Energy distribution trajectories in two Western Indian states: Comparative politics and sectoral dynamics

Siddharth Sareen

University of Bergen, Department of Geography, Fosswinckelsgate 6, 5007 Bergen, Norway

ARTICLE INFO

Keywords:
Socio-technical transitions
Electricity distribution sector
Energy governance
India

ABSTRACT

This article unpacks the institutional bottlenecks and path dependency holding back energy transition in two part-desert states with a sixth of India’s land, despite potentially high scope for solar growth and a systemic move towards a sustainable profile. As heavily-indebted electricity distribution companies in Rajasthan seek to emulate thriving counterparts in Gujarat and turn to technology adoption, efficiency enhancement and loss reduction measures, this study offers an in-depth stakeholder analysis, reflecting on implications for energy futures. Based on 56 expert interviews, it pries open the political economy of distribution within energy transition in Western India, spanning concerns of various consumers and providing insights into the roles played by several institutions, from regulatory commissions to renewable energy agencies. The article adds to existing scholarship by explicating how institutional conditions promote and hold back transitions to sustainable energy futures, bookmarking stakeholders’ expectations with regard to current developments on tariffs, renewable energy growth targets and compliance, the advent of competition, and public participation. It contributes a comparative understanding of the current issues, concerns and ideologies that characterise this transforming sector at the state level, intertwining electricity distribution trajectories and regional political economic developments to explain the dynamics of change and nature of resistance.

1. Introduction

In the early 2000s, even an astute observer of power sector reforms in India might have struggled to identify many differences between the electricity distribution sector in Gujarat and Rajasthan. The cocktail of liberalisation, privatisation and globalisation that characterised India’s approach to governance in the 1990s made its impact felt in most sectors of national importance, and the new millennium saw both the Rajasthan State Electricity Board (RSEB) and the Gujarat Electricity Board (GEB) preparing to unbundle their gargantuan selves into separate public utilities for generation, transmission and distribution. Guided by newly-established quasi-judicial independent regulatory authorities, each state set about formulating and implementing various efficiency measures in the distribution sector, which had long suffered from relative inattention, being side-lined within the black-box state electricity board structure. The past decade has shown that the early- and mid-2000s were crucial for the very different trajectories along which Gujarat and Rajasthan’s distribution sectors have developed: by 2015, Gujarat’s four public distribution utilities were the only ones in India to be consistently awarded A-plus credit ratings, whereas Rajasthan’s three public distribution utilities were being bailed out of over US$10 billion of debt by the state government. Numerous differences in the political economy of each state’s electricity distribution sector help explain such contrasting financial performances, and unpacking them as issues of governance shows the bearing they have on many vital aspects of the sector’s trajectory going forward.

Yet little regional scholarship exists to explain the institutional factors driving these contrasting developments. Combining a focus on the dynamics of transition and the bottlenecks that constitute resistance to change with an appreciation of how these are embedded within regional political economies, I argue that attention to context is critical for furthering our understanding of regional energy transitions, and demonstrate the particular factors that have proven key to determining sectoral trajectories in these cases. This article has a twin focus: the first part carves out key contemporary historical and institutional developments in both states’ distribution sectors to set up a comparative context; the second part draws out the implications, divergent yet similar, that the current sectoral configuration has for a variety of concerns within both states’ future energy sectors, with very instructive overlaps. A picture of electricity distribution in Western India emerges, encapsulating the enabling and constraining factors that inspire hope and despair for those intent on championing a transition to affordable, clean energy, and a fine-grained appreciation of what lies in the bargain for sectoral stakeholders.
Such a contextually-grounded analysis speaks to a wider current concern in the socio-technical transitions literature. Like other countries, India is in the midst of a clean energy transition, here understood as ‘a substitution of technologies and associated fuel inputs across the full set of energy sectors and consumers of energy, both as intermediates and final goods’ after Arent et al. [11: 3]. Since such substitution takes place within organisational frameworks, my analysis attends to both processes of change and the environments within which they are structured. Work in other developing country contexts highlights how clean energy transitions comprise competing visions, infrastructure and political agendas [2]. Understanding the implications of differences in ‘location, landscape, territoriality, spatial differentiation, scaling, and spatial embeddedness’ is widely agreed to be of vital importance ([3]: 331). Due to its federal nature and complex political economy, India represents a highly interesting developing country context for probing how these factors feed into socio-technical transitions in its energy sector. Yet studies on energy federalism have so far focussed largely on North American contexts [4]. To secure the sort of attention to numerous aspects of energy politics and practice that the socio-technical transitions literature calls for [5], India’s state-level electricity distribution sectors present rich yet under-studied cases to study the import that regional political economies have for sustainable energy transitions [6]. It is widely accepted that socio-technical transitions in the electricity sector are heavily dependent on hybridisation, upscaling or decentralisation of infrastructure, with decentralisation or the ‘de-alignment and re-alignment pathway’ being least likely due to requisite external impetus and strong policy interventions [7]. Yet especially in developing country contexts, the choices that determine which pathway is followed are based on political economic factors that remain poorly understood in relation to the energy sector [8]. This article seeks to contribute to the socio-technical transitions literature by drawing out these linkages between two contrasting Indian states’ political economies and electricity distribution sectors to explain the dynamics of change and nature of resistance.

