

COMMUNITY MANAGEMENT OF RURAL WATER SUPPLY

Community Water ^{plus}

IRC IRC, The Netherlands

Understanding the resource implications of the ‘plus’ in community management of rural water supply systems in India: community-managed handpumps in Patharpratima, West Bengal



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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

Since 2006 Water For People has followed a programmatic approach to comprehensively address water (and sanitation) needs in Patharpratima block of West Bengal. In that it has sought to achieve universal water supply coverage in a limited number of Gram Panchayats, mainly through handpumps. In addition, institutional arrangements were put into place for community management and support to community-based water committees.

This study set out to assess this support arrangement, in terms of the type and extent of support that is provided to these community-managed handpumps, the effects this has on service delivery and the resource implications. The study took place in Digambarpur Gram Panchayat, with a comparison made to the neighbouring Dakshin Gangadharpur Gram Panchayat of, where the support structure was not set-up.

The institutional set-up found in the study is one of community management with direct support. Community water committees carry out day to day operation and minor maintenance activities. In addition, they keep a basic administration of the limited tariffs they collect, and which they use for some minor repairs. The level of professionalization of the water committees is very basic. This is reflected for example in the semi-formal governance set-up of the water committees as self-help groups, but not as service providers, the absence of statutes or clear election procedures. Also administration is done in a basic manner. Only the technical maintenance is professionalised through the outsourcing of this task to handpump mechanics, called Jalabandhus, who carry out repair services.

A complex of four support organisations has evolved to support water committees in this. The Gram Panchayat provides the first line of support to water committees, and in turn is supported by the block authorities. Digambarpur Angikar, a grassroots NGO provides software support and help programme implementation and is in turn supported by Water For People. The service provider functions are shared between Gram Panchayat (funding and coordinating major maintenance), water committees (operation and administration) and the Jalabandhus (repairs). The Gram Panchayat (and block) present strong local leadership and willingness and to support community management, but they lacking professional skills, tools and resources to do so. The NGO “branch” of the support arrangements has medium to high performance indicators, but lacks the application of tools and methods for some support areas and ways to track the service providers it has supported are lacking.

This set-up contrasts sharply to the control area, where the service provider function is almost exclusively fulfilled by the Gram Panchayat – though in fact barely fulfilled. The service provision in the control area is therefore classified as “direct public provision with community involvement”.

The water supply service provided in Digambarpur, however, is still very basic. This is largely due to the fact that the quantities obtained from the handpumps are very low. People use them only for drinking and cooking; other users like washing and laundry are done in the numerous open ponds. But, this is still better than in the control area. There service levels are lower, particularly in terms of accessibility and reliability. Through the direct public provision model, break-downs cannot be quickly addressed and pumps are out of function for a longer time, meaning people also need to walk longer to fetch water. As a result, also user satisfaction is lower than in Digambarpur.

The costs of this service delivery model are shared between the various organisations involved. Capital costs are largely carried by the government and NGOs. The level of software support during capital investment – considered crucial to the success of this model is some 10% of total capital costs. Communities are expected to cover the operation and maintenance costs through tariffs. Though these are low, at present they are covering operating expenditure with some contribution

towards capital maintenance expenditure. A modelling exercise also showed they are sufficient to cover minor maintenance. For capital maintenance, however, tariffs are insufficient. And in fact, the bulk (about 90%) of capital maintenance costs is carried by the government, at about INR 17/person/year. The expenditure on direct support is mainly made by the NGO branch of the support model, and currently stands at an equivalent of INR 28/person/year.

The study concludes that a clear support model has evolved to support community-managed handpumps, both in terms of the capital maintenance of these handpumps, as well as in the software of community management. Through that support, water committees can function and carry out basic organisational and financial management and outsource technical maintenance to Jalabandhus. As a result, everyone in Digambarpur now has access to functional handpumps – even though these provide only a basic level of service. It now costs about INR 46/person/year to provide ongoing support, both for capital maintenance and for direct support whilst communities cover operation and minor costs of INR 9/person/year.

Recommendations are formulated to further professionalize this model. Water committees should have standard statutes for water committees and clear election procedures. But also variants to the current water committee model could be tried out, including having one water committee taking care of several pumps to get to further economies of scale. The support entities themselves can also professionalise further, particularly by standardizing much of their work in products and tools, such as guidelines and manual for water committees, or monitoring of the satisfaction of the water committees with the support provided.

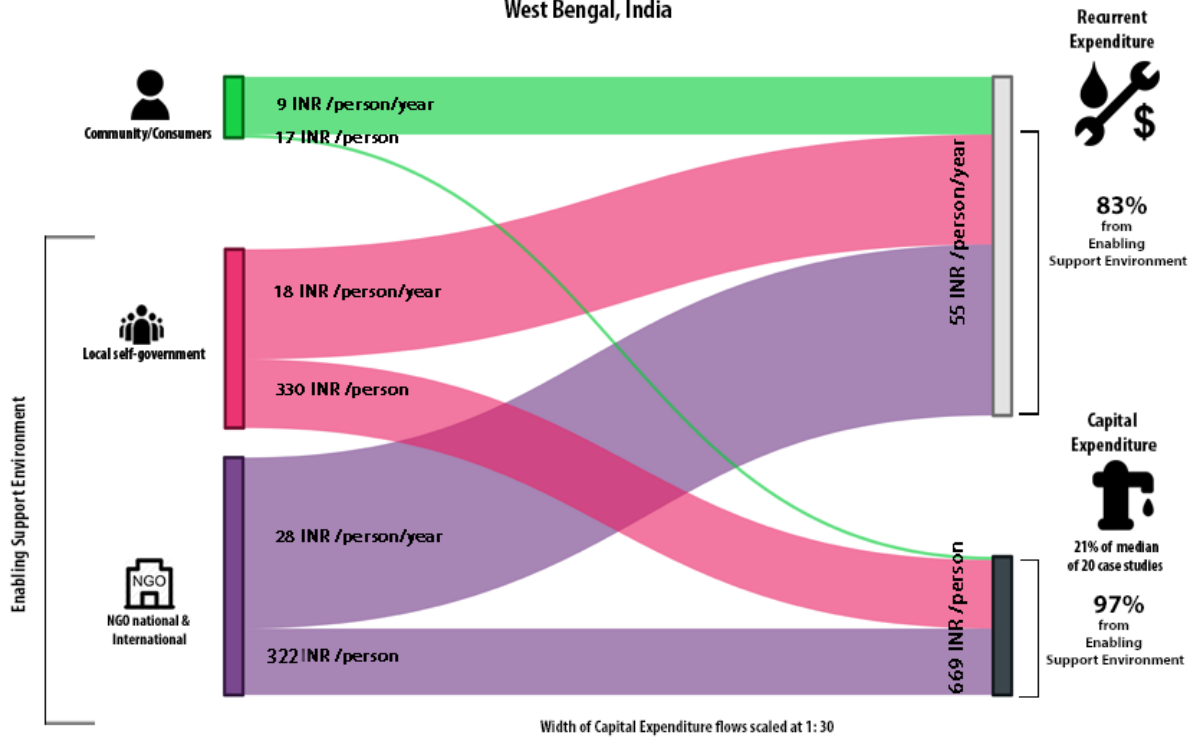
West Bengal Summary Cost Table - calculated as the average cost per person, that is averaging across the three 'successful' villages

Source of funds	Use of funds - implementation			Use of funds - annual recurrent					RECURRENT EXPENDITURE TOTAL
	CapEx hardware	CapEx software	CAPEX TOTAL	OpEx labour & materials	OpEx power	OpEx bulk water	OpEx enabling support	CapManEx	
Community/consumers	INR 17	-	INR 17	INR 7	-	-	-	INR 2	INR 9
Local self-government	INR 297	INR 33	INR 330	-	-	-	INR 1	INR 17	INR 18
State government entity	-	-	-	-	-	-	-	-	-
State water supply agency	-	-	-	-	-	-	-	-	-
National Government	-	-	-	-	-	-	-	-	-
NGO national & international	INR 291	INR 31	INR 322	-	-	-	INR 28	-	INR 28
International donor	-	-	-	-	-	-	-	-	-
TOTALS	INR 605	INR 64	INR 669	INR 7	-	-	INR 28	INR 19	INR 55
Median of 20 case studies			INR 3,231						INR 207
'Plus' %age	97%	100%	97%	0%	-	-	100%	89%	83%
Median of 20 case studies			95%						57%

Notes: Data is for the village Digambarpur only, as no data could be obtained for the other best practice villages

The Financial Flow Diagram, next page, 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 West Bengal, India



Acknowledgements

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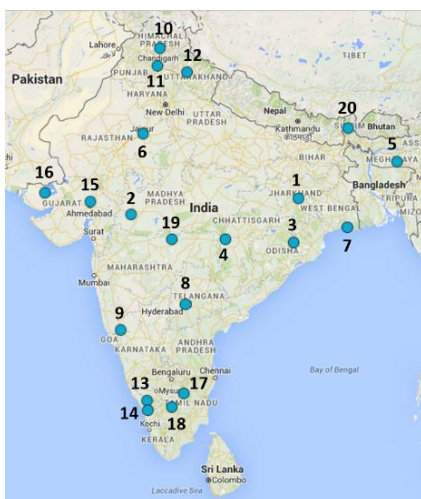


Thanks also go to the reviewers of this report, Paul Hutchings (Cranfield University) and Swagato Mitra (Water For People). All photos in the report are taken by Stef Smits, unless indicated otherwise.

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. Dr Snehalatha Mekala was the national research coordinator.



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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.

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1 Introduction

This report is part of the Community Water ^{plus} series of case studies on community-managed rural water supply in India. It documents the community-managed handpumps in Patharpratima block (West Bengal), and complex of organisations that support the water committees, including the Gram Panchayats, Jalabandhus (handpump mechanics) and NGOs. This report describes this support arrangement in detail, and assesses the effects of the support in terms of service delivery. It also provides an approximation of the costs involved in support.

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 handpumps in Patharpratima block (West Bengal). The water committees who manage these pumps are supported by their respective Gram Panchayats, and contract the technical support of Jalabandhus (handpump mechanics). Digambarpur Angikar, a Community-Based Organisation, with the support of Water For People, have helped setting up this management and support structure and continue providing ongoing support to the water committees as well to manage the water supply delivery.

After this introduction, Chapter 2 presents the concepts and methodology used for this study. This is followed by a description in Chapter 3 of the context in which the model of community-managed handpumps – with the support structure – 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 the NGOs Water For People and Digambarpur Angikar, as well as the Gram Panchayat (with some reference also to support from the block office). Chapter 5 presents the findings at community level, including the performance of the water committees, which share the service provider functions with Jalabandhus. In chapter 6 the service levels that users receive are presented. The seventh chapter focuses on the financial data that underlie the calculations of the resources spent on supporting community management. It ends with a concluding chapter.

1.3 Concepts and methodology

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 desired 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.

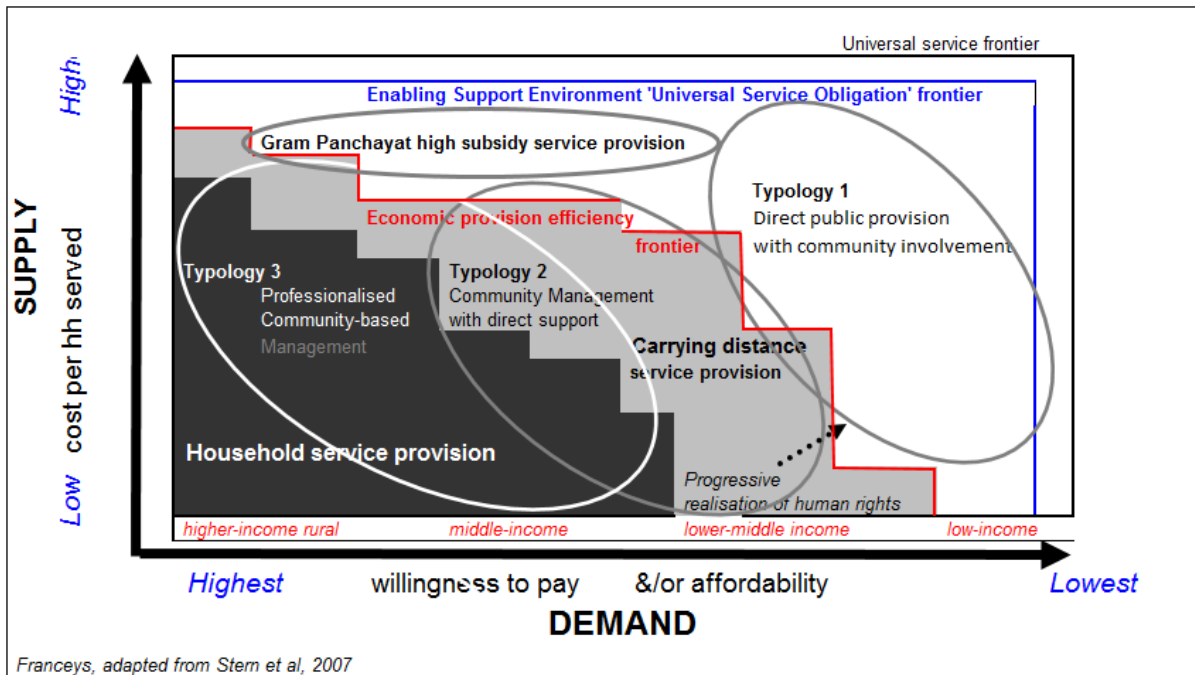


Figure 1: Application of *plus* approaches in relation to demand and costs of water supplies. Source: adapted from Franceys and Gerlach (2008) after Stern et al. (2007)

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.

1.4 Methodology

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.

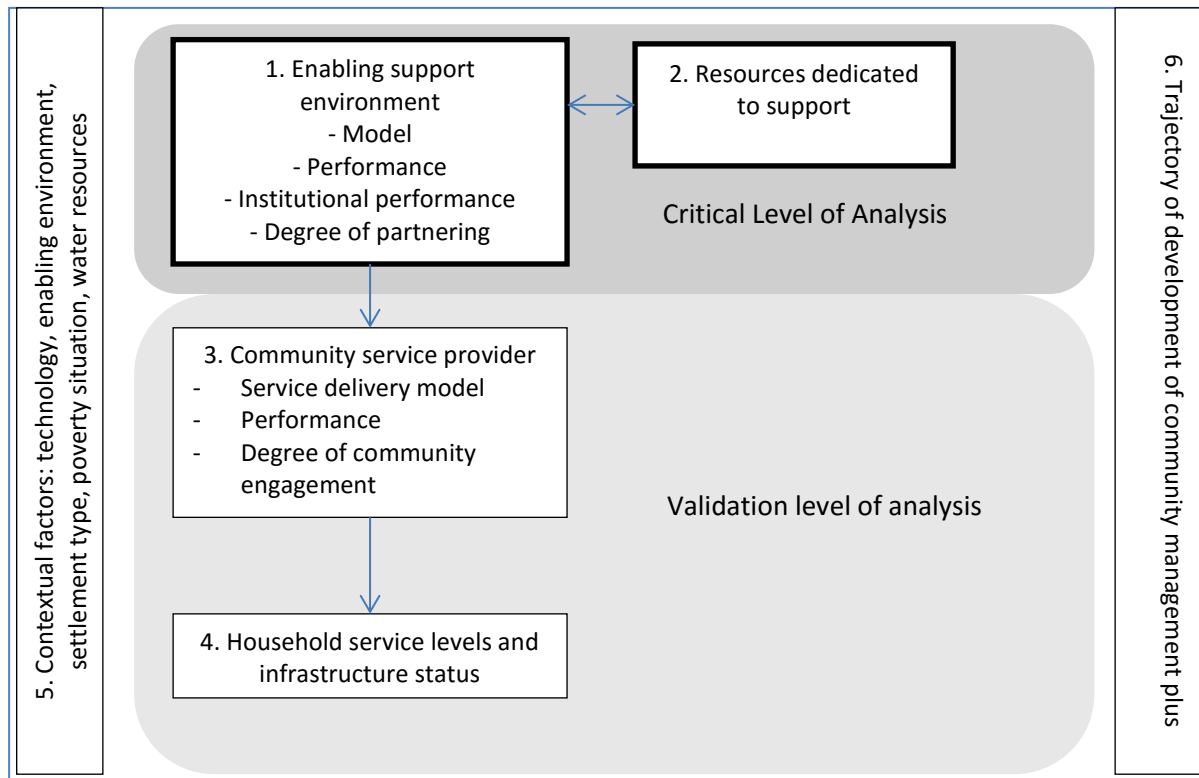


Figure 2: Elements of the research

For further information about the research approach please see: “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; <http://www.ircwash.org/projects/india-community-water-plus-project>

1.4.1 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.

