

# USER CHARGES AND RURAL WATER SUPPLY DELIVERY

## A Counter-Intuitive View from South India

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## ABSTRACT

Conventional wisdom that higher user charges lead to improved water service delivery underlies the Global Policy Thrust that communities pay 100% of operation & maintenance costs for water supply projects. Testing this hypothesis by randomly assigning user charge collection targets across 145 village panchayats of a pilot project in Tamil Nadu state revealed contrary trends: Villages *without* targets performed better on service delivery and user satisfaction, and even imposed charges for hitherto free public stand post services. Community awareness of the importance of managing water as a scarce resource, and community-level co-management emerged as the key factors in water governance and not mere charges on based collection targets.

**Key Words:** Water Management, User Charges, Water Pricing, Community Participation, Change Management.

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## 1. INTRODUCTION

One of the four Dublin Principles of 1992 states that water should be recognized as an economic good as it has an economic value in all its competing uses (ICWE, 1992; Box 1).

### Box 1: The Four Dublin Principles

1. Water is a finite, vulnerable and essential resource which should be managed in an integrated manner.
2. Water resources development and management should be based on a participatory approach, involving all relevant stakeholders.
3. Women play a central role in the provision, management and safe guarding of water.
4. Water has an economic value and should be recognized as an economic good, taking into account affordability and equity criteria.

Source: ICWE, 1992

By the turn of the century, the *Economist* carried an article stating that much of the world's fresh water were being wasted as governments were shying away from the answer, which was to 'price this valuable resource correctly'. (*Economist* March 23, 2000) The wide implementation of adequately-priced user charges has been seen as the panacea needed 'to improve cost recovery, to facilitate adequate maintenance and expansion of water supply systems and to provide incentives for conservation & reuse' (UN, 2006, p. 36). A key paper presented at the Copenhagen Consensus of 2004 stated that "users that pay for the water services that they use have an incentive to use the resource wisely and demand quality services' and that 'the more users are removed from paying for service .... the higher the risk that service quality is low, users refuse to pay the fees or charges, services don't recover their costs, funding O & M falls short etc.'" (Rijsberman, 2004). In a similar vein, a World Bank report on the state of water resources in India argued that user charges

being prescribed are negligible, resulting in **lack of accountability** and **insufficient generation of revenue** even for operation and maintenance (World Bank, 2005). This implicit and unquestioned linkage between the imposition of user charges for water and improved sectoral performance has been endorsed by several national and international agencies especially the international funding agencies.

There have been rapid policy changes in rural water supply in India since the late 1990s, with the introduction of demand-driven community-based water supply management, first through the Sector Reform Project in selected districts in 1999 and then the national Swajaldhara programme in 2002.<sup>1</sup> Underlying much of the policy discourse, however, is a certain conventional wisdom, reflected mainly in World Bank documents and projects such as the Swajal project in Uttar Pradesh and the World Bank and Government of India review of India's water sector (World Bank, 1999), concerning user charges. The Swajal Project, in particular, took pride in the fact that 'in addition to contributing towards the capital costs, the communities undertook full responsibility for operation and maintenance (O&M) of the water supply system, including paying all costs... [and to] accomplish this, they levied user charges at differential tariff rates from both household connection holders and public tap stand users' (Padiyar and Verma, p. 9). Subsequently, the Tenth Five Year Plan of India (2002 - 2007) document and the National Water Policy of 2002 have started examining, the dictum that the community must pay 100% of the operation and maintenance costs of the rural water supply scheme (see Box 2).<sup>2</sup>

**Box 2: Policy on user charges**

The National Water Policy 2002 on user charges states: "There is a need to ensure that water charges for various uses should be fixed in such a way that they cover at least the operation and maintenance charges of providing the service initially and a part of the capital costs subsequently. These rates should be linked directly to the quality of service provided. The subsidy on water rates to the disadvantaged and the poorer sections of the society should be well targeted and transparent."

*Source: National Water Policy, Ministry of Water Resources, Government of India, 2002*

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<sup>1</sup> It is of course true that prior to these policy changes, the situation in most state rural water supply departments was the same as in the UP Jal Nigam, which has been described thus: There was no capital cost recovery, and operation and maintenance (O&M) costs were rarely collected. Poor O&M was a major problem, with about one-third of its schemes non-functional at any one time (Padiyar and Verma, undated)

<sup>2</sup> See, for instance, Volume 2, Chapter 5.5 on Water Supply and Sanitation in the Tenth Five Year Plan of the Government of India.

