COMMUNITY MANAGEMENT OF RURAL WATER SUPPLY

Community Water *plus*

Cranfield University, UK

Understanding the resource implications of the 'plus' in community management of rural water supply systems in India: Morappur, Tamil Nadu

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Community Water *plus* is a 20 case study research project managed by Cranfield University, UK, on behalf of the Department of Foreign Affairs and Trade (DFAT) of the Australian Government

Executive Summary

Morappur is a government labelled 'dark' block that suffers from depleted and contaminated groundwater in Tamil Nadu. Delivering sustainable water supply here has required the combined efforts of communities and a number of different support agencies. From 2004 the TWAD Board (Tamil Nadu Water Supply and Drainage Board), a public utility, piloted a new programme to facilitate public involvement in efforts to address source sustainability issues, whilst later the Centre of Excellence for Change (CEC), a national NGO, built on this legacy to (re)mobilise communities to address water insecurity. These efforts have complemented the on-gong support provided to rural communities through the Panchayat Raj Institutions (the local self-government) and have recently been further supplemented by massive investment from the state government in a new bulk water scheme bringing surface water to the region. As part of the Community Water *plus* research series this case study sets out to assess this support arrangement in more detail, in terms of the type and extent of support that is provided to villages, the effects this has on service delivery and the resources required to deliver it. The study has taken place in three villages in Morappur that have been part of the main programmes and the findings have been contrasted with a village from a neighbouring block that has not been included in all the same programmes.

The institutional set-up for service delivery found in the villages involves a strong role for local government so the model can be classified, within the typologies of this research project, as a form of direct provision with community involvement that is transitioning, in the better performing villages, into the more professional community-based management model. The service provider is a semi-autonomous Village Water and Sanitation Committee (VWSC) that is a sub-committee of the Gram Panchayat (the village-level local self-government). This VWSC-Gram Panchayat nexus carries out the operation and maintenance functions and the villagers have an active oversight role, facilitated in part through specialist created Community Change Management Groups that work to promote a sense of responsibility for water security issues. The research found that in this model the level of professionalism is relatively high but the degree of community participation is somewhat limited. The set-up has benefits such as the easy channelling of resources from higher-level government agencies down to the villages but it means that the lines between the oversight functions of elected officials and the executive service delivery role have disappeared, which may lead to problems if proper avenues for community complaints are not established.

The case study has found that a significant amount of support has been required to ensure that communities can successfully take on this model of service provision. This includes the on-going support from public bodies, namely the TWAD Board and the Block Development Office, that specialise in hardware and software support respectively, as well as a number of one-off programmes and projects. In 2004 these included the 'Tamil Nadu Rural Water Supply Programme' whereby TWAD Board engineers adopted a mode of working focused on community participation and facilitation which has been built on by the more recent NGO programme with a similar agenda of capacity building of village-level institutions. In 2012 the area saw one of the largest hardware investments in bulk water provision anywhere in Tamil Nadu through the Hogenakkal Water Supply Fluorosis Mitigation Project. This has been a real 'game changer' as it has transformed the source sustainability issues that had plagued many systems. The performance of these different support

institutions was assessed and, across the board, medium to high performance was documented. CEC, the only NGO assessed, was limited in its ability to score highly on factors related to long-term planning whilst the technical government institutions scored lower on factors related to community proximity. This suggests that community participation may fall after the CEC pilot is concluded which is supported by historical evidence about the 'slippage' of participation between the early TWAD Board programme and the later CEC initiative.

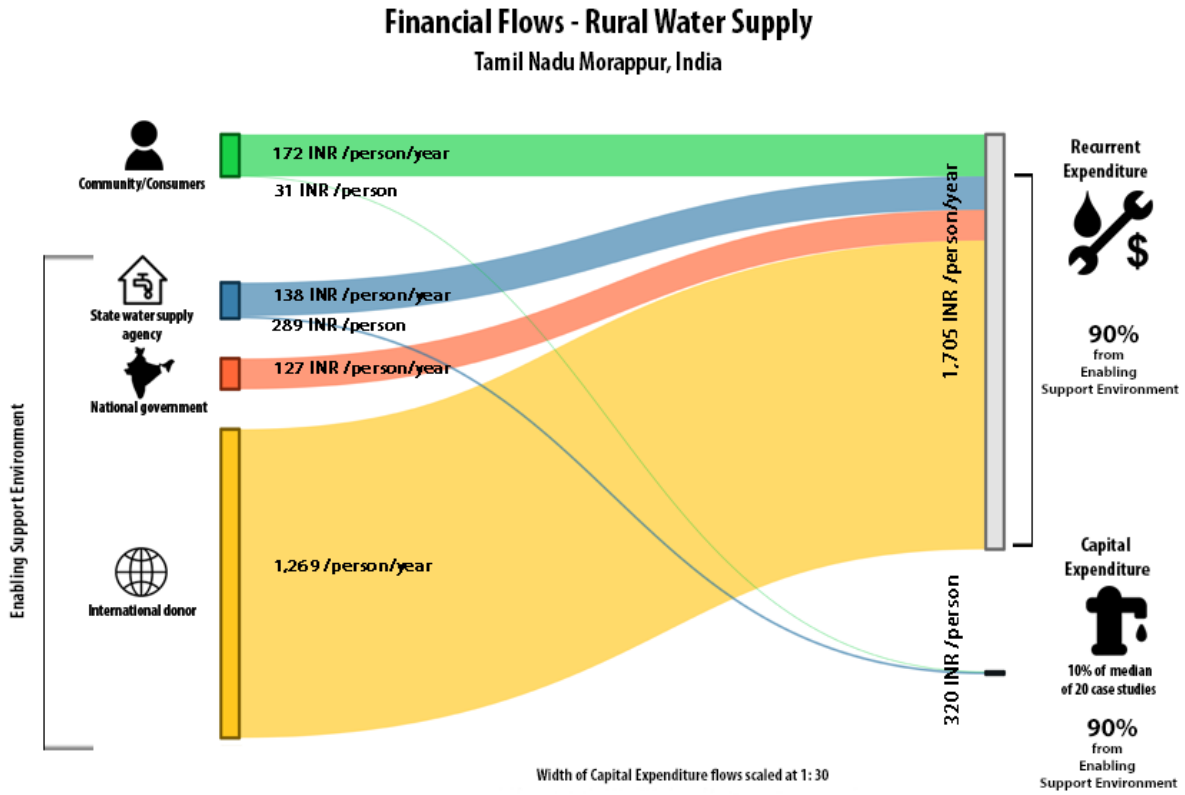
Finally, the research also sought to understand the resource implications of this support. The financing of it was found to be fragmented across a number of different funds and institutions with the exact arrangements not always transparent. However, in one village, Ramianahalli, it was possible to collate a comprehensive overview of costs for the piped water supply scheme. The summary table of costs is given below. The apparently high operational costs reflect the total annualised production costs of the bulk water which is subsidised by the government to the extent of INR 1,269 (PPP USD$72.31) per person per year which have in this instance been ascribed to an 'International donor', JICA being the source of the capital for the bulk water scheme. Such high costs for rural water supply reflect the considerable expense of large-scale surface water schemes, which can be a necessary but expensive investment in places with groundwater depletion. Based on these findings, it is clear that a significant level of external investment is required to develop and sustain an effective support model for villages with limited groundwater resources.

Tamil Nadu Morappur Summary Cost Table - calculated as the average cost per person, that is averaging across the 3 'successful' villages

Source of funds	Use of funds - implementation			Use of funds - annual recurrent					
	CapEx hardware	CapEx software	CAPEX TOTAL	OpEx labour & materials	OpEx power	OpEx bulk water	OpEx enabling support	CapManEx	RECURRENT EXPENDITURE TOTAL
Community/consumers	INR 31	-	INR 31	INR 9	INR 26	INR 22	-	INR 116	INR 172
Local self-government	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-
State government entity	-	-	-	-	-	-	-	-	-
State water supply agency	INR 277	INR 12	INR 289	INR 55	INR 16	-	INR 40	INR 27	INR 138
National Government	-	-	-	INR 31	INR 16	-	-	INR 80	INR 127
NGO national & international	-	-	-	-	-	-	-	-	-
International donor	-	-	-	-	-	INR 1,269	-	-	INR 1,269
TOTALS	INR 308	INR 12	INR 320	INR 95	INR 57	INR 1,290	INR 40	INR 223	INR 1,705
Median of 20 case studies			INR 3,231						INR 207
'Plus' %age	90%	100%	90%	91%	55%	98%	100%	48%	90%
Median of 20 case studies			95%						57%

Notes: CapEx and CapManEx data is for the village Ramianahalli only;
the entire part of OpEx bulk water not covered by the community has been apportioned to JICA

The Financial Flow Diagram, below, has been developed as an advocacy and communication tool. It aims to assist policy-makers and programme developers to visualise the 'plus' resource implications necessary for sustainable community-managed rural water supply services:


Financial Flows - Rural Water Supply
Tamil Nadu Morappur, India
Community/Consumers
State water supply agency
National government
International donor
Enabling Support Environment
172 INR /person/year
31 INR /person
138 INR /person/year
289 INR /person
127 INR /person/year
1,269 /person/year
1,705 INR /person/year
320 INR /person
Recurrent Expenditure
90% from Enabling Support Environment
Capital Expenditure
10% of median of 20 case studies
90% from Enabling Support Environment
Width of Capital Expenditure flows scaled at 1: 30

Acknowledgements

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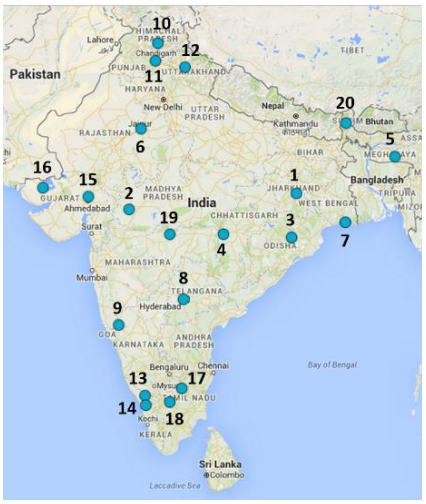
This research project has investigated twenty reportedly successful community-managed rural water supply programmes and approaches across India, from which we have subsequently developed understanding on the support needed to make community-management service provision successful and sustainable. The project has been implemented by a consortium of partners, including: the Administrative Staff College of India (ASCI), the Centre of Excellence for Change (CEC), Malaviya National Institute of Technology (MNIT), the Xavier Institute of Social Service (XISS) and IRC, The Netherlands with overall project coordination provided by Cranfield University, UK.

The research has been funded by the Australian Government through the Australian Development Awards Research Scheme, Australian Aid, Department of Foreign Affairs and Trade, under an award titled 'Community Management of Rural Water Supply Systems in India'. The views expressed in this report are those of the project and not necessarily those of the Australian Government. The Australian Government accepts no responsibility for any loss, damage or injury, resulting from reliance on any of the information or views contained in this report.



The twenty case studies

1	Jharkhand	11	Punjab
2	Madhya Pradesh	12	Uttarakhand
3	Odisha	13	Kerala (Kodur)
4	Chhattisgarh	14	Kerala (Nenmeni)
5	Meghalaya	15	Gujarat (Ghandinagar)
6	Rajasthan	16	Gujarat (Kutch)
7	West Bengal	17	Tamil Nadu (Morappur)
8	Telangana	18	Tamil Nadu (Kathirampatti)
9	Karnataka	19	Maharashtra
10	Himachal Pradesh	20	Sikkim

The twenty case studies are available also in four page summaries, both in Indian Rupees and in US Dollar (PPP) versions, accessible from the project website. A Policy Brief and a Research Brief There is also a synthesis report available, published by Earthscan, London.

Contents

1 Introduction

For decades the villages of Morappur relied on groundwater but a lack of recharge and water quality problems left many habitations with a sub-standard water supply service. The situation inspired communities and public bodies to reassess the prevailing approach to rural water supply. The Tamil Nadu Water Supply and Drainage Board (TWAD Board) and, later, the Centre of Excellence for Change (CEC) helped facilitate communities to become more efficient managers of water resources, whilst the Hogenakkal Water Supply and Fluorosis Mitigation Project (HWSFMP) now delivers bulk water from the River Kaveri to the area. Together these initiatives have transformed the fortunes of rural water supply in Morappur and so this case study investigates this success with a view to understanding the level of resource and support that was needed to deliver sustainable, community-engaged rural water supply. It forms part of a series of case studies produced as part of the Community Water *plus* research project.

1.1 Background to the topic and the Community Water *plus* project

Community management has long been recognised to be critical for rural water supply services. Indeed, community management has contributed significantly to improvements in rural water supplies. However those supplies are only sustainable when communities receive appropriate levels of support from government and other entities in their service delivery tasks. This may consist of easy access to call-down maintenance staff from government entities, or support from civil society organisations to renew their management structures and they may need to professionalize—that is, outsourcing of certain tasks to specialised individuals or enterprises.

In spite of the existence of success stories in community management, mechanisms for support and professionalization are often not institutionalised in policies and strategies. Success stories then remain pockets of achievement. Also, the necessary support comes at a price, and sometimes a significant one – though in many cases there is lack of insight into the real costs of support.

Community Water *plus* (Community management of rural water supply systems) is a research project which aims to gain further insights into the type and amount of support that is needed for community-managed water services to function effectively.

1.2 Overall objectives of the research and research questions

This research investigates 20 case studies of reportedly 'successful' community-managed rural water supply programmes across India in order to determine the extent of direct support provided to sustain services with a valid level of community engagement. The expected outcome – based on the empirical evidence from the 20 cases - of the project is to have a better understanding of the likely resource implications of delivering the 'plus' of successful community management 'plus', for different technical solutions, at a level of competence and bureaucratic involvement that is indicative of normal conditions across many low-income countries, and the possible trajectories for institutional development of effective support entities for community management.

In order to achieve that outcome, the project focuses on the following main research question:

What type, extent and style of supporting organisations are required to ensure sustainable community managed water service delivery relative to varying technical modes of supply?

This is further broken down in the following specific questions:

- What are the current modalities of successful community management and how do they differ in their degrees of effectiveness?
- What supporting organisations are in place to ensure sustainable water service delivery relative to alternative modes of supply?
- What are the indicative costs of effective support organisations?
- Can particular trajectories of professionalising and strengthening the support to rural water be identified?

This report provides the results from the case study of community-managed piped water schemes in Morappur block, Tamil Nadu. In this case study Village Water & Sanitation Committees (VWSC) that are closely aligned with the village-level local self-government, known as the Gram Panchayats, manage these systems. Support is provided through designated government agencies such as TWAD Board and the Block Development Office (BDO). CEC, an NGO, supports the overall management and support structure through training and awareness-raising with regards to water security, whilst the new bulk water scheme, led by TWAD Board but delivered through contractors, is supplying the bulk water to many of the villages in this area.

1.3 Report structure

Following this introduction, Chapter 2 presents the concepts and methodology followed in the research. Chapter 3 describes the context of this case study helping to explain how the model of support found in Morappur has evolved. The structure of the findings follows the Community Water ^{plus} conceptual model for rural water supply: these start in Chapter 4 with a description and assessment of the organisations that make up the Enabling Support Environment (ESE), in this case TWAD Board, the HWSFMP, Panchayat Raj Institutions and CEC. Chapter 5 presents the findings at the community service provider level, including the performance of the water committees, which share the service provider functions with the Gram Panchayats. Chapter 6 presents the household services levels achieved through this model. The seventh chapter focuses on the financial data on the resources spent on supporting community management. Finally, Chapter 8 offers conclusions and recommendations regarding the community managed water service found in Morappur.

2 Concepts and methodology

2.1 Conceptual framework

Community-management remains the predominant approach for rural water supply services delivery in low-income countries. It originated in response to the perceived limitations of the 'public works department' phase, and built on the insights around appropriate technology, eventually leading to the present 'community management' paradigm. Though this has undoubtedly brought benefits (Schouten and Moriarty, 2003; Harvey and Reed, 2006; Lockwood and Smits, 2011) and is often the most appropriate service delivery model, evidence shows that the community management approach is necessary but not sufficient for sustainable services (Harvey and Reed, 2006; RWSN, 2010).

The hypothesis is that sustainable services delivery requires a combination of community engagement and community management of appropriate technology with the necessary government institutional support (potentially including a level of out-sourcing to the private sector). We see that there is the need to professionalise the support elements of community-management in order to provide on-going support. The needs and possibilities for this differ widely and the need for institutional/functional segmentation and resulting differentiation of support, most likely according to technology use, needs to be further investigated.

Ultimately, we believe that for successful community management, proper support is needed to deliver water services that are: *effective* in terms of quantity, accessibility, quality and reliability; *equitable* in that all rural households can access services irrespective of gender or social status, indeed that there is a bias towards the poorest who most benefit from good public health provision; sustainable or *viable*, in that there are adequate resources available, from whoever, to ensure the continuation of the service; *efficient* such that the minimum resources are used to deliver the desire quality of outputs; and *replicable* such that approaches can work at scale across different localities, not being dependent upon particular situations or leaders.

Building on these principles and applying general insights from the theoretical literature on participation and partnerships, the research identifies several "community-engaged approaches" to ensuring the fulfilment of the human rights to water. These are illustrated in Figure 1 below and include: 1) direct provision with community involvement, 2) community management with direct support and 3) professionalised community-based management. These three broad approaches represent different levels of balance of what communities themselves do, and the extent to which they are supported by external agencies. We believe that these different approaches are closely related to factors such as average income levels, cost of technology, development status and context and that across the demand and cost continuum it is expected that the intensity of community involvement will vary.

