Energy Research & Social Science 44 (2018) 75–82

Contents lists available at ScienceDirect

Energy Research & Social Science

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

India's energy future: Contested narratives of change

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ARTICLE INFO

Keywords:
Energy policy
Narratives
Renewables
Coal power

ABSTRACT

In this perspective article, we undertake a brief empirical analysis of the dominant narratives in debates around India's energy future. India has ambitious goals for increasing renewable energy and enabling universal energy access, but there is little social consensus on how these goals should be achieved. We find two compelling narratives in energy policy debates in the country: 'energy for development' that privileges energy as critical to economic growth and long term strategic security; and 'energy for all' that prioritises the role of energy for basic development and ending poverty. We find that while these narratives find common ground on certain issues such as the role of coal, they clash in the socio-technical imaginaries they represent about India's energy future. Indian energy policy has been characterised so far by top down, centralised policymaking. With this article, we highlight the societal choices that are inherent in discussions about transformations in India's electricity sector and call for further research on the socio-cultural dimensions of future energy pathways in India.

1. Introduction

India has pledged ambitious goals to increase its clean energy capacity in its submitted Nationally Determined Contribution (NDC) to the Paris Agreement on climate change [1]. This includes a commitment to install low carbon energy capacity up to 40% of the total installed electrical capacity by 2030 and to reduce the carbon intensity of its economy by 33–35% by 2030. The government has also publically declared a domestic target for 175 GW of renewable energy (RE) capacity in the country by 2022,[1] including 100 GW of solar and 60 GW of wind energy capacity. In 2027, India is estimated to have installed 275 GW of RE capacity which would be more than a four-fold increase on current levels [2]. At the same time, the Indian government has committed to bold plans to achieve universal access to electricity in the country by December 2018 [3].

Several studies and reports have been commissioned to study the pathways for India's energy future and how it may transition to a clean energy supply from one that is currently dominated by fossil fuels, especially coal, which in 2015 supplied nearly 80% of India's electricity (see in Fig. 1). However, transformations in the Indian electricity sector will be a complex process and as we show in this paper, there is a lack of social consensus on what the preferred policy pathway for this transition should be. Trade-offs between energy access and environmental constraints as well as contestation over the pathways for deployment of certain technologies lead to contrasting visions of energy futures. Accordingly, the policy roadmaps required to implement India's ambitious electrification and clean energy goals diverge. Key actors in the energy domain such as policymakers, power producers, and civil society actors coalesce around different narratives of the role of energy in society and the goals and priorities of Indian energy policy. By sketching out central fault lines as well as interesting overlaps we aim at making a point for strengthening the analysis of socio-cultural dimensions in developing future pathways for energy systems in India, which are likely to be reflected in other developing countries. Bringing these choices and assumptions to light will enable a broader discussion around India's energy transition which is currently dominated by narrow techno-economic considerations. As India is the world's third largest emitter of greenhouse gases (GHG), its energy pathway has significant impact on global climate targets. Our focus therefore lies on the debate on clean energy growth in India, expanding energy access, and their interdependencies with the coal sector. The question is: how do different narratives translate into policy options – and what are points of interventions where narratives may 'speak' to each other in order to find compromises? Through our brief empirical analysis, we outline the broad contours of the two overarching narratives that are currently jostling for pre-eminence in debates over India's energy future. We believe this holds value in two ways: 1- it can serve to initiate a much needed discussion and research agenda on the importance of social debate and value based choices in Indian energy policy which has so far been limited; and 2- the dominant narratives can reveal the

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[1] Renewable energy (RE) in India according to the government definition does not include large hydro power. Therefore, in this paper when referring to RE we mean wind, solar, biomass, and small hydro power.

https://doi.org/10.1016/j.erss.2018.04.040
Received 8 January 2018; Received in revised form 16 April 2018; Accepted 19 April 2018

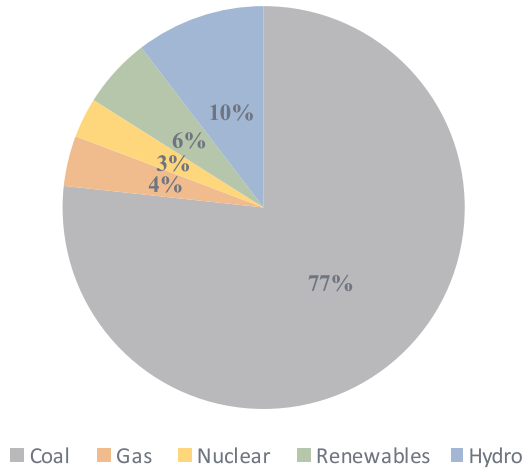

Fig. 1. Share of electricity production in India 2015–16 [4].

opportunities and challenges in implementation of India's energy access and climate action goals.