Globally there has been little systematic analysis of whether the imposition of these user charges has actually affected the service quality of village water supply, user satisfaction or sustainability of community-level services, over time.<sup>3</sup> It is in this context, that a critical look at the central premise of user charges leading to sustainability of water supply services is warranted, which is what this extensive study attempted to do.

## 2. STUDY BACKGROUND

Faced with a growing water crisis and a problem of identity within the water sector, the Change Management Group in the Tamil Nadu Water Supply and Drainage (TWAD) Board initiated a unique process from January 2004 to critically review its practices and values, its work culture and performance, its vision and achievements. A series of internal 5-6 day workshops were held with TWAD rural water supply engineers, facilitated by UNICEF, which developed an overarching conceptual framework for this entire collaborative transformation exercise, known as the Democratization of Water Management (CMG-TWAD, 2005). The strategy adopted for this process was attitudinal change, among individuals, the organisation as a whole and among key stakeholders. These Change Management workshops resulted in a Vision, which slowly evolved into a consensus, and was endorsed by administrative heads, policy makers and other opinion leaders. Following the growing acceptance of the Vision, a core group of engineers formed the Change Management Group (CMG) at the state level, committing themselves to developing and spreading the vision and practice of the Change Management Initiative as a voluntary exercise done in addition to their normal work load and without using any extra budgetary resources (*ibid*).

The vision was implemented in 5 pilot village panchayats (VPs) in each of 29 districts (administrative units) of the state. These 145 villages were seen as the experimental workspace within which to test and implement the concepts learnt through the consultative process of the change management initiative. Four major thrust areas identified were community involvement in planning and implementation, targeting of poor and disadvantaged, sustainable and cost-effective investment solutions and conservation and recharge of water. The main focus of these voluntary efforts of rural water supply engineers was to explain to community representatives of the Village Water Supply

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<sup>3</sup> This is similar to the situation reported in the context of irrigation water where there has been little analysis of time-series data from controlled experiments that have tracked the response of farmers (water users) to progressively higher water prices while holding other key variables constant, and the water pricing literature is largely made up of modelling exercises based on cross-sectional data (Ray, 2007, p. 3659) .

Committees (VWSCs) and women's Self Help Groups (SHGs), the scarcity of water resource and the need to conserve and maintain the resource.

A randomization experiment was initiated in November 2005 with the 145 pilot VPs covering 455 villages, being randomly assigned user charge based revenue collection targets fixed at **0%, 25% and 100% of O&M expenditure**. The Government of Tamil Nadu had already issued an order in 2004 specifying that all households with HSCs had to pay Rs.30 per month to continue enjoying this facility from state-sponsored rural water supply schemes, but had not fixed any revenue collection targets.

After nearly two years of the Change Management process, and three months after the randomized imposition of user charges, the TWAD Board appointed an independent consulting firm to review the impact of imposing revenue collection targets through user charges from rural communities, on the water usage and on water management practices. The assessment was conducted in 105 Village Panchayats in 26 out of the 28 districts in the state (excluding Chennai and Nilgiris). The analysis focuses on the impacts of user charges on these three groups of VPs regarding three parameters: (1) the amount of water used & Conservation Practices; (2) O & M Expenditure and Revenue Collection; and (3) Satisfaction levels.

### **3. METHODOLOGY AND SAMPLE**

Seven field formats were developed in consultation with Poverty Lab of the Massachusetts Institute of Technology (MIT), USA, Institute for Financial and Management Research (IFMR), Chennai and Pragmatix Research & Advisory Services, Gurgaon, in close consultation with the authors. These aimed to elicit information from: (1) Households; (2) VP Presidents; (3) VP Clerks; (4) Pump Operators; (5) Public fountains (from a street walk) (6) OHT Meters; and (7) Village Panchayat Register. The 36-member field team was a mix of professional NGO staff and current and former students at the post-graduate level in Social Work from the Madras School of Social Work, Chennai, and the Madurai Institute of Social Sciences, Madurai. All field team members had previous experience and training with participatory data collection methods. A field training workshop was held in Chennai to familiarize field teams with the survey and the questionnaire, and the field teams were then divided into 3-person teams that spent 2-days per village for the assessment, under the guidance of four senior Field Coordinators. Within each village, field team members were externally given a list of 12 randomly-chosen households, which they were to interview. They were also given a list of replacement households, in case householders in the original list were unavailable. The assessment was carried out in 1,234 households in

105 Village Panchayats (VPs) during February - March 2006. Three strategies were used to minimise biases in capturing perceptions from the field: (1) repeated and intensive field staff training; (2) thorough review of field formats by external social scientists and TWAD engineers with field teams, and (3) verification of the field situation by TWAD Executive Engineers on the ground.

## 4. MAIN FINDINGS

The six key findings from the study are detailed below.

### 4.1 O&M EXPENDITURE

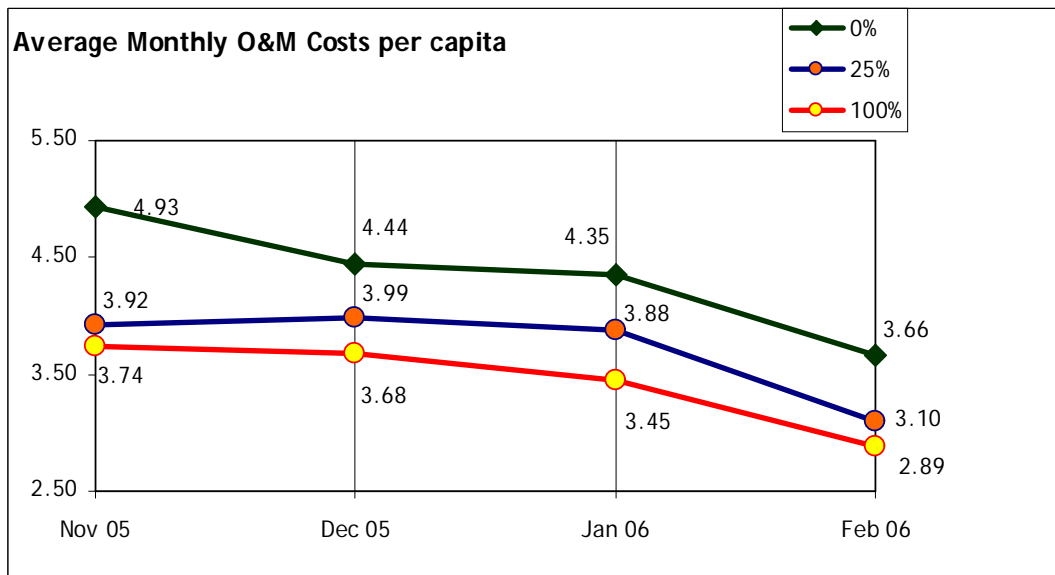
The O&M costs of a typical village water supply system comprise electricity charges, operator salary, bleaching powder charges, cleaning charges and minor repairs. Over the period November 2005 to February 2006 average O&M costs per month decreased by 26% for VPs with no revenue targets (0% category), while it reduced by 23% for VPs with 100% targets and by 21% for VPs with 25% targets (Table 1 and Figure 1).<sup>4</sup> The lowest monthly O&M costs were for VPs with a 25% target (Rs. 9,331 in February 2006), followed by VPs with 100% target (Rs. 11,319).

Table 1: Impact on average monthly O&M costs per VP

VP User Charge Collection Targets (% of O&M costs)	Average monthly O&M costs per VP (Rs.)			
	November 05	December 05	January 06	February 06
0%	12,019	15,255	15,631	13,896
25%	9,383	9,915	9,719	9,331
100%	15,393	12,507	11,692	11,319
<i>Percentage change</i>	November - December 05	December 05 - January 06	January - February 06	November 05 - February 06
0%	-10%	-2%	-16%	-26%
25%	2%	-3%	-20%	-21%
100%	-2%	-6%	-16%	-23%

Figure 1: Changes in Average Monthly O&M Costs per capita (November 2005 - February 2006)

<sup>4</sup> The average monthly O&M costs per VP have been calculated by dividing the average O&M cost per month by the number of VPs in the respective groups.



These findings suggest that VPs which were assigned 100% revenue collection targets did not perform

better than VPs with lower collection targets and also that the variation in performance is not systematic.

## 4.2 O&M COLLECTION

Overall, there is an appreciable improvement in revenue from user charges. The average proportion of O&M costs covered by user charge collections over this period was highest for VPs with no revenue collection targets (Table 3).

Table 3: Impact on O&M Cost Collection Target

VP User Charge Collection Targets (% of O&M costs)	HSC + PF Charges Collection		
	November 05	December 05	January 06
0%	117,710	178,035	205,895
25%	64,775	69,870	82,595
100%	88,200	129,500	125,100
	O&M Costs		
	November 05	December 05	January 06
0%	420,668	529,197	469,867
25%	300,246	281,515	311,640
100%	523,355	487,674	429,249
	Total Collection to Total O&M Expenditure		
	November 05	December 05	January 06
0%	28%	34%	44%
25%	22%	25%	27%
100%	17%	27%	29%

The performance on collection of House tap charges, show that VPs with no collection target show the maximum financing of O & M expenditure through user charges (44% compared to 27-29%) over the period December 2005 to January 2006.

The data shows all three groups of VPs collected an increasing proportion of their (rising billed amounts) over the period November 2005 to February 2006 (Table 4). However, VPs with no collection targets collected the largest proportion (40% in November 2005 to 97% in January 2006), while the other two groups of VPs collected only 62-68% of the total amount billed as user charges in the village panchayat.

Table 4: HSC Collection and Demand (November 2005 - February 2006)

VP Charge Collection Targets (% of O&M costs)	User O&M	HSC Charges Demand			HSC Charges Collection			HSC Collection to Demand		
		Nov 05	Dec 05	Jan 06	Nov 05	Dec 05	Jan 06	Nov 05	Dec 05	Jan 06
0%		198,360	200,750	206,390	113,340	172,990	199,545	57%	86%	97%
25%		100,380	107,495	105,155	55,030	59,965	71,925	55%	56%	68%
100%		164,290	176,210	186,720	78,770	120,070	115,670	48%	68%	62%

Once again there is no systematic variation in performance across the three group of randomly chosen villages with different revenue collection targets, and there is certainly no better performance by villages assigned the highest revenue collection target of 100% of O & M Expenditure.

#### 4.3 SATISFACTION WITH WATER SUPPLY DELIVERY

The satisfaction levels of the community with the water supply were more or less same irrespective of the user charges. In particular, user satisfaction levels did not suffer for want of user charge imposition in the villages with no revenue collection target, unlike what the existing literature based on anecdotal evidence would have us believe. Nearly 80% of households across all 3 VP categories reported that they were more satisfied now with the functioning of their water supply scheme, both PF and HSC, while 15 - 18% of user households were non-committal, and only around 5% were less satisfied (Table 5). This is also Contrary to the World Bank position that low user charges reflects in poor accountability (World Bank 2005) which would lead to poor service & low satisfaction levels.



Table 5: Satisfaction with functioning of water supply scheme

VP User Charge Collection Targets (% of O&M costs)	Total House-holds	Satisfaction with functioning of water supply		
		More satisfied	Less satisfied	No response
0%	412	313	24	75
25%	396	317	15	64
100%	409	324	20	62
<b>Total</b>	<b>1217</b>	<b>954</b>	<b>59</b>	<b>201</b>
<i>Percentages to households in VP</i>	Total	More satisfied	Less satisfied	No response
0%	100%	76%	6%	18%
25%	100%	79%	4%	16%
100%	100%	78%	5%	15%
<b>% to Total</b>	<b>100%</b>	<b>79%</b>	<b>5%</b>	<b>17%</b>

#### 4.4 WATER CONSERVATION

The ultimate focus of all these actions at village level is water conservation. If wastage of water can be reduced, then the total volume of water used in the village can be reduced, thus conserving water for future generations. If this can be done with the full cooperation of village officials and the village community, as reflected in greater user satisfaction, then the TWAD rural water supply engineers can be said to have moved significantly closer to their goal of better water management by working with the Community as partners managing a Common resource.

**Action to reduce use of piped water:** Roughly 50% of households across all three categories in habitations surveyed reported multiple actions to reduce use of piped water, the most commonly reported ones being storing less at home, using other water sources and reporting or fixing leaky taps (Table 6).

Table 6: Action to reduce use of piped water

VP User Charge Collection Targets (% of O&M costs)	Total House-holds	Action to reduce use of piped water				
		Yes	Store less at home	Use waste water for gardening or cattle	Report/fix leaky taps	Use other water sources
0%	412	198	197	69	75	84
25%	396	215	215	60	69	81
100%	409	201	201	50	61	94
<b>Total</b>	<b>1217</b>	<b>614</b>	<b>613</b>	<b>179</b>	<b>205</b>	<b>259</b>
<i>Percentages to all households in VPs</i>	Total	Yes	Store less at home	Use waste water for gardening or cattle	Report/fix leaky taps	Use other water sources
0%	100%	48%	48%	17%	18%	20%
25%	100%	54%	54%	15%	17%	20%
100%	100%	48%	48%	12%	15%	22%
<b>% to Total</b>	<b>100%*</b>	<b>50%</b>	<b>50%</b>	<b>15%</b>	<b>17%</b>	<b>21%</b>

\* Percentages add to more than 100% as households take more than one action to conserve water.

The data shows that VPs with higher collection targets do not have more households conserving water: The proportion of households undertaking water conservation activities is

almost the same across VPs with collection targets of 0%, 25% and 100% of O&M costs (being 48%, 54% and 48% respectively).

The findings that water consumption has reduced at village level for VPs with no collection targets over the period November 2005 to February 2006, while user satisfaction is quite high (Section 4.4 above), suggests that the message of water conservation has been successfully transmitted by the engineers and adopted voluntarily in actual practice by the village community.

#### 4.5 VOLUNTARY IMPOSITION OF USER CHARGES

While the government of Tamil Nadu imposed mandatory user charges for HSCs, there was no such provision for public fountains (PFs), a socially sensitive issue. However, several of the 105 VPs in the project areas imposed PF tariffs on their own (Table 7).

Table 7: Voluntary user charges for public fountains

VP User Charge Collection Targets (% of O&M costs)	Number of VPs In the Group responding to this question	Number of VPs Imposing PF user charges voluntarily	% of VPs imposing PF user charges voluntarily
0%	34	12	35%
25%	35	10	29%
100%	33	8	24%

Remarkably, and counter-intuitively, the largest proportion of VPs (35% ) that imposed user charges are those without a collection target (therefore no need to impose any tariff ), followed by VPs with a 25% target (10 out of 35 or 29%), and those with a 100% target (8 out of 33 or 24%). This clearly shows up a new perspective to policy prescription. Communities are capable of responding to a consensual social objective irrespective of an externally mandated law or rule.

#### 4.6 OVERALL

There does not appear to be any straightforward statistical relationship between the O&M collection targets randomly assigned to VPs and the performance of the water supply system in the villages, either in terms of service quality, water conservation or user satisfaction. There is a striking improvement across all three groups of VPs in the proportion of user charges collected, but the performance is consistently higher in VPs with no revenue collection targets. Further, nearly 100% of HSC charges are being collected in VPs with no collection targets, although the proportion in the other VPs is also high at around 60-65%. There thus seems to be a better performance of the VPs with no revenue collection targets, in terms of decreasing water wastage, reducing O&M expenditure and

increasing user charge collection to cover O&M expenditure. This performance extends to the critical area of voluntary payments of user charges for the hitherto freely-supplied public fountains.

These results are contrary to the conventional wisdom which relies on user charges for improved sectoral performance and service delivery, although there is some recent acknowledgement that “water shortages can be addressed by modifying water demand and usage through increased awareness, education & water policy reforms’ (UN 2006, p.44)

## **5. CONCLUSIONS AND WAYS FORWARD**

### **5.1 TESTING CONVENTIONAL WISDOM ON USER CHARGES AND SERVICE DELIVERY**

The randomization experiment, where VPs were randomly divided into three groups and assigned a collection target based on the proportion of O&M costs to be covered, tested the conventional wisdom that (higher) user charges leads to greater efficiency of service delivery, hence better collection, and consequently greater proportion of O&M expenditure gets covered by collection, and leads to overall greater user satisfaction. The findings of the study, however, show that the fixing of user charges based higher collection targets has not induced either greater collection of user charges, greater decline of O&M costs or better Conservation. . It is therefore apparent that the conventional wisdom is not working in this present case, i.e., the imposition of (higher) revenue collection targets for user charge collection will lead to improved performance on the ground. Clearly, there are some other factors at work.