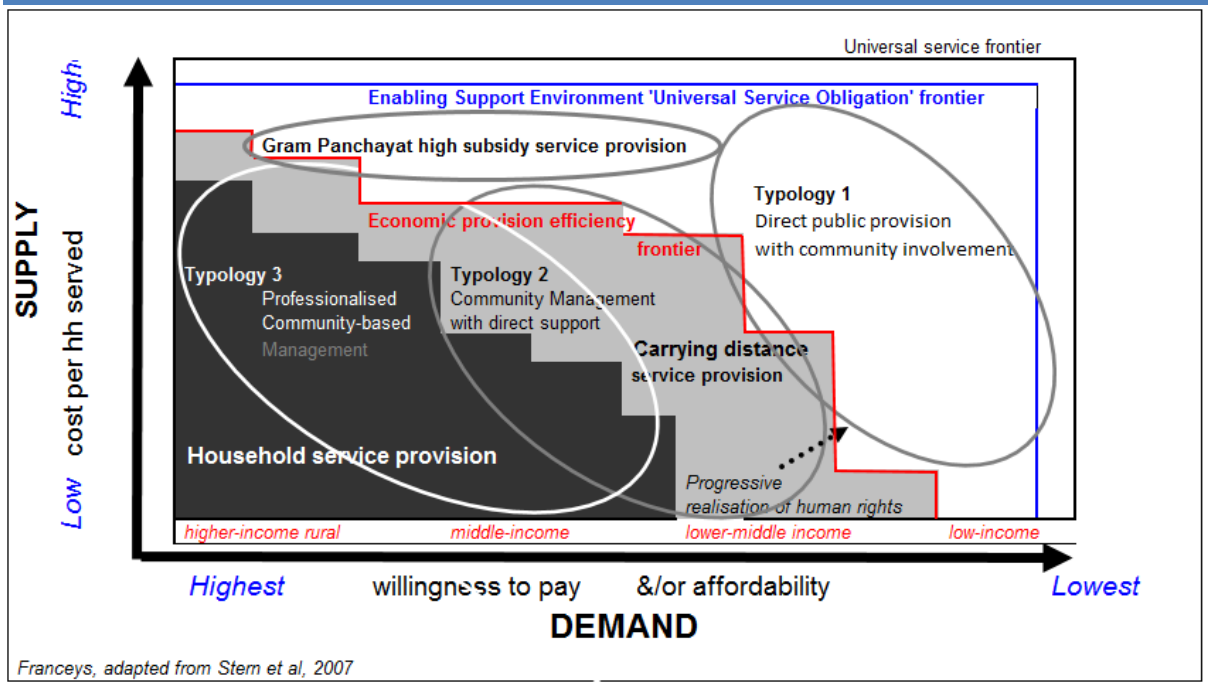


Figure 1: Application of *plus* approaches in relation to demand and costs of water supplies. Source: adapted from Franceys and Gerlach (2008) after Stern et al. (2007)

Key to all three models is the presence of what is called an 'enabling support environment' within the Indian context. The enabling support entities (ESE), that make up this environment, fulfil what Lockwood and Smits (2011) call service authority and monitoring functions, such as planning, coordination, regulation, monitoring and oversight, and direct support functions, such as technical assistance. The main objective of such support is to help communities in addressing issues they cannot solve on their own and gradually improve their performance in their service provider functions. Within this research, we will seek to classify the varying types of community management and the necessary enabling support environment, and get a further understanding of which models are functioning best. An interrelated objective will be to identify the resource implications of this *plus*, economic as well as financial, which is needed to deliver demonstrably successful, sustainable water services across these typologies.

2.2 Methodology

2.2.1 Elements of research

The focus of this research is thus to investigate successful cases of community-managed rural water supplies, and in that assess the type and size of support that has been deployed to make it successful. What can be considered successful can be understood at various levels: at the level of service that users receive, at the level of the service provider carrying out its tasks with a certain degree of community engagement, and at the level of partnership between the support entities and the service provider. The research will therefore assess the degrees of success across various elements, as summarised in Figure 2 below, and further elaborated below.

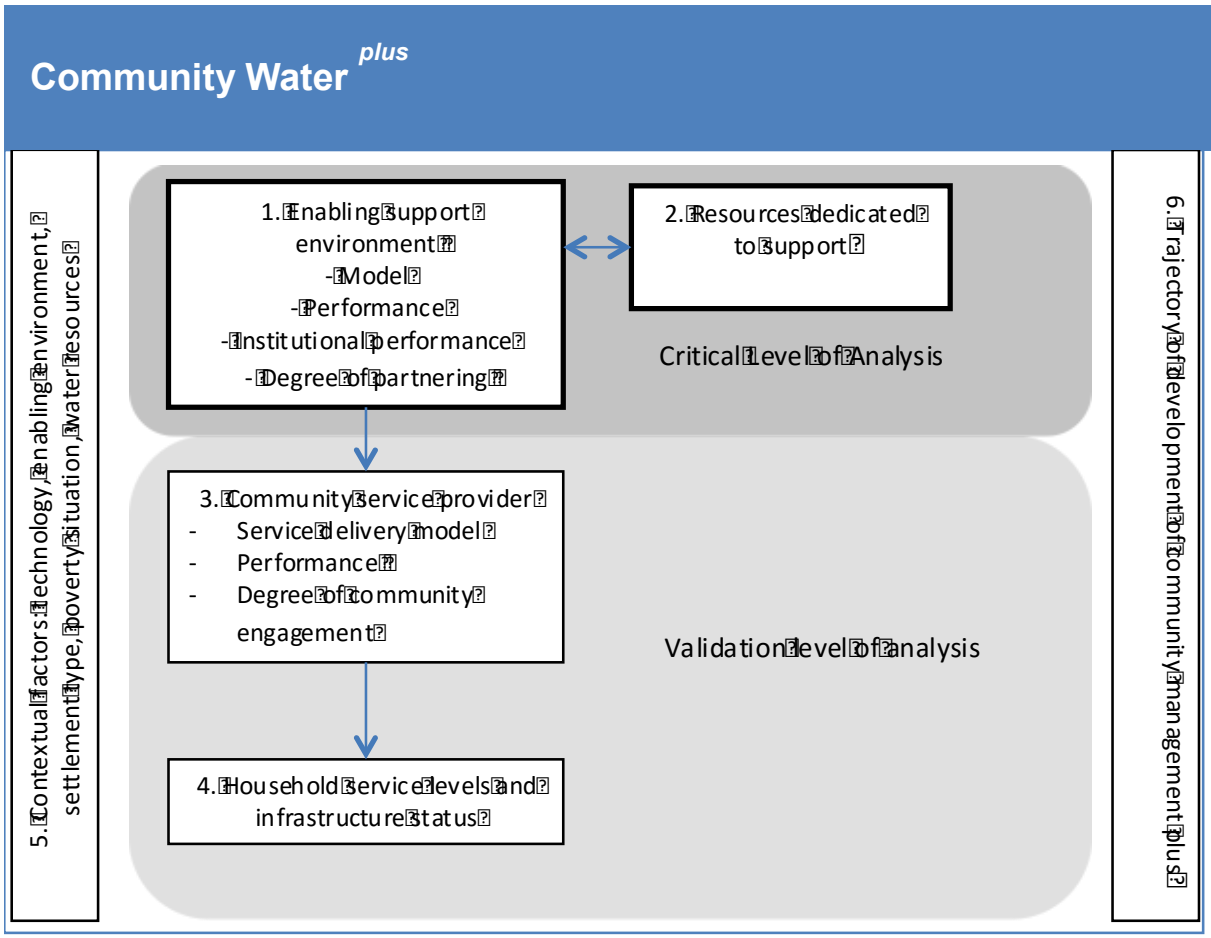


Figure 2: Elements of the research

2.2.2 Case study selection

In selecting twenty successful case studies, the research has scanned over 161 community-managed rural water supply programmes in India, covering a combined population of nearly 50 million people. Through a detailed process of selection using both secondary data and pilot visits, 20 programmes were selected to become case studies.

This case has been selected because between 2004 and 2007 the TWAD Board through the Tamil Nadu Rural Water Supply Programme (TNRWSP) advocated a form of community-engaged support for rural water supply that received plaudits for its effectiveness (Pragmatix and Institute of Sustainable Development, 2006). The programme emerged from a process of bottom-up governance reform, which was considered a best practice example of institutional reform with the case shared in many national and international forums (Suresh 2006; Nayar & Suresh, 2007). Although the TNRWSP has now ended, many of those who were responsible for the programme formed a specialist NGO, CEC, to spread these learning both in the water supply sector and other sectors of government. As CEO are now working on promoting drinking water security through a highly participatory approach in Morappur, which was also once the location for the earlier TNRWSP, this case provides an opportunity to assess the legacy and current performance of this model. Working in Morappur, also allows the study to investigate the impact of a new large-scale bulk water supply scheme on communities and to reflect on how community management can be integrated into such a model. Overall, the research is focused on providing additional insight into the total resources dedicated to support community management and, so, the main focus of this case study is to complement the previous studies with data on costs, and to confirm and quantify some of the earlier obtained information, against the various indicators that are common to all Community Water *plus* projects.

For this purpose research was conducted in three 'best practice' villages in Morappur block – Ramianahalli, Vagurappampatti and Thoppampatti – who were all part of the CEC programme. In neighbouring Harur block a 'control village' was selected called *Maruthipatti* that was not part of the CEC programme.

2.2.3 Data collection and analysis

In order to have information, on each of the research elements, this case study carried out the following data collection methods during field visits in February-March and September-November 2014, with this data complemented by a literature review. In total, 26 key informant interviews, 5 focus groups and 180 household surveys were collected as well as material from secondary sources (such as organisational reports).

Unit of analysis	Data collection methods
Enabling support environment	10 Key informant interviews 1 Focus group discussions Review of literature
Community service providers	16 Key informant interviews 4 focus group discussion (one in each village)
Households	180 Household surveys (90 in Ramianahalli and 30 in each other village)
Resource dedication	Review of available literature (i.e. Programme/Project documents) Compilation of expenditure from: VWSC, Gram Panchayats, block, and CEC

Table 1: Data collection methods

The data were processed in 4 databases (one for each of the units of analysis). These databases contain scoring tables for the performance of the enabling support entities, the service providers, the degree of partnering and participation and the service levels that users receive (for details of the scoring, see the project's research methodology and protocols (Smits et al., 2015)). Though the scores obtained have informed much of the analysis presented here, these analyses were refined through validation meetings with CEC staff.

In the costing section, all prices quoted are given in Indian Rupees (Rs) and have been converted to 2014 prices.

For more information on the conceptual framework and research methodology please see Community Water *plus* Concepts and Research Methods (2015): "Understanding the resource implications of the 'plus' in community management of rural water supply systems in India: concepts and research methodology", Smits, S., Franceys, R., Mekala, S. and Hutchings P., 2015. Community Water Plus working paper. Cranfield University and IRC: The Netherlands; please see http://www.ircwash.org/projects/india-community-water-plus-project

3 Context: the story of rural water supply in Morappur

In this section the background and context to the case study is explained. The villages studied come from Morappur an administrative block in Dharmapuri district consisting of 43 Panchayats with a population of 151,495. The average rainfall in this area is 760 mm per year but due to unfortunate hydrogeological conditions the groundwater level is severely depleted (Central Ground Water Board, 2009). It is also estimated that over 50% of groundwater sources have fluoride levels of more than 1.0 ppm, which is high enough to damage human health (State Planning Commission, 2011). With

minimal availability of surface water, droughts in the 1990s and early 2000s led to many villages suffered severe water shortages. As shown in Table 2, this was compounded by the relatively low levels of socio-economic development found in the area, as compared to broader Tamil Nadu (Rural Development and Panchayat Raj Department, 2011). In terms of water supply, according to official statistics, 89% of communities are considered fully served meaning that they received at least 40 lpcd (litres per capita daily), whilst 11% are considered partly served and so receive between 10 and 40 lpcd.

Table 2: Social Indicators (taken from State Planning Commission, 2011)

Social Indicators	Dharmapuri District Status
Poverty	32.3% Below Poverty Line
Enrolment at elementary educational	98.8%
Literacy	52.2%
Infant Mortality Rate	24 per 1000
Maternal Mortality Rate	0.7 per 1000
Sex Ratio	927 women per 1000 men
SC/ST Population	19%
Water supply status	Fully Covered: 89 % Partially Covered: 11 %

However, the relatively good water supply access numbers had been in danger of slipping back as source sustainability and water quality problems plagued the area. In the early 2000s Ramianahalli village was particularly badly affected as its boreholes failed due to dropping groundwater levels and no alternative sources could be found. Responding to this crisis, the TWAD Board – the public body responsible for rural water supply across the state – selected the village to become part of the experimental Tamil Nadu Rural Water Supply and Sanitation Programme (TNRWSSP). In this programme, TWAD Board engineers – who usually operated through a highly technical, supply-driven model – worked through a new approach that aimed to facilitate communities to take responsibility for improving service delivery and water security with an emphasis on promoting judicious use of water and the revival of traditional water bodies (Nayar & Suresh, 2007). In Ramianahalli the pilot was deemed to be a great success with the TWAD Board engineers and the Village Water and Sanitation Committee (VWSC) mobilising the support of the community to invest in new boreholes and pipes that bought water from a neighbouring village. Yet, in 2007, the TNRWSSP was stopped and without the support of the engineers, the enthusiasm for community management evaporated and, over the next few years, the village moved back to a form of direct provision from the Gram Panchayat, whereby the local government carried out all operation and maintenance tasks.

Table 3 – Timeline of programmes in Morappur

Year	Events
1990-2000	• Gradually deteriorating water problems in Morappur • 5km round trip for water in Ramianahalli village
2000-2002	• Ramianahalli Gram Panchayat and TWAD Board exploit borehole in neighbouring village

	• After less than 2 years this borehole dries and becomes unreliable
2002-2004	• Ramianahalli Gram Panchayat and TWAD Board identify a new scheme to solve source sustainability issues
2004-2007	• TWAD Board launches TNRWSSP in 145 Panchayats across the state, including Ramianahalli • An empowered VWSC emerges in Ramianahalli
2008-2011	• End of TNRWSSP and 'slippage' of community management • Source sustainability issues become exacerbated by drought • CEC formed to disseminate learning from TNRWSSP
2012-2014	• NRDWPP launched in all villages of Morappur Block, including Ramianahalli, Vagurappampatti and Thoppampatti • HWSFMP implementation with bulk water connections made to Ramianahalli, Vagurappampatti and *Maruthipatti*

Then, in 2012, CEC, an NGO that was formed by engineers who had taken part in the TNRWSSP, began to work again in the villages of Morappur including Ramianahalli but also new villages such as Vagurappampatti and Thoppampatti. This work was supported as part of the National Rural Drinking Water Security Pilot Projects (NRDWSPP) with the aim to promote improved water source sustainability through mobilising communities to take better responsibility for water resources and converging these efforts to broader government programmes. This has resulted in the formation of Community Change Management Groups in villages throughout the block that now work alongside the reinvigorated VWSCs and Gram Panchayats to support the sustainable delivery of water supply. These developments have also been accompanied by a major change in the water supply arrangements for the whole district of Dharmapuri and its neighbour Krishnagiri district. The Government of Tamil Nadu sanctioned a large-scale bulk water supply scheme with funding from the Japan International Cooperation Agency (JICA, 2013). TWAD Board were the executing agency working with five private contractors for the implementation and five-year operation of the project. From early 2012, this scheme, labelled the Hogenakkal Water Supply & Fluorosis Mitigation Project (HWSFMP), has brought water from the River Kaveri over 100 km to over 3 million people. Now, many of the communities in the area are no longer reliant on groundwater but, instead, have treated bulk water delivered to village reservoirs. In these cases, the villagers can now concern themselves with addressing the issue of effectively managing the distribution system, with support from CEC and the other support entities.

Top left: Tamil Nadu, India
Top right: Dharmapuri District, Tamil Nadu
Bottom left: Case study villages in Morappur & Harur Block

Figure 3: Map of case study (source: Google Maps, 2015)

4 Enabling Support Environment

A complex of support organisations now operate in Morappur making up the 'enabling support environment' for rural water supply. This chapter describes the roles of these organisations in more detail as well as their relationships. In addition, it provides an assessment of how the different organisations perform in their roles as well as in their internal organisation. Finally, an assessment is made of how they work together in partnership with other support entities and also the communities. In turn it focuses on the four entities that make up the enabling support environment which are:

- Tamil Nadu Water and Drainage Board (TWAD Board): the statutory public body responsible for water supply and sanitation across the state of Tamil Nadu (excluding the Chennai metropolitan area).
- Centre of Excellence for Change (CEC): the specialist 'software' NGO mobilising communities to address drinking water security in Morappur block.
- Hogenakkal Water Supply Fluorosis Mitigation Project (HWSFMP): a specialist scheme led by TWAD Board but in-part implemented by 5 private contractors that is now delivering bulk water supply in Dharmapuri and Krishnagiri districts.
- Block Development Office: the local government entity in charge of providing support to the village-level local-self government, the Gram Panchayat.

An institutional map of this support is presented in Figure 4 below.

