Journal of Rural Studies 45 (2016) 252–259

Contents lists available at ScienceDirect

Journal of Rural Studies

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

# The political risks of technological determinism in rural water supply: A case study from Bihar, India

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ARTICLE INFO

*Article history:*
Received 11 September 2015
Received in revised form
23 February 2016
Accepted 29 March 2016
Available online 19 April 2016

*Keywords:*
Rural water supply
Policy
Technology
Discourse
Institutions
India

ABSTRACT

With the politics of the environment so fundamental to the development process in rural India, this paper analyses the relations between water discourses and drinking water technology. First, the national discourses of water are analysed using key policy and populist documents. Second, the paper presents ethnographic fieldwork studying the politics of drinking water in rural Bihar, where the relative merits of borehole handpumps and open wells are contested. The links between the national discourses and local contestation over appropriate technology are examined. The paper argues both policy and traditionalist perspectives are too technologically deterministic to adequately account for the myriad challenges of delivering rural water supply. The emphasis on technology, rather than service levels, creates the conditions in which capability traps emerge in terms of service provision. This is not only in terms of monitoring regimes but in the very practices of rural actors who use certain water supply technologies under an illusion of safety. With a focus on furthering the policy debate, the paper considers ways forward and suggests that a move from a binary understanding of access to a holistic measure of service levels will reduce the potential for political contestation and capability traps in rural water supply.



## 1. Introduction

In the debate that followed the global achievement of the Millennium Development Goal (MDG) 7c for water supply (JMP-WHO/UNICEF, 2012), researchers have questioned the classifications used in the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP) (Clasen, 2012; The Lancet, 2014). Access figures from the JMP indicate that nearly 90% of the global population consume water from an improved water source whilst around 10% are reliant on water from an unimproved source (JMP-WHO/UNICEF, 2012). The distinction between improved and unimproved sources is based on the probability that certain types of water sources are more prone to contamination by faecal matter, the leading cause of water-related morbidity and mortality. Improved sources, such as boreholes with handpumps, are deemed secure from such contamination by the nature of their construction whilst unimproved sources, such as open hand dug wells, are considered to have little protection against such contaminants (JMP-WHO/UNICEF, 2014). This simple classification has enabled the widespread and consistent monitoring of water supply access throughout the world (Bradley and Bartam, 2013) and, as has been the case with many international policy targets (Velázquez Gomar, 2014), become a powerful unifying goal that has helped mobilise the international community. Yet, in its current formation, the MDG target does not take into account the service levels that people receive from their water supply. Considering this omission in the context of meta-analysis data that indicates that 28% of the global population consume water that fails to meet World Health Organisation (WHO) water quality standards (Onda et al., 2012), it means that over one billion people consume water that is technically unsafe but classified as 'improved' access in the MDG figures. In this sense, the proxy indicator for water supply poorly reflects the actual service levels many people experience.

It has been argued that the significant political risk of this 'metric problem' is that, by significantly overestimating access to safe water, the global monitoring figures could lead to a reallocated of resources away from the water sector, "thereby putting at risk continued progress on critical health goals that depend on ensuring sustainable access to safe drinking water" (Clasen, 2012, p. 1180; Bradley and Bartam, 2013; The Lancet, 2014). There is also evidence that having a technologically-deterministic indicator detrimentally shape the goals of water policies and programmes, leading to an

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http://dx.doi.org/10.1016/j.jrurstud.2016.03.016
0743-0167/

overemphasis on expanding access through infrastructure development, and a neglect of broader investments in maintenance and institutional development, which are both critical to ensuring sustainable supply (Moriarty et al., 2013). Despite the articulation of these macro and programmatic concerns, there has been surprisingly little engagement within the academic literature on the role of the MDG discourse in shaping the behaviour of actors at an implementation level. This is despite of a well-theorised body of literature that examines the tensions between standardised policy discourse and the reality of local complexity in development programmes. Such work has famously shown the limitations of "seeing like a state" (Scott, 1998, p.1–8), particularly in rural regions, where the governance requirements for standardisation have often bred resistance from local actors as it fails to account for the high degree of variability in local customs and practices (Scott, 1998; Gupta, 1998; Birkenholtz, 2008).