Parts of the experiences with community-managed handpumps in Patharpratima, particularly the experience of the Jalabandhus, has been documented in previous studies (Smits and Baby, 2013; Poole et al., 2012). Also, Water For People, the NGO that is behind much of the reported success, maintains complete records of many data, including services levels (through its FLOW surveys) and the work of Jalabandhus. These studies and data had shown that indeed the handpumps in this area are managed with a relatively high degree of success, amongst others thanks to the work of the Jalabandhus, and the strong support from Gram Panchayats. It was decided to include this case among the twenty cases of the Community Water Plus project, because it is one of the few cases where handpumps are the main technology used – most of the others focus on piped supplies. Moreover, these previous studies, as well the rather complete registers made that this would be a case for which much of the required information would be relatively easily available.

Those studies, however, provided little insight into the total resources dedicated to support community management. The main focus of this case study has thus been 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.

Within the Patharpratima area, the Digambarpur Gram Panchayat area was selected as the main focus. That is the Gram Panchayat that was believed to have received most support over the last few years and has attained the “everyone” status, i.e. covered all households, as declared by Water For People. The neighbouring Dakshin Gangadharpur Gram Panchayat area was also studied, as a control area – sharing many of the same characteristics with Digambarpur but not having had much support the last few years.

1.4.2 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 were applied during a field visit from 2-6 Feb 2015, complemented by literature review and review of the aforementioned registers, and drawing heavily also on the previous work in that area (Smits and Baby, 2013):

Table 1: Data collection methods

Unit of analysis	Data collection methods
Enabling support environment	4 Key informant interviews 2 Focus group discussions Review of literature
Service providers	2 Key informant interviews with water committee members (in 2 of the villages) 2 Focus groups discussions with water committee members (in 2 villages) 4 infrastructure checks (1 in each village)
Households	120 Household surveys (20 in each village) 4 focus group discussion (1 in each village)
Resource dedication	Review of Jalabandhu management information system Compilation of expenditure from: block, Gram Panchayats, Digambarpur Angikar and Water For People Analysis of costing studies, using AtWhatCost

The data were processed in 4 databases (one for each of the units of analysis). These databases contain scoring tables for amongst other 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 Water For People staff.

2 Context: towards “everyone forever” in Patharpratima¹

2.1 Water supply in Patharpratima

The state of West Bengal has a coverage in water supply of 89%, placing it among the ten best covered States in the country, and above the Indian average (MDWS, 2013). The Government of West Bengal is strongly committed to improve on this and achieve universal water supply coverage. For water supply the State’s target is to reach full coverage by 2020 (GoWB, 2011). The main emphasis of developments in the country’s water supply is to rapidly increase access to piped supplies, thereby replacing or complementing the common tubewells with handpumps. The main rationale for this is the aim to increase service levels by bringing water closer to people’s homesteads. It is also driven by considerations of water quality (in salinity and arsenic affected areas) and water quantity (in areas where there is high seasonal variability of groundwater levels).

In order to achieve these ambitious targets, the government is making large investments in rural water supply, channelled through the Public Health Engineering Department (PHED) for piped supplies and the Panchayat Raj Institutions. In addition, members of the Legislative Assembly at State level may also be provided with budgets for water and sanitation.

Patharpratima is a block within the South 24 Parganas District, which stretches from Kolkata’s metropolitan area to the numerous islands that make up the Sundarbans in the mouth of the Bay of Bengal (see Figure 3). The block of Patharpratima covers an area of 469 km² and is home to 346,064 people, as per 2011 census data. Part of the block is located in the mainland, the other part is spread over a dozen islands. It is divided into 15 *Gram Panchayats*.

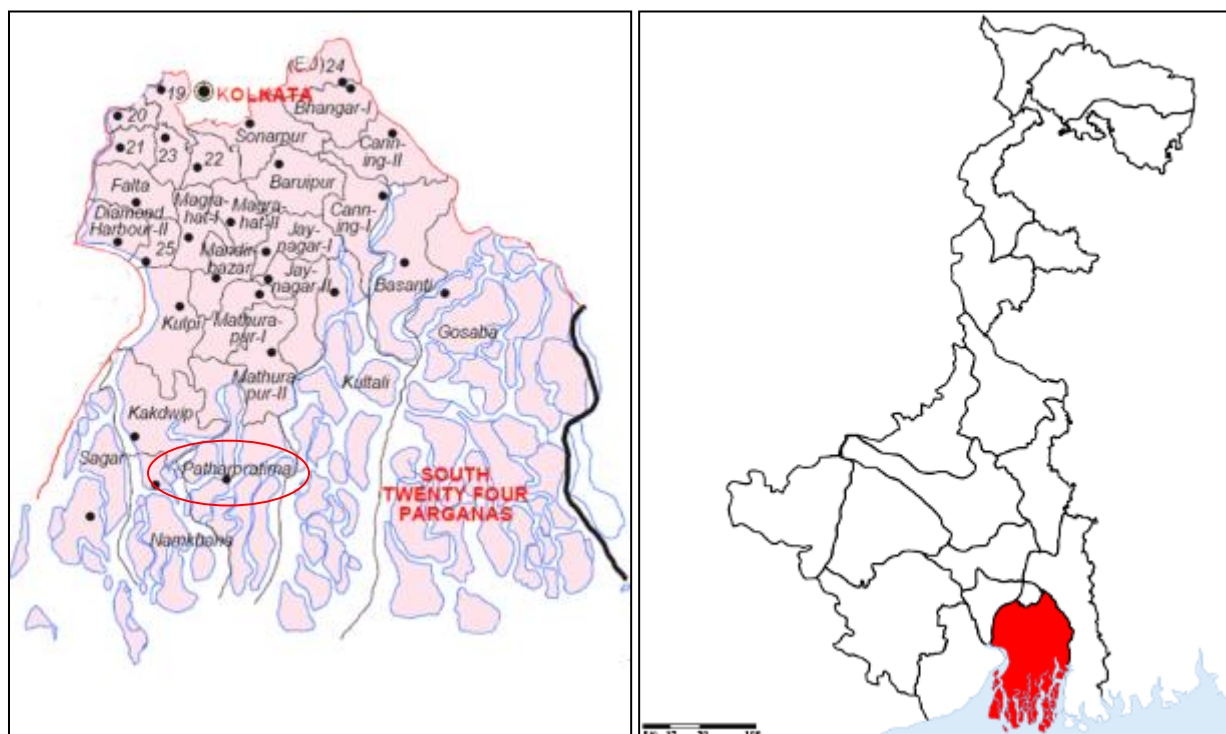


Figure 3: Location of Patharpratima block within South 24 Parganas district, within West Bengal (Source: Wikipedia)

¹ Unless indicated otherwise, the information presented here comes from Smits and Baby, 2013

The latest government statistics (2009) put the water supply coverage in Patharpratima at 74 per cent, when expressed as habitations covered, and at 78 per cent when expressed as population covered (MDWS, 2013).

Deep tubewells with different types of handpumps (mainly India Mark-II, PHE-6 and Temple pump) form the main type of water supply technology, though in some parts of the block, piped water supply schemes were present. In addition to these improved water sources, open household ponds are very common. Almost every household has such a pond, generally used for purposes like bathing, laundry and washing utensils.



Photo 1: Household pond used for laundry

2.2 The Everyone Forever programme of Water For People

Since 2006 Water For People has followed a programmatic approach to comprehensively address water (and sanitation) needs in Patharpratima (and the neighbouring Sagar Block). Central to that approach was the concept of concentrating efforts in a limited number of Gram Panchayats and to reach everyone in such an area, before moving to a next one, and in that way achieve full coverage in a block. In addition, many efforts were put into addressing the observed need of improving sustainability of service delivery. During the first years of the programme, it was observed that some 30-40% of the handpumps was not working at any moment in time, and that repairs took a long time to be carried out. Women used to walk long distances to fetch drinking water facing hardships especially during summer. In response, Water For People started putting in place maintenance arrangements at different institutional levels: setting up water committees, training Jalabandhus, and working with grassroots NGOs, to support community mobilization and other software.

These two main pillars of attention were formally brought together in 2011, when the organisation adopted “Everyone Forever” as the main focus and slogan for its work, using principles developed over the preceding years into a programmatic approach. Currently, the programme is made up of a number of components that together should be able to achieve the ambition. These are the following.