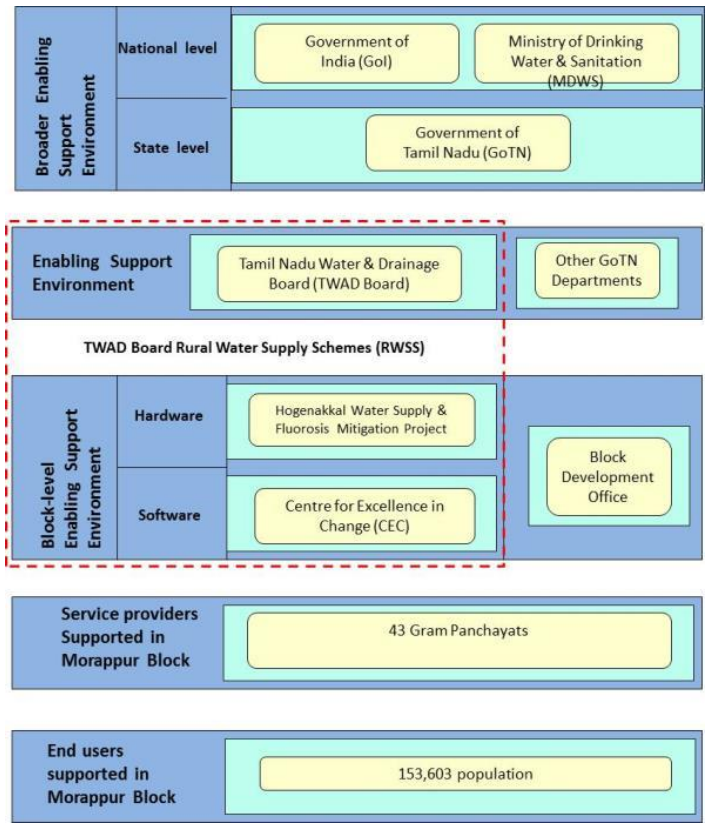


Figure 4 - Institutional diagram of enabling support environment

4.1 Background and descriptors of the enabling support environment

In this section each ESE is described and its role in rural water supply is explained.

4.1.1 Tamil Nadu Water and Drainage Board

TWAD Board was formed in 1971 and is the main body responsible for rural water supply across the state. Through its Rural Water Supply Scheme (RWSS) it has responsibilities including: planning, investigation, design, implementation and commissioning of water supply in rural areas; operation and maintenance of combined water supply schemes; water quality monitoring and surveillance programmes; activities addressing the sustainability of drinking water sources; and, training activities in support of rural water supply. In 2012-2013 TWAD Board provided direct support to rural water supply schemes covering 10 million people and monitored rural water services for over 30 million people, with an estimated capital budget of 10 Rs. billion and an operational expenditure budget of 3.35 Rs. billion (GoTN, 2014). The organisation has offices at the state, district and block level throughout Tamil Nadu and, as a large organisation with 9,000 employees, it has a complex organisational structure as depicted in Figure 5 below. There are a number of wings of the organisation, including the finance and administration wings, however the main operational wing is the Engineering Wing. There are four Chief Engineers head-quartered at Vellore, Thanjavur, Coimbatore and Madurai, and one Project Chief Engineer at Dharmapuri for the Hogenakkal Water Supply and Fluorosis Mitigation Project (HWSFMP).

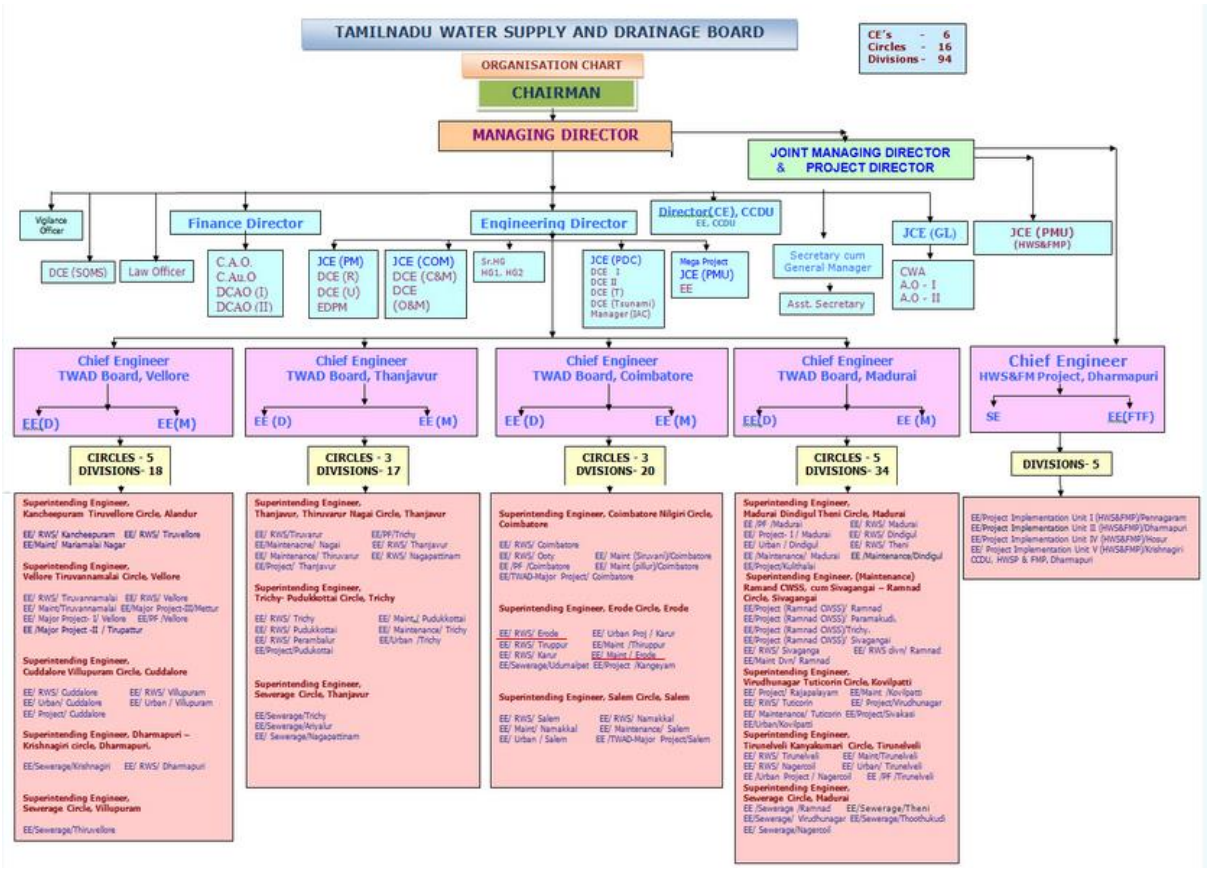


Figure 5 – Organisational chart of TWAD Board (Source: TWAD Board, 2011a)

The TWAD Board is first and foremost a technical support entity but they also provide software support to communities. It generally support is provided through a supply driven approach but it has reactive capability if problems emerge in particularly villages. In Morappur, in terms of specific support functions it remains responsible for a number of support services including the construction of reservoirs (overhead-tanks) and the sinking of boreholes. It also monitors the status of water supply infrastructure and water sources, visiting villages on average twice a month. However, in Morappur, the main body of the TWAD Board has 'outsourced' many of its core functions to various entities that deliver the hardware (i.e. treatment plants, bulk water distribution networks etc.) and software (i.e. social interventions, training, monitoring and evaluation) support services to villages. Hardware support for bulk water is now overseen by TWAD Board but primarily provided through the private contractors as part of the HWSFMP. Due to this situation, the HWSFMP has been considered a separate ESE. Specialist (community involvement) support is now also being delivered through CEC as well as the on-going support provided through the BDO which offers financing and administrative support to village-level entities.

4.1.2 Centre of Excellence for Change

CEC is a Chennai based NGO formed in 2009 by past (and some present) officials of the TWAD Board. It built on the experiences of these officials from the TNRWSP with the aim of the NGO to now transfer these learning to build effective enabling environments and sustained demand for positive change in public service delivery (CEC, 2013). Today it works across government departments but its genesis can be traced back to the early 2000s during the experimental governance reforms that lead to the TNRWSP[1]. In 2012 it was commissioned as the implementing agency for one of 15 Government of India supported National Rural Drinking Water Security Pilots (NRDWSP) to test software interventions that can address drinking water insecurity in areas with depleted groundwater. Upon award of the grant, CEC formed a specialist block-based support entity in Morappur to provide support to all 43 Gram Panchayats, including Ramianahalli, Vagurappampatti and Thoppampatti. The aims of the programme have been to: support measures to improve water source sustainability; promote participatory integrated water resources management led by Gram Panchayats; prepare drinking water security plans with villages; make selected villages open defection free and ensure proper solid and liquid waste management (MDWS, 2012).

Photo 1 Centre for Excellence in Change Morappur Block Office

Based on those guidelines, as well as the NGOs own experience in change management initiatives, CEC designed a programme to be implemented in each Gram Panchayat. This consists of

[1] For a review of the history of CEC please see: Nayar & Suresh 2007.

intensive six-month programmes that through awareness raising and capacity building leads to the establishment of a Community Change Management Group (CCMG) in every village. The idea is that CEC operates as a nodal agency in the community establishing the CCMG who then become voluntary change agents that work to bolster and hold to account the VWSC and Gram Panchayat that remain the community service providers. Members of the CCMGs include the VWSC, Elderly People, Youth volunteers, Water User's Association, and other associations, Women Group, Volunteers from Working / retired School Teachers, retired Government staff and dalit representatives (CEC, 2013). This CEC programme has been implemented across a population of 163,603 people between June 2012 and December 2014 (following a 6-month extension of the original 24-month grant). It follows an integrated approach with support extending beyond drinking water to irrigation and broader water resource management issues. In terms of the organisational capacity, at the block-level, CEC has seven fulltime staff and two part-time staff. The employees include a team leader, senior engineer, hydro geologist, three social mobilisers as well as the administrator who make up the core team. As a relatively small operation, a single office houses the team.

4.1.3 Hogenakkal Water Supply & Fluorosis Mitigation Project

The HWSFMP operates across two districts and represents one of the largest rural drinking water schemes built in Tamil Nadu in recent decades. The TWAD Board led project aims to alleviate pressure on strained and contaminated aquifers through the provision of treated surface water from the River Kaveri to Dharmapuri and Krishnagiri district. The total intended population served will be 3.4 million people but currently 10% of villages are still to be connected, this includes one of the villages included in this study – Thoppampatti. As shown in Figure 6, TWAD Board oversees the operation with a specialist Project Director who reports directly to the Managing Director. A number of senior engineers and executive engineers are also involved.

Photo 2 Hogenakkal Integrated Water and Fluoride Mitigation Project Transmission Storage Tank Dharmapuri district

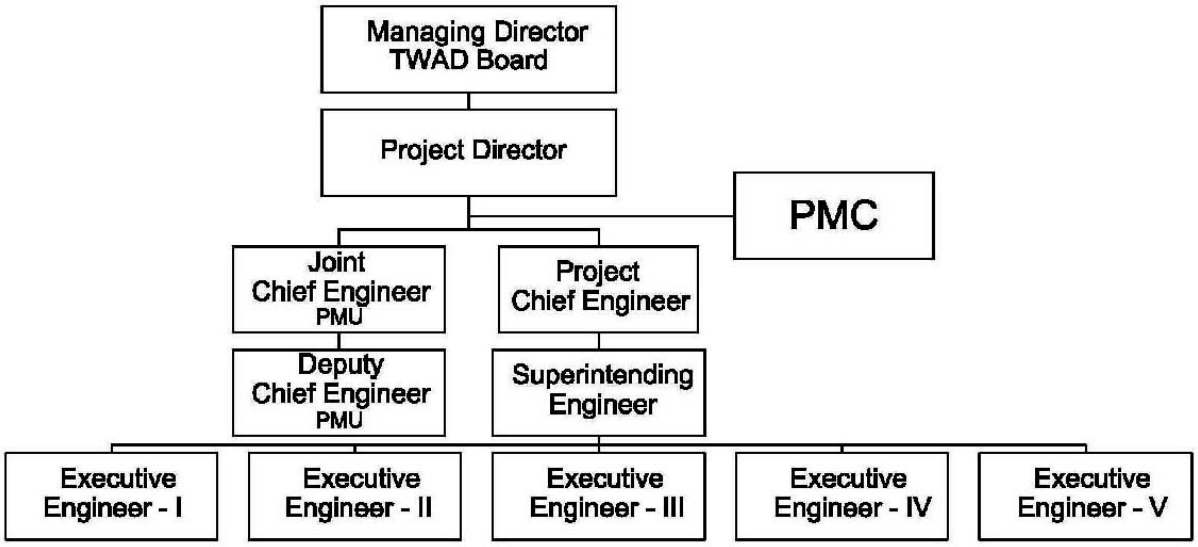


Figure 6 – Organogram of TWAD Board oversight over Hogenakkal Water Supply & Mitigation Project (Source: TWAD Board, 2011b)

The Government of Tamil Nadu (GoTN) using loans from the Japan International Cooperation Agency (JICA) have funded the implementation and 5-year initial operations of the scheme. The project has been divided into 5 packages that have been awarded to private contractors as shown in Table 4 below. As specified in the TWAD Board price guidelines, HWSFMP delivers bulk water that it charges service providers 3 Rs per m^3 ($0.17) This is a highly subsided price with the project costs amounting to a significantly higher production cost (as discussed in Chapter 7 on costing). The HWSFMP also directly supports an operator in each Gram Panchayat who is supported by a specialist technical support team operating at the block-level.

Table 4 – Work packages of Hogenakkal Water Supply and Mitigation Project (Source: TWAD Board, 2011b)

ackage	Contractor	Cost (million INR)
Package 1 - This package consists of raw water intake, water treatment plant, raw water and treated water transmission main to a length of 11.139 km, booster pumping station and Master Balancing Reservoir at Madam and providing Supervisory Control and Data Acquisition (SCADA) arrangements.	IVRCL - Cadagua Hogenakkal Water Treatment Company	2371.9
Package 2 - This Package consists of trunk main from Master Balancing Reservoir at Madam to Uthangarai, feeder mains etc., to a length of 2,447 Km.	IVRCL Infrastructure & Projects Limited	3150.3
Package 3 - This Package consists of branch trunk main from trunk main to Package-II, feeder main etc., to a length of 1,512 Km.	Larsen & Toubro Limited	1640.5

Package 4 - This Package consists of pumping main from common booster station at Moongilpatti to a length of 3,228 km.	Joint Venture with Nagarjuna Construction, SMC Infrastructures, Pratibha Industries & Electrosteel Castings	3875.4
Package 5 - This Package consists of trunk main from Master Balancing Reservoir at Madam to Moongilpatti Sump and then Moongalpatti sump to Krishnagiri feeder mains etc., to a length of 2,793 Km.	Larsen & Toubro Limited	3668.0

4.1.4 Block Development Office and broader government support entities description

The Block Development Office is part of Tamil Nadu Rural Development & Panchayat Raj Department (see Figure 7 below). This department is responsible for implementing various Centrally sponsored, State-funded, and externally aided schemes in rural areas for poverty alleviation, employment generation and area development. In terms of water supply, the primary role of the BDO is as a financing unit through which centre (Government of India, Delhi) and state-level grants are channelled. As far as Tamil Nadu is concerned, the entire Central Finance Commission allocation is given to the Gram Panchayats for maintenance of drinking water and sanitation. There is the State funding which is used mainly for capital expenditures. A floor amount of INR 250,000 is given to each Panchayat and the remaining is given based on a prorate of the population size. The BDO also fulfils the role of financial monitoring and auditing of the Gram Panchayat and VWSC accounts. Accounts are inspected every three months and a trained accountant conducts a full-scale audit once a year. The BDO provides general administrative training to the Gram Panchayat President, which covers all aspects of his or her role in terms of public administration, but with approximately 50% of the Gram Panchayats time dedicated to water supply in the studied Gram Panchayats, this training can be considered part of the support to rural water supply. The Rural Development & Panchayat Raj Department also plays a role by providing rural engineers who complete development work in villages that include rural water supply.

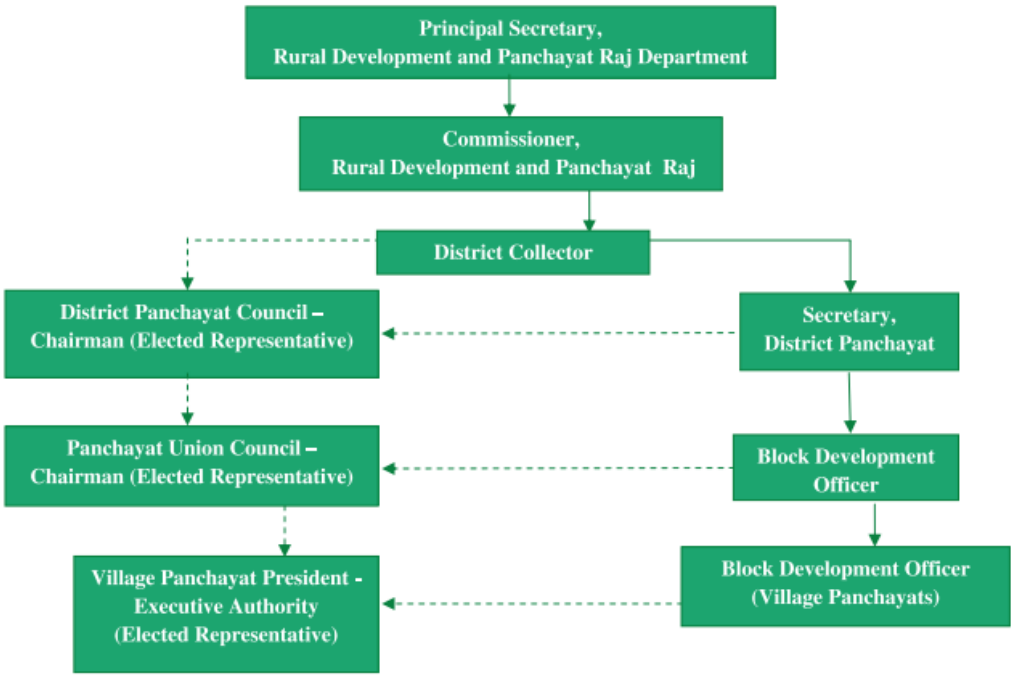


Figure 7: Organogram Rural Development & Panchayat Raj (Source: Comptroller and Auditor General of India, 2010)

Finally, there are other government departments involved in rural water supply but these play a minor role so are not fully examined in this research. They include the Health and Family Welfare Department who are responsible for biological water quality testing and the inspection of water and sanitation facilities in schools and child care centres, and the Agricultural Engineering and Public Works Department that are involved in water supply projects, due to roles in irrigation and infrastructure development, respectively.

