Energy Research & Social Science xxx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

Energy Research & Social Science

journal homepage: www.elsevier.com/locate/erss

Original research article

Towards new configurations of urban energy governance in South Africa's renewable energy procurement programme

Megan Davies*, Mark Swilling, Holle Linnea Wlokas

Centre for Complex Systems in Transition (CST), School of Public Leadership, Stellenbosch University, Private Bag X1, Matieland 7602, South Africa

ARTICLE INFO

Keywords:
Energy transitions
Development
REIPPPP
Urban energy governance

ABSTRACT

The South African Department of Energy launched the Renewable Energy Independent Power Producers Procurement Program (REIPPPP) in 2011 to secure additional renewable energy generation capacity for South Africa's national electricity grid. The procurement framework included expenditure targets to drive socio-economic (SED) and enterprise development (ED) in local communities, together with requirements related to job creation through local employment as well as local community shareholding [2]. The article explores the opportunities opened up for alternative configurations of urban energy governance given the emergence of new dispersed and decentralised socio-technical infrastructure and the accompanying place-based investments by Independent Power Producers (IPPs). What follows is first an analysis of the relationship between the spatial realities of energy transitions and the political dynamics of the urban. Thereafter the article presents an exploration of the developmental implications of the programme together with three scenarios which might contribute towards *enhancing the development outcomes of the REIPPPP*, *integrating IPPs into local economies* or *building sustainable energy democracies*. In this way, we try to demonstrate how the expansion of utility scale renewable energy infrastructure might catalyse the emergence of new 'spatial imaginaries' [12] and the possibility of building 'new forms of collective life' [13] in South Africa.

1. Introduction

The South African Department of Energy (DoE) launched the Renewable Energy Independent Power Producers Procurement Program (REIPPPP) in 2011 as a competitive tender process to secure investment into grid-connected renewable energy generation capacity for South Africa's national electricity grid [1,2]. The procurement framework included expenditure targets to drive socio-economic (SED) and enterprise development (ED) in local communities,[1] together with requirements related to job creation through local employment as well as local community shareholding [2]. In essence, "the programme is designed to reduce the country's reliance on fossil fuels, stimulate an indigenous renewable energy industry and contribute to socio-economic development and environmentally sustainable growth" ([2]:7).

With its rapid expansion, the renewable energy sector in South Africa has gained local traction and international acclaim, strengthening the prospects for a low-carbon transition [3]. This has entailed the integration of utility scale renewable energy into national energy and climate change-related policies and targets, for example the National Development Plan 2030, Integrated Resource Plan 2010–2030 and National Framework for Sustainable Development 2008. The South African case is relevant internationally when considering the deployment of renewable energy technologies and the related financial and economic investment this has attracted to the country; it is also significant given how this 'green' agenda has been coupled to developmental ambitions reflected in the unique procurement framework [4,1,2]. The linking of low-carbon and developmental targets is a distinctive feature of the REIPPPP and, as such, South Africa becomes increasingly prominent as a reference point for the deployment of renewable energy technologies across Sub-Saharan Africa and the global south.

Interest in the REIPPPP is reflective of the burgeoning international focus on the geographies of energy transitions [5–7]. This new literature considers the wider socio-spatial and political implications of the decentralised and distributed renewable energy infrastructure, in particular how this unfolding energy transition could significantly affect local, community-level and urban governance configurations. The article proceeds from the position that the distributed nature of utility scale renewable energy infrastructure, coupled with the place-based developmental ambitions of the REIPPPP, brings into sharper focus the

* Corresponding author.
E-mail addresses: megandavies@sun.ac.za (M. Davies), mark.swilling@spl.sun.ac.za (M. Swilling), holle@sun.ac.za (H.L. Wlokas).

[1] The REIPPPP defines 'local communities' as settlements located within a 50 km radius around IPP project sites.

https://doi.org/10.1016/j.erss.2017.11.010
Received 15 March 2017; Received in revised form 25 October 2017; Accepted 7 November 2017

spatially constituted political and urban governance implications of South Africa's renewable energy transition.

Thus far, the emerging geography of the programme has predominantly been located in the discourse of sustainable rural development, small town regeneration and local economic development in small rural towns [8,2,7,9]. While this might be appropriate given the location of the infrastructure assets, this article argues that it is more fruitful to position this discussion of the developmental opportunities generated by the REIPPPP in wider debates about the future of urban governance, with special reference to opportunities for novel and transformative ways of working. In essence, urban governance refers to the assemblage of institutions and processes that are constituted in each locality by national regulatory frameworks to manage spatially configured infrastructure networks and socio-economic development processes [10,11]. By referring to experimental governance in the discussion below, we are referring to any significant institutional and/or process changes that may emerge at the local or urban level that respond in some way to the emergence of new socio-technical infrastructure configurations, with special reference in this case to renewable energy infrastructures.

In the context of an unfolding energy transition that, by definition, creates new socio-technical infrastructures at the local level, it follows logically that this new material condition can create, under certain context-specific conditions, new 'spatial imaginaries' [12] that, in turn, shape the exploration of governance experiments at the local or urban scale.