Reaching Everyone:

- **Installing and repairing tubewells with handpumps.** To reach everyone with water, new tubewells are being installed in communities that did not have an existing water point. Tubewells that are completely broken down are rehabilitated. In Patharpratima over the period 2006-2012, Water For People installed 88 new tubewells and rehabilitated 219. It must be noted that Water For People explicitly decided not to work on developing piped supplies, as the PHED are already engaged in such work. Only in the last year it has been decided to start working on piped supplies.
- **Coordinating infrastructure development with authorities.** The programme also engaged with the *Gram Panchayats* and block offices to jointly coordinate and plan for investments with both officials and elected representatives. It aimed to ensure that investments went to areas prioritised by authorities and avoid double investments in the same area.

Ensuring services last forever:

- **Setting up and training water committees at the water points that were intervened** (either new ones or rehabilitations). These water committees were trained to be responsible for some of the operation, maintenance and administration tasks. In addition, they were supported in establishing tariffs and book keeping systems at those water points.
- **Setting up a network of *Jalabandhus*** (literal meaning: friends of water in Bengali), to provide major repair services. The establishment of the network entailed the initial training of 20 *Jalabandhus*, the provision of tool kits, and the promotion of their services among *Gram Panchayats* and water committees.
- **Local partner NGOs providing software support.** International NGOs like Water For People are not allowed to implement programmes directly, under Indian civil society legislation. Local partner NGOs were selected to implement the programme, most of these being grassroots NGOs from the area itself. In Patharpratima, this has been the NGO Sabuj Sangha. Last year collaboration with that NGO ended, for reasons beyond the scope of this report. Since then, the collaboration has started with Digambarpur Angikar, a Community-Based organisation from the area. The NGO has a strong role in community mobilization during project implementation, but also in ongoing support to communities particularly in terms of software.
- **Obtaining support from Gram Panchayats and block authorities.** The sustainability of services also depends on the presence of enabling by-laws, local policies and financing from the local authorities. Therefore Water For People has been working closely with Gram Panchayats and blocks in, for example, developing local resolutions to establish water committees, developing co-financing agreements for repairs and monitoring.

2.3 The study area

Of the 15 Gram Panchayats in Patharpratima, five were declared as “everyone” Gram Panchayats by the district authorities at the time of this research in February 2015. One of these, Digambarpur, was selected as the one that was considered by Water For People as having received most support. It would thus provide the opportunity to establish the complete value of the support received. Digambarpur is home to some 25,000 people, distributed over eight villages, each made up of three to four neighbourhoods. These are provided water through in total 171 tubewells with handpumps. In one habitation, also piped water is available, as part of a larger regional network, developed through the Swajaldara programme and managed by the PHED.

The control Gram Panchayat is Dakshin Gangadharpur. Through the then partner NGO Sabuj Sangha, some work on water supply has been done by Water For People, but rather minor and in an ad hoc manner. It was selected because it was believed to provide the greatest contrast in terms of the support provided. Dakshin Gangadharpur is home to 27,548 people, spread over seven villages. The population receives water through some 151 water points, but of which some 50 are non-functional.

3 The complex of support organisations

Through the programme developed by Water For People, a complex of four organisations has evolved that are supporting community-managed rural water supply. Gram Panchayats provide the first line of support to water committees, and in turn are supported by the block authorities. The grassroot NGOs, in this case Digambarpur Angikar provides software support and help programme implementation and is in turn supported by Water For People. This chapter describes their roles in more detail as well as their relationships, differentiating between Digambarpur and the control area of Dakshin Gangadharpur. 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 partner.

3.1 Organisations and their roles

3.1.1 Digambarpur

Figure 4 below summarises the institutional set-up in Digambarpur, developed on the basis of the activity and responsibility matrix (presented in Appendix 1).

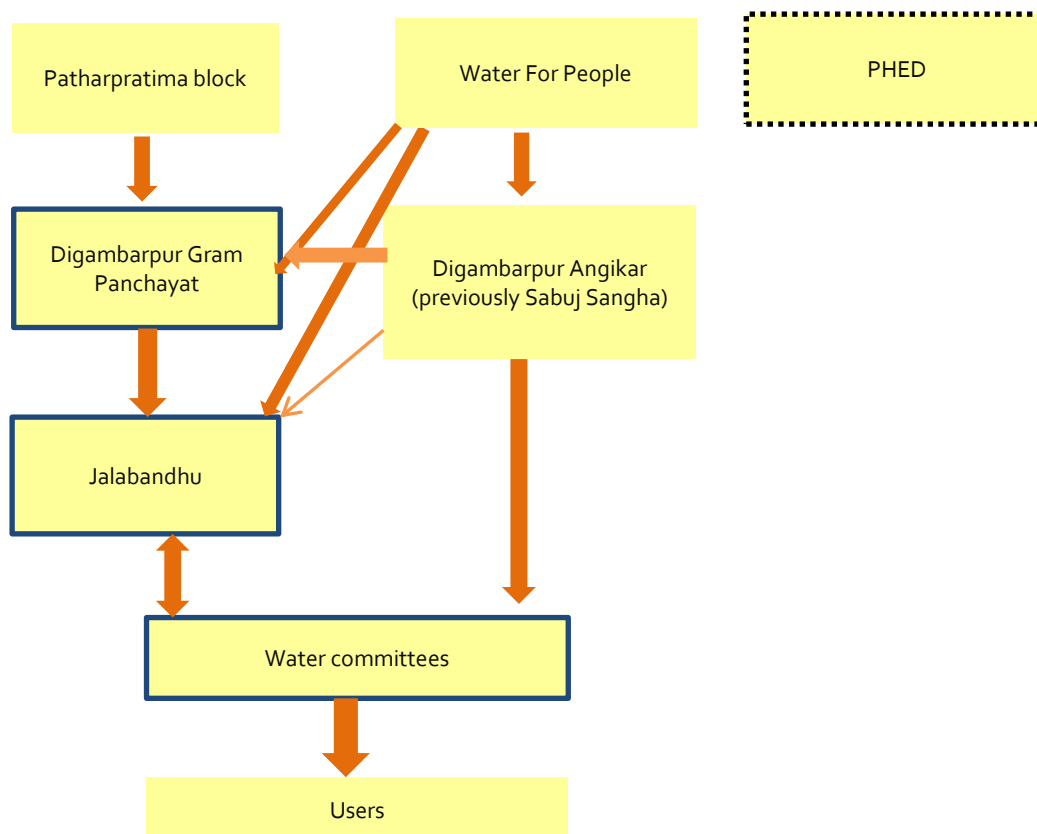


Figure 4: Institutional set-up in Digambarpur Gram Panchayat

In this set-up, the service provider role – indicated by the blue line around the respective boxes – is shared between three entities: water committees, Jalabandhu and Gram Panchayat. They are responsible for providing the service to users. That is, they carry out the basic operation of the handpumps (greasing, keeping the platforms clean), ensuring that maintenance and repairs take place and carrying out the financial administration, including tariff collection. The actual carrying out of the repairs is done by the Jalabandhus, who are contracted for that purpose by the water committees. Gram Panchayats do not have a direct service provision role, but they co-finance the larger repair works. Moreover, they contract Jalabandhus to carry out preventive maintenance.

The support entity roles are shared by four entities:

Digambarpur Gram Panchayat: Apart from its role in financing repairs, the Gram Panchayat also plays a lead role in funding new investments. In addition, it plays a role in creating the enabling environment, by defining local by-laws or resolutions. For example, the Gram Panchayat adopted a resolution that all water points need to have a water committee that is active and has a minimum amount of cash in its bank account. Without that, the Gram Panchayat would not co-finance major repairs of the handpumps. The Gram Panchayat also plays other support roles, such as monitoring of the water points, through the Gram Panchayat members who represent different wards, and health and hygiene promotion, through health conveners.



“We have issued a resolution that all water points must have a water committee with a bank account. Water committees that don’t have some money in the bank account will not be supported by the Gram Panchayat in repair works”. Rabindranath Bera, Pradhan (President) of Digambarpur Gram Panchayat

Patharpratima block office: Its role is above all one of channelling funding for new hardware and rehabilitations. It can also assist Gram Panchayats in its planning and coordination functions, and adopt block-wide by laws. Sometimes the Zilla Parishad (district level administrative body) allocates the funding to the blocks and other source of funding is through the MLA/MP (political representatives) funds, however there are no fixed allocations for WASH. These funds are utilised to drill the tube wells based on the need and demand from the people. The block office also offers technical support to the Gram Panchayats. There is currently more of a focus on sanitation, given the introduction of Swacch Bharat (Clean India) Mission while water has a lower profile at district level, leaving the responsibility to Gram Panchayats and NGOs.

Digambarpur Angikar: As the local NGO, it plays a lead role in community mobilization and training during implementation (or rehabilitation) of hardware. It is helping communities to organise themselves, open up bank accounts and train them in book keeping. It also provides on-going support in software to establish water committees in the form of monitoring their bank pass books, meetings resolutions and infrastructure status. The new committees that are formed by the Gram Panchayat are not supported directly. It is expected that this year they will receive the funding for such activities.

Water For People: Provides the technical support to Digambarpur Angikar by training its staff and orienting the programmatic approach. It also has been supporting the original setting-up of the Jalabandhus by training them, providing tools and putting them into contact with Gram Panchayats and water committees. It also has been advocating towards the Gram Panchayats (and to a lesser degree the blocks) for adopting the support structure presented here. Finally, it carries out monitoring of services delivery (through its FLOW monitoring system), and does research to inform programme management.

PHED: The PHED is only partially present, as indicated by the dotted line around the box. It is supposed to be the service provider in the one village where there is a piped supply, and is expected to operate the pump and carry out maintenance and repair functions. In reality it is almost absent.

Given the focus on the handpump supplies, its functioning has not been studied further in the scope of this study.

All in all, this leads to a complex set-up of complementary support roles towards the service providers. What is notable is that the Gram Panchayat is both part of the service provider and of the support entities. Whereas that has the advantage of strong political leadership for service delivery, it also brings the risk of conflated roles. Furthermore, the strong motivation of the Pradhan (president of the Gram Panchayat) contributes in a great way to the drive behind this, and the absence of that may lead to risks to the sustainability of the approach.

Through this set-up also, almost all the possible support functions are carried out, some even by both Digambarpur Gram Panchayat and Digambarpur Angikar. The Table 2 summarises which support activities are carried out and by whom. This shows that, apart from conflict management, all support functions are carried out. Most are done in a mix of supply-based and on-demand support. This reflects that support needs are often identified jointly between water committees and the support entities. The support functions by Water For People and the block office haven't been assessed as their support is mainly indirectly.

Table 2: Type of support activities carried out

Support entity	Is this type of activity undertaken?	Way of providing support	Modality of support
Monitoring and control, including auditing	Partial	Panchayat members monitor water committees in an informal way and report on this to the Gram Panchayat. No auditing takes place	Supply based
Water quality testing	Partial	When water systems are developed or converted, tests are done, on initiative of the NGO or Gram Panchayat. Regular quality testing is supposed to happen twice per year by State government and coordinated with the Gram Panchayat, but this doesn't happen always	Supply based
Water resources management	Yes	The main water resources management measure that can be taken is the deepening of tubewells as recharge areas are far away. The need for this is assessed jointly by NGOs and Gram Panchayat, together with water committees	Both on request and supply based
Technical assistance	Yes	Digambarpur Angikar provides direct technical assistance to water committees. Both the block office and Water For People provide technical assistance to the Gram Panchayat	Both on request and supply based
Conflict management	No	N/A	N/A
Identifying investments needs	Yes	NGO and Gram Panchayat jointly identify investment needs	Both on request and supply based
(Re)training of service provider	Yes	Digambarpur Angikar provides direct training to water committees	Both on request and supply based
Information and communication activities	Yes	Both the NGO and Panchayat members carry out information and communication activities such as awareness raising on hygienic water	Both on request and supply based
Fund mobilization	Yes	Both the NGO and Gram Panchayat can support water committees in fund raising.	On request

In order to fulfil these functions, the support entities employ the following human resources (excluding financial resources, which are elaborated in chapter 7) presented in Table 3:

Table 3: Human resources employed to undertake support

Organisation	Staffing for rural water (in Full Time Equivalent – FTE)	Description
Digambarpur Gram Panchayat	1	One engineer spending around 30% of his time on implementation of new water points, the rest on other works. Health conveners focusing on health and hygiene promotion. Unpaid ward councillors carry out a monitoring role.
Block office	1 for whole of Patharpratima	There is a nodal officer, dedicating half of his time to water. In addition, there is 1 full time water and sanitation engineer, but who dedicated 50% of this time to sanitation
Digambarpur Angikar	10 for two Gram Panchayats	A whole team of technical, financial and social staff focused on community mobilization
Water For People	1.3 for five Gram Panchayats in Patharpratima	Apart from one full time project officer, there is time dedication from several other senior staff.

The logistical capacity (offices, cars, computers, etc) of the support entities wasn't assessed in detail. But the NGOs have well-equipped offices and cars and motorcycles.

3.1.2 Dakshin Gangadharpur

The set-up in the control Gram Panchayat of Dakshin Gangadharpur is different, as shown in Figure 5. As in Figure 4, the solid blue line indicates the entity that fulfils the service provider function. The dotted lines indicate entities that are only partially present.

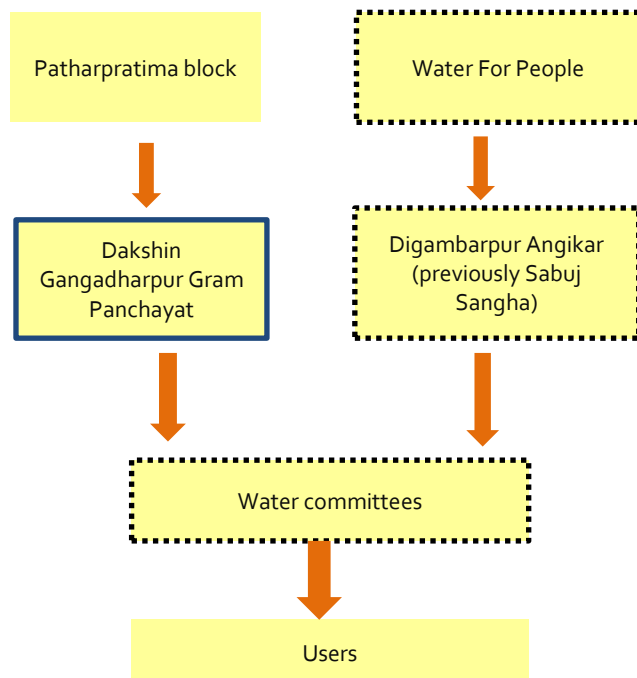


Figure 5: Institutional set-up in Dakshin Gangadharpur Gram Panchayat

First of all, there is no Jalabandhu in Dakshin Gangadharpur Gram Panchayat and only few water points have water committees. Instead, the Gram Panchayat itself fulfils almost all service provider roles. It is expected to carry out both minor and major repairs directly. Where water committees exist they may carry out some basic cleaning tasks, and otherwise that is done in an informal manner

by the people around the water point. The Gram Panchayat is aware of the limitations of this approach, recognising that it is unable to provide a fast response to break-downs and that where people don't contribute to the costs of the supplies, they will not take care. Having seen the experiences in Digambarpur, it recognises that water committees could play an important role in ensuring sustainability, particularly through payment of water tariffs towards minor maintenance. The Gram Panchayat is therefore now following a similar approach of also adopting resolutions that all water points need to have an active water committee with bank accounts.

This Gram Panchayat has seen so far only ad hoc support from the NGOs (first Sabuj Sangha and the last year Digambarpur Angikar), directed to a few water committees where interventions took place. But no ongoing support was provided.



“If I pay for something, I will own it; it if comes from government, nobody will take care”. Allaudin Mollah, Pradhan (President) of Dakshin Gangadharpur Gram Panchayat

3.2 Performance of the support entities

An assessment was made of the performance of the support entities in their respective roles, against a number of predefined scores as per the research protocol (see Appendix 2). Though on several of the elements no data was obtained (and some didn't apply), the following is found in terms of the main performance issues:

- Degree of professionalization. This shows a mixed picture between the two PRI entities on the one hand and the NGOs on the other. The Gram Panchayat and block have by definition a strong policy mandate for support. But they both also articulated a strong vision about the important role of government in supporting water committees. In spite of this strong mandate and vision, they score low in the application of methods and tools for providing that support. Most of the support is provided in an ad hoc and unplanned manner, as and when the need arises. The two NGOs do not have a formal policy mandate for providing support, but they have a strong vision on that, and through their many interactions with government have obtained recognition for the support they provide. Water For People also applies a series of methods and tools for providing the support, which Digambarpur Angikar currently is still lacking.
- Effectiveness. The effectiveness of the support provided is relatively high. As shown above, jointly, the PRI entities and NGOs provide a mix of support services. Digambarpur Gram Panchayat and Digambarpur Angikar were able to support 26% and 29% of all water committees in the area last year in any form (with training, support in repairs and maintenance, or otherwise).
- Efficiency. Data on efficiency, i.e. the resources dedicated per water committee supported, are difficult to interpret. Digambarpur Gram Panchayat supported 50 water points through its one Full Time Equivalent (FTE) of staff. Digambarpur Angikar employed in total nine FTE to reach 49 water committees – but also provides ongoing support to water committees in neighbouring Gram Panchayats. This doesn't mean that Digambarpur Angikar is less efficient. Rather, it shows that the software support and programme management provided by Digambarpur Angikar is more time intensive than the engineering supervision by the Gram Panchayat.
- Frequency of support. As none of the support entities keeps track of the number of support visits, no frequency could be established.
- Client satisfaction. None of the support entities keeps systematic track of how satisfied water committees are with the support.

3.3 Institutional assessment of support entities

Whereas the previous section looked into how the support entities perform in their roles, here the results are presented of an overall institutional assessment that considers the strengths of the organisations, in terms of: 1) organisational autonomy; 2) leadership; 3) community orientation; 4) organisational culture; 5) development and maintenance of staff; 6) technical capability; 7) management and administration; and 8) interactions with external institutions. Through a series of questions these areas were scored on a scale from 0 to 4 (see Figure 6).

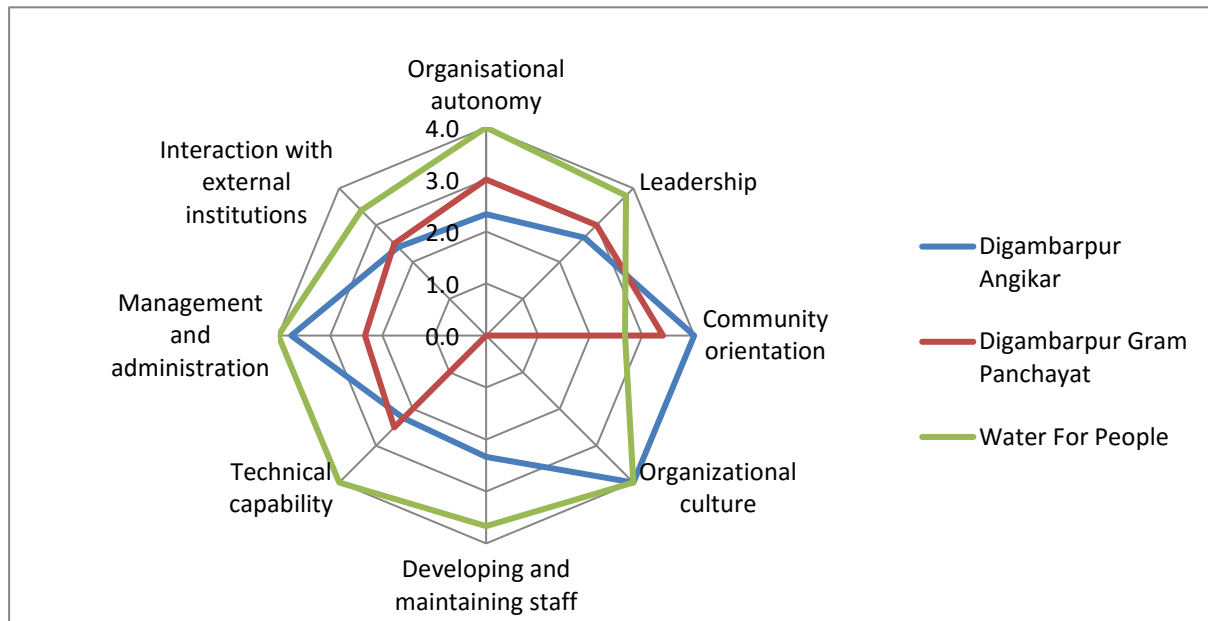


Figure 6: Institutional assessment scores

The first thing that is observed is that Water For People scores better than the Gram Panchayat and Digambarpur Angikar across the board. Water For People is a highly professional organisation, with strong technical capability, management and administration systems, human resources but is also providing strong leadership in the field of support to rural water supply. The Gram Panchayat scores intermediate scores for almost all the elements (there was not enough data on organisational culture and development and maintenance of staff to come to a score so it appears as a score of 0). Whereas the Pradhan has shown strong leadership and is community-oriented, the Gram Panchayat lacks strong technical capability and management systems. Even though in theory it is an autonomous body, for its finance it is very dependent on funds coming from above in the administrative system. Digambarpur Angikar scores very high on some elements such as its organisational culture and community organisation, because of it being a grassroots organisation. But like the Gram Panchayat it has limited technical capability and relations with external institutions, amongst others because it has only recently become a partner NGO to Water For People. The block was not assessed as insufficient insight was obtained into its internal organisation.

All in all this means that the complex of institutions that support rural water supply in this case are very strong on the “soft side”, in terms of community orientation, organisational culture and leadership. But on the hard side, of technical capability and having strong management and administration, it is highly dependent on the professional skills and expertise brought in by Water For People. Whereas that is indeed the added value that Water For People brings, it is an area that needs to be further institutionalised within the Gram Panchayat and Digambarpur Angikar.

3.4 Assessment of partnering between support entities and water committees

To conclude this chapter, an assessment was made on the types of partnering that are found between the support entities and water committees. This is done against an adapted model of six types of partnerships (Demirjian, 2002):

- Collaborative. The sharing of responsibility and authority through joint decision-making
- Contributory. Partners pool resources or leverage new funds for implementation and maintenance of service
- Operational. The sharing of working (division of labour) and co-ordinate operations
- Consultative. To systematically obtain and share relevant information to improve service design, delivery, evaluation or adjustment
- Transactional. This refers to the exchange of funds for services or products
- Bureaucratic. This is the partnering to fulfil regulatory or normative expectations regarding the need for partners to work together

Note that these types of partnering do not imply any hierarchy. And a partnership may have elements of all these six types of partnering.

The partnering has been assessed for three phases in service delivery: 1) capital investment phase; 2) service delivery phase; and 3) capital maintenance phase. The service enhancement or expansion has not really happened in the area (that would for example entail a replacement of handpumps by a piped system), so that was not assessed.

It has also only been assessed for the two entities that interact most directly with the community: Digambarpur Angikar and Digambarpur Gram Panchayat (see Figure 7)

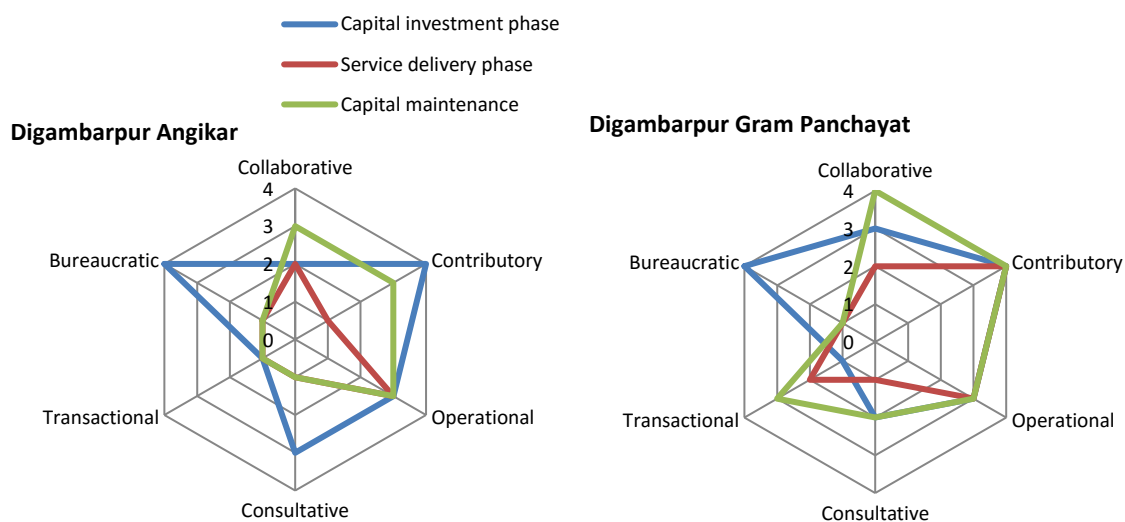


Figure 7: Type of partnering with water committees for Digambarpur Angikar and Digambarpur Gram Panchayat

As can be seen, the type of partnering differs a lot between the two organisations and between the three phases. Both Digambarpur Angikar and the Gram Panchayat employ a mix of partnership types during capital investment. During this phase, normally a project cycle approach is adopted, with a clear procedure and requirements and standard package of technology and management model – giving it a strong element of bureaucratic partnership. For example, before pump installation, a water committee along with a bank account and water tariffs need to be fixed. But this package also implies that there is a contributory partnering. All parties contribute funds and share the operational

work. That also involves joint decision-making and consultation. The need for the standard package is also driven by the hydrogeological conditions, leaving limited technological options for communities to select from.