The rest of this introductory section broadly outlines the argument. The next section presents the material used in the analysis and my approach to collecting it. Thereafter, the first of the two main sections furnishes a comparative outline of the key developments in electricity distribution in Gujarat and Rajasthan as part of power sector reforms over the past quarter century, linking these trajectories to the regional political economy of each state. The second main section builds on this background to address four key aspects of the future of energy: managerial and operational issues in the administration of the sector, renewable energy growth pathways, the advent of competition and private sector participation in distribution, and popular engagement with the sector. A concluding section reflects on the import these determinants have for whether these Western Indian states are likely to move towards an affordable, clean energy future, and the main priorities that such an outcome requires in each case versus the stakes for various deeply invested and influential actors. This contributes to a deeper, contextualised appreciation of the contingent nature of socio-technical transitions.

1.1. Understanding and influencing the electricity distribution sector in Western India

Before going into the background and analysis of state-level electricity distribution, it is worth explaining why this exercise assumes such vital importance in contemporary India. Given the prized position the energy sector holds within any national economy, it naturally attracts its fair share of attention. This has many elements: the engineering challenge of generating and transmitting electricity; the geographical challenge of deciding upon an optimal mix of energy sources, production locations and supply chains; the economic challenge of fixing tariffs to ensure revenue realisation matched with supply costs; the social challenge of making energy access inclusive by using instruments such as cross-subsidy to target different consumer categories; the legal challenge of managing institutions that are of daily vital importance to society and often extremely large, technical and bureaucratic; and not least the political challenge of managing the competing demands of stakeholders, matching supply-side and demand-side expectations, keeping the sector running in a transparent and accountable manner, and securing an acceptable balance between social, economic and environmental concerns. In India, this last element is especially crucial, as the energy sector has historically been extremely politicised, and commonly used by political parties to gain leverage amongst their constituencies in state elections [6]. Thus, the evolution of the electricity sector in various Indian states has been characterised not only by their technical, geographical, socioeconomic and legal specificities, but through modulation by regional and local political and social contingencies [9]. To grasp the manner in which actors exert influence through and over institutions to drive sectoral development in a manner beneficial to them therefore requires a relational as well as structural understanding of power. This is implicit in the historical-institutional approach to energy transitions that informs this study [10].

Surprisingly, however, this insight that the regional political economy has deeply influenced the historical trajectories of the power sector in Indian states is hardly reflected in most academic work on the sector, which is dominated by technical, engineering and economic analyses. Nor is this trend within scholarship on energy transitions unique to India [11]. Lockwood et al. [12] argue that historical institutionalism can complement such analyses by attending to institutional evolution under energy transitions and to the diverse outcomes caused by changing institutional configurations. My unpacking of the relationship between electricity distribution sector developments and the regional political economy aims to explain political, regulatory, and other systemic dynamics in order to situate sectoral trajectories within similar yet contrasting empirical contexts. Some nascent attempts indeed indicate that energy studies would do well to prioritise attention to political aspects in order to arrive at more robust accounts [13,14]. Several contributions in this special issue move in this direction (e.g. [15–17]).

This presents a good case for looking at the electricity distribution sector, which constitutes the interface of supply- and demand-side concerns, and has received little dedicated attention historically due to its relative invisibility within state electricity boards. With India until recently having struggled to generate sufficient energy and transmit it without huge technical losses across vast tracts of land, generation and transmission took up the lion’s share of any focus on the sector. It is only over the past decade, with other parts of the sector functioning in a largely stable manner, that states like Gujarat and Rajasthan have been able to turn to distribution as key towards improving sectoral performance. This is not to say that other aspects do not pose their own problems – indeed, high generation costs remain a massive concern – but a focus on electricity distribution is a productive lens for identifying the factors that are most likely to determine the sectoral trajectory and indeed the future of energy in Indian states. Such a focus combines attention to the sectoral as well as regional political economies to provide a dialectical interpretation of the factors conjointly driving energy sector transitions.

2. Materials and methods

The empirical basis for this study is part of ‘Mapping Power’, a 15-state comparative, collaborative research project on electricity distribution sector governance. Over the course of 56 expert interviews (some with two interviewees) during August–October 2016, I collected data by engaging with perspectives of current or retired top- and middle-management representatives of the following types of institutions in Rajasthan and Gujarat: 7 from the regulatory commission, 12 from the distribution companies, 9 from the state government energy
دریافت فوری متن کامل مقاله

امکان دانلود نسخه تمام متن مقالات انگلیسی
امکان دانلود نسخه ترجمه شده مقالات
پذیرش سفارش ترجمه تخصصی
امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
امکان دانلود رایگان ۲ صفحه اول هر مقاله
امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
دانلود فوری مقاله پس از پرداخت آنلاین
پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات