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Community management and participation in multi-village schemes for rural water supply in India

Paul Hutchings, Richard Franceys, Shaili Jasthi, and Rema Saraswathy

Multi-village schemes (MVSs) connecting hundreds of villages and small towns into a bulk water distribution network represent an emerging frontier for rural water supply in low- and middle-income countries. Conventional rural water supply approaches for such contexts often advocate community management but the scale and complexity of MVSs necessitates alternative approaches. This paper presents three case studies from India of MVSs that focus on the role of communities in their overall management. These illustrate different mechanisms in which community management can or cannot be nested within an overall management system as well as different approaches for promoting community participation. The discussion draws on political economy perspectives to suggest an explanation for the differences across these case studies, while from a public policy perspective, the paper discusses how and why MVSs may lead to the decline of community management in certain contexts.

Keywords: multi-village schemes, rural water supply, community management, participation, India

INDIA IS NOW IN 'MISSION MODE' when it comes to water supply. Inspired by the 2014–19 Swachh Bharat Mission that aimed to clean up India, including ending open defecation, the Government recently launched the 'Jal Jeevan Mission', promising piped water to every household in India by 2024. The latest estimates indicate that around 665 million Indians are living without a piped water supply, with the majority of these living in rural areas (UNICEF-WHO, 2019). If the changes proposed were realized, they would represent a significant transformation of the rural water supply sector bringing with them higher service levels and overall better outcomes for communities. However, the changes will also require developing new infrastructure configurations and management systems that are likely to challenge conventional approaches that have become entrenched within the Indian sector. In this context, multi-village schemes (MVSs) connecting hundreds of villages and small towns into a bulk water distribution network are likely to represent an emerging frontier for rural water supply across India (Baby and Reddy Ratna, 2014). Such costly installations already exist, especially in wealthier states, where they are

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operated by Public Health Engineering Departments or similar large-scale professional bodies that have the technical capacity to operate these systems. Yet the Government of India still specifies that rural water supply should, where possible, be managed by Village Water and Sanitation Committees (VWSCs) with support from the local self-government system (Government of India, 2013a). Effectively, policy retains a preference for a community management model, but the trend is towards infrastructural systems that require alternative management models.

To date, there has been limited discussion in both the grey and academic literature about this. In 2001, the Water and Sanitation Program identified MVSs in India as offering efficiency opportunities due to economies-of-scale but raised concerns about the management burden for rural service providers (2001). More broadly, in 2008 an expert working group of water sector professionals used a case study from Senegal to argue that MVSs represented a potential route for professionalizing rural water supply (AGUASAN, 2008). Beyond this, discussion appears limited even though MVSs have the potential to fundamentally challenge many of the underlying preferences that have been part of rural water supply policy in India and other similar contexts over the past decades. To appropriately frame this debate, it is useful to articulate that community management has been seen as the most prominent solution for rural water supply in India and most low- and middle-income countries (Van Den Broek and Brown, 2015; Chowns, 2015).

Throughout the 1990s and 2000s, the idea of promoting local ownership and placing communities in charge of managing services becomes a preferred policy option following the failure of supply-driven approaches in the immediate post-colonial period (Black and Talbot, 2004). Community management was often framed as the demand-driven alternative in that communities were expected to express a willingness to take on a management role and develop systems that were more appropriately aligned with their needs (Harvey and Reed, 2006). The model has had mixed success as water supply access has been extended to hundreds of millions of people in recent decades, but serious operational sustainability issues have emerged (Moriarty et al., 2013). Communities have been able to take on the basic operational tasks of relatively low tech systems, such as handpumps or small-scale pipe systems, but when complications emerged or significant capital maintenance is required, systems have too often broken down (Van Den Broek and Brown, 2015; Chowns, 2015). In this context, MVSs offer an even greater challenge as even the basic operational tasks are beyond the conventional capacity of non-professionalized community committees.

