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A new energy future for South Africa: The political ecology of South African renewable energy

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ABSTRACT

Renewable energy remains a contested topic in South Africa. This paper argues that South Africa can build on the momentum surrounding its introduction of a feed-in tariff by enacting policies that may, if given adequate funding and political effort, allow the country to be a world leader in renewable energy. Given a variety of renewable energy policy options for moving forward, a majority of stakeholders consulted in this study strongly prefer the development of a renewable energy manufacturing cluster, in which government develops coordinated policy mechanisms that attract renewable energy manufacturers, over three other policies suggested by the authors. Interviews with key informants that play critical roles in this decision-making process suggest that there are reasons to remain cautiously optimistic about the country's renewable energy future while cognizant of the challenges that must still be overcome. Opportunities for a low carbon renewable energy transition in South Africa include the prevalence of broad stakeholder consultation, facilitated by civil society, and an innovative policy development context. Significant impediments also exist, however, and include pervasive social issues such as poverty and political inertia, along with the ongoing difficulties facing renewable energy technologies in reaching grid parity with inexpensive and abundant South African coal.

1. Introduction

In early 2008, an emergency was declared in the Republic of South Africa. A convergence of mass electrification, strong economic growth in a number of industrial sectors, and inadequate maximum load planning culminated in demand for power that began to outstrip supply. Rolling power outages, many of which lasted for several hours, spread virulently across the country as it quickly became clear that deficient coal production systems and coal delivery coordination could not keep up with the demand (Fell, 2009). From factories to restaurants, financial banking centers to private homes, individuals were forced to endure lengthy power outages and electricity rationing.

As the 2007/2008 electricity crisis made acutely evident, the three key elements of sustainable development – economic progress, environmental sustainability, and social justice (Ibid.) – are fragile and, in South Africa, consistently in tension with each other. As a result of its strong year-on-year economic growth numbers, meeting sustainable development goals were extremely difficult. Between 2002 and 2009, the country increased its coal production from 124.1 to 141.2 million tonnes of oil equivalent per year and became the sixth largest producer of coal (BP, 2011). This enormous growth in heavily polluting fossil fuel energy use is contrasted with relatively little primary contribution from renewable sources (Zakaria, 2009; Jefferson, 2008).

Renewable energy is deeply interwoven with many aspects of sustainable development, yet historically policies have not favoured renewable energy technologies and have lead to a proliferation of private and public sector funding for more profitable, heavily polluting energy generation technologies. In particular, the ideologies of business have fundamentally shaped patterns of energy generation and consumption. Business principles have become an instrumental force in the evolution of politics, economics, and culture, both in South Africa and in Africa more broadly (Stiglitz, 2002).

Yet this power structure has often resulted in inequality and economic injustices as wealth and power grow increasingly concentrated (Winkler, 2005a, 2005b), while also contributing to significant environmental degradation through, inter alia, greenhouse gas emission increases, biodiversity losses, and airborne pollution. Policy makers in South Africa (and elsewhere) have been cognizant of these challenges, but have almost uniformly opted for an "absolute", GDP-centric wealth generation pattern over more diffuse financial benefits and sustainable growth (El-Erian, 2008).

Sebitosi and Pillay (2008) note that many policy debates "assume an intrinsic political process that constantly works in

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favor of the process [of sustainable energy development], but in South Africa that is not necessarily the case." Jefferson (2008) charges that there has been a myopic focus on top-down solutions, resulting in a lack of concentration on improving grassroots involvement. The controls exerted over electricity generation, transmission, and distributions remain highly contentious and "politicized issues" that are reliant on a relatively small number of actors. Renewable energy in particular is often prone to the dogma of vested interests—many of which are in the business community (Sending and Neumann, 2006).

Therefore, it has been contended that what is lacking in South Africa is a focus on a complete "structural change" for the politics of energy and a move away from what Bryant and Bailey (1997) refer to as the "primacy of politics" in all domains of decision-making—a normative progression that is unattainable without an understanding of how the conflux of socio-political, economic, and environmental "structures" shape the existing situation (Lemon and Rogerson, 2002). Following Zimmerer and Basset's (2003) ecological modernization thesis in which institutional and techno-managerial forms are shifted in favor of enhanced environmental quality, it is this structural change that may serve to remedy the social marginalization and environmental degradation that has characterized traditional patterns of energy development in South Africa.