4.1.5 Overview of support functions

This section summarises the overview of support provided to communities. Table 5 below is complimented by the Activity and Responsibility Matrix presented in Appendix 1 that clarifies which entities are responsible and involved in different parts of the enabling support environment. As can be seen in these tables, support comes through this complex of organisations with each entity offering specialist support for different parts of the water supply system. This is in terms of the type of support with CEC for example specialising in software support such as capacity building and awareness-raising at the community level and TWAD Board providing technical assistance to the village level when issues cannot be addressed by the local VWSC or Gram Panchayat. However, even the same type of support can vary for different parts of the system. For example, HWSFMP will provide technical assistance to communities if transmission valves between the bulk water and local distribution network are faulty, but then TWAD Board would provide

Photo 3 Water budgeting exercise as part of CEC support

technical assistant for issues connected to boreholes and reservoirs. It is only in totality that the complex of support organisations becomes an effective ESE.

Community Water *plus*

Type of activity	Modality of support	Support entities playing a role	Explanation
Monitoring and control (auditing)	Supply-based	HWSFMP, TWAD Board, BDO	HDWFMP and TWAD Board take responsibility for monitoring parts of the water supply infrastructure (i.e. OHTs, boreholes) and water resources within the Gram Panchayat. They on average make two visits a month. BDO inspects the financial accounts of the service provider every three months and organises an annual audit by accountant.
Water quality testing	Both (On request and supply based)	TWAD Board, CEC, Dep of Health	TWAD Board provide water quality testing kits to the Gram Panchayat & VWSCs. In the CEC villages, the NGO provides the initial training at the village level. TWAD Board also conduct WQT twice a year on the major water sources (both chemical and bacteriological testing).
Water resources management	Both (On request and supply based)	CEC, TWAD Board	CEC works to promote improved water resource management with support extending beyond drinking water to irrigation and other water uses. Other government departments, such as the agricultural engineering department provide assistance on water resource management. For example, they provide subsidy and advice on installing drip irrigation and other water saving techniques into agriculture.
Technical assistance	Both (On request and supply based)	TWAD Board, HWSFMP	Technical assistance to the Gram Panchayat for water supply is the primary responsibility of TWAD Board. However, they only provide assistance for major technical issues, with the Gram Panchayat taking responsibility for minor technical issues. In the villages which are part of the HDWFMP, the project now provide technical assistance, including employing an operator in every Gram Panchayat to support the operations and maintenance of the network, who is supported by a supervisory team to assist with any technical problems.
Conflict Management	On request	CEC, BDO	Through establishing the CCMG, CEC provides a forum for discussion regarding water supply, including conflict management. The BDO would intervene in cases that could not be handled by the community.
Support in identifying investments needs	Both (On request and supply based)	TWAD Board, CEC	As part of the monitoring activities, TWAD Board and CEC identifies whether new investment is needed in parts of the infrastructure. The BDO also works closely with the Gram Panchayat to support it in identifying investment needs.
(Re)training of service provider	Supply based	CEC, BDO	TWAD Board and CEC train the community as part of awareness raising activities with regards to WRM. Beyond the service provider, training is provided directly to the community on Gram Panchayat via the BDO.
Information and communication activities	Supply based	CEC	Information and communication activities are the core work of CEC as they try to initiative behavioural change with regards to WRM in communities. A broad range of activities are used, including participatory methods, water budgeting, community walks etc.
Fund mobilization	Both (On request and supply based)	BDO, CEC	As the key financing unit at the village level, the BDO helps mobilise funds for the Gram Panchayat and the VWSC. CEC helps with fund mobilisation through helping communities and Panchayats to access the numerous government social, economic and environmental subsidies that are on offer.

Table 5 – Support functions provided by the Enabling Support Environment

4.2 Enabling environment performance indicators and institutional assessment

In this section the support entities are assessed in terms of the performance of the institutions. This exercise was conducted using specialist QIS indicators that were developed for this project and that rate the professionalism and performance of rural water supply support entities. These results are presented in full in Appendix 2.

In terms of professionalism, all ESEs scored highly for the formality of their mandate. This is not surprising as they are all either government entities or have been commissioned by government bodies to undertake their work. The use of standardised methods of support, effective communication channels, and appropriate information management systems were also evident, although the time-limited scope of CEC's programme restricted its ability to score highly on all measure of professionalism as compared to the larger government agencies. The entities did not have any formal mechanisms for assessing and systematically monitoring client satisfaction. Assessing the effectiveness of the ESEs, interviews with the service providers in the villages indicated that initial support would normally be provided by the ESEs within 1 or 2 days if requests were submitted.

A more detailed institutional assessment was also conducted for the ESEs that involved scoring performance on scale of 0 to 4 on a number of specific institutional areas, such as leadership, administration, and technical capability (see: Figure 8). It helped identify the strengths and weaknesses of support entities. With a greater exposure to CEC and TWAD Board during fieldwork, it was judged that an accurate institutional assessment could only be conducted of these two entities so the HWSFMP and BDO are not considered in this particular assessment.

The relative strengths of the different entities reflect function and size. TWAD Board scores highly on its technical capability and ability to influence external institutions. Its weakest area of performance is in terms of its orientation to the community. In Ramianahalli village, for example, it was explained that the regularity of meetings between local TWAD Board officials and the community significantly dropped following the end of the TNRWSP. Presently, CEC are the organisation working closely with the community and this is reflected in their strong community orientation score. They also score very strongly on the leadership and organisational culture, with the small but highly motivated team able to clearly articulate the missions of the organisation. The short-term character of the pilot programme restricted performance in two important areas. CEC were restricted in their ability to gain additional funding in pursuit of broader goals and, the temporary nature of the programme, meant a lack of job security for the employees as there are no clearly defined career paths. This is a problem, especially for the younger members of the team who aspire to develop professionally in this sector.

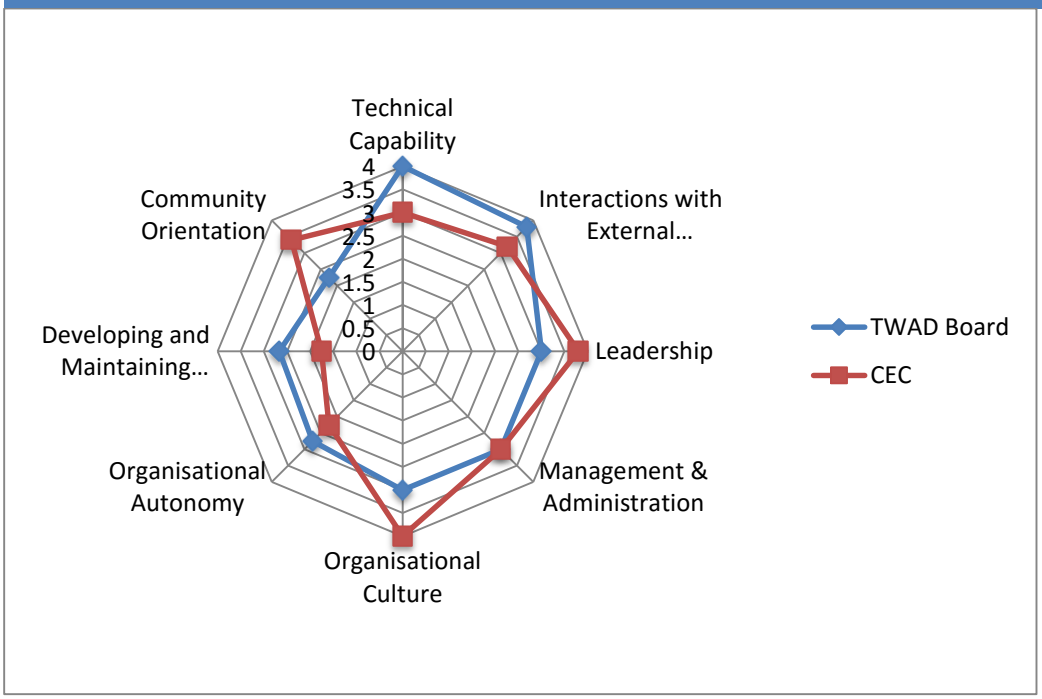


Figure 8 TWAD Board and CEC institutional performance

4.3 Enabling environment partnership assessment

This section assesses the degree of partnership between the support organisations and the community service delivery organisations (see Community Water *plus* Concepts and Research Methods (2015) for the definitions given in the partnership typology table). It compares the model found in the three villages of Morappur block with the control village found in Harur block. The nature of the partnerships differs in two important regards as in all the CEC-supported villages there was a clear operational partnership between the VWSC (and Gram Panchayat) and the support entities with this facilitated by the CCMG. This was evidenced by the contribution of labour and resources toward shared goals. Whereas, in the control village, the VWSC operated in a more isolated manner in which informants articulated strict divisions in terms of the responsibilities of the support entities vis-à-vis the community service provider. Another divide is evident in how the public bodies structured the relationship with the service provider, as compared to CEC. The public-community relationship was more transactional and bureaucratic, which is not necessarily a weakness, as this should lead to a more consistent and efficient performance for public bodies that serve many millions of citizens. However, what it does suggest is that having a more informal organisation, building personal relationships at the community level through a deliberate partnering approach, is more likely to encourage and enable meaningful community involvement, so providing an additional "plus" to the public management approach.

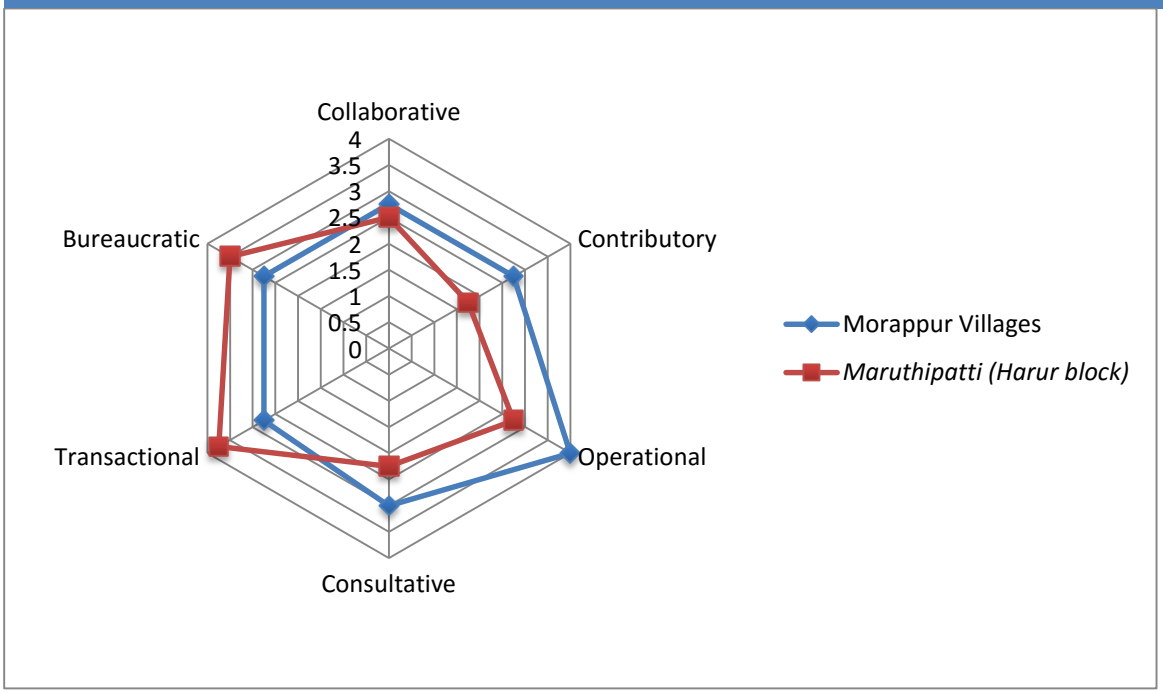


Figure 9 Partnering assessment of service provision in Morappur and *control village*

5 Community Service Providers

Having seen the type and performance of the enabling support entities, this chapter assesses the performance of the community service providers. As indicated in the conceptual framework, the service provider assessment is above all a validation of whether the support that has been provided indeed leads to well-performance community service providers. To do so, this chapter first provides the context of the villages where the validation took place, describing their history of water development. This is followed by the assessment of their respective service providers, using the descriptors and indicators and participation scores.

5.1 Context: the four villages

The four villages in this study range in size from the smallest, Thoppampatti, with a population just short of 3,000, to the biggest, Vagurappampatti, which has nearly 9,000 people. With each located in an area with groundwater shortages, they have all faced problems with water supply. Since 2012, CEC have worked in the three Morappur based villages – Ramianahalli, Vagurappampatti and Thoppampatti. This means they have recently had a specialist training and awareness-raising programme to support a community-engaged approach to tackling drinking water insecurity. However, from these three villages, only Ramianahalli and Vagurappampatti have been connected to the HWSFMP so Thoppampatti remains reliant on the local groundwater. Like over 90% of the villages in the area, the control village, *Maruthipatti*, has been connected to HWSFMP but it has not received the specialist CEC training. All villages receive support from the BDO and TWAD Board however the level of support from TWAD Board is reduced in the HWSFMP villages as many support functions are taken up by the HWSFMP instead.

Table 6 – Characteristics of the villages

Villages	Ramianahalli	Vagurappampatti	Thoppampatti	*Maruthipatti*
Block	Morappur	Morappur	Morappur	*Harur*
Population	3,780	8,991	2,934	*4,457*
No. households	700	1,670	672	*1020*
Water Source	Hogenakkal River via HWSFMP	Hogenakkal River via HWSFMP	Groundwater via local boreholes	*Hogenakkal River via HWSFM*
Enabling Support Environment	CEC, HWSFMP, TWAD Board & PRI	CEC, HWSFMP, TWAD Board & PRI	CEC, TWAD Board (RWSS) & PRI	*HWSFMP & PRI*
Community Service Providers	VWSC as standing committee of the the Gram Panchayat with support from the Community Change Management Group (CCMG)	VWSC as standing committee of the the Gram Panchayat with support from the Community Change Management Group (CCMG)	VWSC as standing committee of the the Gram Panchayat with support from the Community Change Management Group (CCMG)	VWSC as standing committee of the the Gram Panchayat

As shown in Table 7 an assessment of economic indicators that were collected as part of the household surveying for this study, it is possible to assess the relative economic conditions of each

village. Higher quality housing is more likely to be found in Vagurappampatti and Thoppampatti whilst, on average, *Maruthipatti* and Ramianahalli have lower quality housing. The proportion of landless households is notably higher in *Maruthipatti* than the other villages whilst Ramianahalli has nearly universal land ownership. Intriguingly, however, *Maruthipatti* has the highest average wage of male household heads. Although agricultural work is the main source of income for a significant minority of people, in the three Morappur villages, most male household heads work in non-agricultural work. No usable data was collected on employment in *Maruthipatti*.

Table 7 – Economic indicators in the villages

Economic indicators	Ramianahalli	Vagurappampatti	Thoppampatti	*Maruthipatti*
House type				
Low quality	9%	7%	0%	3%
Medium quality	64%	34%	47%	83%
High quality	27%	55%	53%	13%
No data	0%	3%	0%	0%
Landownership				
Landless	2%	24%	27%	43%
Landowners	98%	76%	73%	57%
Ratio card				
NO	1%	0%	23%	0%
YES	99%	100%	77%	100%
Income (male household head)				
Up to 25,000	6%	55%	17%	0%
Up to 50,000	53%	10%	10%	0%
Up to 100,000	11%	31%	17%	37%
Up to 250,000	8%	3%	33%	50%
250,000+	13%	0%	13%	10%
No data	9%	0%	10%	3%
Employment (male household head)				
1 - Agricultural	14%	21%	7%	No data
2 - Agricultural Wage Labour	8%	10%	3%	No data
3 - Gov/Regular/Irregular Non-Farm Employment	40%	41%	13%	No data
4 - Self-Employment Including Business	4%	17%	30%	No data
6 - Others	13%	0%	23%	No data
7 - Retried	1%	10%	13%	No data
8 - Homemaker	10%	0%	0%	No data

Social indicators were also collected as part of the household surveying. Hinduism is the dominant religion in all the villages but caste groups vary. The control village has a lot higher proportional of Schedule Castes (SC) that are often the most marginalised caste group in India. Thoppampatti has 27% SCs whilst Ramianahalli and Vagurappampatti are made up of Backward Castes (BC) and Most

Backward Caste (MBC) groups. Educationally, the villages are mixed with people ranging from illiterate to having post-graduate degrees. Self-reported illiteracy is highest in Ramianahalli at 31%, whilst 27% of people in *Maruthipatti* report having degrees. The average household size in all the villages is between 4 and 5. This data is shown in Table 8 below.