This paper presents three case studies from India that show different approaches for how communities can be integrated into the overall management of MVSs. The paper follows Harvey and Reed (2006) in distinguishing between community management and community participation. These concepts are considered qualitatively different ideas even if community management emerged as part of a broader movement of promoting participatory development (McCommon et al., 1990). Participation can most usefully be defined in terms of a citizen's power to influence processes (Arnstein, 1969), but this does not actually mean taking on the administrative, financial, and technical decision-making and labour needed to enable

those processes, which is expected under community management. The paper further develops that distinction in comparing the MVS schemes from Maharashtra, Tamil Nadu, and Kerala, and shows how different strategies have been taken for institutionalizing community management and participation within schemes. The discussion draws on theories of Indian political economy (Kohli, 2012) to propose an explanation for the differences across these case studies, while from a public policy perspective, the paper discusses how and why MVSs may lead to the decline of community management in certain contexts. Before moving on to explain the methods, and present the case study and discussion, this introductory section provides some context on the water management challenges facing India.

The country suffers from a troubling combination of water source and water quality problems. Domestic supplies are commonly extracted from groundwater sources, but across the country aquifers are under significant pressure (Cronin et al., 2014). The unsustainable depletion of such sources is at such a level that the Government of India has now mandated that new domestic water supply projects should use surface water (Government of India, 2013b). The move to surface water is expected to extend the use of MVSs to drive economies of scale for the necessary treatment and transportation systems required in surface water schemes. The other important factor that will help drive, or more precisely finance, this trend is the ongoing, if uneven, socio-economic development of Indian society. India is in the upper-band of the World Bank's definition of a lower-middle income country with a gross domestic product (GDP) of US\$4,234 per person with the highest growth rate of any major economy (World Bank, 2016). Inequality remains stubbornly high with 26 per cent of the rural population living below the poverty line (Reserve Bank of India, 2015). Yet, particularly in the richer states, India is entering a period whereby it has greater financial, technical, and institutional capacity to deliver large-scale, high-quality engineered solutions for water, and MVSs are expected to become a common strategy across many states.

Case study context and approach

This paper focuses on case studies from Maharashtra, Tamil Nadu, and Kerala that were compiled as part of a wider study of 20 community-managed rural water supply programmes in India (see Hutchings et al., 2017). The states from which these cases have been selected have some key similarities and differences, with overall water supply coverage estimated to be 98 per cent (Maharashtra), 98 per cent (Tamil Nadu), and 93 per cent (Kerala) as against the all India average of 96 per cent. The Kerala figure is slightly lower due to the cultural preference for continued use of open wells by some of the population, which do not constitute an accepted form of supply according to official statistics. Average wealth levels, as measured by GDP per capita, are \$6,679, \$6,427, and \$5,922, respectively, compared with the India average of \$4,243 (Reserve Bank of India, 2015). Kerala has the highest measure on the human development index, scoring 0.79 against 0.572 in Maharashtra and 0.57 in Tamil Nadu (Reserve Bank of India, 2015). In short, Maharashtra and Tamil Nadu are economically richer and more advanced in extending rural water supply

coverage, but Kerala has higher levels of human development. The reasons for this situation will be expanded on later in the paper.

The broader research project from which the cases were selected was designed to investigate the level of support – financial, technical, and institutional – that was required to deliver successful community management. In the selection of 20 case studies, that research had expected to cover many programmes that involved relatively simple handpump installations. However, the scoping and case selection process led to the selection of 19 case studies involving piped water supply, which is considered to reflect the trend in India away from basic forms of rural water supply infrastructure to more sophisticated systems. Among those case studies, there were still significant differences between basic ‘single-village schemes’ whereby locally sited, motorized boreholes fed distribution systems with very basic treatment processes, and the more complex MVSs that are reported on in this paper. The latter class of case studies are considered to overcome a poorly defined threshold in which the viable scale of management moves beyond community institutions to larger, more professionalized institutions; hence they have been selected from the broader class of cases for investigation in this paper.

Each case study was compiled in the same manner involving research at three main analytical levels. These were the ‘Enabling Support Environment’, which includes the organizations and agencies that operate at a higher scale than the village such as government agencies and NGOs; the ‘Community Service Provider’ level, which includes the village-level organizations involved in service delivery; and the ‘Household’ level, from which survey data was used to calculate household service levels. Administrative records, key informant interviews, focus groups, and household surveys were triangulated to develop an overview of each rural water supply programme. The primary scale of analysis was the entire programme, but data collection at a village-level was conducted in four villages per programme, and then within each village, 30, on average, household surveys were also conducted. Table 1 shows an overview of the data collection for each case study reported on in this paper. Data was processed and analysed through standardized protocols and compiled into overall synthesis frameworks for cross-case analysis. The full overview of this process is provided in Smits et al. (2015). In this paper, the emphasis is on the qualitative description of the institutional systems in each case study with a particular emphasis on the role of communities. In this sense, it builds on the respective case study reports from the overall research project (Hutchings, 2015; Chary Vedala et al., 2016; Saraswathy, 2016a).

Table 1 Data collection overview

<i>Case studies</i>	<i>Enabling support environment</i>		<i>Community service provider</i>		<i>Household</i>
	<i>Key informant interviews</i>	<i>Focus groups</i>	<i>Key informant interviews</i>	<i>Focus groups</i>	<i>Survey</i>
Maharashtra	8	1	2	4	120
Tamil Nadu	10	1	16	1	180
Kerala	4	0	4	3	120

Multi-village water supply in Maharashtra, Tamil Nadu, and Kerala

The case studies are presented sequentially with the aim to describe the overall management system, including the role of the enabling support environment, and the community-level institutions. The section will also characterize the approach followed in each example with a particular emphasis on how community participation and management is institutionalized into the overall system.

The Maharashtra Jeevan Pradhikaran (MJP) is the public utility for the provision of water supply and sanitation in Maharashtra. In the Purna river basin region, where Amravati district sits, there is saline intrusion of aquifers covering an area of nearly 5,000 km². Here, MJP provides surface water schemes to villages and, as part of this strategy, it developed the Shanoor dam MVS covering 156 villages and two towns with household piped water supply. The federal government provided 50 per cent of the initial financing cost, which was equalled by the state government, following a loan from the Housing and Urban Development Corporation. The MJP was then the implementing agency for the construction of the MVSs and now also operates and maintains the system. As such, the MJP can be described as being both the enabling support environment and also the service provider. Its support functions include monitoring system performance, water quality testing, water resources management, and conflict management. MJP also controls service provision across the whole system, including the bulk water production and distribution management. Ten MJP engineers and nearly 200 other staff are required to manage the system, including time-keepers and valve operators to operate and maintain the distribution systems at the village level. In this sense, the service provision has been completely professionalized within MJP, and there is no direct community involvement in service provision.

VWSCs are established in each of the 156 villages as part of the scheme, but the role of these institutions has moved away from service provision to a model closer to consumer councils within urban systems. They both provide a community forum as a vehicle for overseeing MJP while also promoting compliance among the community for regular tariff payment. As all households have meters installed, the VWSC discourages and monitors for misuse and also plays a role mediating between MJP and any tariff defaulters. In addition to the VWSC bodies, the main involvement of the community in the scheme is through the payment of tariffs based on consumption of water, as measured by the meters. In this sense, the case reflects an example whereby rural water supply is moving closer to an urban-based model and the population move from being 'community members' to paying consumers. This is a possible trajectory of professionalizing rural water supply through the adoption of urban utility type approaches.

A similar technical solution is employed in the case of Morappur, Tamil Nadu, a government-labelled 'dark block' that suffers from depleted and contaminated groundwater. Morappur had been the location of a number of initiatives using participatory techniques to improve water security. The public utility, Tamil Nadu Water and Drainage Board (TWAD Board), trialled a special scheme from 2004–7 to mobilize communities to conserve water and, more recently, NGOs have made similar efforts.

Yet these made only marginal differences to the domestic water security situation until a new bulk water scheme opened, bringing treated surface water over 100 km to the area. The Hogenakkal Water Supply and Fluorosis Mitigation Project (HWSFMP) opened in 2012 serving over 3 million people. Support from the Japan International Cooperation Agency was mobilized as part of the significant financing needed to deliver the scheme, with a private contractor responsible for operating the bulk water transfers in addition to building the scheme. This situation now means that villages are supplied water directly to overhead tanks and local reservoirs by the HWSFMP.

Within villages, VWSCs have been set up according to a community management approach, but following convention in Tamil Nadu (and other parts of India) these operate as sub-committees of the local self-government. In this sense, there is a higher level of public sector support than is found in community management in other parts of the world (Hutchings et al., 2016). The VWSCs take on the management of the local distribution system from overhead tank to tap or standpost. However, the HWSFMP directly supports the employment of an operator in each village, alongside the administrative and financing support provided through local government apparatus. Service provision takes place through piped water supply – with significant levels of household connections – but handpumps still remain in the villages for some households. Overall, this set-up can be considered a hybrid system in which community management is nested within a larger management system, and dedicated support is provided to communities by both the bulk water operator and local self-government.

The Kerala case study comes from the World Bank-supported Jalandihi programme in Nenmeni Gram Panchayat, Wayanad district. In Kerala the local self-government administrative units are much larger than other states. For example, in Nenmeni the local self-government has a population of nearly 50,000 people compared with a national average of 5,000. In this case study, a small MVS was rehabilitated and expanded to cover 18 of the 23 habitations that housed the 50,000 people. The scale of the MVS is, therefore, much smaller in this case study but, notwithstanding this difference, the scheme is managed by a community-based management system, rather than a public utility. Each habitation has formed a VWSC to take on distribution tasks within the habitation, but they have also formed a Scheme Level Executive Committee made up of representatives from each of the VWSCs. This higher-level body then oversees and coordinates the management of the MVS. Through this process a sophisticated ‘professional community-based management’ model for a small MVS has been developed, whereby the communities directly managed the infrastructure rather than just participate in a broader management initiative. In this sense, the Kerala case suggests that community management can still be a solution for MVSs.

The political economy and policy implications of MVS management in India

Taking the conceptual distinctions between participation and management outlined earlier in the paper, the case studies illustrate alternative set-ups for MVSs. In Maharashtra the management of both bulk water and the village-level distribution

network is the responsibility of the state agency supported by the district level offices. Here, the role for the community is purely participatory through its oversight water committee. In the Tamil Nadu case study, the community plays both a participatory and management role through the water committees, but the management element is limited only to the distribution system, which is nested in the larger bulk system. Whereas in Kerala, albeit in a smaller scheme, the set-up is one in which communities are able to develop more sophisticated institutional systems to take on the management of MVSS. As such, across these case studies there have been completely different approaches taken to integrating community management and community participation within MVSS.

This section now proposes an explanation for these differences by bringing in a discussion regarding the political economy differences between the states in which the case studies were based. Applying political economy to the study of rural water supply has become a common theme in a number of studies as the intersection of political and economic processes has been shown to be fundamental for determining sector strategy (Harris et al., 2011; Chowns, 2014; Jones, 2015). Similarly, political economy approaches have already been applied to explain differences in governance arrangements across Indian states (Ruparelia et al., 2011; Casini et al., 2015). Kohli (2012) has developed a 'State-Society Framework' in which he illustrates some indicative differences in the political economy of Indian states that explain how the 'varying patterns of politics and authority across Indian States, especially the underlying state and class/caste relations, are a key determinant of regional development dynamics' (Kohli, 2012: 14). This framework essentially seeks to explain differences in the characteristics of development processes and, in this spirit, it is considered to have insights for explaining some of the differences found in this paper.

Kohli (2012) classifies the political economy of the states into three categories: neo-patrimonial, social democratic, and developmental. Neo-patrimonial states tend to be characterized by poor governance and corruption; social democratic states are focused on social welfare and bottom-up political processes; and developmental states tend to be focused on top-down driven economic development. Each of these classifications is only indicative but, in the context of the states covered in this paper, Kerala is an archetypal social democratic state and Maharashtra is an exemplar developmental state (Kohli, 2012). As outlined, earlier in the paper, this is reflected in state-level statistics: despite having a much larger GDP per person, one in four rural citizens of Maharashtra lives below the poverty line, while in Kerala it is only one in ten that lives below the poverty line even though the state has lower levels of economic prosperity (Reserve Bank of India, 2015). Tamil Nadu sits in the middle on both counts, with a rural poverty level of 16 per cent and also a GDP per capita that sits in the middle. In this sense, it reflects a state that is harder to classify clearly as one of the political economy typologies.

The intensity of community management with MVSS found across the case studies also seems to reflect this pattern. The Maharashtra case study shows a top-down approach whereby communities are no longer required to manage the scheme with all of the system taken on by the state agency. In Kerala a bottom-up approach has continued as communities have sufficient social and human capital to develop

the more sophisticated institutional systems to manage the services. Finally, in Tamil Nadu, the situation could be interpreted as a third way in which distribution remains community managed, but bulk water is taken on by other agencies. It is not expected, nor is it argued, that there is a causative link between the political economy of the state and the forms of MVS that emerge but, rather, that there are varied possibilities for nesting or removing community management as part of MVSs and the political economy context will at least partly shape which possibilities emerge.

This is considered an especially important point to highlight for the contemporary Indian policy context. For much of the post-independence period, public administration in India has retained characteristics of a centrally planned economy in which key public policy goals are outlined as part of five-year plans by the centralized Planning Commission (Sharma, 2015). Federal government would, therefore, set policy for rural water supply that the states would be expected to follow. However, in 2014, the Prime Minister, Shri Narendra Modi, disbanded the Planning Commission, replacing it with a less powerful new body, NITI Aayog, in an effort to drive greater devolution of policy-making to the state level (Shan, 2015). This is widely expected to drive greater diversity in public policy across the states and, at the very least, provide a greater potential for flexibility across what can be extremely different operating contexts. It is expected that in those states with greater social democratic tendencies, community management is more likely to be maintained but in the more developmental states it is expected that the role for communities will be largely side-lined in the MVSs. The challenge is what will happen in the poorer states characterized by neo-patrimonial characteristics. The World Bank is currently investing over \$500 m into rural water supply and sanitation into Assam, Bihar, Jharkhand, and Uttar Pradesh with a component of investment going towards MVSs, so this may offer an interesting test case for those states with more challenging governance contexts (World Bank, 2014).

In a general policy context, moving beyond community management in India is potentially a positive transition. Although community or household management exists in high-income worlds, particularly for remote villages, the bulk of the rural population receive regulated supply from professionalized service delivery organizations. It is likely that in high-density India, it will become increasingly viable to remove the management burden away from communities, and so this option will be more readily available when the context dictates this as an appropriate approach. The challenges will remain immense though. In the Indian context the tendency towards technocratic management (Hueso and Bell, 2013) means there is a risk that the value of participation could be forgotten completely. The mechanisms in which communities can influence decision-making and hold providers to account must be established, as they are in high-income countries through initiatives such as municipal committees or consumer councils. Similarly, the reduction in management burden at community level necessitates greater management capability within other agencies. This capability must be supported by sustainable sources of finance that should include the replacement of labour contributions with higher financial contributions from users in the form of tariffs or a political settlement, which enables greater funding from the tax base into these organizations. It is such

challenges that India and other similar transitioning societies must navigate if they are to deliver high-quality rural water services to their populations. Going forward, policy-makers and planners will need to consider how best such participation can be institutionalized as India undergoes this transition. It is expected the country will move towards having a sector that more readily reflects the characteristics of higher-income countries rather than the community management that will still be practised in parts of the low-income world.

Conclusions

This paper considers one of the anticipated major trends that will transform rural water supply across the low- and middle-income world. That is, the introduction of MVs that can cover many hundreds of villages and therefore, challenge the idea of community management, which was largely developed in the context of low-tech, village-scale water schemes. In comparing case studies from different states in India, the paper outlines how there are different options for integrating community management and participation into MVs. The paper suggests that in the Indian experience the way communities become integrated into such systems reflects the underlying political economy in which a scheme is operating. The policy implications are that, in the context of greater devolution, there is likely to be even greater variation across the states as community management becomes further institutionalized into MV management in some places but, in others, completely abandoned with the focus on adopting urban-style utility approaches instead.

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