologies whose technical feasibility and resource availability have not yet been widely

¹⁰ In fact there is a longer history of donor interest in geothermal in Kenya. UNDP's support for renewable energy in Kenya dates back to 1963 when UNDP supported the development of geothermal energy in Olkaria area in Rift Valley Province in Kenya. (Interview with Senior Staff, United Nations Development Programme (UNDP), 15 November 2013).

¹¹ Interview with senior staff, Ministry of Finance, Treasury. Nairobi, 15 August 2013.

¹² Of 5-10 geothermal projects at various stages of development, one has involved relocation so far. The Masai land dispute over the Olkaria geothermal project involves a long term land conflict and a court dispute. The issue with land around geothermal is a necessary exclusion zone around well heads. The development of geothermal resources has added value to land already under dispute. Most interviewees put it down to a long running land dispute between Ngati farm (The Kikuyu owners of which claim ownership from the post-independence land allocation decisions of Jomo Kenyatta), and the Maasai, who had claimed ownership over the land for some 400 years (Interviews with senior energy programme staff of international donors August 2013; interviews with energy sector consultants, August 2013).

assessed find it difficult to make headway, except in cases like geothermal where the resource potential is high. Here we see a key role for an 'entrepreneurial state' taking risks and setting the direction of change for investors and donors (Mazzucato 2011). Geothermal stands in sharp contrast to solar in terms of the extent and forms of government support because of its relatively high potential and low cost. This in turn has attracted donor support since donor investment in the sector is strongly led by government, and donor interests overlap with government in geothermal. The Kenyan Government, with large donor support, is taking the risk of exploration and drilling to assess available geothermal resources through the Geothermal Development Corporation as this is a key barrier to private investor interest (Climate and Development Knowledge Network 2013). There are parallels to risk-taking made on solar by donors, but in contrast to the further development of solar, which generally does not receive much on-going public support (other than small-scale initiatives and donor support for training), the balance of risk and reward between the public sector, as risk taker, and private sector, as reward taker, seems to be mostly in favour of the private sector with regard to investments in geothermal energy. While off-grid solar has advantages since it reduces demand for grid electricity, the approach of the government thus far seems to be largely to leave off grid solar to 'the market', with the exception of an MoE and Rural Electrification Authority programme to provide solar-generated electricity to public buildings.

In contrast, the government justifies heavy public investment in geothermal resource assessments as a precondition for private investment, which requires reliable data and existing infrastructure before committing long-term finance to resource development. The government, however, is not willing to offer sovereign guarantees for geothermal and expects that good data, good governance, the possibility to repatriate some benefits and an improvement of the credit rating will be enough to attract capital without having to 'bow to the private sector' in the words of one official from the Treasury. From early experimentation in both geothermal and solar (both niches supported by experimentation by donors (Byrne *et al* 2014)) geothermal attracted big regime support, on the basis of many advantages that it is perceived to have. It is at this stage that solar gets encouraged (in the form of the small, pico-scale market of solar lanterns and the larger household scale Solar Home Systems) in line with government priorities as a cheap option for off-grid access, in which the capital cost of infrastructure is met by the consumer rather than the state, and that alleviates pressure on the grid without much government support. The narrative of private sector led deployment in the up-take of off-grid solar technologies is dominant (Hankins 2000; Van der Plas and Hankins 1998) despite the reality, as traced through detailed innovation histories, that this is not a success story of private sector market-making and risk taking for financial reward. Rather, public finance played a decisive role in building networks, creating demand, absorbing risk and enabling diffusion without which the success of the home systems would not have been possible (Byrne *et al*, 2014).

FIT for purpose: Supporting pro-poor clean energy niches or neglecting them?

Building on the theme of 'entrepreneurial states' stimulating innovation and cultivating enabling environments, in this section we consider interventions intended to support a solar industry as part of Kenya's attempt to promote CCD. One tool that has been gaining increasing traction as well as attracting increasing controversy is the use of feed-in-tariffs (FIT) to stimulate growth in the renewable energy sector and in doing so reduce the role of fossil fuels in the energy mix, such that mitigation goals can be more readily achieved. Indeed the United Nations Environment Programme (UNEP) cites Kenya's FIT as a 'Green Economy Success Story' stating the case in terms which closely fit with the idea of CCD: 'benefits targeted are a 'triple-win' of additional renewables based generation capacity to the country; enhancing employment and poverty alleviation in the rural areas; and increasing income opportunities for business development'.¹³

¹³ See United Nations Environment Programme (n.d.)

Through the FIT, first launched in 2008 and revised in 2010 and 2012, the government purchases renewable energy generated by Independent Power Producers (IPPs) and fed into the national grid. A framework for small power distributors is also underway to support the government policy of providing clean energy to the rural areas. The new feed in tariffs have been operational since December 2012, but those for solar have not encouraged investment in the sector. Although the tariffs for solar are higher than other energy sources (at 12 US cents per kilowatt hour), they are considered the least attractive for independent power producers for whom the cost of solar generation is much higher than for other sources such as wind or small hydropower plants.

The response from government has been to dismiss some of the criticisms. A representative from the Ministry of Energy claimed:

Investors are more concerned about making quick returns rather than large-scale impact and transformation of poor people's lives. This is why they complain about feed in tariffs being low.... The government thinks these tariffs are reasonable both for consumers and investors. This is the reason why solar production is low. The government does not want consumers to pay higher for energy.

This resonates with the opinion of others that while the government wants to appear to be promoting renewable energy in order to be 'good', it does not want to lock the consumer into high cost solar for 20 year Power Purchase Agreements (PPAs), particularly as the prices for solar continue to fall. In the short term then, grid-connected solar power may be a victim not only of its price, but also of its declining price.

In this regard an ERC official stated that: 'As an advocate for renewable energy, I can say that the decision to price solar low was a deliberate one'. In other words the former Permanent Secretary had dictated that tariffs for on-grid solar, in particular, would be set at a rate that would *deliberately* not support investment. Indeed, no grid-connected solar power projects yet exist in Kenya. The position is consistent with reports that the same Permanent Secretary of the Ministry of Energy, who had been in post for many of the years in which solar technology was developed in Kenya, had long maintained an animosity toward solar technologies and how they could serve the interests of the Ministry of Energy and of Kenya (Byrne 2011). This is in contrast to the previous head of the renewable energy department of MoE who is said by private sector and government interviewees to have been very supportive of renewable energy. Bureaucratic and personality politics are key features then of the account about the degree of support for solar amid longstanding hostility towards solar power within the MoE (with the exception of the Renewable Energy department). Rather, solar energy development has been left for the Rural Electrification Authority.¹⁴ This is compounded by the fact that the Renewable Energy division within MoE is thought to be inadequately financed so is unable to promote renewable energy within the department.¹⁵ This highlights the importance of individuals as well as bureaucracies in the political economy of climate compatible development.

Besides the issue of price, from expressions of interest to implementation, there are a number of steps for project developers to complete to implement renewable energy projects, such as obtaining licenses, completing feasibility studies and securing land. For renewable energy projects, some of these processes and their requirements can be novel to government departments tasked with establishing and implementing sector regulations and licensing. To address this donors in Kenya have played their part in incentivising private sector participation in the FIT scheme, notably those donors that have FIT schemes in their

¹⁴ Interview with staff KfW, 20 November 2013.

¹⁵ Interview with programme staff, Solar, GIZ. Nairobi, 16 August 2013.

own countries such as Germany. KfW has supported private sector participation in renewable energy development through incentives in the form of premiums on top of the FIT already set by government. KfW also provide debt and equity finance under the FIT policy by convincing other partners to participate in funding renewable energy development in the country.¹⁶ The World Bank also provided some technical assistance on the FIT and the UNDP supported hydro power pilot project in Meru is said to have led the Government to change the Electricity Act to allow other energy generators to sell part of or excess of their energy to Government under the FIT policy.