During service delivery Digambarpur Angikar has a limited role, only consisting of some support in book keeping, and hence none of the types of partnerships come out clearly. The Gram Panchayat on the other hand does partner strongly with water committees, particularly those that were formed by the Gram Panchayat itself, as it takes most responsibility for those. But for all the water committees there is support in sharing an important part of the costs and operational responsibilities.

During the capital maintenance phase, finally, partnering is again stronger, with a mix of types of partnerships presents. The Gram Panchayat comes out stronger on those different types of partnerships as it has a stronger role to play, in terms of discussing requests from communities for replacement, negotiating with them on respective contributions and eventually pooling resources.

4 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 location and socio-economic characteristics of the population. This is followed by a reconstruction of the history of water development, based on the results of the focus group discussions with users and water committees. This is followed by the assessment of their respective service providers, using the descriptors and indicators and participation scores. This is followed by a dedicated section on the Jalabandhu and the crucial role he plays to complement the work of the water committees.

4.1 Context: location and socio-economic profile of the population

The validation took place in three villages of Digambarpur Gram Panchayat. Within each village, there are typically several handpumps, each covering a particular street-block (*Gheri*) or neighbourhood (*para*). The validation focused on the water committees that served the following areas:

- Pancham (No 5) Gheri, in Digambarpur village
- Dakshin para, in Parbotipur village
- Majher para, in Ramnagar Abad village

The control area is *Durganagar Kanchantala* in Dhut Khali village in Dakshin Ganghadarpur Gram Panchayat.

Though the selected villages are all located on the mainland area, the area is interspersed with backwater channels of the Hooghly delta. Some of these backwaters are used for summer crops of rice and vegetables, as are the numerous ponds. Otherwise, rainwater is the main source of water for paddy cultivation. The abundant water is also used for fisheries.

Appendix 3 presents the social and economic profile of the villages (based on a sample of the households interviewed). This shows that two thirds of the interviewees work in agriculture, either as farmers or as labourers. The remainder works in all kinds of off-farm jobs, construction being the main one of them.



Photo 2: Irrigation of summer chili crop with motorized pumps from the ponds

In spite of the abundant agriculture and fisheries, it is a relatively poor area for West Bengal standards. All interviewees had ration cards, though 71 of the 120 have an Above Poverty Line (APL) card. The estimated average annual income is some INR 42,000, with little difference between the four villages. The poverty is also reflected in the relatively poorly developed transport and infrastructure facilities.

In terms of social data, only one of the villages (Dakshin para) has a sizeable Muslim population. Of the Hindu population, about half are SC/OBC. Otherwise, there are no marked differences in the population characteristics of the villages.

4.2 History of water supply in the four villages

Through the focus group discussions with users and water committees, the history of water development in each of the villages was reconstructed. Details about each village are provided below, but the commonalities in the history of water supply, coming out of the focus group discussions are:

- Before the installation of the hand pumps, the women in the selected villages had to walk long distances for alternative water sources. Some of the alternative sources, like the standpoints in Dakshin para (Parbotipur) proved unreliable. That piped scheme suffers also from unreliability and poor maintenance by the PHED.
- But even when pumps were installed, problems were not over. Particularly the repair time in the case of break-downs was long: 15 days to 1 month.
- The installation of the handpumps through the NGOs followed a process of community engagement to inform them about the technology and management arrangements. Though this led to a proper interpretation of the implications of the installed services, there was not much choice for the communities. Only handpump technology was on offer, and a more or less standard package of community contribution (in the form of a cash contribution and cow dung for platform construction) was provided.
- Digambarpur Angikar facilitated the process of tariff collection and made them understood the importance of the tariff which is used for their own benefit. Now, the water committee is responsible for tariff collection and accounting and book keeping.
- This process also made the water committees aware of the repair arrangements and particularly the role of the Jalabandhu in this, as well as of the financial arrangements for the Jalabandhu's services.



Photo 3: Focus group discussion with users from Majher para

These findings contrast with the results of the focus group discussion with users and water committee in Durganagar Kanchantala. That village has had initially similar problems of long break-down times of handpumps. Therefore, the community wanted to stick to a PHE-6 pump, when that one was rehabilitated several years ago. In the same community also an India Mark-II pump was installed by the Gram Panchayat. That one also broke down and has gone unrepaired for 8 months, as its repair requires a skilled mechanic, which is not available in that community.



Photo 4: Users in Durganagar Kanchantala explaining problems with the unrepaired handpump

Though this community has had good discussions about technology, it has not has much accompanying in the administration and management of the pumps. For example, the focus group mentioned that there were no contributions from the community during the installation, and

only an initial contribution to set up the bank account was collected. But no follow up was given after that in terms of tariff collection. The water committee quickly got defunct.

4.2.1 Pancham (No 5) Gheri in Digambarpur

The handpump in this *Gheri* was installed in 2008. Prior to the installation, the women had to walk half a kilometre to fetch water from another street-block. They requested the Gram Panchayat several times to install a new hand pump, as the one they had used up to then (a PHE-6 type pump) was totally defunct and the community could not afford the costs of repairing or renovation by themselves. At this juncture they came in contact with Sabuj Sangha, and the community applied to them for making the pump functional again. In the discussion with Sabuj Sangha it was decided to convert the PHE-6 to a Temple Pump; though an India Mark-II was also considered, the community didn't feel confident with that new technology so they settled for the Temple Pump. The community hasn't regretted its decision, as they consider the frequency of break-downs to be less than the ones witnessed with India Mark-II pumps in neighbouring areas. Also the yield of the Temple Pumps is considered good.

At the moment of installation, the water committee was established on instigation of Sabuj Sangha. This NGO also provided some initial training on issues of safe water handling, book keeping and basic maintenance and cleanliness of the water point to the water committee. It also advised in setting up a tariff system (currently at Rs 20/family/year). The water committee was formed in 2008 and so far they have changed only one member in the committee, who considered it too much of a workload.

Seeing the success of this water committee, other committees established themselves in neighbouring street-blocks. And these experienced similar stories of initially having a handpump that was broken down for a long time, but then mobilizing support from the NGO and/or the Gram Panchayat to have pumps installed. In most cases, either a PHE-6 or Temple Pump was selected. But satisfaction with these is mixed. One of the neighbouring committees would have in hindsight preferred an India Mark-II.

4.2.2 Dakshin para in Parbotipur

Dakshin para has had two sources of water supply: an 18 year old PHE-6 handpump and a piped supply. There are 70 households in the village and 40 households depend on the hand pump installed by the Water For People. There are two hand pumps and 3 public stand posts in total for the water supply. Before the intervention, the handpump used to get damaged very frequently. Initially the Gram Panchayat took responsibility for carrying out the repairs but gradually it also got frustrated with the occurrence of break-downs. Also the community got frustrated, as they had to contribute



Photo 5: Broken tap-stand of the piped supply system in Dakshin para

The details of the non-performance of the piped system were not further investigated, given the focus on the handpump supplies.

also to the costs of the frequent repairs. Moreover, during the repairs, women had to go to fetch water from a neighbouring street block, and the normal users of that handpump sometimes refused to allow water to be taken from that pump.

The village piped water supply (developed through the Swajaldhara programme) didn't offer any respite either. Though it is installed only ten years ago, it is in poor conditions. Tap stands are visibly damaged and there are reportedly frequent piped breaks and leakages. Out of fear of contamination, community members indicate they don't use the piped supply for drinking. The PHED is not carrying out regular repairs of the piped system.

In 2014 Digambarpur Angikar discussed the possibility of rehabilitating the hand pump and converting it from a PHE-6 into Temple Pump. This was done with contributions from both the community and the Gram Panchayat. One requisite put forward by the Gram Panchayat for contributing to this rehabilitation was that a water committee was formed. This was done with support from Digambarpur Angikar, which provided basic training in book keeping and operation and maintenance. This is also the moment at which a decision was made to establish a tariff, of Rs 5/family/month. The pump and the water committee have been functional since then.