A critical lens on the mainstream practice of sustainable development (Neumann, 2005), however, is required to ensure that this marginalization is not replicated in the context of renewable energy development. Based on this theoretical perspective, this paper asks the following questions. First, it considers how the South African renewable energy landscape can be characterized in terms of the dynamics of social and economic power. Second, it questions how, given the central stakeholder status of business and, to a lesser extent, non-governmental organizations, in renewable development in South Africa, policies can be implemented to help spur private sector businesses towards initiating new renewable development in South Africa. Furthermore, it asks how new renewable energy deployment can be undertaken while still realizing the three goals of sustainable development (economic efficiency, environmental sustainability, and social justice) and ensuring that the needs of other key stakeholder groups are met.

This paper first begins by presenting the key elements of the South African renewable energy context, including the central role of Eskom. Using the lens of political ecology, we consider the distributive dynamics embedded in renewable energy production and consumption in South Africa. This provides the foundation upon which empirical research was carried out to explore both the differential power relations between key renewable energy players in South Africa (such as the business community and NGOs), as well as preferred policy options for moving forward in the context of sustainable development.

2. The renewable energy transition in South Africa

South Africa currently relies almost exclusively on fossil fuel-based energy sources, particularly coal-generated electricity. Eskom (formerly known as the Electricity Supply Commission and the major publicly backed utility for the entire country's electricity grid) holds a total installed generating capacity of approximately 42,000 megawatts (MW), with a peak capacity of approximately 34,200 MW (African Wind Energy Association, 2008). This generating capacity routinely operates at peak levels—largely due to heavy industrial consumption. As a result, preventative maintenance is generally neglected and potential long-term grid functionality is less stable. Given that the costs of these coal-fired power plants have been nearly completely amortized, the country has some of the lowest electricity prices in the world, making any future changes politically and economically difficult (Eberhard, 2005). Eskom has enjoyed several enormous government advantages, including virtually unmatched incentives like long-term coal purchasing contracts at fixed prices, free forward exchange cover from government entities, and long-term tax exempt status until the year 2000 (Winkler, 2005a, 2005b).

A recent The World Resources Institute report (2010), however, notes that large-scale tariff prices are being re-negotiated and, in an attempt to spur domestic and foreign interest in renewable energy investment, the country's department of environmental affairs has promised to lower greenhouse gas emissions from the "business as usual projections" by a third in the next 10 years. In an effort to meet Eskom's massive funding gap, the National Energy Regulator of South Africa (2009) has approved a 25% annual increase every year between 2010 and 2013 that will help to secure the financial stability of Eskom (The World Resources Institute, 2010). Moreover, through a combination of demand reduction, new power generation construction, and the integration of new renewable energy sources from private sector producers, Eskom hopes to continue a prodigious expansion process that electrified 3.8 million households over the course of eight recent years (Eberhard, 2005).

Eskom plans to continue to inject massive capital investments into an expansion of the country's energy infrastructure, with a primary focus on expanding new coal-fired generation infrastructure. Kusile and Medupi, two major coal-fired plants, are scheduled to come online in the near future. The progressive single buyer initiative, a much smaller initiative, guarantees the purchase of green power at premium prices and includes detailed provisions for fundamental issues of risk allocation, government support, and attractive pricing (Eskom, 2010). Eskom, again in partnership with the DOE, has also embarked on a revamping of the national energy policy. This process includes improving economic metrics of energy performance, gradually decreasing coal's share of the energy mix through a combination of less carbon-intensive conventional sources and renewable energy deployment, and reducing coal consumption from the current level.

Of particular importance to South Africa and neighboring African countries, renewable energy generation offer the potential to actively combat the emerging threat of climate change. Climate change threatens to derail the improvements in living standards that have been realized in many areas of sub-Saharan Africa over the last fifty years by increasing extreme weather events, raising sea levels, and reducing crop yields, among other damaging effects (IPCC, 2007). South Africa is among a small number of countries that emit disproportionately high levels of greenhouse gases, mainly due to relatively high energy intensity per unit of GDP and a continued reliance on a heavily polluting "minerals-energy" complex (Buscher, 2009).[1]

In 2009, Greenpeace and the European Renewable Energy Council commissioned an assessment of renewable potential in South Africa. The study assessed the likely outcomes of three scenarios: 1) the "business as usual" approach, 2) the desired government approach of minor changes to the existing path, and 3) a radical reformation of renewable energy policies and massive

[1] The concept of a "minerals-energy complex" was introduced in the seminal study by Fine and Rustomjee (1996), and is argued to lie at the core of the South African political economy both because of its significance in terms of economic activity as well as its fundamental influence on the economy as a whole. The MEC "outlines the form of capital accumulation as incorporating a core set of industries associated with large-scale mineral extraction, energy provision, and associated down-stream sectors; it can be expanded to characterize a broader system of assumption underpinning the incorporation, or not, of other sectors and socio-economic development more generally" (Minerals Energy Complex and Comparative Industrialization Working Group, 2011).