Given the limited success of the FIT process to date (at least with respect to solar power), despite its framing as a ‘green economy success story’, a set of regulations have been developed to encourage distributed generation, such that business and individuals are able to sell any excess electricity that they might generate to the grid (net metering), or to buy electricity directly from independent power producers (wheeling). These proposals are being considered as alternative financial arrangements to the FIT, to encourage private generation. ERC have requested the EU to study the development of regulations for these alternative arrangements – to determine tariffs and regulations that would decide who benefits, and who shoulders the costs of existing grid inefficiencies. There is an issue of rent-seeking here however, amid suggestions that KPLC currently benefits from a fee for connecting consumers with Independent Power Producers (IPPs), which could be lower in wheeling arrangements and therefore might be resisted by KPLC if structured in a way that would reduce revenues for the already financially vulnerable company.¹⁷

3.2 Climate mainstreaming or climate on the margins?

As well as supporting niche lower carbon technologies and energy sources, one of the principal challenges facing a transition to a lower carbon economy is ensuring that the imperatives of reducing carbon are mainstreamed across government and all areas of policy-making. This means integrating climate change mitigation and adaptation objectives into energy policy and planning, areas where the incumbent regime will often fiercely resist change. In the literature on the political economy of environmental governance, the issue of policy integration features highly: the extent to which and the ways in which environmental goals, such as climate mitigation get mainstreamed or side-lined in policy across government and not just that which explicitly deals with ‘the environment’ (Newell 2008). Integration can be horizontal: mainstreaming across government departments and policy areas, as well as vertical: ensuring coherence and consistency of policy across multiple levels of political decision-making which is an increasing challenge in Kenya in the context of the devolution of powers to county governments.

In Kenya there have been several attempts to integrate climate change mitigation and adaptation objectives into energy policy and planning as would be required of climate compatible energy development. The following examples of key strategic documents such as Vision 2030 and Least Cost Power Development Plan (LCPDP), as well as National Energy Policy, have formally guided the relationship between energy and development to date. We then look at the Climate Change Action Plan whose aim is explicitly to promote the integration of climate objectives across these policy areas, and promoted as a ‘flagship model for Africa’ in terms of climate planning (Climate and Development Knowledge network n.d.)

¹⁶ Interview with energy sector programme staff, KfW, 20 November 2013.

¹⁷ Interview with Energy Consultant and KERECA Executive Committee member, Nairobi, August 2013 & interview with Energy and Climate consultant, Nairobi, 14 August 2013.

Kenya's Vision 2030

In work on transitions management there is frequent emphasis on setting agreed goals and constructing a vision which seeks to integrate competing policy objectives (Kern and Smith 2008). Kenya's Vision 2030 is an attempt to go beyond electoral cycles – and to 'dream big'. Prepared by the Government of Kenya, it aims at creating 'a globally competitive and prosperous country with a high quality of life by 2030'. It aims to transform Kenya into 'a newly industrialising, middle-income country providing a high quality of life to all its citizens in a clean and secure environment'.

Critics allege that it includes many ambitious interventions among the flagship projects, alongside the realisation of more grounded priorities such as geothermal power.¹⁸ Vision 2030 also recognises energy as the driver of all development activities in the country and opts for the cheapest and most widely available energy sources. It recommends a mix of energy sources depending on prevailing circumstances, but, as with the LCPDP, pays particular attention on their costs and availability. The Vision 2030 analysis conducted shows that cost will be brought down by investment in renewable energy sources including geothermal, solar, wind, hydro, and bio-mass energy sources among others. The Vision 2030 also incorporates sustainable waste management as a source of energy by using the methane gas produced to generate electricity and use the residues for organic fertiliser production.¹⁹ Outside of the flagship projects, the document covers a wide range of issues but does not address climate change explicitly.

Least Cost Power Development Plan (LCPDP) 2011-2031

The LCPDP meanwhile lays out the Government's medium to long term planning of the energy sector. It identifies existing potential in generation, required investments in transmission and forecasts future demand for power and how best it can be met at the least cost. The LCPDP is updated annually to take into account new information and new promising technologies with potential to generate power at competitive costs. The latest update covers the period 2011-2031.

Alongside Vision 2030, the LCPDP appears to be the primary guiding document in government for energy policy where least cost is the key driver over climate change. For this reason the LCPDP is more 'engrained in Ministry of Energy thinking' than the subsequent Climate Change Action Plan (discussed below) since climate change is 'a long way from their experience' according to one interviewee. The preparation of the LCPDP involved officers from the Ministry of Energy, KenGen, KPLC, GDC, REA, Kenya National Bureau of Statistics, the Ministry of State for Planning, National Development and Vision 2030, KETRACO, Kenya Vision 2030 Board, Kenya Investment Authority and the Kenya Private Sector Alliance. The team also counted on technical assistance from the French Development Agency, Egis Bcoem International and an expert in the use of the Model for the Assessment of Energy Demand (MAED).

Geothermal resources are the preferred choice for the future generating capacity in the LCPDP. They should provide 26 per cent of the installed capacity by 2036, with the rest coming from nuclear plants (19 per cent), coal (13 per cent), wind (9 per cent), hydro (5 per cent), diesel (9 per cent), gas (11 per cent) and imports (9 per cent). The plan proposes 18,920 MW of new generation projects up to 2031, in addition to 1,815MW of committed

¹⁸ Interview with Energy and Climate Consultant, Nairobi, 14 August 2013

¹⁹ Interview with Mr Stephen Kinguyu 23 October 2013, National Climate Change Action Plan Secretariat, Ministry of Environment and Mineral Resources, Nairobi, Kenya.

projects up to 2015. It also proposes 10,345 km of transmission lines. The total present value of the projects proposed and committed is US\$49.78 billion.

National Energy Policy (third draft), 2013

The National Energy Policy was formulated by the MoE with the objective of aligning the statutes that govern the energy sector to Kenya's Vision 2030 and the 2010 constitution. The energy policy aims at ensuring affordable, sustainable and reliable supply to meet national and county development needs while protecting and conserving the environment. The National Energy Policy refers to renewable energy as having the potential to 'enhance energy security, mitigate climate change, generate income, create employment and generate foreign exchange savings'. However, fossil fuels are also given a prominent role in the country's energy matrix, and the policy reveals the 'excitement' caused by the recent discovery of oil in Northern Kenya, noted above, and the subsequent need 'to develop adequate petroleum production capacity in the country'. Coal is also defined as having 'the potential to become the most reliable and easily accessible energy source for electricity generation'. Renewable energies are important, therefore, as far as they can complement the country's energy portfolio and provide energy security, but are not supported at the exclusion of conventional energy sources.

National Climate Change Action Plan 2013-2017 (CCAP)

The CCAP is the main vehicle for the horizontal integration of climate concerns into the LCPDP and V2030. The CCAP process was designed partly to address the fact that Vision 2030 did not address issues related to climate change. It was developed in 2012 under the leadership of the Ministry of Environment and Mineral Resources (MEMR) to enable Kenya to reduce vulnerability to climate change and to improve the country's ability to take advantage of the opportunities arising from climate finance. The initiative was mostly financed by DfID, with funding provided through CDKN and UKAid. Other donors included Danida (Danish Development Agency), JICA (Japan International Cooperation Agency) and ADB (French development agency).²⁰

The CCAP was developed and guided by a multi-stakeholder, multidisciplinary, taskforce called the National Climate Change Action Plan Task Force (NCCAPTF). This body convened a year-long participatory process involving the public sector, the private sector, academia, NGOs, the civil society and communities. The climate change unit within the MEMR played the key role in the coordination and overseeing of this process by identifying and inviting stakeholders, establishing task forces, thematic working groups, mobilising resources and engaging consultants. The Minister of MEMR, Hon Chirau Mwakwere, also provided overall leadership in the Ministry that led to the development of the CCAP.

Government and donor representatives describe the consultation process leading to the conclusion of the CCAP as efficient, 'smooth' and 'rapid' but wide ranging and able to reach consensus across the board. Success is attributed to the MEMR leadership, which ensured coherence and buy in from other line ministries. There was also a clear allocation of duties across ministries and departments according to some and a very high level of political and government support (see table 3.1).²¹ The fact that the plan was passed by the cabinet and signed by the president is seen as another indicator of success. The Ministry of Finance was

²⁰ Interview with senior staff, Climate Change Unit, Ministry of Environment and Mineral Resources, Nairobi, 29 August. The UNDP supported the National Climate Change Action Plan initiative on technology. UNDP assisted through their network of experts in identifying different renewable energy technologies that will be suitable under the Kenya case.

²¹ See Climate and Development Knowledge Network (n.d.)

also a key actor in the NCCAP Task Force, as a catalyser of climate finance and a national Climate Change Trust Fund (see below) was also created to support research and development on climate change issues and to drive the policy on carbon investment and carbon trading.

Table 3.1 The NCCAP Task Force

| Ministries | Non-Governmental Actors |
|--|------------------------------------|
| Ministry of Environment and Mineral Resources | Parliamentarians |
| Office of the Prime Minister | Kenya Private Sector Alliance |
| Office of the Deputy Prime Minister | Kenya Climate Change Working Group |
| Ministry of Finance | World Wildlife Fund – Kenya |
| Ministry of State for Planning | |
| National Development and Vision 2030 | |
| Ministry of Agriculture; Ministry of Forestry and Wildlife | |
| Ministry of Development of Northern Kenya and Arid Lands | |
| Ministry of Water and Irrigation | |
| Ministry of Energy | |

Source: Authors’ own

Questions over the extent of political buy-in across and beyond government remain, however. The Ministry of Energy was less represented in the deliberations around the plan, indicative perhaps of less buy-in. This may have been compounded by the fact that a relatively junior member of the department’s historically under-funded and politically more marginalised Renewable Energy division within the MoE participated in the process. It is also the case that new initiatives such as the plan are often viewed as a potential threat to the power, autonomy and authority of existing ministries, especially since climate change relates so closely to energy, giving rise to bureaucratic turf-wars over competence over key issue areas.

Efforts were made to mainstream the CCAP in planning through the Government’s Medium Term Plan (2013-2017). The MTP-2 is a 5-year implementation tool of the Government. ‘Ownership’ and involvement from the Ministry of Planning was considered important given their overall role in steering government policy and will be important in setting up the Climate Change Authority. Although MEMR leads, the Ministry of Planning has the most important role to play in advancing the low carbon pathway document of the MTP-2. Joshua Opiyo represented the Ministry of Planning in the CCAP process, participated in consultative stakeholder initiatives and was also a member of the low carbon pathways group. The Ministry’s key role was to guide the mainstreaming of climate change in all ministries and sectors. The Ministry of Planning’s role was to ensure that on-going projects within Vision 2030 were ‘climate proofed’ and that the projects’ impacts on climate change were taken into account. To do this the Ministry of Planning interacts with the MoE on issues related to renewable energy and is a key stakeholder in energy meetings. They also engage on planning and the prioritisation of programmes to reflect government aspirations in terms of planning, monitoring and evaluation of their projects.²²

The private sector also had a strong role in the development of the CCAP, with some claiming that consultants hired by CDKN to help with the work were pursuing their own sense of what the policy should contain. In this regard, according to those involved in the process, the Ministry of Planning took a lead role in the process to ensure that the priorities of the Kenyan government were pushed forward rather than those of external forces.

²² Interview with Mr. Joshua Opiyo – Ministry of Planning, held on 2 September 2013.

In the end the CCAP proposes a number of mitigation actions for the energy sector, including:

- Develop an additional 2,275 MW of geothermal capacity by 2030 through a support programme aimed at encouraging private sector investment. The programme could include: additional grants for the early phases of geothermal development, access to loans for latter stage development, risk mitigation instruments, capacity building programmes, and harmonisation and improvement of the regulatory framework. This is in line with what the National Energy Policy already says. Estimated cost: 877-1115 billion KSh
- Undertake a programme to support the use of improved cookstoves and of LPG cookstoves, including increasing awareness of improved cooking practices, undertaking pilot initiatives which promote the use of LPG, increasing awareness of stove quality, increasing access to soft loans, building capacity of stove producers, and improving access to testing facilities. Estimated cost 20 billion KSh
- Improve the policy and regulatory framework for low carbon investment in Kenya. This is also in line with on-going policies of the Government of Kenya.

The following actions are recommended to improve energy infrastructure as part of the adaptation plan:

- Solar (hybrid systems, installation of solar in more institutions in arid and semi-arid lands areas, promotion of solar street lighting) to provide power for schools and other public institutions
- Small hydropower generation plants to provide electricity to large numbers of local community members and businesses in the rural areas to enable job creation
- Energy efficiency programmes
- Geothermal resources development

These actions largely follow least cost criteria, as with the LCPDP. The different mitigation actions proposed by the CCAP are to be presented as NAMAs (Nationally Appropriate Mitigation Actions) to the Conference of the Parties (COP) of the UNFCCC to secure climate finance for risk mitigation instruments, mostly for geothermal. Indeed Kenya has been one of the earliest recipients of fast start climate finance.²³ Yet questions remain over the CCAP in regard to where the money is to implement it and how to ensure county level implementation where many counties have now developed climate plans.

The greatest challenge, however, is that the Climate Change Authority Bill was then rejected by President Kibaki earlier in 2013. The Climate Change Authority Bill sought to provide a framework for mitigating and adapting to the effects of climate change by establishing the Climate Change Authority and vesting the Authority with specific functions and powers. It also established a Climate Change Trust Fund, managed by a Board of Trustees, into which monies received in the form of donations, endowments, grants or gifts or monies raised by the Authority would be paid and subsequently utilised for the achievement of the mandate and objectives of the Authority. It was rejected in 2013 because it was brought as a private members bill (by NGOs and CSOs) and needed wider consultation, but few interviewees asked about this appeared to agree whether that was the primary reason for its rejection. Some interviewees suggested that the climate change policy should have come first before a strategy and an action plan to achieve it were formulated. Instead, things worked 'backwards'. The CCAP's greatest hurdle to implementation then is that it is not backed by legislation informed by the climate policy. Again Stephen Kinguyu of the National Climate Change Action Plan Secretariat (MEMR) is, perhaps unsurprisingly, more positive in claiming

²³ Interview with senior staff, Ministry of Finance, National Treasury. Nairobi, 15 August 2013.

that the projects being executed by CCAP and the MEMR have received adequate political backing from the previous coalition government of President Mwai Kibaki and Prime Minister Raila Odinga. He maintained that it was for this reason that the National Climate Change Action Plan 2013-2017 and Vision 2030 were jointly signed by both Principals and that the current President Uhuru Kenyatta has supported the policies and programmes of the CCAP, including using them in addressing the current climate change related disasters in the country.²⁴

What this example of the political economy of climate compatible development in practice reveals is the importance of understanding and engaging 'turf-wars' over authority and resources between different parts of government. These are sometimes prompted by interventions on climate change which touch upon core state interests such as energy and where entrenched interests compete to secure control over an issue which relates to and potentially threatens their ways of working and position of power. It underscores the importance of processes which are seen to be transparent, inclusive and legitimate in terms of deriving from being driven by domestic policy priorities. It also highlights the importance of engaging business actors, a theme to which we return below.

Struggles over authority: towards devolution?

Here we address the vertical dimension of policy integration in the form of efforts to construct a coherent and climate compatible energy policy at the national and county level in Kenya in light of the changes brought about by amendments to the constitution. As the NCCAP acknowledges: 'The climate change agenda is a challenging one for new county governments that will face many priorities. While the national government has a crucial role to play in setting Kenya on a low carbon climate resilient pathway, many adaptation and mitigation interventions will need to be taken at the local level' (NCCAP).

The 2010 Constitution of Kenya, which replaced the 1969 Constitution, established a system of devolved government with 47 lower level county governments. County governments started to operate after the March 2013 elections, which included the election of county governors, deputy governors and representatives. These 47 new county governments are now in charge of overseeing some functions which were previously the responsibility of Kenya's national government, including the provision of health care, pre-primary education, and maintenance of local roads (Kimenyi 2013). County governments are financed through a combination of national revenues and their own revenue collection through several taxes.

Energy planning has been placed at the heart of the devolution debate. Counties have requested more control over energy planning to facilitate the attraction of private investment and to seek to improve access to the grid for the populations over which they govern. Additionally, some counties want compensation for providing local energy resources for power generation fed to the national grid. While MoE is considered one of the most centralised of ministries, the REA is in the process of setting up offices in each county, and reducing the size of its central office. Moreover, following the devolution process in the current Government administration in Kenya, the Secretariat (CCAP) is in discussions with two County Governments (Machakos and Nakuru) for the development of renewable energy programs from Solar, geothermal, and Bio-gas under the Nationally Appropriate Mitigation Actions (NAMA) of the Government.²⁵ The new Environmental Act (EMCA) will also reflect Kenya's new devolved structures and form county environment committees to replace existing district environment committees. EMCA has a chapter on energy use and efficiency

²⁴ Interview with Mr Stephen Kinguyu, 23 October 2013, National Climate Change Action Plan Secretariat, Ministry of Environment and Mineral Resources, Nairobi, Kenya.

²⁵ Interview with Mr Stephen Kinguyu, 23 October 2013, National Climate Change Action Plan Secretariat, Ministry of Environment and Mineral Resources, Nairobi, Kenya.

that calls on the government to promote the sustainable generation of energy through encouraging clean production, and developing comprehensive nuclear, petroleum policies guided by sound research and the precautionary principle.²⁶

There are also reports from businesses involved in renewable energy, such as solar, of widespread support and enthusiasm for cleaner forms of energy among country officials and some counties are putting in place climate strategies.²⁷ Yet it remains unclear how far county governments will be allowed control over energy resources, or responsibility over electricity generation and rural electrification. Others also suggest that counties are not ready, do not have capacity, or that they cannot be trusted. In any case, devolution of energy policy, planning and generation will not happen in the short term, as in August 2013 the Transitional Authority declared that rural electrification (and roads) would not be devolved at this stage, prompting an angry reaction from county governors. There is also, however, a level of dismay among the Kenyan public about the performance of the counties due to rampant mismanagement of taxpayer monies. Indeed, there is a bill currently in parliament to sharply reduce the number of counties to tame spending and misappropriation of finances (The Standard 2014b).

Beyond the tussle for power over energy policy taking place between national government and counties, uncertainty about devolution has consequences for external actors. For example, the Lonidat Slaughter house project which is supported by UNDP focuses on shifting from diesel powered generators for cooling to solar powered or biogas cooling systems. The project is co-financed by the Ministry of Energy who has now indicated that with devolution in place, they may not continue to co-finance the project which would be the duty of the County Government. Other donors such as JICA also expressed concerns about their capacity and willingness to form deeper local engagements. Their preference is for energy to remain centralised even though devolution may also involve some further unbundling and creation of regional energy companies.

3.3 Building coalitions of the winning

The state is of course not the only key actor in debates about climate-compatible development even if, because of its strategic importance, states often maintain tight control over who participates in energy policy. In a context in which control over production, technology and finance in the energy sector is increasingly shared with the private sector, especially in the wake of power sector reform and energy sector liberalisations in many countries, business groups unsurprisingly also play a critical role.

This section provides examples which illustrate how important business actors are to the pursuit of CCD in shaping regulations that support or hinder CCD, or lobbying for policies that serve their material interests, but which in some cases can also bring about climate and development benefits. This insight derives from a longer history of successful lobbying by fossil fuel industries against action on climate change (Leggett 1999; Newell and Paterson 1998) and more recent attempts by the beneficiaries of ambitious mitigation action and proactive policy support for clean (and climate-compatible) energy to mobilise an effective presence in these debates (Newell and Paterson 2010). Other work, cited earlier, on 'drivers of change' arrives at similar conclusions where it is noted:

²⁶ Interview with senior policy making staff, Ministry of Environment and Mineral resources (MEMR), Nairobi, 29 August 2013.

²⁷ Interview with energy sector research, African Centre for Technology Studies, Nairobi, August 2013.

The Kenyan private sector has great dynamism and could act as an important source of pressure on government. However, it has not met its potential in influencing public policy and public expenditure. There are numerous issues of common concern to Kenyan businesses where effective lobbying could make a difference to pro-poor change, for example.. service delivery and infrastructure.
(Ng'ethe *et al* 2004: 33)

The following example helps to illustrate the role of business in CCD in the Kenyan context. It concerns the use of a VAT exemption and a zero-rated import duty on renewable energy equipment and accessories, such as solar panels and batteries.²⁸ These are often considered an effective way to improve the competitiveness of renewable energy technologies through simple price mechanisms. According to some sources, the CCAP advocated for a policy on zero rating on solar energy generation in the country. But many attribute credit for this policy change to the role of business groups that would benefit from it.

For example, the Kenyan Renewable Energy Association (KEREAA) was at the centre of a coalition of actors that successfully lobbied for the exemption. The big importers and manufacturers of solar were also involved in this campaign as well as groups such as the Solar Technicians Association and KAM (Kenyan Association of Manufacturers) that produced a position paper used in lobbying for the measure.²⁹ These actors managed to get the buy-in of junior officers in the Ministry of Energy, then the Permanent Secretary and eventually the minister. According to those involved in the campaign, parliamentarians were brought together at a workshop in Mombasa to get their buy-in and this helped bring about the policy change. Others also emphasise the importance of convincing the technical experts of the merits of the policy change within key bodies such as the Kenyan Revenue Authority, Kenya Ports Authority and the MoE.

Institutional access was crucial. Since KEREAA was created by a technical committee of the Kenyan Bureau of Standards (KEBS) and has close links to government, the body was well placed to make the case for the removal of VAT on what was considered to be a technical matter. Indeed government employees are among KEREAA members in their individual capacity – including the Renewable Energy director in Energy Regulatory Commission (ERC). Despite this advocacy work, KEREAA claims it does not like to 'get involved in politics' or present its activities as overtly political. Both KAM and KEREAA make use of contacts in 'technical' positions within the MoE to try to influence 'political' positions in the Ministry. This ostensibly more de-politicised approach is thought to yield more effective results.

Yet strategic alliances or issue-based coalitions often obscure differences among business associations and the actors within them. The same private sector bodies that form alliances over areas of common interest such as the VAT exemption can also represent different interests across diverse fora at other times. While KEREAA are seen to represent the small scale solar industry, reflecting the majority of their membership base, the Kenya Private Sector Alliance (KEPSA) and KAM represent a broader range of powerful business interests across the economy. KEPSA and KAM for example, represent many of the private sector businesses and land owners that might take-up the opportunities to supply renewable energy to the grid at the generating scale that would serve government interests in the rapid growth of electricity generation. These bodies represent both the companies that would benefit from higher Feed-in tariffs, while also representing the most powerful business voices that keep pressure on the government to reduce electricity prices to keep Kenyan industry competitive

²⁸ Raw materials for solar products were not duty and vat exempt whereas finished solar lamps, without AC charging capability, were tax exempt. The concern is that this discourages local assembly of solar products, undermining the capacity of Kenyan industry to assemble and eventually manufacture.

²⁹ Interview with senior staff, Centre for Energy Efficiency & Conservation, Kenya Association of Manufacturers. Nairobi, 19 August 2013.

within the region. It is, therefore, significant that KERECA and KAM report very different experiences of their respective attempts to engage in the government's draft energy policy consultations. While KAM report that the Ministry of Energy is receptive to its written submissions, KERECA has not received the same response to its own efforts, which is perceived by both KAM and KERECA as being reflective of the closer relationship between the Ministry of Energy and the industry representatives that best serve larger businesses. Energy policy planning has reportedly become more consultative since the openly oppositional terms on which renewable energy associations met during the process of developing the Energy Act of 2006. Yet whose voice is represented in those processes is likely to be important in forming the outcomes of important processes like the drafting of the national energy policy, particularly when in practice such policies will have more influence within the Ministry of Energy's planning than cross-sector climate change mitigation action plans such as the NCCAP as we saw above.

The VAT example also reveals, however, the fragile and potentially temporary nature of some of these gains and the need to 'embed' policies by building networks and coalitions committed to them and with a stake in them. The VAT is now back on solar PV at 16 per cent since October 2013, after having been removed from the zero-rated goods in the 2013 VAT Act (Republic of Kenya 2013). The removal of the exemption will have an effect on the affordability of solar products and will hit firms like Sunny Money that only sell complete, 'plug-play' products, which were VAT exempt.³⁰ There appears to be nothing KERECA can do about this because it is part of a removal of VAT exemptions across the economy, and not just in the energy sector. The motivation appears to be revenue-raising by a government facing a pressures to make budgetary savings, although Treasury officials suggest that removal of VAT exemptions across government also provides a way to remove political interests from financial incentive instruments.³¹

3.4 Landscape pressures and state autonomy: Donors and government

Research on energy transitions often refers to 'landscape' pressures which can take a range of forms but which include the role of international institutions and donors in shaping and incentivising and dis-incentivising particular energy policy choices at the national level (Geels 2011).

Indeed, donors are heavily involved in the Kenyan energy sector. For example, Kenya was described as an obvious choice for the World Bank funded Scaling-Up Renewable Energy Programme (SREP) pilot by several interviewees on the basis that 'Kenya is the pilot for everything'.³² It is a donor favourite, particularly in energy. Donors already like working with Kenya because it is market orientated. In contrast to Tanzania, for example, one donor commented 'Kenya always been private sector focused and avoided the virulent forms of socialism of some of its neighbours'. Cost recovery of tariffs allows donors to promote the private sector and ensure that international capital will have the confidence to invest. In this sense the Kenyan PV market had been lauded as being undistorted by subsidies with the International Finance Corporation (IFC) (1998:12) describing 'Kenya as a true free market for PV products', a claim which sits uneasily with detailed histories of the degree of donor support for experimentation, diffusion and risk reduction around PV technologies (Byrne *et al* 2014).

Donors are able to 'set the tone' for priorities in the energy sector in a number of ways. For example, the IFC also played a role in the revision of the Energy Policy 2013 to its final draft

³⁰ Interview with Sales Manager, Sunny Money Trade, Nairobi, August 2013.

³¹ Interview with senior staff, Ministry of Finance, National Treasury. Nairobi, 15 August 2013.

³² Interview with senior energy sector specialist, World Bank, Nairobi, 21 August 2013.

through the identification of investment opportunities on renewable energy in the country. UNDP, meanwhile, assisted the Government of Kenya in the formulation of the National Energy Policy of 2004 as part of the technical team drawing on a network of expertise from over 136 countries. Donor influence appears to have been particularly important with regard to access to clean energy in Kenya. Through donor pilot projects, many government policies are formulated or changed, such as the feed-in tariffs and the cook stove initiatives (GIZ), and most projects on solar are donor-financed (by World Bank, IFC, UNIDO and AfD). The different programmes of donors reflect different approaches to the role of energy in development. World Bank programmes for example, emphasise the importance of the efficient transmission and distribution lines in providing affordable electricity and energy sector institutions that are able to collect sufficient revenues to reinvest in grid extension and maintenance. Others, such as GIZ, focus on correcting for information deficits in the market for off-grid solar products, connecting solar technology importers with a network of sales agents in rural areas. As such, different programmes of donors receive variable support from the Ministry of Energy given its priorities in large-scale increases in electricity generation. Most donors, therefore, tend to have energy sector portfolios that cover both support for large scale clean energy generation based on geothermal, for example, and interventions targeted at smaller scale programmes, such as energy efficiency or the training of solar technicians.

Overall, the World Bank is regarded as the most powerful of the energy donors (including by most other donors) and has the most resources committed. Such power has implications for who gets access to energy and on what terms (the poverty element of CCD); whether it is low carbon (the mitigation component) and the extent to which it is climate resilient (which might mean a shift away from the Bank's traditional interests in hydro power for example). In this sense the World Bank portfolio is strongly behind grid access and to that end is involved in technical assistance projects throughout the infrastructure chain from transmission to distribution. Likewise World Bank loan conditionalities drove the unbundling of the Kenyan power sector. Close observers of the process suggest the World Bank works by targeting an issue such as the high unit cost of electricity and then forming a coalition with other donors and private sector actors to push for reforms. Dialogue and commissioned technical studies then lend momentum to calls for unbundling whereafter other donors will often follow the World Bank's lead.

Donor interest in Kenya's energy sector is of course not only driven by the poverty dimension of CCD. Donors also use their material power to create trade and investment openings for their own corporations. An example would be the trade missions from governments in the UK, US and France exploring opportunities for exploitation of geothermal energy. In one such visit in 2012 a delegation led by the UK Minister for Energy and Climate Change came with about 40 delegates from the UK that were interested in renewable energy development including many investors. The fruit of that visit was that many of the investors made deals on renewable energy options with local partners in Kenya for the development and promotion of alternative energy options in the country. The British government were also strong supporters of geothermal power in the Tanzanian Scaling-Up Renewable Energy Programme (SREP), with a British company subsequently gaining a major contract. Likewise JICA's 'Bottom of the Pyramid' work is aimed at helping Japanese companies gain market access and JICA plays a part in showcasing their products,³³ while the US Trade and Development Agency technical support for GDC is clearly aimed at enabling investment opportunities for US geothermal company interests.

The role of China in the political economy of energy in Kenya is interesting in terms of what it indicates about broader shifts in the geopolitical landscape. The 150 billion KSh High Grand Falls hydro project was one of the foci of a trip in 2013 to Nairobi by senior officials from the

³³ Interview with senior energy sector staff, JICA, Nairobi, 22 August 2013.

Chinese Exim bank.³⁴ One effect of China's presence might be to introduce a degree of competition among donors which potentially strengthens the hand and degree of policy autonomy of the Kenyan state, especially since Chinese grants are thought to come with fewer 'strings attached'. According to Treasury officials Kenya 'will never be left behind by the World Bank'.³⁵ But it can increasingly look to China and Russia for alternative sources of finance where loans are faster, come with fewer conditions and are more flexible. As a World Bank official put it: the World Bank is 'not the only show in town...like 20 years ago'. Perhaps by way of response US interest in Kenya appears to be increasing. Besides interest in the East Africa Power Pool, USAID has an 'Enhancing Capacity for Low Emission Development Strategy (ECLDS)' which is an initiative under President Obama to support about 20 developing countries, including Kenya, to come up with low emission development pathways. USAID Kenya now receives about US\$ 4 million annually up to 2017 to develop low emission initiatives in clean energy development and to conduct audits of carbon emissions in Kenya.

