



# Spatial processes and politics of renewable energy transition: Land, zones and frictions in South Africa



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## ABSTRACT

This paper seeks to make a contribution to on-going debates about how to conceptualise the spatial processes of renewable energy transition. It makes a case for understanding renewable energy transitions as simultaneously spatial and political processes, constitutive of new territories and configuring development pathways. Drawing on a case study of South Africa's Renewable Energy Independent Power Procurement Programme (REI4P), the paper explores the ways in which energy transitions are intrinsically bound up with both the materiality and the historical and contemporary politics of land. It then examines the relationship between energy transitions and territory to conceptualise the ways in which transitions take on an experimental shape in the form of 'zones'. The paper argues that these zones are new territories deploying forms of spatial and political-administrative exceptionality, which allow political and economic actors to exercise authority and commercial power. Two types of zone emerging from South Africa's energy transition exemplify these processes: legally-defined zones for the development of solar and wind energy and zones of socioeconomic development required by REI4P. The paper explores the spatial and political consequences of these strategies and suggests that these may not necessarily translate into conflict and confrontation, but instead produce uneasy co-existences of different political, social and spatial projects and interests, with potential to create new polities.

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## 1. Introduction

There is a long and rich history of engagement by geographers with energy (see [Calvert, 2015](#)), but until recently, the importance of geographical approaches to understanding renewable energy transitions has been largely neglected. As [Shove and Walker \(2014\)](#) argue, energy policy, engineering and material science tends to focus on methods for either meeting demand more efficiently or for reducing CO<sub>2</sub> emissions, while social scientists tend to focus on questions about the politics of access, provision and supply. There have been basic analyses of some of the geographical dimensions of contemporary energy challenges at different scales (global, regional, urban, household); geographers have also used the concept of 'energy landscape' to analyse how different modes of energy production, distribution and use underpin material relations, such as landscape form and livelihoods ([Calvert, 2015](#); [Nadai & Van der Horst, 2010](#)). However, debates about renewable energy transitions have tended to focus on the temporal dimensions of 'transition' and to neglect "the way in which spatial

processes shape energy systems and influence their capacity for transformation" ([Bridge, Bouzarovski, Bradshaw, & Eyre, 2013](#), p. 332). Bridge et al. call for interventions that seek to examine the spatial organisation and governance of new energy systems, and to generate new ways of thinking about energy transition as a spatially-constituted process "involving the reconfiguration of current patterns and scales of economic and social activity" (2013: 231). As [Huber \(2015: 27\)](#) argues, understanding renewable energy transitions "will also require new spatialities and new spatial imaginations."

In response, this paper seeks to make a contribution to on-going debates about how to conceptualise the spatial processes of renewable energy transition, while also making a case for understanding renewable energy transitions as simultaneously spatial and political processes. Timothy [Mitchell \(2011\)](#) has illustrated how the material properties of carbon fuels revolutionised first western and then global polities. Due to its bulk and dependency on labour to move it, coal gave working-class people and labour unions new power, acting as a catalyst for democracy and progress. The fluid properties of oil allowed elites to regain control over energy supplies, devise systems through which to maximise profits and reduce

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vulnerability to democratic pressures. Oil also made it possible for the first time in history to reorganize political life around the management of ‘the economy’ and the promise of its infinite growth. The global ramifications of renewable energy transitions are beyond the scope of this paper, but it makes a case for examining the ways in which such transitions are already constitutive of new territories and polities in particular locations. Specifically, the paper first explores the importance of acknowledging the ways in which energy transitions are intrinsically bound up with both the materiality and the historical and contemporary politics of land. Second, it develops the notion of energy transitions as a form of territoriality (Bridge et al. 2013) to conceptualise the ways in which they take on an experimental shape, deploying forms of spatial and political-administrative exceptionality – ‘zones’ – that allow political and economic actors to exercise authority and commercial power. Third, it explores the unintended spatial and political consequences of these strategies, reflecting on the kinds of polities that are emerging and could emerge within these spaces.