The next section provides a background note on contestations in India's energy domain and the need for analysis at a 'framework' level, of the different logics that ascribe Indian energy futures. Section 3 describes the concept of narratives used in this study, and the methodology used to deconstruct the different policy narratives. Section 4 outlines the competing policy narratives and the role of the actors involved in bringing these futures about. Section 5 discusses some of the implications of these alternative narratives for debates on energy futures in India, suggesting that these debates must engage with the social and political choices inherent in alternative pathways. Lastly, Section 6 attempts to provide some suggestions for future work in this area.

2. Background – contestation in future visions

The domestic targets for RE growth, India's NDC commitments to the United Nations Framework Convention on Climate Change (UNFCCC), and the rapidly falling price of solar and wind power in India are leading to discourse around far reaching changes in India's electricity sector. However, complex systems such as the electricity grid in a country like India, rarely (if ever) lend themselves to such uncomplicated claims of linear transitions without inviting significant challenges and counter claims. In fact, a review of seven independent modelling studies found a broad range of possible outcomes, ranging from 7% to 31% of clean electricity in 2030 [5]. As the authors of the review note, '..projections of India's future electricity mix suggest widely divergent projections on the future electricity mix in 2030 even in reference scenarios.' Even under reference scenarios, growth rates of RE for instance vary by as much as a factor of four. Interestingly, even the most ambitious growth rates are more modest than the government targets [5]. The authors go on to suggest that common expert judgement and more reasoned assumptions are needed to narrow the divergences in modelling studies [5].

However, scholars have noted the narrow scope of mainstream energy debates which consider lack of consensus as a function of techno-economic inadequacies which can be improved upon [6]. It has been observed that 'conflicts in the domain of energy and climate are not primarily due to lack of scientific facts or objective truth. Instead, they are more due to a clash of priorities, interests, and normative assumptions which create a number of subjective truths' [7]. Resolution on 'facts' are implausible when the disagreements are at a 'framework' level – divergences in energy futures are not so much a reflection of the differing data sets and modelling methods used but rather symptomatic of the competing logic driving such studies. Competing visions of societal futures drive the construction of alternate energy policy pathways [8] but mainstream literature on energy studies pays little attention to visions as key drivers of energy policy debate [9,10].

More broadly, the use of techno-economic modelling processes itself suffers from drawbacks as assumptions of linear trajectories of technological change overlook the significant social and political changes which will have to accompany energy transitions [11]. Geels [12] for example criticises traditional modelling forecast methods on two levels: 1. 'an implicit linear model of technological development'; 2. 'undue emphasis on macro-logic and neglect of meso-logic'.

Alternative policy pathways for energy transformations reflect not just different technological choices and economic assumptions but in many cases represent fundamentally different governance frameworks [8,13]. Policy systems, regulatory contexts, role of institutions, user practices and consumer-producer relationships can significantly vary between alternative pathways as technological change precipitates a range of social outcomes. Lovins has argued that 'hard' and 'soft' energy paths which emphasise centralised vs decentralised solutions respectively are distinguished not only by 'choices of hardware' but 'by the socio-political structure of the system' [14]. They are therefore 'mutually exclusive', not as a result of technical incompatibility but due to the divergent governance arrangements they require [14]. A recent study of controversy among future visions of RE in Europe also finds that the roots of the contestation lie in 'normative end-state aims and governance solutions for achieving these aims, and not primarily in technology, power mix pie-charts or costs' [15].

Methods such as social-technical scenarios, narratives, and storylines are increasingly being used to address this lacuna in energy policy debates and capture the interconnections between social and technical pathways of change and their co-evolution [16,17]. This paper draws on the concept of narratives to outline the differences in political, technical, social, and economic choices by different actors which will influence trajectories of change in the electricity sector in India.

3. Theoretical framework & method

3.1. Narratives

A narrative is a story with a temporal sequence of events which lays out a problem, its causes and consequences and typically makes arguments for possible solutions to the problem [18–20]. Narratives simplify and communicate complex issues and enable actors to make decisions in the face of uncertainty and complexity [18]. They may help frame a system and the guidelines for action for different actors in the system [21]. Narratives normally characterise actors in the story as heroes, villains and victims. Attributing roles for actors in a story is a useful way to inspire action and affix blame and responsibility [18,22,23]. The importance of analysing narratives in policy debate relies on the assumption that subjective reality and facts are social constructions, and narratives influence how individuals interpret the world around them [24,25].

Narratives have a clear purpose for policy change as they are not simply neutral, objective descriptions of the status quo but provide suggestions on how the world should be, by identifying both the norm and the point of departure [25]. Narratives may therefore often be strategically designed to influence the policy preferences of the target audience and narratives usually express a stance on policy issues [22,26]. Narratives therefore interplay with frames in that they start with a particular framing of an issue and seek to suggest solutions on that basis.

> "Narratives are created and promoted by particular actors, networks and institutions. They often start with a particular framing of a system and its dynamics, and suggest particular ways in which these should develop or transform to bring about a particular set of outcomes. Narratives therefore suggest and justify particular kinds of action, strategy and intervention. Some narratives, in turn, come to