Such high levels of interest lend weight to the widespread perception that the low carbon energy access agenda is a very donor driven one, described by one interviewee more sceptically as a 'fashion'. On big generation the only disagreement between donors and government is on coal and the Kenyan government is said to be happy to pursue coal alone according to Treasury officials. Indeed the discovery of new supplies of fossil fuels potentially re-shapes the balance of power between donors and the Kenyan state. As an IFC official put it: 'With the discovery of oil in Turkana and coal in Kituyi areas, the government is becoming more assertive. The government offered a 1000MW opportunity on coal, but donors and investors are reluctant in investing in it because of the greenhouse gas effects'.³⁶

Hence the government of Kenya is adamant that external actors do not drive their priorities, and descriptions of the periodic meetings of the Energy Sector Donor group suggest that these formal information-sharing meetings are not the decisive decision-making arenas in practice. This group of donors meet with the Ministry of Energy every quarter to discuss any issue that donors have with the implementation of various energy initiatives or any policy requirement that is necessary for donor operations in the country, but it is not a forum for decision-making. Indeed, many donors in the energy sector appear to be strongly led by the MoE and key individuals within it in these sessions of the energy group. When Patrick Nyoike was Permanent Secretary he is reputed to have run the meetings like 'a one man show'. Some members are much more active in the room than others in line with their portfolio size and interest. But the space for discussion of pro-poor energy projects in the room is very limited when the focus is on big generation projects in line with MoE priorities which donors have to engage with. Indeed donors are keen to present their programmes as aligning with stated government priorities. For example, the priorities of UNDP in Kenya are defined by the United Nations Development Assistance Framework (UNDAF) which, in turn, is derived from Kenya's Vision 2030 and the Medium Term Plan (MTP). About 40 per cent of these projects are implemented through the government of Kenya using government delivery structures.

It is also the case, however, that outside of these meetings donors can present a 'powerful force' when they coordinate their positions and work in harmony. Despite differences in preferences and power, donors have tried to operate as market facilitators in all of their interventions. For example, the Norwegian government in 2012 signed an MoU with the government to enable them to provide support for clean energy through the 'Energy Plus Initiative'. The initiative revolves around basic principles such as private sector involvement, sector wide application, and results based financing.³⁷ This includes CDKN support where

³⁴ 'High Grand Falls Dam 200 MW Approved' <http://www.skyscrapercity.com/showthread.php?t=941430> (accessed 28 April 2014).

³⁵ Interview with senior staff, Ministry of Finance, National Treasury 15 August 2013.

³⁶ Natural gas has also recently been discovered in Lamu.

³⁷ Interview with senior energy sector staff, Royal Norwegian Embassy, Nairobi 30 August 2013.

DfID and CDKN are now 'keen to move on CCAP implementation through private sector support projects, while noting the importance of government capacity issues'. Support to the private sector often comes in the form of finance, risk mitigation, data collection, resource mapping and in construction of initial infrastructure to attract international capital with the expertise, as we saw above with geothermal. Indeed, if there is common ground between donors and government other than around large scale renewable energy options such as geothermal, it is around the virtues and necessity of private sector investment and cost recovery principles in each area of energy sector development. It is largely the distribution of risk and reward, and the responsibilities for incentivising the private sector that become contested and where disagreements arise.

In the next and final section we discuss some of the potential consequences of the existing form that the political economy of clean energy in Kenya currently takes and what this implies about how difficult trade-offs between climate mitigation, adaptation and poverty alleviation will be resolved and on whose terms. In some cases CCD might be pursued by working within these dominant framings of energy development, and in some cases may require working outside of them, particularly if the interests of the poor are to be reflected in the 'development' of climate-compatible energy.

3.5 Consequences

Key reflections on climate compatible development

This is a critical time for Kenya in deciding upon its energy future and whether and how it will aim to make it 'climate compatible'. Issues of power and political economy will play a key role in determining technological and social outcomes: the winners and losers from different energy pathways and on whose terms and how the trade-offs between competing policy objectives are resolved. This is the value of political economy analysis: to understand the potential for energy systems to meet climate, development and adaptation needs simultaneously. A political economy analysis such as this provides a useful tool for those within and beyond Kenya wanting an understanding of the political landscape and terrain of power they have to navigate in order to affect change and to expand the scope for climate-compatible development.

To be useful, it needs to identify the key actors, institutions and relations of power which preserve unsustainable energy trajectories, as well as highlight opportunities for change. This means engaging in detailed analysis of particular policies, programmes and initiatives, which more general and macro-level analysis of drivers of change are prone to miss. But it also means rendering more explicit the sorts of politics that have a decisive effect on the prospects of lower carbon climate-compatible forms of development that work on transitions has yet to fully explore.

Political economy analysis of relations of power, when mapped onto venn diagrams of CCD (see figure 1.1), can illustrate the conflicts, trade-offs and opportunities of simultaneously trying to reconcile poverty, mitigation and adaptation policy objectives. Which objectives prevail and why is a function of the power of the different actors promoting them. We have seen above how the (energy) poverty element is often reduced to the (significant) question of increasing grid capacity and reliability, without addressing a spectrum of the energy service needs of a large percentage of the Kenyan population that have to meet their energy needs off-grid. The mitigation element of energy technology and policy choices has been largely externally-driven, though some degree of buy-in was sought and achieved through the CCAP. Revealingly, however, this does not yet have legislative backing and its influence over existing energy priorities, targets and plans appears to be limited.

Key moments when these objectives are openly discussed and attempts made to reconcile and integrate them are revealing of the power dynamics at work. The process leading to the development of Kenya's Climate Change Action Plan provides one such moment as does the current review of Energy Policy and donor efforts to finance a lower carbon trajectory for Kenya's energy sector. Yet despite these sites of conflict, Kenya presents a relatively rare case in which national energy security goals (cheap electricity generation) are, on aggregate, seen by both government and donors to be served well by some renewable energy technologies. With a fragile grid, and some of the highest energy costs in region, a variety of drivers conspire to make 'clean' energy and lower carbon options attractive. Whether recent discoveries of oil will unsettle this consensus and degree of support remains unclear. It may not diminish support to renewable energy, but could well impact on the carbon intensity of Kenya's future energy pathway.

On one level, the trade-offs between climate change mitigation and low cost power appear to have been the easiest to resolve on one level in Kenya. Note for example the comparative overlap between the LCPDP and the CCAP in terms of how they evaluate the benefits of different energy options. Where they are able to serve existing interests the potential for conflict is reduced. For example, a powerful coalition of interests between donors and Kenyan government is in favour of geothermal on these grounds. And yet in terms of the poverty dimension of CCD, access to electricity is only one dimension of energy poverty. Cheap electricity does not necessarily mean pro-poor electricity or that all energy service needs are served. The drivers of policy have not, on the whole, been concerns for pro-poor energy access, but rather concerns around energy security and the competitiveness of industry in Kenya.

Running through all discussions and any attempt to construct CCD for the energy sector are deeply politicised questions of energy/ electricity for whom? Industry v consumers; off-grid v on-grid; wealthy v poor consumers, all of which imply important social and environmental justice trade-offs that institutions and policy-processes have to manage. This is apparent around issues of cost recovery in tariffs following partial liberalisation and the conditions considered necessary for the creation of an investor friendly sector. At present, there appear to be few efforts in the Kenyan energy sector to cater for unprofitable consumers in the current model. There appears to be greater interest in developing new financial models to collect revenue from the 'bottom of the pyramid' rather than consider redistributive measures.

Beyond the political economy of energy for whom and for what, we have seen intense competition over which energy sources and technologies are deserving of support from the (entrepreneurial) state or donors. We saw how solar competes with growing investor, government and donor interest in geo-thermal and, increasingly, fossil fuels. Political economy analysis usefully points to how and why some options are favoured over others and the relations of power which explain why some sources and technologies are privileged over others in terms of their fit with the interests of powerful domestic and external actors. It helps to explain the seeming mismatch between the potential of an energy resource and the level of political commitment to harness it. As we have seen with solar, the level of penetration and use is still very low for a country that has a lot of potential for solar generation, and whose vast population lacks access to clean energy. Most projects by institutions and NGOs are small scale and there are no large scale players willing to invest in solar yet due to the perceived high financial risks resulting from unfavourable tariffs and the low prioritisation of solar energy by the government.

Meanwhile, adaptation has arisen largely as a concern in relation to the energy sector in Kenya in terms of climate impacts upon the water flows required for the supply of hydropower. The vulnerability of hydro is already a major driver in Kenya in diversifying the electricity mix. Droughts have long affected hydro capacity and increased the price of energy (with the use of emergency diesel and crude oil). Economic vulnerabilities such as the price

of oil and the exchange rate of Kenyan Shillings versus US dollars (used to buy oil) are also important drivers of policy change. The 1999 drought was instrumental in creating an energy sector crisis (with its attendant load shedding and economic impacts) and driving emergency procurement from World Bank and the subsequent *Energy Sector Dialogue* led by World Bank on institutional aspects of energy crisis and policy. A 2004 energy sector recovery project by World Bank and 2004 Ministry of Energy sessional paper 4 then led to the Energy Act and the liberalisation and unbundling process. We can expect future shocks and events such as this to provide further windows of opportunity for actors to seek to advance their energy policy preferences in moments of crises.

Political economy analysis is useful in understanding blockages to reform on the part of the incumbent regime, but also identifying opportunities for niche technologies and entrepreneurs to move things forward. The rise of solar home systems and the role of the IFC 'Lighting Africa' programme in addressing issues of quality and access of solar products are interesting in this regard, as are developments in private led pico-solar markets (Byrne *et al* 2014). Donors and international businesses have played a key role here as landscape actors working to shape the domestic politics of energy choices according to their mandates which include lower carbon energy in the case of many donors and attractive investment opportunities in the case of international capital. Though they differ in terms of support for particular energy sources and technologies, there is a high degree of ideological alignment among donors and between government and donors around the desirability and necessity of market-based approaches to tackling the countries' energy challenges.

Clear instances of CCD pushed by the government have been harder to come by, however, despite the one-off adoption of measures like reducing VAT on the import of solar equipment in the wake of an effective industry campaign. The subsequent reversal of the VAT exemption suggests the ease with which potentially positive policy change from a CCD point of view can be reversed and, therefore, the challenge of embedding measures that might be considered to be desirable from a CCD point of view. One key lesson, as well as challenge for CCD, then is that it is important not to exaggerate the degree of coherent strategy and planning that guides energy policy as opposed to more reactive and/or opportunistic decision-making. Circumstances, events, priorities and political coalitions mean that the domestic and international landscape within which energy policy is situated is constantly changing. As one interviewee suggested 'energy development in Kenya has not been planned. It has not been an intentional development'. In so far as this is true, this presents difficulties for the implementation of vision strategies or the realisation of mainstreaming goals in the CCAP.

An approach in which the pursuit of poverty, mitigation and adaptation goals are more balanced and effectively integrated, will require working with and against the very powerful actors that benefit from and indeed seek to expand 'climate un-compatible development' since the coalitions of the 'winning and the willing' are currently too weak to drive and sustain change in Kenya, as in many other parts of the world. The shifts of relations of power that this would imply will likely have to come from within Kenya, even if donors and other external actors might be able to support domestic coalitions of change that stand to benefit from the transition to a lower carbon energy trajectory and tip the balance of power somewhat in favour of one set of actors over another. This is because of the centrality of energy to growth and to broader state strategies. Nevertheless, helping to bring together and mobilise groups of business and civil society actors with a material stake in the success of a low carbon economic pathway could be a key contribution donors and others can make.

References

- Baker, L.; Newell, P. and Phillips, J. (2014) 'The Political Economy of Energy Transitions: The Case of South Africa', *New Political Economy*, January 2014
- Bawakyillenuo, S. (2012) 'Deconstructing the Dichotomies of Solar Photovoltaic (PV) Dissemination Trajectories in Ghana, Kenya and Zimbabwe from the 1960s to 2007', *Energy Policy* 49: 410-21
- Briceno Garmendia, C. and Shkaratan, M. (2011) *Power Tariffs: Caught Between Cost Recovery and Affordability*, World Bank Policy Research Paper 5904, Washington DC: World Bank
- Burkeywo, A. (2013) 'Kenya Power Names Dr Ben Chumo Acting CEO', *Standard Digital Business*, 27 June, www.standardmedia.co.ke/business/article/2000086922/kenya-power-names-acting-ceo (last accessed June 2014)
- Büscher, B. (2009) 'Connecting Political Economies of Energy in South Africa', *Energy Policy* 37.10: 3951-8
- Byrne, R.; Ockwell, D.; Urama, K.; Ozor, N.; Kirumba, E.; Ely, A.; Becker, S. and Gollwitzer, L. (2014) *Sustainable Energy for Whom? Governing Pro-Poor, Low Carbon Pathways to Development: Lessons from Solar PV in Kenya*, Steps Working Paper, Brighton: Steps Centre
- Cho, A. and Dubash, N. (2005) 'Will Investment Rules Shrink Policy Space for Sustainable Development? Evidence from the Electricity Sector', in K. Gallagher (ed) *Putting Development First: The Importance of Policy Space in the WTO and IFIs*, London: Zed Books
- Climate and Development Knowledge Network (2013) 'Harnessing Geothermal Energy: The Case of Kenya', *Inside Stories on Climate Compatible Development*, London: CDKN
- Climate and Development Knowledge Network (n.d.) *Kenya Climate Change Action Planning: A Flagship Model for Africa*, cdkn.org/project/from-planning-to-action-in-kenya/, (last accessed June 14)
- De Gouvello, C. (2006) *Rural Electrification Access Expansion Study*, Document of the World Bank 70236, Washington DC: The World Bank
- Deichmann, U.; Meisner, C; Murray, S. and Wheeler, D. (2010) *The Economics of Renewable Energy Expansion in Rural Sub-Saharan Africa*, Policy Research Working Paper 5193, Washington: World Bank
- Department for International Development (2009) *Political Economy Analysis- How to Note*, London: Department for International Development
- Department for International Development (2004) *Drivers of Change, Public Information Note*, London: Department for International Development
- Dubash, N. and Williams, J. (2011) 'The Political Economy of Electricity Liberalisation', in J. Byrne, N. Toly and L. Glover (eds) *Transforming Power: Energy, Environment and Society in Conflict*, New Brunswick: Transaction Publishers

- Financial Times* (2014) 'Tullow Oil Highlights Success in Kenya Despite Poor Drilling Run', 15 January, www.ft.com/cms/s/0/DCF9652E-7DE7-11E3-B409-00144FEABDC0.html#axzz2rEmN90yV (accessed March 14)
- Geels, F.W. (2011) 'The Multi-Level Perspective on Sustainability Transitions: Responses to Seven Criticisms', *Environmental Innovation and Societal Transitions* 1.1: 24-40
- Geels, F.W. (2002) 'Technological Transitions as Evolutionary Reconfiguration Processes: a Multi-Level Perspective and a Case-Study', *Research Policy* 31: 1257- 74
- Geels, F. W. and Schot, J. (2007) 'Typology of Sociotechnical Transition Pathways', *Research Policy* 36.3: 399-417
- Hankins, M. (2000) 'A Case Study on Private Provision of Photovoltaic Systems in Kenya' in *Energy Services for the World's Poor*, World Bank Energy Sector Management Assistance Programme (ESMAP), Washington DC: The World Bank
- Herbling, D. (2014) 'Electricity Company now Freezes New Power' www.businessdailyafrica.com/Corporate-News/Kenya-Power-now-freezes-new-electricity-connections/-/539550/1863688/-/gsg5vg/-/index.html , *Business Daily*, 26 May (last accessed June 2014)
- International Energy Agency (2011) *Energy for All- Financing Access for the Poor*, Special Early Excerpt of the World Energy Outlook 2011, October 2011, Paris: International Energy Agency
- International Finance Corporation (1998) *India, Kenya, and Morocco: Photovoltaic Market Transformation Initiative (PVMTI)*, Project Document, International Finance Corporation, Washington DC
- International Renewable Energy Agency (2013) *Renewable Power Generation Costs in 2013: An Overview*, www.irena.org/home/index.aspx?PriMenuID=12&mnu=Pri (accessed March 2014)
- International Renewable Energy Agency (2012) *2009 Energy Balances*, www.irena.org/home/index.aspx?PriMenuID=12&mnu=Pri (accessed March 2014)
- Karekezi, S. and Kithyoma, W. (2002) 'Renewable Energy Strategies for Rural Africa: Is a PV-Led Renewable Energy Strategy the Right Approach for Providing Modern Energy to the Rural Poor of Sub-Saharan Africa?', *Energy Policy* 30.11-12: 1071-86
- Kern, F. (2011) 'Ideas, Institutions and Interests: Explaining Policy Divergence in Fostering 'Systems Innovations' Towards Sustainability', *Environment and Planning C: Government and Policy* 29.6: 1116-34
- Kern, F. and Smith, A. (2008) 'Restructuring Energy Systems for Sustainability? Energy Transition Policy in the Netherlands', *Energy Policy* 36.11: 4093-103
- Kimenyi, M. (2013) 'Devolution and Resource Sharing in Kenya', *Brookings Opinion*, 22 October 2013, www.brookings.edu/research/opinions/2013/10/22-devolution-resource-sharing-kenya-kimenyi (accessed March 2014)
- Leggett, J. (1999) *The Carbon War: Global Warming and the End of the Oil Era*, London: Penguin

- Lehtonen, M. and Kern, F. (2009) 'Deliberative Socio-Technical Transitions', in I. Scarse and G. MacKerron (eds) *Energy for the Future: A New Agenda*, Basingstoke: Palgrave
- Malingha Doya, D. (2013) 'Kenya Postpones Renewable Energy Drive to Reduce Power Costs', *Bloomberg Sustainability*, 27 November, www.bloomberg.com/news/2013-11-26/kenya-suspends-licensing-new-wind-farms-solar-plants-until-2017.html (last accessed June 2014)
- Mati, M. (2002) *Looting the KPLC: The 21st Anglo Leasing*, Mars Group Kenya, blog, www.marskenya.org (accessed 12 March 2014)
- Mazzucato, M. (2011) *The Entrepreneurial State*, London: Demos
- McLeod, D. (2005) *Review of DFID's Drivers of Change Country Study Reports*, London: Department for International Development
- Meadowcroft, J. (2011) 'Engaging with the Politics of Sustainability Transitions', *Environmental Innovation and Societal Transitions* 1.1: 70-5
- Meadowcroft, J. (2009) 'What About the Politics? Sustainable Development, Transition Management, and Long Term Energy Transitions', *Policy Sciences* 42.4: 323–40
- Meadowcroft, J. (2005) 'Environmental Political Economy, Technological Transitions and the State', *New Political Economy* 10.4: 479–98
- Ministry of Devolution and Planning, Kenya (2013) *Economic Survey 2013 – Highlights*, Nairobi: Ministry of Devolution and Planning
- Ministry of Energy and Petroleum (2013) *5000 + MW by 2016, Power to Transform Kenya – Investment Prospectus 2013-2016*, Nairobi: Ministry of Energy and Petroleum
- Ministry of Energy of the Republic of Kenya (2012) *National Energy Policy*, Nairobi: Ministry of Energy of the Republic of Kenya
- Ministry of Energy of the Republic of Kenya (2011) 'Updated Least Cost Power Development Plan 2011-2013', Nairobi: Ministry of Energy of the Republic of Kenya
- Mitchell, T. and Maxwell, S. (2010) *Defining Climate Compatible Development*, CDKN Policy Brief November 2010, London: Climate and Development Knowledge Network
- Mugalu, M. (2014) 'Kenya Moves Closer to Getting Commercial Oil', *The Observer*, 16 January, http://observer.ug/index.php?option=com_content&view=article&id=29664:kenya-moves-closer-to-getting-commercial-oil&catid=38:business&Itemid=68 (last accessed June 2014)
- Newell, P. (2008) 'The Political Economy of Global Environmental Governance', *Review of International Studies* 34.3: 507–29
- Newell, P. and Mulvaney, D. (2013) 'The Political Economy of the Just Transition', *The Geographical Journal* 179.2: 132–40
- Newell, P. and Paterson, M. (2010) *Climate Capitalism: Global Warming and the Transformation of the Global Economy*, Cambridge: Cambridge University Press

- Newell, P. and Paterson, M. (1998) Climate for Business: Global Warming, the State and Capital. *Review of International Political Economy* 5.4: 679–704
- Newell, P.; Phillips, J. and Mulvaney, D. (2011) ‘Pursuing Clean Energy Equitably’, *Human Development Report Research Paper* 2011/03, United Nations Development Programme, <http://hdr.undp.org/en/content/pursuing-clean-energy-equitably> (accessed march 2014)
- Ng’ethe, N.; Katumanga, M. and Williams, G. (2004) *Strengthening the Incentives for Pro-Poor Policy Change: An Analysis of Drivers of Change in Kenya*, London: Department for International Development
- Ondraczek, J. (2013) ‘The Sun Rises in the East (Of Africa): A Comparison of the Development And Status of Solar Energy Markets in Kenya and Tanzania’, *Energy Policy* 56: 407-17
- Parshall, L.; Pillai, D.; Shashank, M.; Sanoh, A. and Modi, V. (2009) ‘National Electricity Planning In Settings with Low Pre-Existing Grid Coverage: Development of a Special Model and Case Study of Kenya’, *Energy Policy* 37.6: 2395-410
- Republic of Kenya (2013) *Special Issue, Kenya Gazette Supplement*, No 119 (Acts no. 35), Nairobi: The Government Printer, www.revenue.go.ke/notices/pdf2013/VAT%20%20Act%202013.pdf (last accessed June 2014)
- Republic of Kenya (2011) ‘Scaling-Up Renewable Energy Program (SREP) - Investment Plan for Kenya (Draft)’, May, 2011
- Rip, A. and Kemp, R. (1998) ‘Technological Change’, in S. Rayner and E.L. Malone (eds), *Human Choice and Climate Change 2*, Oxford: Oxford University Press: 327–99
- Scaling-up Renewable Energy Program (SREP) (2011) ‘Country Investment Plan Kenya’, presentation at SREP Sub-Committee meeting, Cape Town, June 2011
- Scrase, I. and Smith, A. (2009) ‘The Non-Politics of Managing Low Carbon Socio-Technical Transitions’, *Environmental Politics* 18.5: 707-26
- The Standard (2014a) *Costing Plan for New Power Connection Out*, 7 March
- The Standard (2014b) *Governors Trap MPs in Flight for Country Billions*, 7 March
- United Nations Environment Programme (n.d.) ‘Feed in Tariffs in Kenya’, *Green Economy*, www.unep.org/greeneconomy/SuccessStories/FeedintariffsinKenya/tabid/29864/Default.aspx (accessed 04 March 2014)
- Unruh, G.C. (2000), ‘Understanding Carbon Lock-in’, *Energy Policy*, 28.12: 817–30
- Van der Plas, R. and Hankins, M. (1998) ‘Solar Electricity in Africa: A Reality’, *Energy Policy* 26.4: 295-305
- Victor, D. and Heller, T. (eds) (2007) *The Political Economy of Power Sector Reform: The Experiences of Five Major Developing Countries*, Cambridge: Cambridge University Press
- Wamukonya, N. (2007) ‘Solar Home System Electrification as a Viable Technology Option for Africa’s Development’, *Energy Policy* 35.1: 6-14

Wendle, J. (2013) 'Assessing the Impacts of New IPPs at Country Level? Case Study on Kenya', *Private Sector & Development* 18: 18-21

World Bank (2012) *Project Appraisal Document on a Proposed Series of IDA Partial Risk Guarantees in the Aggregate Amount Equivalent to US\$166 Million*, World Bank Report No: 66363-KE, Washington DC: World Bank