Social indicators	Ramianahalli	Vagurappampatti	Thoppampatti	*Maruthipatti*
Religion				
Hindu	97%	100%	93%	100%
Muslim	3%	0%	7%	0%
Caste				
BC	53%	38%	63%	17%
MBC	44%	59%	7%	0%
SC	2%	3%	27%	83%
ST	0%	0%	3%	0%
Education (male household head)				
1- Illiterate	31%	24%	3%	13%
2 - 1st To 5th Class	13%	17%	17%	10%
3 - 6th To 10th Class	29%	41%	30%	40%
4 - Intermediate	10%	3%	27%	7%
5 - Degree	4%	7%	10%	27%
6 - Post Graduate	3%	0%	3%	0%
No Data	9%	7%	10%	3%
Household size				
Average (mean)	4.04	4.79	4.21	4.39

Table 8 – Social indicators in the villages

5.1.1 Infrastructure snapshot

The type of physical system varied across the villages bringing with it different challenges. As found in many parts of India, there were multiple systems in place across each Gram Panchayat with some of these representing secondary or back up sources. As per the TWAD Board definitions, each habitation within the broader village was often served by its own single village scheme with borehole, reservoir and distribution network. This means that within one village you can have many single village systems managed by the VWSC and Gram Panchayat. In the villages that were now connected to the HWSFMP, the reservoirs from these earlier schemes were supplied with bulk water and then the in-village distribution was the responsibility of the VWSC and Gram Panchayat, often making use of the existing distribution networks developed for the conventional borehole schemes that preceded the HWSFMP. Ramianahalli has the most complete distribution network serving 95%

Photo 4 Renovated overhead-tank behind disused handpump in Vagurappampatti

of households whilst the distribution network in *Maruthipatti* was only designed for public stand posts.

System component	Ramianahalli	Vagurappampatti	Thoppampatti	*Maruthipatti*
Boreholes	Yes, unknown number	Yes, unknown number	Yes, unknown number	Yes, unknown number
Open wells	3	10	9	No data
Hand pump	16 public handpumps (used as secondary source)	51 public handpumps	34 public handpumps	30 public handpumps
Tap stands	Yes, unknown number	Yes, unknown number	Yes, unknown number	50
Single-village Scheme	3	16	6	7
Multi-village Scheme	0	0	1	0
Mini-power pump systems	6	7	8	No data
Motorised pump	Yes	Yes	Yes	Yes
Electricity panel	Yes	Yes	Yes	Yes
HWSFMP main line & connection	Yes	Yes	No	Yes
Reservoir (OHT)	3 OHT	16 OHTs	12 OHTs	10 OHTs
Distribution network	Full household distribution network	Partial household distribution network	Partial household distribution network	Distribution network for public tap stands only

Table 9 – Infrastructure assessment

5.2 Community Service Provider Descriptors

In each village, the Village Water and Sanitation Committee (VWSC) takes responsibility for the operation, maintenance and administration of the domestic water supply with varying levels of support from the Gram Panchayat and Community Change Management Group, with oversight provided through the Gram Sabha, the village assembly. As per the official guidelines (GoI, 2012), the constitution and roles of these institutions are as follows:

- Gram Sabha includes every person of voting age within a village. Usually, the Gram Sabha meets to take key decisions during the implementation of a water scheme and it is responsible for approving the plans that the Gram Panchayat and VWSC have for water supply each year.
- The Gram Panchayat is the lowest level of government in rural India. It is part of the Panchayat Raj system of local self-government which promotes self-rule within Indian villages. Each Gram Panchayat has a President known as the Sarpanch who is elected by the

members of the Gram Sabha. Typically, he or she is supported by a Vice President and Clerk, whilst a number of elected Ward Members also sit within the main Gram Panchayat council. Together they are responsible for the provision of many public services within the village, including domestic water supply. The Gram Panchayat owns and manages (in partnership with the VWSC) the water supply with its tasks including: approving investment plans and getting financing; approving annual budgets and user fee charges after discussion in the Gram Sabha; approving contracts with operators; co-ordinating with the block and district Support Organizations; hiring trained mechanics, for regular preventive maintenance for handpumps, and trained operators for piped water supplies (GoI, 2012).

- The Village Water and Sanitation Committee (VWSC) is a standing committee of the Gram Panchayat of between 6 and 12 members that takes on the responsibility for the everyday operation, maintenance and administration of the water supply service. It is chaired by the President of the Gram Panchayat and includes some ward members – it should also include at least 50% women and representatives from all social classes and castes with the village. The existing members nominate new members onto the committee but any decision must take into account the predetermined quota system. Key tasks include: collecting household contributions and user fees; opening and managing a bank account; preparing annual budgets and recommendations for user fee charges; organising people to be vigilant about not wasting water and keeping water clean; ensuring professional support for handpump caretakers and piped water supply operators; ensuring access to spare parts for handpumps and trained mechanics for regular preventive maintenance; ensuring the operators handling piped water supply systems are provided with adequate training to gain the technical and financial skills needed to do the job (GoI, 2012).
- The Community Change Management Group (CCMG) is another voluntary body of between 20 and 25 members that includes members of the VWSC, elderly people, youth volunteers, water user's associations, women's group, representatives from disadvantaged groups and other relevant people (i.e. retired teachers or Government staff). It is also chaired by the Gram Panchayat President. The designated role of the CCMG is to ensure the Gram Panchayat and VWSC meet their responsibility with regards to water supply but also to go beyond this to work for the welfare of the village with regards to water security and other development issues. Whilst the Gram Sabha, Gram Panchayat and VWSC can be found in villages all over India, the CCMG is a unique institution formed as part of the CEC programme studied in this case study. A CCMG has been formed in Ramianahalli, Vagurappampatti, and Thoppampatti but not in *Maruthipatti*.

Photo 5 Community Change Management Group members explaining role in water quality testing

In the villages, especially those with the CCMG, there is significant overlap between the different village-level institutions involved in water supply. This is by design as the overlap of institutions reduces the potential for conflict that can develop if there are different bodies serving under opposing leadership teams. However, as illustrated by Figure 10 below, it does raise questions regarding the lines of accountability between the community, community service provider and elected officials. In practice, the closeness between the Gram Panchayat and VWSC – and now also the CCMG – means that the lines between the operational responsibilities of the VWSC and the more strategic, planning and oversight roles of the Gram Panchayat can become confused. The CCMG enriches this institutional matrix even more by creating a body that is essentially about holding the system to account over its responsibilities whilst also promoting the broader issues of water security that can get overlooked when VWSC and Gram Panchayat become focused on service delivery.

Photo 6 Water metres on the distribution network in Ramianahalli

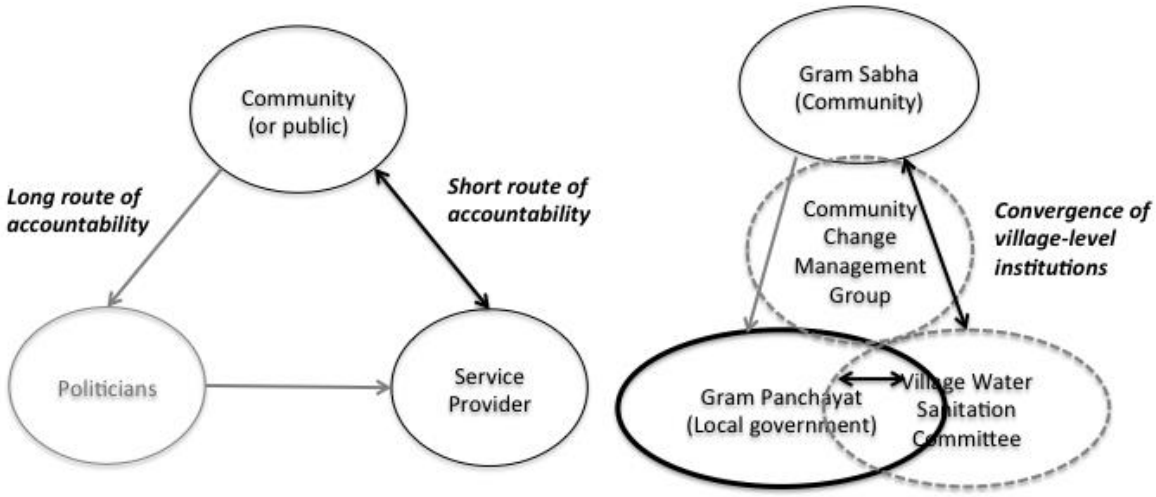


Figure 10 – Conventional accountability triangle (adapted from World Bank, 2003) and service delivery model in Morappur

In classifying the type of service delivery along the community management continuum (Community Water *plus* Concepts and Research Methods, 2015), the model can be labelled as a form of direct provision with community involvement in the three villages apart from Ramianahalli. However, in Ramianahalli the VWSC regularly collected user tariffs to cover much of the operational expenditure. It is also the only one to have installed water meters on the distribution network in the different zones of the network that broadly reflect the wards of the village (each Ward Member is then held to account over the water usage in their part of the village). In this sense, overall, the VWSC in Ramianahalli is the most professional organisation and with the highest level of community contribution so, in this regard, it can be considered as making the transition to the professional community-based management model (see: conclusion section for more on this classification).

Table 10 – Community Service Providers Descriptors

Village	Ramianahalli	Vagurappampatti	Thoppampatti	*Maruthipatti*
Entity	VWSC with support from Gram Panchayat & CCMG	VWSC with support from Gram Panchayat & CCMG	VWSC with support from Gram Panchayat & CCMG	*VWSC with support from Gram Panchayat*
Population covered	3,780	8,991	2,934	*4,457*
Members of governing body	9	14	11	*9*
Staff	7	21	8	*7*
Coverage	100%	100%	100%	*100%*
Household connection coverage	95%	27%	87%	*0%*
Household connection among vulnerable groups (SC/ST)	83%	18%	67%	*0%*
Meters	Meters for distribution zones within network	None	None	*None*
Tariff (INR per month)	50 (with regular tariff collection)	30 (with partial tariff collection)	30 (with partial tariff collection)	*None*
Connection costs (INR)	1,000	1,000	1,000	*None*

5.2.1 Detailed focus on who is doing what

Building on the previous section, we now focus on who is doing what at the village level. First, a summary of the focus group findings with the community service providers is presented. Second, the roles of different entities is clarified through an Activity and Responsibility Matrix that focuses on a bottom-up view of activities as seen from the village level.

5.2.1.1 Community Service Provider and CCMG Focus Group

A focus group was held in each village with members of the CCMG apart from in *Maruthipatti* where a focus group was held with members of the Gram Panchayat who sit on the VWSC. Each of the CCMG focus groups included members of the VWSC not least the President of the Gram Panchayat who is chair of both the VWSC and CCMG in each village. The focus group provided the opportunity to clarify how these groups operated in practice. In all the CCMG villages, it was explained that the CCMG meetings were usually focused on water security, whereas there was also separate VWSC meetings that covered the more operational and managerial matters associated with water supply. The female CCMG members explained that they have received training from CEC and that they now try to sensitize people at the grassroots level about water security. They also help monitor the status

of the infrastructure and feed this back to the broader members of the group. Other activities they undertake include rainfall monitoring and water quality testing with these results helping the village to monitor the water security situation. The link between the VWSC and Gram Panchayat was very blurred even in these focus groups, with people mentioning them interchangeably. In this regard, the focus groups reinforced the perception that the Gram Panchayat and VWSC operate extremely closely together but it was clear the Gram Panchayat was the senior partner. This questions the autonomy of the VWSC as an independent entity able to take decisions regarding the water supply. However, this model, as discussed elsewhere, brings many benefits and members of the focus groups said that they did not perceive any major problems with the current institutional set-up.

5.2.2 Activity & Responsibility Matrix at the Community Service Provider level

In contrast to the Activity and Responsibility Matrix presented in Appendix 1 that shows the official overview of activities and responsibilities across the enabling support environment, the table below shows these matters from a community perspective. That is, it shows who is responsible, involved, interested and pays for things at the community level. For example, ultimately the funds channelled through the BDO come from State government funds, yet from the community's perspective it is the BDO that provides funds for capital expenditure. This table was completed after speaking to informants in interviews and also conducting focus groups at the village level.

Community Water *plus*

Table 11 – Community view of the Activity and Responsibility Matrix

	TWAD Board	CEC	HWSFMP	BDO	Gram Panchayat	VWSC	CCMG	Operators	Households
Allocation of finance / Budgetary approval				RES + PAY	INV	INV	INT		
Monitoring service levels & water quality	RES + PAY		RES + PAY		INV	INV	INV		
Project planning	RES			INV	RES	INV	INV		
Infrastructure design & implementation	RES		RES		INV	INV			
Social intervention design and implementation	INV	RES				INV	RES		INT
Operation and minor maintenance	PAY		PAY	PAY	INV	INV	INV	RES	INV + PAY
Ongoing software support to community	RES			RES	INV	INV	INV		
Water resources management measures	RES	RES			INV	INV	RES		INV
Capital Maintenance and renewal	RES + PAY		RES + PAY	PAY	INV	INV	INV		
Major repair	RES + PAY		RES + PAY	PAY	INV	INV	INV		
Approval of user charges				INV	RES	INV	INV		INT
User charge collection	INT				RES	INV	INV		INT
Management of community involvement		INV			INV	RES	RES		
Community capacity development & Training		RES			INV	INV	INV		INT
Dispute resolution				INV	RES				
Paying of water charges					INV	INV	INV		RES
Institutional & human resources development	RES	INV	INV	INV	INV				
Auditing	INV			RES	INV	INV			
Evaluation/performance assessment	RES			RES					

***PAY = PAYING; RES = Responsible; INV = Involved; INT = Interested.**

5.3 Community Service Provider Performance Indicators

As was the case with the ESEs, the performance of the CSPs was also assessed using a series of Qualitative-Information System (QIS) indicators. With all the community service providers established as VWSCs following government guidelines, the CSPs scored highly with regards to the formality of their mandate. As public systems, they also had inbuilt democratic accountability mechanisms through which members of the public can raise concerns about the service. This is principally through the Gram Sabha but in reality everyday concerns are raised through interaction between members of the public and the operating staff within the villages. However, there was significant divergence in terms of the performance of the community service providers with regards to water security planning. In the three Morappur villages, drinking water security has been highlighted as a priority through the work of the CCMGs so this means that the service providers were keen to respond to this issue by, for example, building rainwater harvesting structures in the villages, whereas in *Maruthipatti* no specific water security activities were undertaken.

Table 12 – Community Service Provider QIS Indicators

	Ramianahalli	Vagurappampatti	Thoppampatti	*Maruthipatti*
Selection of the Board	QIS 100 - The CSP has a formal document that describes how elections for its governing should take place. This was followed duly during the last elections.	QIS 100 - The CSP has a formal document that describes how elections for its governing should take place. This was followed duly during the last elections.	QIS 100 - The CSP has a formal document that describes how elections for its governing should take place. This was followed duly during the last elections.	QIS 100 - The CSP has a formal document that describes how elections for its governing should take place. This was followed duly during the last elections.
Accountability mechanisms	QIS 75 - The CSP has several mechanisms to inform and provide accountability to users, of which only one is used regularly	QIS 75 - The CSP has several mechanisms to inform and provide accountability to users, of which only one is used regularly	QIS 75 - The CSP has several mechanisms to inform and provide accountability to users, of which only one is used regularly	QIS 50 -The CSP has at least one mechanism through which users are informed and accountability is provided. This is used regularly.
Cash Reserves	QIS 50 - The CSP actively has a cash reserve, either in the form of a petty tax box or bank account, which it regularly replenishes	QIS 50 - The CSP actively has a cash reserve, either in the form of a petty tax box or bank account, which it regularly replenishes	No data	QIS 50 - The CSP actively has a cash reserve, either in the form of a petty tax box or bank account, which it regularly replenishes
Book Keeping	QIS 100 - The CSP tracks its income and expenditure systematically and produces an annual account. The annual accounts have been audited and approved.	QIS 100 - The CSP tracks its income and expenditure systematically and produces an annual account. The annual accounts have been audited and approved.	No data	QIS 100 - The CSP tracks its income and expenditure systematically and produces an annual account. The annual accounts have been audited and approved.
Water meters	QIS 50 - Most users with household connections have water meters. But these are not regularly read nor used for billing.	QIS 0 - No water meters at all have been installed at users with household connections.	QIS 0 - No water meters at all have been installed at users with household connections.	QIS 0 - No water meters at all have been installed at users with household connections.
Water Security	QIS 100 - A water security plan is in place	QIS 100 - A water security plan is in	QIS 100 - A water security plan is in	QIS 0 –No water security measures are taken, neither is

	and in execution	place and in execution	place, but only partially executed	any plan in place
Water Quality Management	QIS 75 – The CSP executes a comprehensive water quality management plan that it has developed itself. But it hasn't been reviewed by a competent ESE.	QIS 25 - Even though a water quality management plan is in place, it is not followed.	QIS 25 - Even though a water quality management plan is in place, it is not followed.	QIS 25 - A water quality management plan has been developed and is followed most of the time but not always.
Technical folders	QIS 50 - The CSP has a folder with at least the map or design of the system or the operational manual and guidelines	QIS 50 - The CSP has a folder with at least the map or design of the system or the operational manual and guidelines	QIS 50 - The CSP has a folder with at least the map or design of the system or the operational manual and guidelines	QIS 50 - The CSP has a folder with at least the map or design of the system or the operational manual and guidelines
Registry of operational information	QIS 25 - The CSP has only one of the five types of records	QIS 25 - The CSP has only one of the five types of records	QIS 25 - The CSP has only one of the five types of records	QIS 25 - The CSP has only one of the five types of records

5.4 Assessment of community participation in the villages

Understanding a water service to involve a continuous cycle through planning, implementation, service delivery, asset renewal and service extension and enhancement phases, the research sought to assess the intensity of community participation in each stage. This approach uses a dedicated ladder of participation for the rural water sector that is explained in more detail in Community Water *Plus* Concept and Methods Paper (2015). In this case study it was deemed appropriate to score the villages on only two of the four stages in the service delivery cycle, with these being the implementation and service delivery stage. In this sense, the HWSFMP is being treated as implementation but it is acknowledge that it is building on the existing systems within the villages and that it means Thoppampatti cannot be scored, as it has not yet been connected to this system. The original capital expenditure for much of the other infrastructure is over 10 years ago (and sometimes a lot longer) so it was not deemed appropriate to make assessments on this implementation. Equally, there is not sufficient data on participation in asset renewal or service enhancement and expansion to make a valid judgement.