More broadly, the emphasis on technology in the policy discourse also enables this contribution to relate to wider debates about technological determinism. The notion that technology drives history is a key facet in social thought, for example, reflected in Karl Marx's notion that the technologies of production drive societal change (Mackenzie, 1984). The distinction between hard and soft (technological) determinists is of significance here (Smith and Marx, 1994) where hard determinists have a reductionist view of history whereby the trajectories of technological innovation drive historical change and are beyond social, cultural and political influence. Conversely, soft determinists note the potential for social, cultural and political forces to shape the trajectories of technological innovation, yet emphasise that technology remains one of the primary driving forces in human history. In this sense, a technological discourse can reflect different balances of hard or soft determinism that can either embody the material technology with a simple, non-challengeable causal agency, or place it within a more complex setting whereby non-material factors, such as behaviour and practice, can also influence outcomes. These concepts of hard and soft determinism are thought to provide a particularly useful distinction for assessing the use of water discourses in India as the paper explores the extent to which technology is constructed as part of a broader storyline about water and development or as the end goal in itself. This contribution engages with these debates as it examines how social movements and activists actively challenge technocratic policy discourse in India by drawing on alternative notions of good practice in rural water supply (Agarwal and Narain, 1997; Jacob, 2008; JJJA, 2013). In particular, these critiques often exhibit what can be crudely labelled as a traditionalist-environmental discourse that can promote the use of "unimproved" indigenous technologies, such as open wells (for example, see: MPA, 2011). In this way, they directly call into question the legitimacy of improved/unimproved demarcation but as is argued in this paper such actors retain a technologically deterministic approach in doing so. This paper examines the components of such discourses at a national level in India in order to consider the tensions between these contrasting notions of appropriateness in the rural water supply sector. Then, building on ethnographic fieldwork, it describes a case in which this battle for legitimacy plays out at the implementation level in West Champaran district in Bihar state. The paper concludes with a discussion in which the findings are considered in relation to theories of policy-making and institutional change with questions raised about the value of deterministic discourse at an implementation level.

## 2. Approach to understandings discourses of water and technology in India

Discourse analysis covers a broad set of approaches that range from the purely linguistic analysis of texts to the socio-theoretical 'Foucauldian' school of analysis (Fairclough, 2003). With the idea that different modes of discourse analysis fit specific purposes (Gee, 1999; Doulton and Brown, 2009), this research considered a number of inter-related contributions. It recognises the tradition of discourse analysis in international development studies (Faille, 2011). In particular, Escobar's (1997) seminal work on the discourses of underdevelopment in which he connects the notion of underdevelopment with a legitimization of continued Western hegemony and interventionist policies around the world. In a similar way, Ferguson (1990) uses the approach to criticise technocratic discourses in development projects as part of the "anti-politics machine" that is used to conceal political decisions regarding societal change by using apolitical managerial speak. Such contributions offer critical insight into the power of discourse analysis for unrevealing underlying and unconscious structures of power in society. However, as argued by Faille (2011) the underlying methodology of much discourse analysis in international development is considered marginal to contributions made from broader subject areas, such as environmental policy studies.

This research fuses the spirit of discourse analysis from the international development studies literature with the more established discourse analysis approach of Dryzek (2005) and Hajer (1995) who both offer seminal approaches to the analysis of environmental policy discourse. These approaches have proved particularly useful because they help answer politically important questions regarding how notions of responsibility and rights are constructed (Hajer, 2002, p.18). Here, discourse is defined simply as a "shared way of apprehending the world" which is embedded within language (Dryzek, 2005, p.8). From this perspective, discourse analysis is about identifying the key components of discourse such as its modes of knowing, ontological assumptions, models of causality, relevance judgements (of agents), and shorthand storylines. To identify these components, Dryzek (2005) asks four key questions: What are the basic entities recognized or constructed in the text? What assumptions does it make about natural relationships? Who are the agents and what are their intentions? What key metaphors or rhetorical devices does the discourse make use of? Using these questions, we analyse the Government of India National Water Policy (NWP) (2012) and the Jal Jan Jodo Abhiyaan (JJJA) (2013) campaign documents, both of which were formally released in April 2013 with the first author present at both launch events in New Delhi. The NWP text represents the principle-positioning document for government policy, whilst the JJJA manuscript sets out the aims of a prominent pan-Indian traditionalist movement reflecting an archetypal representation of a traditionalist storyline at a national level. The process of coding and analysis was conducted on English language copies of these documents only and is presented in the following section. However, drawing on the work of Hajer (1995), the research also moves beyond a purely linguistic analysis of these texts, to a broader approach that recognises *discourse coalitions* of actors share and use a discourse (or discourses) to construct particular storylines. This framework places actors within the realm of discourse where discursive affinity can hold together a coalition of actors who share argumentative structures that contribute to a particular storyline, even if they emerge from different sources and logics, or operate in different domains (Feindt and Oels, 2005; Hajer and Versteeg, 2005). In this regard, the research sought to assess the use and function of the policy and populist discourses at the implementation level of rural water supply.

The lead author conducted fieldwork during five weeks in April and May 2013 in West Champaran district in Bihar state in northern India. Initially, fifteen key informant or "helicopter" (Hajer, 1995) interviews were conducted both remotely from the UK and face-to-