The paper develops these ideas through an exploration of South Africa’s renewable energy transition, which has proposed around 600 renewable energy projects, both grid and off-grid and ranging from utility-scale to household-level systems, in the absence of a consolidated strategic spatial plan (Cape-Ducluzeau and van der Westhuizen, 2015). Yet, as this paper argues, spatial processes are shaping the emerging energy transition and their consequences are likely to be dramatic. The South African government has recently committed to a strategy for electricity generation until 2030 that makes provision for a diverse energy mix. As part of this, in 2011 it launched the Renewable Energy Independent Power Producer Procurement Programme (REI4P), a public-private partnership that provides impetus to a low-carbon energy transition. This is an ambitious programme that attempts to ensure renewable energy capacity is fully developed while mediating the competing powerful interests involved and ensuring that some of the profits are retained in South Africa. To date, REI4P has procured approximately 5041 megawatts (MW) of renewable energy in four bidding rounds at costs increasingly competitive with coal-fired electricity by mobilising over R168 billion (£8.57 billion)<sup>1</sup> of investment, largely from the private sector (Papapetrou, 2014). South Africa has thus secured more investment for more independent power generation than has been achieved across the entire African continent over the past 20 years and, since 2012, has ranked among the top ten countries globally in renewable energy Independent Power Producer (IPP) investments (Eberhard, Kolker, & Leigland, 2014). The scale remains relatively modest when gauged against planned procurement from other energy sources (7400MW from new coal-fired, gas-fired and hydro-electricity generation; 9600MW from a nuclear-build programme; 15,000MW from the Grand Inga Hydro-electricity Partnership in the Democratic Republic of Congo).<sup>2</sup> However, the commitment to sourcing over 40% of new electricity generation from renewable sources by 2030 represents a considerable policy shift that positions South Africa as a leading player in utility-scale wind and solar power generation, and in which the REI4P is a significant driver.

While it is too early to assess the success of REI4P, this paper examines the ways in which it is already remaking territory, creating new polities, and producing new scalar relationships

within and beyond South Africa. It draws on research conducted between 2012 and 2014, including six weeks of fieldwork in the Northern and Western Cape provinces. Thirty-six interviews were conducted with key informants including: two local government officials and three Community Programme Managers involved in renewable energy in both provinces; CEOs in three sustainable energy companies; three independent sustainability consultants; twenty-one individual off-grid energy consumers in five different locations in both provinces, and; six sustainable development professionals. The paper also draws on document analysis of government renewable energy policies, industry and government press releases, and other reports on South Africa’s renewable energy roll-out. The first section of the paper makes a case for the importance of situating REI4P within histories and politics of energy and land, focusing specifically on the simultaneous re-valuing and discursive occlusion of land within South African renewable energy policy and debate. The second section of the paper uses the concept of ‘the zone’ to examine new territories emerging from and shaping the renewable energy transition. The first are zones that have been identified as optimal for the location of wind and solar energy projects, and in which business is being made easier for international investors in renewable energy. The second are zones for development surrounding individual renewable energy projects, which are spatially defined by procurement rules and in which IPPs are required to deliver socio-economic benefits to the local ‘community’. Drawing on Easterling (2014a: 1–2), the paper argues that these two zones are “meta-infrastructures” administered by public and private actors and creating “de facto, undeclared forms of polity”. They are spaces in which “extrastatecraft” – activity that is both outside of and in addition to statecraft – is performed, and in which state and private sector forces have attained “power and administrative authority necessary to undertake the building of infrastructure” (*ibid.*: 2). A critical question in the context of South Africa is whether or not these two different zones are also spaces in which a just energy transition (Newell & Mulvaney, 2013) can occur. Inspired by Tsing’s (2005) notion of “zones of awkward engagement”, the paper suggests that within these zones global investors and speculators, national and local government discourses of development, and the autonomy and desires of the poorest in society exist together in a state of friction. The paper explores the possibilities for the emergence of new polities out of these frictions and reflects on their likely outcomes. Finally, it draws some tentative conclusions about the broader significance of understanding renewable energy transitions as simultaneously spatial and political processes.

## 2. Renewable energy transition and the politics of land

Approximately 96% of South Africa’s electricity is generated by Eskom, the largest energy producer in Africa (Baker, Newell, & Phillips, 2014); 93% of Eskom’s generation is coal-powered (Tyler, Boyd, Coetzee, & Winkler, 2011). South Africa’s minerals-energy complex (Fine & Rustonjee, 1996) – a regime of accumulation that has its origins in apartheid – continues to exert enormous influence over the country’s energy sector (Swilling & Anneke, 2012). However, South Africa is experiencing an on-going energy crisis, shifting from historic over-capacity fuelled by cheap domestic coal for commercial and industrial use under apartheid, to rising demand and falling reserves fuelled by economic growth and post-apartheid grid expansion. The crisis has been exacerbated by lack of infrastructure investment, fuelled in large part by uncertainty within government strategic planning. In the late 1990s, the government drew up plans to partially privatise Eskom, including divesting 30% of production capacity, outsourcing functions, creating independent regional distributors and fully corporatising

<sup>1</sup> Currency conversions are based on July 2015 rates. The Rand has fallen steadily against major global currencies since 2011, when £168 billion would have equated to £14 billion.

<sup>2</sup> These figures were confirmed in the 2015 State of the Nation Address (see <http://www.gov.za/president-jacob-zuma-state-nation-address-2015>, accessed 12/6/15).

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