



Original research article

The political economy of energy transitions in Mozambique and South Africa: The role of the Rising Powers



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ABSTRACT

In a world in which rising powers are reconfiguring global development trajectories with significant implications for their sustainability, it becomes increasingly important to understand *whether* and *how* low carbon energy transitions might be enabled or frustrated by this new global geography of power. Towards this end, this paper makes the case for bringing together insights from three broad sets of literature on: (1) socio-technical transitions; (2) the rising powers as (re)emerging development donors and; (3) energy geographies. In building bridges between these three bodies of scholarship we seek to develop an alternative analytical framework that attends more effectively to the global and domestic political economy of transitions and whose value is illustrated empirically in relation to the growing involvement of Brazil, India and China in the energy systems of Mozambique and South Africa. We argue that this alternative framework provides a better understanding of how the rising powers are influencing the changing relationships between low carbon and fossil-fuel based energy pathways and of the multiple roles they are playing in the development and transformation of energy systems, through the development of 'niches' where innovation can emerge, or in reinforcing or challenging existing 'regimes' or dominant ways of providing energy services.

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1. Introduction: The Rising Powers and energy transitions in Southern Africa

In recent years the growing importance of rising powers like China, India and Brazil in the African continent has attracted considerable attention and controversy. Their (re) emergence as international development actors has often been discussed principally in terms of their role in the exploitative acquisition of natural resources such as coal, oil and gas and their growing presence in Africa has regularly been represented as a kind of neo-colonial resource 'grab' characterised by a plundering of Africa reminiscent of the darkest days of empire [58]. What such representations preclude, however, is recognition of the simultaneous and growing involvement of the rising powers in the transfer of renewable energy technologies in Africa and their potential significance in

reconfiguring a range of energy systems within the continent. In 2014, for the first time ever, over half of all new annual investment into clean energy power generation globally went toward projects in emerging markets, rather than toward wealthier countries [19] whilst "South-South" investment surged to US\$79 billion in 2014 from US\$53 billion the year prior.

This paper seeks to address the question of how best to *theorise* these emerging forms of South-South co-operation around clean energy and comparatively draws out the different ways in which China, India and Brazil have facilitated the growth of renewable energy technologies in each country alongside the pursuit of more 'traditional' forms of resource diplomacy designed to enhance access to hydrocarbon resources like coal and gas. It seeks to explore the significance of this engagement and the different forms it is taking in two contrasting countries in Southern Africa, Mozambique and South Africa, characterised by very different energy systems and political economies. In the first section we identify three bodies of literature relevant to the study of emerging energy transitions in Southern Africa and examine their relative utility in understand-

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ing the reconfiguration of energy systems in the region. Firstly, we engage with the literature on theorising energy transitions which usefully situates the emergence of new ‘niche’ technologies, such as renewables, in interaction with incumbent energy ‘regimes’ such as fossil fuel based power systems and engages with the detail of the practice and politics of these socio-technical arrangements [30]. Secondly, we engage with literatures concerned with the rising powers as emerging development donors and global actors in the new ‘scramble for Africa’ which usefully raises questions about the changing nature of international development co-operation, the growing significance of south-south flows of trade, investment and finance and the geopolitics of resource extraction and diplomacy. Thirdly, we engage with a growing body of scholarship concerned with ‘energy geographies’ which addresses energy infrastructures, transitions, agencies and materialities and which views ‘energy landscapes’ as dynamic entities constituted by complex local, national and transnational flows of technology, funding and ideology. We argue that although each of these bodies of scholarship have a number of merits, none of them, on their own, are sufficient and as a result we seek to develop and apply a more integrated and interdisciplinary framework.

In the second section of the paper we then develop an alternative framework that provides a more multi-actor and ‘global’ reading of the politics of transition by integrating these three groups of literature and by bringing them into conversation with a number of different strands of work within global political economy concerning the role of transnational actors in enabling and constraining particular energy pathways. Engaging with political economy enables a better understanding of the discourses, institutions and interests that shape energy transitions and enhances our understanding of who sets the terms of energy transition and how, whose interests are served as a result and how relations of power within and beyond the state shape the adoption of one energy pathway over another.