In terms of the implementation of the HWSFMP there was a high degree of consultative participation with information shared by the state authorities through the Gram Panchayat to the communities. It was discussed in Gram Sabha and also communicated through local newspapers. With the project being so large and complex, it is deemed that consultation is the most appropriate approach as highly participatory approaches across many communities may not have been feasible and could have delayed the project. For service delivery, it was deemed that the three villages with CCMGs had a form of functional participation as they had forum in which community members could make decisions regarding water supply beyond the VWSC, Gram Panchayat and Gram Sabha. With the formation of the CCMG the communities also have a more continuous avenue for functional participation notwithstanding the reality that much of the work of the CCMG can be classified in the broader area of improved water resource management rather than domestic water supply. In *Maruthipatti*, the formal mechanisms of the Gram Sabha and VWSC were evident but

there was little engagement beyond these arenas and so the village can be described as having a 'passive mode' of participation.

The ladder of participation assessment exercise is useful for mapping out the differences between villages in terms of current practice. However the most insightful findings regarding community participation come from understanding the history of the VWSC in Ramianahalli. In between the earlier TWAD Board and the new CEC programmes, the degree of participatory input from the community was markedly lower, with poorly attended VWSC meetings, and the role of the Gram Panchayat vis-à-vis the VWSC becoming much stronger, in practice becoming the service provider rather than as a village-level support agency for the VWSC. This situation raises the broader point about the longevity of the community management model even in high performing villages when external support is removed.

Table 13 Community level of participation throughout the service delivery cycle

Stage of delivery cycle	Ramianahalli	Vagurappampatti	Thoppampatti	*Maruthipatti*
Capital Investment (implementation)	4. Participation by consultation: Community members are asked whether they want a predefined implementation scheme but have no formal decision making power to demand alternatives	4. Participation by consultation: Community members are asked whether they want a predefined implementation scheme but have no formal decision making power to demand alternatives	No data, as not yet connected to HWSFMP	4. Participation by consultation: Community members are asked whether they want a predefined implementation scheme but have no formal decision making power to demand alternatives
Service delivery	3. Functional participation: The community is provided with administration, management and operation and maintenance arrangements that they discuss and they have a chance to amend limited elements	3. Functional participation: The community is provided with administration, management and operation and maintenance arrangements that they discuss and they have a chance to amend limited elements	3. Functional participation: The community is provided with administration, management and operation and maintenance arrangements that they discuss and they have a chance to amend limited elements	5. Passive Participation: Community members are informed how administration, management and operation and maintenance will operate without opportunity for change
Asset Renewal	No data, as this hasn't taken place	No data, as this hasn't taken place	No data, as this hasn't taken place	No data, as this hasn't taken place
Service enhancement or expansion	No data, as this hasn't taken place	No data, as this hasn't taken place	No data, as this hasn't taken place	No data, as this hasn't taken place

5.5 Community service provider costs

Costs reported at the CSP level predominantly cover the recurrent costs of operation and minor maintenance. However, in Ramianahalli, as well as the recurrent costs, it was also possible to collect data on capital expenditure during the TNRWSP and the capital maintenance they are making on the distribution network within the village. No community costs, apart from the nominal bulk water charge, are collected for the HWSFMP.

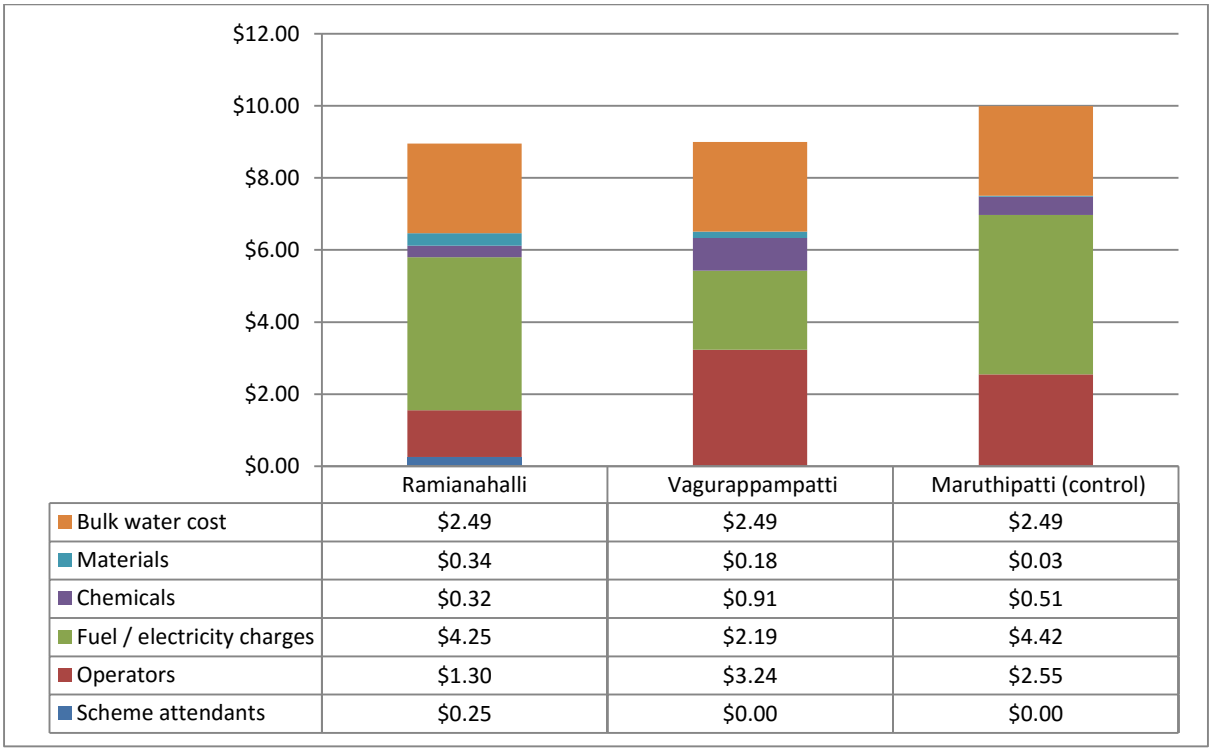
In 2004, the community in Ramianahlli contributed to the CapEx for the infrastructure developed as part of the TNRWSP, which included a new borehole, pipes and two overhead tanks. This cost, converted to 2014 prices comes to almost INR 170,000, which was 10% of the total cost with the rest being covered by external funds. In 2013, the VWSC has allocated around INR 100,000 for investment in spare parts for the system, such as pumps and motors. Around 68% of costs at the

village level are covered by tariffs and local taxes whilst approximately 32% of costs are covered by grants made to the Gram Panchayat for water supply, so the community contribution equates to just over INR 60,000. Table 14 shows the community contribution to capital expenditure for the water supply per person, with the rest of the CapEx costs reported in the Chapter 6 which focuses on costs at the ESE level.

Table 14 – Community contribution to capital costs in Ramianahalli

	Per person costs (INR)
Capital Expenditure	45
Capital Maintenance Expenditure	16

In terms of recurrent costs at the village level, it was possible to collect this information from Ramianahalli, Vagurappampatti and *Maruthipatti*. However, unfortunately, no reliable data on costs could be collected from Thoppampatti due to absence of the Gram Panchayat clerk during the fieldwork so data on costs is only reported for the other three villages. The annual costs presented per person served in Figure 11, show that the costs are relatively similar in each village. Surprisingly, the reported OpEx costs at lowest in Ramianahalli despite this village enjoying the highest service level. This could be explained as the outcome of a better overall management approach, with the village making efforts to minimise pumping costs through the installation of metres on the network. Such measures have not been taken in the other villages.



	Ramianahalli	Vagurappampatti	Maruthipatti (control)
Bulk water cost	$2.49	$2.49	$2.49
Materials	$0.34	$0.18	$0.03
Chemicals	$0.32	$0.91	$0.51
Fuel / electricity charges	$4.25	$2.19	$4.42
Operators	$1.30	$3.24	$2.55
Scheme attendants	$0.25	$0.00	$0.00

Figure 11 Recurrent costs at the CSP levels (USD PPP)

Only in Ramianahalli was there any significant cost recovery from users charges with the other villages running the systems exclusively using the government grants provided for this purpose.

Tariffs at INR 50 per household currently cover 68% of operational costs with the remaining costs coming from a combination of government grants and other taxes. In Vagurappampatti and *Maruthipatti* there was either none or minimal tariff collection so the CSP revenue came from government grants and Gram Panchayat level taxes. The bulk water costs reported here represent the cost which are charged to the CSP which equates to INR 3 per m3 yet the actual production costs of bulk water are far higher, as shown later in the report.

Beyond the costs and revenues reported in CSP accounts, there are also many hidden costs that occur at the CSP level which are not fully accounted for in the Gram Panchayat and VWSC accounts. In Ramianahalli the de facto President (who operates as the working President with the role formally filled by his brother's wife who was elected on a gender quota) provides 'gap financing', when contracts need paying but the VWSC is awaiting funds. This can be anything up to and including INR 100,000 and is difficult to reflect in terms of the accounts. Similar practices were reported in Vagurappampatti, where the Gram Panchayat President explained that he used his personal money to help make payments whilst awaiting government grants. Beyond these costs, there are also the hidden costs of self-supply, with many households now investing in underground household water storage tanks that cost between INR 5,000 to 10,000 to construct.

Finally, it is important to note that at the CSP level both the HDWFMP and Rural Development and Panchayat Raj department pay the salaries of staff involved in water supply, such as the Gram Panchayat clerk, and so these are included in the ESE costing section.

6 Household service levels

In this chapter data on household service levels is presented so to validate the level of success in each village. Ultimately, the purpose of providing effective support is that people receive good quality water services so this section helps to assess whether this is happening in Morappur. The services levels are compiled from data collected via the household surveys. This section starts by providing an overview of the coverage in the villages that is followed by a detailed overview of service levels. The final sections discussed the equity of supply as well as the community view of the water service, as articulated in the focus group discussions and surveys in each village.

6.1 Coverage

In each village, the VWSC-Gram Panchayat complex operates as the service provider to the entire population of the village taking charge of the piped water supply and handpumps. In Ramianahalli the household connection coverage rate is at 95% with only a limited number of households still awaiting connection. The remaining 5% of the population are reliant on handpumps and a number of public taps, which also represent secondary sources for the population served via household connections. In Thoppampatti, the household connection coverage rate is at a similar level (87%) but in Vagurappampatti the household coverage rate is significantly lower at 27%. In Vagurappampatti they have over 50 handpumps and an unspecified number of public standposts that are used by the population. In *Maruthipatti* the village has (temporarily) banned household connections as there was a minimal level before but users were not paying the tariff so the current connection rate is 0%. Following meetings of the Gram Panchayat and VWSC it was decided that the connections would be cut off and that everyone can use the public standposts at no cost. The village has 30 handpumps that complement the standposts.

Table 15 – Coverage rates across the villages

Village	Ramianahalli	Vagurappampatti	Thoppampatti	*Maruthipatti*
Population covered	3,780	8,991	2,934	*4,457*
Coverage	100%	100%	100%	*100%*
Household connection coverage	95%	27%	87%	*0%*

6.2 Quantity, accessibility, quality, continuity & reliability

The principle purpose of the household surveys was to give an insight into the service levels people receive in the villages. Using this data we allocated a service level for the quantity, accessibility, quality (perception), continuity and reliability. The categorisation of levels reflects the Government of India norms and is presented in the main research concept and methods paper (Smits et al. 2015).

As shown in Table 16 below, we can see that Ramianahalli scores strongly in terms of accessibility, water quality perception and reliability. Continuity remains at a basic level as the household supply is only switched on for 2 hours so this would change as the supply becomes more continuous or

mores to a 24/7 model. Quantity also remains an issue for 50% of households who receive less than 40 LPCD. This may be explained by the lack of household storage facilities in many households. In such houses, residents fill a number of storage pots each morning rather than a dedicated tank with a large capacity, as can be found in some homes. This suggests that support should be provided to households for improving storage capacity as an intermediate step before 24/7 systems can be introduced. Withstanding these comments, it is also acknowledged that in households with minimal storage people will often use additional water when the supply is turned on, such as for bathing, and such use is not reflected in these figures.

Table 16 – Household service levels in Ramianahalli Panchayat (n=90)

Service level	Quantity	Accessibility	Water Quality: Perception	Continuity	Reliability
High	20.0%	94.4%	100.0%	0.0%	100.0%
Improved	15.6%	0.0%		0.0%	0.0%
Basic	17.8%	4.4%	0.0%	100.0%	0.0%
Sub-standard	34.4%	1.1%			0.0%
No service	12.2%	0.0%	0.0%	0.0%	0.0%

In Vagurappampatti, quantity is recorded at a similar distribution to Ramianahalli but with a higher proportion of people reporting a high level of service. However, the accessibility is lower, due to the people using public stand posts that consume more time. Water quality perception and reliability are also lower, with continuity coming out at a similar score.

Table 17 - Household service levels in Vagurappampatti Panchayat (n=30)

Service level	Quantity	Accessibility	Water Quality: Perception	Continuity	Reliability
High	35.0%	0.0%	65.0%	0.0%	0.0%
Improved	10.0%	0.0%		0.0%	0.0%
Basic	17.0%	4.0%	31.0%	100.0%	100.0%
Sub-standard	31.0%	12.0%	4.0%	0.0%	0.0%
No service	7.0%	84.0%			0.0%

In Thoppampatti the service level in terms of quantity is markedly lower, with over 80% reporting that they use less than 40 LPCD. Continuity is also lower than the other Morappur villages, with 87% of households reporting a sub-standard service. This is likely to be explained by the fact that the village had not been connected to the HWSFMP at the time of the research and so the village remain reliant on the groundwater, either via the borehole that served the distribution network or the handpumps.

Table 18 - Household service levels in Thoppampatti Panchayat (n=30)

Service level	Quantity	Accessibility	Water Quality: Perception	Continuity	Reliability
High	0%	87%	97%	0%	97%
Improved	0%	0%	0%	0%	0%
Basic	17%	7%	0%	10%	0%
Sub-standard	27%	3%	0%	87%	0%
No service	53%	0%	0%	0%	0%

Maruthipatti had a similarly low level of service in terms of quantity as had Thoppampatti. However, as this village is connected to the HWSFMP, this may be explained by the reliance on public standposts rather than source sustainability issues. Accessibility was low but people were approving of the water quality. The system was also deemed to be reliable and the continuity of supply was acceptable.

Table 19 - Household service levels in Marthaipatti Panchayat (n=30)

Service level	Quantity	Accessibility	Water Quality: Perception	Continuity	Reliability
High	0.0%	0.0%	100.0%	0.0%	100.0%
Improved	0.0%	6.7%	0.0%	0.0%	0.0%
Basic	20.0%	46.7%	0.0%	100.0%	0.0%
Sub-standard	43.3%	46.7%	0.0%	0.0%	0.0%
No service	36.7%	0.0%	0.0%	0.0%	0.0%

Using an indicative water quality field-testing kit provided by TWAD Board (TWAD Board, 2011c), tests were completed in each village with results displayed in Table X below. Tests came back negative for residual chlorine indicating regular chlorination is not taking place. All tests for Fluoride came back below the 2 mg/l limit. As the availability of bacteriological tests were not available in the field, ammonia was tested for as a potential proxy for contamination with faecal matter and/or agricultural matter. All results came back below the 1 mg/l.

Table 20 – Water quality test results

Village	Sample No.	Description	Ammonia (mg/l)	Residual Chlorine (mg/l)	Fluoride (mg/l)
Raminahalli	1	Handpump with borewell (350m) in centre of village	0.5	0	1.25
Raminahalli	2	Handpump with borewell (350m) edge of village	0.5	0	1.25
Raminahalli	3	Hogenakkal water from overhead tank	0	0	1.25

Raminahalli	4	Hogenakkal water from household tank	0	0	1
Vagurappampatti	1	Handpump with borewell (350m) in centre of village	0.5	0	1.25
Vagurappampatti	2	Hogenakkal water from household tap	0	0	0.75
Vagurappampatti	3	Hogenakkal water from OHT	0	0	0.75
Vagurappampatti	4	Handpump with borewell (350m) edge of village	0.5	0	1.25
Thoppampatti	1	Handpump with borewell (350m) in centre of village	0.75	0	2
Thoppampatti	2	Borewell tank	0.5	0	1.75
Thoppampatti	3	Handpump with borewell (350m) edge of village	0.5	0	2
Thoppampatti	4	Household from borewell	0.5	0	2
Maruthaipatti	1	Hogenakkal water from public tap close to OHT	0.5	0	1.75
Maruthaipatti	2	Hogenakkal water from public far from to OHT	0.5	0	1
Maruthaipatti	3	Borewell (350m) to tank	0.5	0	1.25
Maruthaipatti	4	Borewell (350m) to tank	0.5	0	1.25

Overall, the service level data suggests that, on average, the people of Ramianahalli have the highest service level. Vagurappampatti has the next highest but Thoppampatti had a significantly lower level of service, mainly due to the fact that it had not been connected to the HWSFMP. However, despite being connected to the HWSFMP, the people of Maruthaipatti had an even lower service level because on the complete reliance on public standposts.