### **5.2 ALTERNATIVE HYPOTHESIS: COMMUNITY INVOLVEMENT AND USER CHARGES**

The alternative view is that when the service delivery organisation as well as the community understands the importance of water as a resource, there is greater participation in conservation and management and consequently greater responsibility and ownership over the water supply system and decisions concerning the use of water as a scarce resource requiring conservation. As a consequence, performance and service delivery improves. This turns the conventional hypothesis on its head: a greater community desire for more efficient and cost-effective operations may also *lead* to the imposition (or increase) of tariffs. The study shows that, *after* the drive for improved Water Management began, 12 out of 30 (or 40%) VPs with no revenue collection targets voluntarily imposed a tariff for public fountains (PFs), while the corresponding proportion for VPs with 25% targets was 32% (10 out of 31) and only 28% (8 out of 29) for VPs with 100% targets.

### 5.3 POLICY IMPLICATIONS

The critical finding of the study is that the key to successful community participation in water supply management is to make the community understand the value of water resources and invite them to participate in managing this scarce resource. There is no reason to believe that simply imposing user charges will result in better service delivery quality, efficient water use and better coverage of O&M costs. In fact there is a large body of evidence from the health sector that the imposition of user charges has resulted in social exclusion, sharp and sustained drops in utilization rates, while the provision of health care payments (to pay service providers on behalf of the poor) have resulted in significant improvements in utilization rates (Noirhomme et al., 2007; Creese, 1991). While not going so far as to say that user charges should not be collected from rural communities, the study does show that the policy approach to user charges for water supply provision has to be considerably more nuanced.

Specifically, there are three major policy implications of the findings of this study.

1. **User Charges:**- There is little rationale for the imposition of a target of 100% collection of O&M costs from the outset as is done in donor-assisted programmes. It is perhaps better to fix tariff flexibly with a target decided by the local community and to provide incentives (e.g., phased matching grants from government) to increase collection to cover annual O&M costs. The key message of the pilot study is that the best way to improve management and conservation, is not to approach it as a financial problem requiring user charges, but as a Communal water resource scarcity issue that requires community awareness, management and hence involvement for its resolution. Charges imposed and collected by the community, out of its understanding of the scarcity aspect and the need to improve management, will lead to better Water Governance, Physical and Financial Management. Collecting user charges to cover O&M costs are only a means of supplementing short-term financial viability of the water supply system, and not a means of ensuring either replacement or community ownership of the water supply system. There are other and better ways of getting the community to take responsibility for its water supply and achieving better management other than mandating communities to pay 100% of O&M costs.
2. **Focus on community management for better service delivery:** Structural measures of community participation (such as imposition of user charges, forming Village Water Committees and handing over responsibility to communities) do not work on their own, and need to be actively supplemented

by 'non-structural' measures such as community mobilization, participation (especially by women) and capacity building, in order to build community ownership and responsibility for water service delivery. Only when field-level and other officers of government water supply departments understand this difference clearly will there be better and sustained service delivery. Policy support for the sensitization and training of line department staff to enable them to understand and carry out this important and difficult facilitating role is, therefore, vital. Further it is also established that Communities are Capable of responding to a Consensual social objective irrespective of an externally mandated law or rule.

3. **Non-prescriptive policy:** The present project was non-prescriptive in that engineers did not work to a fixed target or plan, but instead strove to inform the community and to involve them in addressing the water supply issues in pilot villages. The emphasis on raising community awareness of the importance of managing water as a scarce resource, and on providing sufficient space for community action and decision-making, were key ingredients to evolving successful and sustainable community-managed water supply systems. This non-prescriptive approach emphasizing community awareness, understanding and involvement helped carry out a smooth transition - without acrimony and protests from villagers - to reduced and regulated water pumping and water supply hours, reduced O&M costs, enhanced tariff collection and even imposition of sensitive tariffs. But rural water supply engineers will have to first understand and accept the need to involve the community and this takes time and effort. The TWAD pilot, carried out in the context of a larger Change Management programme underway within the organization, shows that rural water supply engineers can indeed mobilize effective community action, and now policy support is vital to replicate these lessons across the country.

The study shows that rural water supply engineers can indeed mobilize effective community action, that existing policies need to be more flexible and that policy support is necessary to replicate the lessons from this innovative rural water supply experimental project elsewhere in the Water sector & beyond.

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