Our proposed alternative and integrated framework, we argue, enables a better handle on the *power*, *capacity* and *autonomy* that states have to secure and negotiate different outcomes with important implications for diverse pathways. It allows for an analysis of the transnational spaces of transition by attending to questions of geopolitics, diplomacy and international relations. But at the same time it also helps to situate, historicise and contextualise the embryonic energy transitions unfolding in South Africa and Mozambique by complementing the more macro focus of global political economy on the broader landscape of power (regarding aid dependence and attractiveness to international capital for example) with a grounded and nationally-oriented domestic political economy analysis (regarding the role of ruling elites and labour for example).

In the third section we then seek to systematically apply this framework to an analysis of the energy transitions unfolding in Mozambique and South Africa. Our analysis is informed by 178 interviews¹ undertaken in Mozambique, South Africa, China, India and Brazil during 2012–2014 and by the creation of a database of low carbon energy projects in South Africa and Mozambique established to understand trends in investments by type of actor, energy source and service, technology type and provider, project scale and location, levels of grid connectivity and type of financing. The data was gathered using policy reports, press releases and web-based sources and then triangulated with findings from interviews and project site visits. Before developing an alternative framework to

account for the trends observed in our fieldwork, we first reflect upon existing ways of explaining energy transitions to garner applicable insights.

2. Theorising energy transitions and the rising powers: the limits of existing approaches

In seeking to understand *whether* and *how* low carbon energy transitions might be enabled or frustrated by the rise of emerging development donors and the growing significance of ‘south-south’ co-operation around clean energy there are a number theoretical and conceptual tools and literatures that provide some useful intellectual purchase. Of particular interest here is the growing literature on socio-technical transitions. Conceptualised as ‘major technological transformations in the way societal functions such as transportation, communication, housing, feeding, are fulfilled’ [30: p. 1257], a great deal of insight into the nature of socio-technical transitions has been generated through a ‘multilevel perspective’ (MLP) on transitions. The multi-level approach identifies different sets of processes operating across three conceptual levels – the landscape, regime and niche – through which socio-technical systems are both sustained and reconfigured.

The ‘landscape’ of a socio-technical system is seen to comprise of the structuring forces of ideologies, institutions, discourses and political and economic trends that constitute enduring forms of socio-technical organisation. ‘Regimes’ in contrast are made up of the complex of practices, regulatory requirements, institutions and infrastructures required to achieve particular societal functions, such as housing, mobility or power. This provides a useful point of departure for thinking about the role of incumbent actors involved in fossil-fuel energy systems whose structural dominance in energy investment and policy shapes the spaces available for developing alternatives. ‘Niches’ meanwhile provide a space within which social and technological learning processes, networking, and expectations develop in relation to alternative forms of socio-technical configuration. Niche spaces can often fail to cultivate the economies of scale and scope to become competitive, particularly without support from the landscape or the regime.

Successful systems are regarded as tending towards stability, held in place through regimes with ‘relatively stable configurations of institutions, techniques and artefacts, as well as rules, practices and networks that determine the “normal” development and use of technologies’ [65; p. 1493]. The operations of these regimes in turn create both ‘path dependency’ and ‘lock-in’ to certain forms of dominant energy socio-technical configuration while others remain ‘locked-out’ and marginal. It is expected that structural changes in the socio-technical system occur where there are ‘alignments’ between the three levels resulting in ‘transformations’ [32] or in ‘transitions’ [30]. Thus the ways in which regimes, niches and landscapes interact will have an effect on the form of transformation that unfolds and a plurality of possible transformation pathways can result. Typically, these involve shifts that permit the increasing influence and development of niches as socio-technical configurations, and the unsettling and decline of regime configurations, such that what had hitherto been niche development pathways transform into more regime-like paths. This would be indicated not only by increasing shares of renewables in the energy mix, for example, but also by greater power for renewable energy actors in the design and development of energy institutions.

There are a number of limitations, however, with this corpus of scholarship and its ability to effectively account for and make sense of emerging south-south co-operation around clean energy. Firstly, there is the Eurocentric orientation of much theorising about transitions to date. Work on socio-technical transitions has typically been focused on Europe and as a result, it makes assumptions about the

¹ Interviews were undertaken with project developers, industry and industry associations, civil society organizations and trade unions, governments, the utilities and municipal level entities, bilateral donors, debt financiers, equity investors, academia and think tanks.

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