6.3 Equity

The tables above show the starkest difference in the quantity of water received whilst accessibility was also variable in Maruthaipatti. Beyond these factors for the other service level, the scores were generally equitable as people within the village reported similar scores for reliability and water quality perception. An analysis was made to understand why inequity existed. Although the type of technology did make a difference with those possessing household connections more likely to receive greater quantities of water, this was not the only factor. Especially when looking at Ramianahalli, which has a 95% household connection rate, we can see a high degree of variability in the data. Yet what appears to be making a difference is the size of household storage that is available in each dwelling, with this related to the standard of house as the higher quality homes have provision for underground storage but the poor quality homes not having this kind of inbuilt storage. It is felt that this is a particularly important factor for household connections with intermittent supply. In terms of whether socio-economic factors were associated with different service levels, it was clear that people from SC or ST communities were less likely to have a household connection in the three villages where connections existed (see Table 21 below).

Table 21 – Coverage among SC & ST communities

Village	Ramianahalli	Vagurappamp	Thoppampatti	*Maruthipatti*

		atti		
Overall Household connection coverage	95%	27%	87%	*0%*
Household connection among vulnerable groups (SC/ST)	83%	18%	67%	*0%*

6.4 Community and household views

This section enriches the presentation of the service levels to provide an insight into the communities' views on the water supply. Respondents to the survey reported high satisfaction levels for water supply with this being consistent across people even when their service levels were dramatically different. In Ramianahalli, Thoppampatti and *Maruthipatti* all survey respondents indicated they were "very satisfied" with the water service. Yet when surveying we came across people on the fringes of villages who complained that they did not receive the same level of service as those closer in. A women living on the fringes of Vagurappampatti explained that: "the smaller hamlets need to also be connected to the system" and then asked us whether "a small tank can be constructed in my hamlet?". During transect walks, similar issues were reported in peripheral regions of the villages. However it was only in Vagurappampatti where we found that people were most willing to acknowledge that they were not completely satisfied during the household surveys. With 33% saying they were "very satisfied", 57% saying they were "somewhat satisfied" and 10% as "not satisfied" compared to 100% very satisfied responses rate in the other villages.

Photo 7 Storing water in Ramianahalli

What is clear is that many of the people are now thankful of the new situation emerging in Morappur due to the HWSFMP. As one focus group attendee in Vagurappampatti explained: "We'd use to sit waiting day and night for a chance to fetch water with many families sharing the working handpumps but now there is no waiting and the water comes to the tap at the same time each day. It is very good." Understandably the people in Thoppampatti had different sentiments and although they were shortly to be connected to the scheme they felt frustrated at the delay in connecting their village.

7 Costing

This section presents the costs reported at the ESE level. It provides data on capital expenditure (CapEx) costs for both hardware and software, recurrent costs, including operation and maintenance (OpEx) and direct and indirect support costs, and finally capital maintenance (CapEx) costs. It ends by providing an overview of the total costs of supporting a village.

7.1 Capital Expenditure Costs

In classifying the CapEx for the various villages there was an attempt to understand the investment within the system over the past 10 years and not just focus on the more recent capital expenditure as part of the HWSFMP. This historical data was hard to come by but was available in Ramianahalli for the work that happened there as part of the TNRWSP. As explained in Section 4, at the time of the 2004-2007 TNRWSP pilots, CapEx was made in two overhead-tanks (30,000 litres each) and a series of borewells in the village. Following the TNRWSP guidelines, the community contributed INR 75,000 with the rest of the INR 750,000 coming via government funds. Today's total price, accounting for inflation, is INR 1,699,500 with the community contribution coming to nearly INR 170,000. The software support costs, that is, the costs which were invested in capacity building and training at the village level among other things, came to just under INR 50,000 in 2014 prices. As shown in Table 22, the per person costs is INR 418 with INR 405 for hardware and INR 12 for software. That gives a ratio of software to hardware spending of 33.75 to 1.

Table 22: Capital Expenditure in Ramiamahalli (2004-2007 given in 2014 prices)

Capital Expenditure	Per Person Costs (INR)
CapEx Hardware	405
CapEx Software	12
Total CapEx	418

The broader capital expenditure for the HWSFMP has been converted to price for every cubic metre the infrastructure is expected to produce over its lifetime. It has then been included in the direct support costs under the bulk water provision. The CEC software support has been classified as a form of software CapManEx and is therefore reported in that section below.

7.2 Recurrent costs

The recurrent costs reported here include support that is provided directly down to the CSP level to cover the OpEx of the CSP. At the community level, the cost of direct support is provided in the tables below with this information reported in interviews with the CSP members and other informants. Reflecting the fact that Ramianahalli is the only village to contribute its local revenue to water supply through collected user charges, the costs for some items has been marginally decreased. For example, the support costs for operators are less than half of *Maruthipatti* despite both villages being of a similar size and with similar number of operators. This is because users charges are put toward operator salaries in Ramianahalli but not *Maruthipatti*. However, all these per person costs are marginal when compared to the subsidy that supports the delivery of bulk

water via the HWSFMP. The standard charge for m3 bulk water across Tamil Nadu is INR 3 yet the full production costs is around INR 93 per m3, which has been calculated using the costs given in the JICA HWSFMP project document (JICA, 2013). This means the subsidy for bulk water is over 30 times the payment that service providers actually have to pay. Overall the magnitude of support for bulk water means there is only a small difference in the direct support costs per person across the villages, with Ramianahalli coming out at INR 1,025 per person compared to INR 1,083 in Vagurappampatti and INR 1,108 in *Maruthipatti*.

Table 23 – Direct support costs per person served (USD PPP 2014)

Item	Ramianahalli	Vagurappampatti	*Maruthipatti*
Scheme attendants	$0.06	$0.00	$0.00
Operators	$0.96	$3.22	$2.55
Administrators	$1.02	$0.40	$0.85
Fuel / electricity charges	$1.36	$2.21	$4.41
Chemicals	$0.11	$0.90	$0.51
Materials	$0.11	$0.17	$0.00
Purchase and/or delivery of bulk water	$54.35	$54.35	$54.35
Total Direct Support for O&M	$57.97	$61.26	$62.67

The service monitoring costs include the costs incurred by TWAD Board for inspections of infrastructure and water quality testing, as well as the costs incurred by the BDO for monitoring of the administration and finance at the CSP level. These have been calculated using the salaries of officials and the number of workdays committed to these jobs. Organisational overheads have been levelled at 100% of salary costs. The data suggests that TWAD Board's technical monitoring costs are roughly twice the level of the BDO administrative monitoring. The variability of the 'per person' costs is related to the number of people in each village.

Table 24 – Service monitoring costs per person served (USD PPP 2014)

Monitoring entity	Ramianahalli	Vagurappampatti	*Maruthipatti*
TWAD Board	$1.47	$1.24	$0.57
BDO	$0.90	$0.74	$0.34
Total service monitoring costs	$2.38	$1.98	$1.02

The on-going support costs for rural water supply also include expenditure on indirect support costs, such as the costs for developing policy frameworks and sector guidelines. To estimate this for Tamil Nadu we have suggested that approximately 2.5% of the overall TWAD Board budget will support (high-level) officials engaged in such work. This leads to an estimated OpexpIDS of INR 35 per person living in TWAD Board served areas (which is the whole state apart from the Chennai metropolitan area). It was not deemed relevant to calculate costs for each village.

7.3 Capital Maintenance

The support costs for CapManEx were calculated based on a classification of the CEC programme representing a form of CapManEx software in Ramianahalli following the TNRWSP. Although the other villages did not receive the earlier support as part of the TNRWSP they had been supported through the standard government support mechanisms, such as the BDO and TWAD Board, so here again we classified the CEC programme as a form of CapManEx and, in this regard, this software expenditure is captured through analysing the funds allocated to CEC through the NRDWSP. Reported as at 2014 prices, this covered over INR 12,000,000 for the programme or INR 74 per person supported. CEC used this resource to promote water security via the six month scheduled programme of visits to villages. This means that the intervention can be considered a form of capital investment in that the support and resources provided by CEC will have to be taken up by the community if they are to continue after this pilot programme. Yet, although CEC support can be classified in this way, it is useful to reflect on the expenditure that this software orientated NGO have incurred during the pilots as it may be relevant for designing longer running programmes that provide continued direct software support. The annual expenditure from CEC is predominantly directed towards staff costs, which account for nearly 63% of all costs. Travel is the next most significant outgoing at 17.5% of total expenditure, whilst documentation, stationary and rent is at 9.3%, this is similar to the tax paid by the organisation which is at the service rate of 10.3%.

The HWSFMP could be classified as a form of CapManEx on hardware but this has been reported in the bulk water costs in the recurrent costs section.

7.4 Overview of costs for supporting rural water supply

In this section we consider the overall resource inputs required to support rural water supply in Ramianahalli. This village is selected because this is where the most complete picture of costs is available. However, it is also the village with the highest overall performance so represents the most appropriate village if we are to understand the cost of success. As Figure 12 shows, the community contribution to capital expenditure costs for the initial investment via the TNWRSP come out at approximately 10% of the total, whilst the community contribution for the OpEx is approximately twice that of the support contribution. The OpExDS is INR 42 per person (classified here as the monitoring functions) whilst the OpExIDS is INR 35 per person each year. However, the graph demonstrates the extent to which external subsidy is needed for OpEx which is driven by the high costs of the HWSFMP. The overall annualised cost across all categories is INR 1,818 per person served each year with the community contributing about 10%. However, in this study, this extent of community contribution is unique to Ramianahalli with the other villages expected to have similar costs behind their water systems but no village contributions.

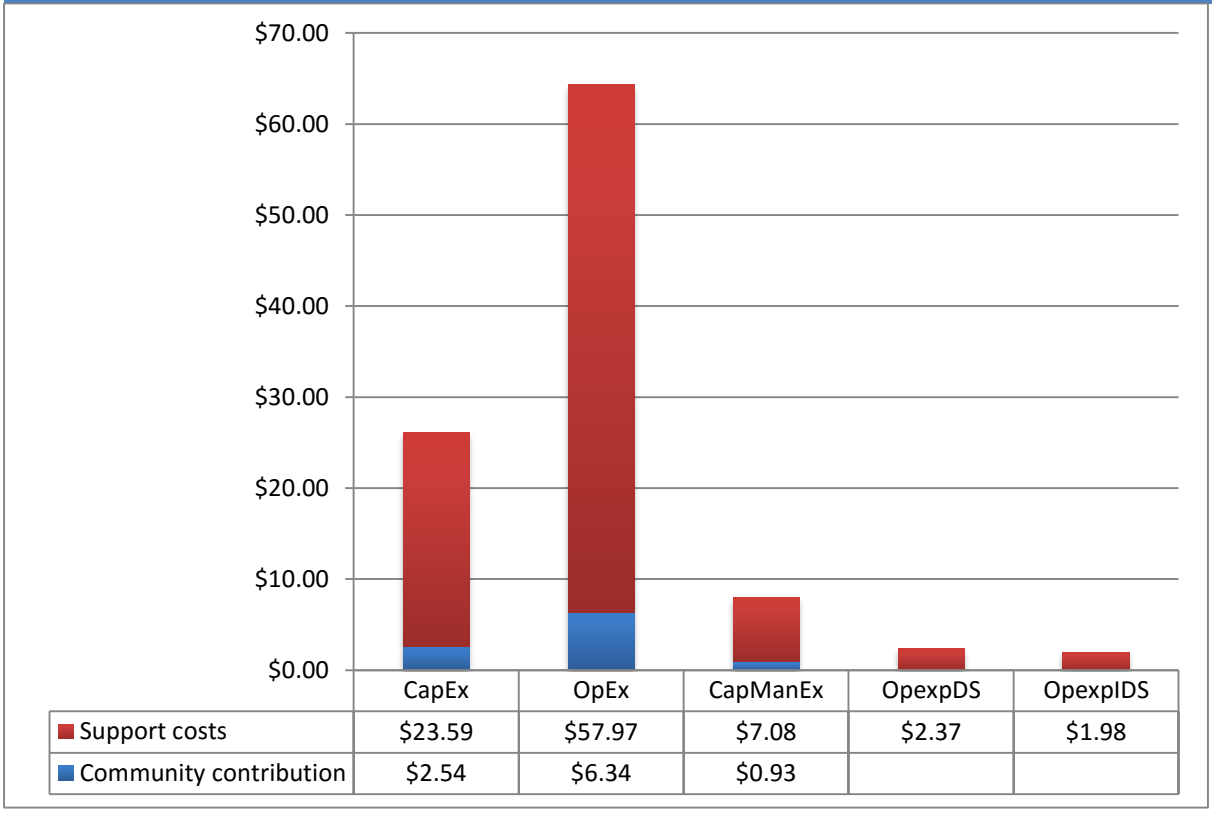


Figure 12 – Total Annual Costs Per Person for Rural Water Supply in Ramianahalli

Table 25 Summary Cost Table (INR)

Tamil Nadu Morappur Summary Cost Table - calculated as the average cost per person, that is averaging across the 3 'successful' villages

Source of funds	Use of funds - implementation			Use of funds - annual recurrent					
	CapEx hardware	CapEx software	CAPEX TOTAL	OpEx labour & materials	OpEx power	OpEx bulk water	OpEx enabling support	CapManEx	RECURRENT EXPENDITURE TOTAL
Community/consumers	INR 31	-	INR 31	INR 9	INR 26	INR 22	-	INR 116	INR 172
Local self-government	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-
State government entity	-	-	-	-	-	-	-	-	-
State water supply agency	INR 277	INR 12	INR 289	INR 55	INR 16	-	INR 40	INR 27	INR 138
National Government	-	-	-	INR 31	INR 16	-	-	INR 80	INR 127
NGO national & international	-	-	-	-	-	-	-	-	-
International donor	-	-	-	-	-	INR 1,269	-	-	INR 1,269
TOTALS	INR 308	INR 12	INR 320	INR 95	INR 57	INR 1,290	INR 40	INR 223	INR 1,705
Median of 20 case studies			INR 3,231						INR 207
'Plus' %age	90%	100%	90%	91%	55%	98%	100%	48%	90%
Median of 20 case studies			95%						57%

Notes: CapEx and CapManEx data is for the village Ramianahalli only;
the entire part of OpEx bulk water not covered by the community has been apportioned to JICA

Table 26 Summary Cost Table (PPP USD$)

Tamil Nadu Morappur Summary Cost Table - calculated as the average cost per person, that is averaging across the 3 'successful' villages

Source of funds	Use of funds - implementation			Use of funds - annual recurrent					
	CapEx hardware	CapEx software	CAPEX TOTAL	OpEx labour & materials	OpEx power	OpEx bulk water	OpEx enabling support	CapManEx	RECURRENT EXPENDITURE TOTAL
Community/consumers	$ 1.75	-	$ 1.75	$ 0.49	$ 1.46	$ 1.25	-	$ 6.61	$ 9.81
Local self-government	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-
State government entity	-	-	-	-	-	-	-	-	-
State water supply agency	$ 15.78	$ 0.71	$ 16.49	$ 3.15	$ 0.90	-	$ 2.25	$ 1.56	$ 7.85
National Government	-	-	-	$ 1.76	$ 0.90	-	-	$ 4.56	$ 7.21
NGO national & international	-	-	-	-	-	-	-	-	-
International donor	-	-	-	-	-	$ 72.31	-	-	$ 72.31
TOTALS	$ 17.53	$ 0.71	$ 18.24	$ 5.39	$ 3.25	$ 73.56	$ 2.25	$ 12.73	$ 97.18
Median of 20 case studies			$ 184.16						$ 11.78
'Plus' %age	90%	100%	90%	91%	55%	98%	100%	48%	90%
Median of 20 case studies			95%						57%

Notes: CapEx and CapManEx data is for the village Ramianahalli only;
the entire part of OpEx bulk water not covered by the community has been apportioned to JICA

The INR Indian Rupee conversion to the USD United States Dollar has been undertaken at the mid 2014 exchange rate of INR60/USD$ with a Purchasing Power Parity (PPP) multiplier of 3.42 applied in order to give the best interpretation of India costs in global terms (http://data.worldbank.org/indicator/PA.NUS.PRVT.PP).

8 Conclusions

Over the past decade different agencies have worked in Morappur in an effort to address the water insecurity caused by depleted and contaminated groundwater. In 2004 TWAD Board experimented with the TNRWSP approach in Ramianahalli village and later, in 2012, implemented the vast HWSFMP that sought to address this problem through bulk water provision. At the same time, CEC have worked to create and mobilise village-level institutions to tackle water insecurity at a more local scale. These support arrangements have been designed to complement the on-going support mechanism provided to communities in Tamil Nadu, such as those provided through the Panchayat Raj Institutions. This level of support has been required to ensure that communities can successfully take on the role of service provision through the local self-government and community nexus, namely the Gram Panchayat and its Village Water and Sanitation Committee. This case study set out to assess this support arrangement in more detail, in terms of the type and extent of support that is provided to villages, the effects this has on service delivery and the resource implications of it. The study took place in three villages in Morappur that have been part of the CEC programme and the findings have been contrasted with a village from a neighbouring block that has not been included in the programme.

The study found that the complex of support organisations operating in Morappur, namely the TWAD Board, HWSFMP, CEC and BDO, make up a professional and effective enabling support environment for the given context. TWAD Board is ultimately responsible for rural water supply implementation and monitoring and its main body continues to play an important oversight role and provides technical assistance on certain matters, however it has contracted out many support functions through the HWSFMP. The HWSFMP now supplies bulk water and directly supports the employment of an operator in each village, with the scheme dramatically changing the source sustainable problems that had plagued many systems. Complementing this, over the past 24 months, CEC have implemented an intensive software programme in which they mobilise communities to form Community Change Management Groups that supplements the existing village-level institutions by focusing on local water security issues. The BDO continues to provide administrative support and operate as a key financing channel for the local self-government institution of the Gram Panchayat. The performance of the different support and service provision institutions were assessed and, across the board, medium to high performance was documented in terms of the professionalism of the organisations. However CEC, the only NGO assessed, was limited in its ability to score highly on factors related to long-term planning. This is because CEC is operating as a pilot programme with a time-limited mandate. The technical government institutions scored lower on factors related to community proximity than CEC, which suggests that community participation in rural water supply may fall after the CEC pilot is concluded.

At the service provision level, in each village there was a VWSC established as a sub-committee of the Gram Panchayat and was mandated to take on the role of the everyday operation and maintenance of the systems. However, the community institution of the VWSC was so closely intertwined with the local self-government institution of the Gram Panchayat that the model blurred the line between highly decentralised public provision and a highly formalised version of community management. In this way, the Gram Panchayat and VWSC operated as a “nexus” that at times played

a supporting role but also takes on the service provision tasks. In Morappur, this nexus was support by the newly formed CCMG that were designed to both embolden the VWSCs and also hold them to account over their performance. The performance of the service provider institutions was variable across the villages, with Ramianahalli having the highest performing service provider both in terms of the professionalism of the bodies and also the service levels delivered to households. The two other villages in Morappur had similar levels of professionalism but were significantly lower in terms of service levels. This can be explained by two main reasons. In Vagurappampatti the village had a much lower proportion of household connections whilst in Thoppampatti, although there were a high number of household connections, the village had not been connected to the HWSFMP so source sustainability issues were restricting the level of supply. *Maruthipatti*, the control village, had a slightly different institutional set-up with the Gram Panchayat and VWSC operating without the support of the CCMG. In this village the service levels and degree of community participation were the poorest of all the villages. The very low service levels can be explained by the decision of the service provider to provide only public standposts rather than household connections. Overall, the data at the village level suggests that technology type and source availability are particularly key influencers over service provider performance in terms of service levels.

All in all, the set-up meant the classification of this model within the Community Water *Plus* framework is not straightforward for the Morappur villages. The Gram Panchayat-VWSC nexus carries out the operation and maintenance functions and the villagers have an active role in water supply, facilitated in part through the CCMG. The high degree of formalisation can be considered a mode of professionalization so in this regard the villages in Morappur, especially Ramianahalli, are bordering between direct public provision with community involvement a more professional model that can be classified as a form of highly formalised community management (see: Figure 13). In *Maruthipatti*, however, it is easier to classify as a form of direct provision through the local-self government and VWSC but with a minimal participatory role for community members in part because of the absence of the CCMG. Regardless of the conceptual ambiguity in terms of the classification of the model, the close relationship between the village-level institutions provides many pragmatic benefits including the easy channelling of funds from the government down to the village-level. However it does raise questions about the accountability of service provision if the division between the community service provider and elected government is blurred. In this regard, there is a need for the ESE to be sensitive to this risk and to carefully monitor the performance of the community service providers.

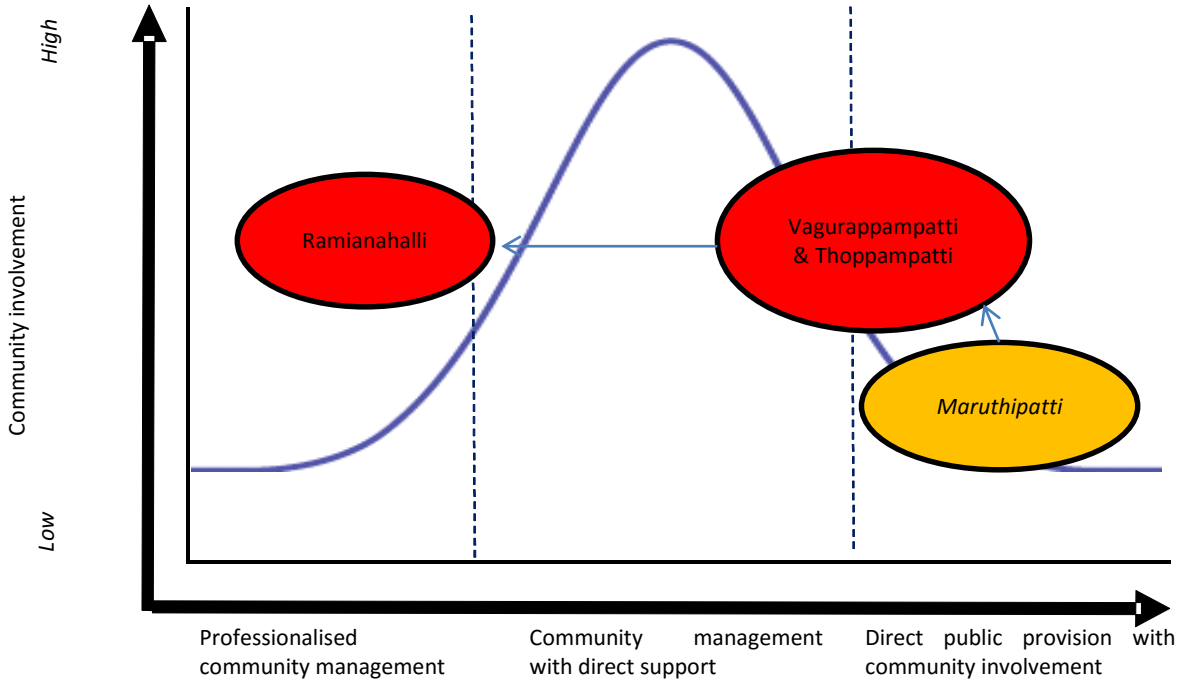


Figure 13: Locating the models in the continuum of community management

Understanding the costs of this model has been challenging due to the fragmented nature of support that stretches across many institutions. Equally, the data has not always been obtainable for all the desired cost categories the research was interested in. However, in Ramianahalli village, it was possible to provide a reasonably comprehensive overview of the costs of support and service delivery that helps illustrate the resource implications of this model. What this analysis has shown is the considerable subsidy that is directed to rural communities even for recurrent costs. Clearly, distorting the costs was the expense for the HWSFMP bulk water provision which was classified in the support for OpEx section as a subsidy for bulk water working out at PPP USD$72.31 per person per year. This highly subsidised cost reflects the considerable expense of surface water schemes, which can be a necessary but expensive investment in places with groundwater depletion. The community contribution for recurrent costs was PPP USD $9.81 in comparison meaning the ratio of support to community contribution was again roughly ten times.

Based on these findings, it is clear that a significant level of investment has been required to develop an effective support model for villages in this area. With this investment, effective support models can be developed however the success of these models can be uneven with certain villages reaching higher performance levels more quickly than others. Withstanding the uneven impact of the support, the HWSFMP model provides an innovative example of how large-scale bulk water provision can be matched with locally managed distribution at the village level. In spite of the relative success, there is danger that slippage may occur in terms of the performance of the service providers following the conclusion of the CEC programme. Evidence regarding the collapse of the VWSC in Ramianahalli between the TNRWSP and later CEC programmes indicates that a lack of continuous investment in software support will lead to a fall in the degree of community engagement in water supply. For the performance of service provision to maintained and improved,

the ESE needs to consider how on-going software support services can be provided following the end of the CEC pilot.

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Appendix

1 Activity & Responsibility Matrix at Enabling Support Environment level

Entities / Actors	Tasks / Activities																		
	Allocation of finance / Budgetary approval	Monitoring service levels & water quality	Project planning	Infrastructure design & implementation	Social intervention design and implementation	Operation and minor maintenance	Ongoing software support to community	Water resources management measures	Capital Maintenance and renewal	Major repair	Approval of user charges	User charge collection	Management of community involvement	Community capacity development & Training	Dispute resolution	Paying of water charges	Institutional & human resources development	Auditing	Evaluation/performance assessment
Central Government					PAY														
State Government	PAY			PAY															
TWAD Board	RES	RES	RES	RES	INV				RES	RES									
Gram Panchayat	INV	INV	INV			RES	INV	RES	INV	INV	RES	RES	RES	INT		RES			RES
Block Development Officer	RES	RES	INV			PAY			PAY	PAY	INT	INT			RES		RES	RES	RES
District Collector	PAY		RES	PAY					PAY	PAY									RES

Community Water *plus*

CEC				RES		RES	INV					INV	RES			
HWSFMP	INV	INV	RES					RES	RES							
Small-scale Private Sector (drillers, plumbers)			INV													
CCMG/VWSC				INV		INV						RES	RES			
Other community organisations																
Operator or mechanic					INV											
Households				INT	INT					INT	INT		INT		RES	

Table 9 – Activity and Responsibility Matrix*

***PAY = PAYING; RES = Responsible; INV = Involved; INT = Interested.**

2 Enabling Support Environment Indicators

Indicator / Definition	Centre of Excellence for Change	Hogenakkal Water Supply & Fluorosis Mitigation Project	Tamil Nadu Water and Drainage Board	Block Development Office
Degree of professionalization in the ESE				
1.1 Formality of the mandate for support Existence of a formal mandate for support to service providers	QIS 100 – CEC work as part of NRDWSP, which forms part of the broader policy goal of the Union Government in incorporating water security into the national water policy	QIS – 100: The HWSFMP has a clearly articulated mission based on the contracts for the private contractors	QIS – 100: As a public body, the TWAD Board has a clearly articulated vision, mission and objectives for its support function, which is also supported by a policy mandate	QIS – 100: As part of the state government, the Block Development Office has a clearly articulated vision, mission and objectives for its support function, which is also supported by a policy mandate
1.2 Working methods Number of standard tools and instruments for support applied in a structured manner	QIS 50 – CEC has tools and methods that are applied for its core activities which are applied in a systematic manner (i.e. water budgeting), but other ad hoc support is provided which there are not prescriptive plans.	QIS 100 - HWSFMP has tools and methods for all of the areas of support it provides and applies those in a systematic manner	QIS 100 – TWAD Board has tools and methods for all of the areas of support it provides and applies those in a systematic manner	QIS 100 – The BDO has tools and methods for all of the areas of support it provides and applies those in a systematic manner
1.3 Information management Existence and use of structured mechanisms for tracking information on performance of the service providers attended by the service support and monitoring authority	QIS 50 – CEC takes baseline survey and makes assessment of community and service provider but it does not go back and systematically measure impact at end of programme in each village (but this is a time limited	QIS - 75: HWSFMP tracks the performance of the service provider through monthly meetings and uses that to monitor its own impact	QIS - 75: TWAD Board tracks the performance of the service provider through monthly meetings and surveys, and uses that to monitor its own impact	No data

	programme)			
1.4 Communication between service support authority and service providers Existence of structured mechanisms for communication with the service providers	QIS 50 – CEC is linked to service providers usually through one of its social mobilisers who acts are point of contact with the Panchayat and community. The mobile phone of this service provider is the "easy" point of access. The Panchayat may also have the CEC office phone number and other staff members (i.e. Engineer).	QIS 75 – The ESE has a number of communication channels, but of which only some are easily accessible and well-used	QIS 75 – The TWAD Board has a number of communication channels, but of which only some are easily accessible and well-used	QIS 100 – the BDO is in regular contact with the GRAM PANCHAYAT and VWSC through regular meetings, local office and contact phone number.
Performance of the ESE				
2.1 Variety of support services being provided	6 - monitoring, water quality management, technical assistance (i.e. zoning), water resource management (i.e. water budgeting), investment needs assessment and fund mobilisation	2 – technical assistance, monitoring	4 - Implementation of major CapEx & CapManEx, monitoring, water quality testing, identifying investment needs	4 – monitoring and auditing, conflict management, mobilisation of funds, training.
2.2 Response time Average time that passes between a request for support and the support being provided	24 to 48 hours –Data from interviews with service providers and CCMGs indicates that following a phone call a CEC employee would usually be able to visit within 48 hours.	24 to 48 hours – HWSFMP employs an operator at the Panchayat level but when additional support is needed a supervisor and additional staff can be called on.	24 to 48 hours – unless an emergency if which case it can be quicker.	No data
Effectiveness				
2.3 Number of service providers that received support in the last year/ total number of service providers to be attended	CEC supported half the service providers under its jurisdiction last year. 22 out of 43 (with the others supported in the previous year)	HWSFMP is designed to serve 770 service providers. Coverage has reached more than 90%.	TWAD Board has jurisdiction over 98,179 habitations. It provided CapEx support in 7000 habitations. (Coverage of 7.12%).	BDO covers all 43 Panchayats under its jurisdiction.
Efficiency				

2.4 Number of systems attended in the last year / number of staff of the support agent	1 employee to 3.07 service providers	No data	No data	No data
2.5 Operational annual expenditure / number of systems supported	See costing section.	See costing section.	See costing section.	See costing section.
Frequency of support				
2.7 Number of support visits / number of service providers supported	45 visits to each service provider, this is taken from an implementation guidance document and is based on a Panchayat having 10 villages.	No data	At least 24 visits to each service provider annually	At least 24 visits to each service provider annually
Client satisfaction				
3.1 Client satisfaction	QIS 25: CEC staffs are keen to receive feedback verbally from community but there is no systematic monitoring process.	QIS 25: CEC staffs are keen to receive feedback verbally from community but there is no systematic monitoring process.	QIS 25: CEC staffs are keen to receive feedback verbally from community but there is no systematic monitoring process.	No data

Table 16 – Enabling Support Environment Performance Indicators

3 Community Service Provider Indicators

	Ramianahalli	Vagurappampatti	Thoppampatti	*Maruthipatti*
Selection of the Board	QIS 100 - The CSP has a formal document that describes how elections for its governing should take place. This was followed duly during the last elections.	QIS 100 - The CSP has a formal document that describes how elections for its governing should take place. This was followed duly during the last elections.	QIS 100 - The CSP has a formal document that describes how elections for its governing should take place. This was followed duly during the last elections.	QIS 100 - The CSP has a formal document that describes how elections for its governing should take place. This was followed duly during the last elections.
Accountability mechanisms	QIS 75 - The CSP has several mechanisms to inform and provide accountability to users, of which only one is used regularly	QIS 75 - The CSP has several mechanisms to inform and provide accountability to users, of which only one is used regularly	QIS 75 - The CSP has several mechanisms to inform and provide accountability to users, of which only one is used regularly	QIS 50 -The CSP has at least one mechanism through which users are informed and accountability is provided. This is used regularly.

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Cash Reserves	QIS 50 - The CSP actively has a cash reserve, either in the form of a petty tax box or bank account, which it regularly replenishes	QIS 50 - The CSP actively has a cash reserve, either in the form of a petty tax box or bank account, which it regularly replenishes	No data	QIS 50 - The CSP actively has a cash reserve, either in the form of a petty tax box or bank account, which it regularly replenishes
Book Keeping	QIS 100 - The CSP tracks its income and expenditure systematically and produces an annual account. The annual accounts have been audited and approved.	QIS 100 - The CSP tracks its income and expenditure systematically and produces an annual account. The annual accounts have been audited and approved.	No data	QIS 100 - The CSP tracks its income and expenditure systematically and produces an annual account. The annual accounts have been audited and approved.
Water meters	QIS 50 - Most users with household connections have water meters. But these are not regularly read nor used for billing.	QIS 0 - No water meters at all have been installed at users with household connections.	QIS 0 - No water meters at all have been installed at users with household connections.	QIS 0 - No water meters at all have been installed at users with household connections.
Water Security	QIS 100 - A water security plan is in place and in execution	QIS 100 - A water security plan is in place and in execution	QIS 100 - A water security plan is in place, but only partially executed	QIS 0 –No water security measures are taken, neither is any plan in place
Water Quality Management	QIS 75 – The CSP executes a comprehensive water quality management plan that it has developed itself. But it hasn't been reviewed by a competent ESE.	QIS 25 - Even though a water quality management plan is in place, it is not followed.	QIS 25 - Even though a water quality management plan is in place, it is not followed.	QIS 25 - A water quality management plan has been developed and is followed most of the time but not always.
Technical folders	QIS 50 - The CSP has a folder with at least the map or design of the system or the operational manual and guidelines	QIS 50 - The CSP has a folder with at least the map or design of the system or the operational manual and guidelines	QIS 50 - The CSP has a folder with at least the map or design of the system or the operational manual and guidelines	QIS 50 - The CSP has a folder with at least the map or design of the system or the operational manual and guidelines
Registry of operational information	QIS 25 - The CSP has only one of the five types of records	QIS 25 - The CSP has only one of the five types of records	QIS 25 - The CSP has only one of the five types of records	QIS 25 - The CSP has only one of the five types of records