The article first explores the relationship between the material spatial realities of energy transitions and the political dynamics of the urban. This comprises the analytical framework that is used to explore the developmental implications of the REIPPPP. This is done with particular reference to the ZF Mgcawu Development Coordinating Forum in the Northern Cape, a multi-stakeholder initiative that is suggestive of the potential of alternative modes of urban energy governance. In the final section, the article reflects on the potential of experimental multi-stakeholder partnerships to support broad-based coalitions and new configurations of urban energy governance in the REIPPPP. In this way, the article tries to demonstrate how the expansion of utility scale renewable energy infrastructure might catalyse the emergence of new 'spatial imaginaries' [12] and the possibility of building 'new forms of collective life' [13].

2. Research methodology

As part of research by the *Renewable Energy for Transitions* group at the Centre for Complex Systems in Transition at Stellenbosch University, this article builds on, and hopes to contribute to, a growing body of evidence that is unpacking and constructively engaging with the developmental impact of the REIPPPP in South Africa. This includes perspectives on finance [14], community development practices [15–17], employment and job creation [65] and the politic of space [7]. Furthermore, it speaks to an emerging research agenda which concerns the opportunities opened up by shifts in the "spatial constitution" of society around renewable energy infrastructure [18]. The paper draws from the lead author's ongoing PhD research, that uses a transdisciplinary case study methodology to facilitate knowledge co-production around issues of partnership, collaboration and experimental governance in the REIPPPP. This research approach builds on sustained engagement in the REIPPPP, specifically, an initial six weeks of embedded field work in the Northern Cape between April and July 2016, and continuous participation in the ZF Mgcawu District Development Coordinating Forum, involvement in the community development industry working groups, as well as engagements with development financing institutions including the Development Bank of Southern Africa. Qualitative research methods have included the case study research, participant observation, semi-structured interviews and the analysis of secondary data and grey literature.

3. The spatiality of energy transitions: politics, governance and the urban

A burgeoning literature on energy transitions demonstrates the centrality of energy in the structural transformation of society [13,19–23]. The notion of an 'energy transition' is without a universal definition, however, it denotes a shift in the nature or pattern of how energy is used within a system [22]. What is widely accepted about energy, however, is that it is multidisciplinary and crosscutting in nature, and core to the evolution and progression of human societies [13,21,22,24,25].

From a wide reading of the energy research field, particularly in terms of the geographies, spatiality and materiality of energy, it is evident that a new dynamic is emerging with the uptake of renewable energy that is divergent from the spatial organisation of a fossil-fuel based economy [13,21,26–30,23,5]. For Huber [12], "any planning or concern for an energy transition to renewable or alternative energy must put space at the centre of the conversation" (2015:2). This spatial transformation in the structuring of energy infrastructure has far reaching impacts when we are reminded of how energy is the material basis of economic and political systems.

For Calvert [5] energy geographies signify that the various geographic imaginaries, spatial identities and connections to place are co-productive with particular systems of energy provision. As the physical depiction of an emerging energy regime, renewable energy infrastructures contrast strongly with the nature of fossil-fuel infrastructures; thus, these geographic imaginaries, spatial identities and connections to place are constituted differently. In some ways, renewable energy infrastructures "provide us with new visual reminders that our energy comes from somewhere" ([26]:144), but more profoundly, challenges the unnoticed, often inconspicuous and centralised character of fossil-fuel infrastructure [25,31]. This 'unmasking' of conventionally unseen energy infrastructure, demonstrates the "stark contrast between carbon-intensive energy sources that have largely unnoticed supply systems, and renewable alternatives…that remain eminently obvious" ([25]:109). Hirsh and Jones [25] highlight the changes in visual and cognitive engagement that people experience with renewable energy infrastructures and how these differ strongly from the largely unperceived—other than in times of disruption, crisis or failure [89]—carbon-intensive energy infrastructures that still dominate our global energy system.

As well as being geographically dispersed, renewable energy infrastructure is also connected to complex financial flows and regulatory frameworks which means that energy infrastructures and various components of the energy system are embedded in distinctive ways within diverse environments, and that the "networked natures of the systems itself produces geographies of connection, dependency and control" ([28]:333). According to Nadaï and Horst (2010:145), "the transformation from fossil fuels to (more) renewable sources of energy, just by the mere fact that they are more decentralised, brings new patterns into the picture: new powers, new connections and new relations". Referring to renewable energy projects, Mitchell [13] argues that "[t]hese projects and the arguments that support them indicate not that forms of energy determine modes of politics, but that energy is a field of technical uncertainty rather than determinism, and that the building of solutions to future energy needs is also the building of new forms of collective life" (2011:238).

The complexity of a transition from carbon-intensive energy to renewables is "much more than a shift in sources, it entails all accompanying and consequent changes in the infrastructure and its management" ([32]:275). Governance, and the 'building of new forms of collective life', is thus a major component of navigating energy transitions. Although as many suggest, the governance challenges associated with a decentralised energy future necessitate deeper consideration, where existing frameworks are not sufficient for understanding or addressing challenges associated with the geographically divergent nature