4.2.3 Majher para in Ramnagar Abad

The water story of Majher para is similar to the ones above. In this area, there has been a handpump for almost 18 years. But it was frequently broken down, taking 15 days to a month for a repair to be carried out. In those cases, the users had to go to another para to fetch water, with a round trip taking almost an hour. Frustrated with this the area's women's group discussed with the male members, and finally they submitted the request to install a handpump in their locality to the Gram Panchayat. The councillor from their locality persuaded the Gram Panchayat and in 2013 the hand pump was installed in collaboration with Digambarpur Angikar. Technology options were not discussed – an India Mark-II was installed - but the location was selected in consultation with the community. The community had to contribute to the installation, particularly to the platform.

Both the Gram Panchayat and Digambarpur Angikar insisted that a water committee were formed at the moment of installation. Digambarpur Angikar assisted with that, particularly supporting the opening up of a bank account and training in aspects of safe water handling and book keeping. The water committee was also informed about the Jalabandhu and his role. Finally, also a tariff system (Rs 60/family/year) was established. The water committee and the pump have been functioning without any problems since then.

4.2.4 Durganagar Kanchantala in Dhut Khali

This control village depends on three water points. The first water point is a PHE-6 pump, but which provides saline water. A second water point is an India Mark-II pump, installed a year ago by the Gram Panchayat. It has been defunct for 8 months. As it is a more complex technology than the PHE-6, there is nobody in the area who knows how to repair such a pump.

The third water point is a Temple Pump. This was initially a PHE-6 pump, which was maintained by the community itself for almost 20 years. This was easy, as the PHE-6 pump can be repaired without special tools and not requiring a trained mechanic. In 2011, the PHE-6 was converted into a Temple Pump, as that allows drawing water from a greater depth. During that moment, also a platform and shelter were constructed. This was done with support from the NGO Sabuj Sangha, who also insisted a water committee was established. This was duly done, as 7 persons formed a committee, collected an initial amount of Rs 5 from each family and opened a bank account, into which they deposited the first Rs 100 they had collected. However, no follow-up was given by the NGO, and quickly the water committee disintegrated. Meetings were no longer held, no tariff is collected and the bank account is not replenished. When the pump broke down last year, the remaining two members of the water committee had to borrow INR 7,000 from the village festival



Photo 6: Bank booklet of the Durganagar Kanchantala water committee, reflecting only the INR 100 deposit made in 2011

committee towards the repair. These members are now in despair about how to repay this loan. Though the pump is now repaired and functional, the platform and shelter are visibly damaged and reflect the poor state of maintenance of this water point.

4.3 Community service provider descriptors and performance indicators

The Table 4 below summarises the main descriptors of these water committees, also discussing the difference between the three in Digambarpur Gram Panchayat and the control village (for the detailed descriptors, see Appendix 4). The three in Digambarpur all are semi-formal water committees. That is, they have the formal governance structure required for community self-help groups, i.e. having the required 9 members on their board in order to be able to open up a bank account. But they are not a registered body or formally mandated to be a service provider. The control village was originally set-up in the same way, but as described above has become inactive.

Coverage with water supply is everywhere 100%, but none through household connections. For the control village, consolidated data was lacking. Also data on coverage that is disaggregated by SC/ST households was not found.

The tariffs are all very low, ranging from INR 20-60/household/year. The initial connection cost is not a real connection cost, but an initial contribution to the capital investment. The amounts differ a bit, but mainly depend on the number of users per water point. In Majher para it was highest, because it has a relatively small number of users.

Table 4: Summary descriptors of the community service providers

Descriptor	Summary
1. Type of organisation	All semi-formal water committee, with the one in the control village having become inactive
2. Members of governing body	The required 9 members as per Self-Help Group regulation. In the control village only 2 active members
3. 1Coverage	100%
3.2 Coverage with household connections	0% (Not applicable)
3.2 Coverage among SC/ST households	Data not available at a disaggregated level but all the households are covered as per the government norms(i.e 50 households for each hand pump)
4.1 Tariff structure	Equivalent to 20-60 Rs/household/year, payable in monthly or annual instalments
4.2 Contribution to capital costs	Highly variable from 5-130 Rs/household

In addition, to these descriptors, an assessment was made of their performance indicators as part of the assessment protocol (see details in Appendix 2). These are summarised in Table 5.

Table 5: Summary performance indicators of the community service providers

Indicator	Service providers in Digambarpur	Service provider in control village of Durganagar Kanchantala
<i>Governance</i>		
1.1 Percentage of legal requirements for establishment of service provider complied with	Water committees establish themselves as Self-Help Group with a resolution and an active bank account. But they are not registered as a formal service provider.	Water committee also complies with having a bank account, but is neither registered as formal service provider.
1.2 Presence of statutes	None of the water committees has statutes or other or other documents describing how the water committee is governed	No statutes or other documents describing how the water committee is governed
1.3 Selection of the Board of the service provider	In absence of statutes, in most villages there is not a clear process for (s)election of board members. Members are nominated, but for unclear term length. Only one of the villages has had an election	No elections whatsoever has taken place for the governing body of the water committee
1.4 Information sharing	An annual meeting between the water	No annual meeting has been held

and accountability mechanisms	committee and users is the main way through which accountability is formally provided.	
1.5 Percentage of women in the governing body of the CSP	In two villages the water committee consisted only of women. One village had a more balanced gender representation in its board	The water committee consists only of women.
1.6 Percentage of members of the water committee who have received formal training	All water committee members have received training for their roles and were coached in that for a certain period. In	Apart from a one-off initial training, no further or coaching was provided.
<i>Finance</i>		
2.1 Financial balance of last year's revenue and expenditure	The balance of the last year was marginally positive in all villages. The two most recently constructed water points didn't have any expenditure.	Since its inception, the water committee hasn't had any income, but neither any expenditure.
2.2 Cash reserves	Cash reserves of water committees go up to INR 5,000. The way in which this is managed is irregular without a target reserve amount, nor do the committees have clarity on when and how to use these	Only a one-off deposit of Rs 100 was made.
2.3 Book keeping	The committees maintain records and provide an annual account which is shared with the community. These are not audited.	In absence of any cash flow, there are no updated books.
2.4 Non-payment rate	There are no defaulters and water committees manage to collect the little tariff there is.	No tariff collection took place after the first despot
<i>Technical performance</i>		
3.1 Technical folder	None of the water committees has technical details of the design of the water points, nor do they have operation and maintenance manuals or guidelines. They can get maintenance support from the Jalabandhu.	The water committee doesn't have details of the design of the water points, nor do they have operation and maintenance manuals or guidelines.
3.2 Registry of operational information	Apart from financial records, only one of the water committees has a list of subscribers and meeting resolutions	Apart from the record of the first deposit, the water committee doesn't have any other records
3.3 Response time to get a repair done	From 2 to 48 hours depending upon the availability of spare parts and Jalabandhu.	Several months.
3.4 Water metering	Not applicable as there are no household connections	Not applicable as there are no household connections
3.5 Waters security measures	The geographic and hydrogeological conditions do not facilitate local water security measures, as the recharge area is far away	The village undertook a conversion, i.e. deepening of tubewells and changing of type of pump.
3.6 Water quality management	Water quality is tested during installation. The committees don't undertake any specific measures to monitor quality afterwards or ensure its safety	The committee doesn't undertake any specific measures to monitor quality afterwards or ensure its safety

As can be seen in this table, in terms of governance, the water committees operate in a semi-formal manner. Though they meet the minimum requirements for being a self-help group (9 members and having a bank account), they are not constituted as service providers. They don't have statutes nor clear procedures for the election of the boards. Accountability to users is done at the most basic level, through annual meetings, presenting the results. In terms of gender, three of the visited water committees were composed entirely by women. This is probably due to the fact that the water committee is based on the model of self-help groups, which are usually composed almost exclusively of women. This is of concern, as the management tasks should ideally be shared proportionally between men and women.

Financial management procedures are basic, limited to keeping books of income and expenditure. This is also because the annual turn-over of each water committee is low (around Rs 3,000/year), as tariffs are low and so is the number of users per water point. A further analysis of the financial sustainability of these water committees is provided in chapter 7, whereby also the other contributions to operation and maintenance will be accounted for.

The technical performance, finally, appears to be low, as water committees keep few records and barely take water security and quality management measures. However, as will be elaborated in the next section, this is also because most of the technical operation and maintenance is outsourced to the Jalabandhus.



Photo 7: The entirely female water committee of Dakshin para, in Parbotipur

In conclusion, the water committees are functional and fulfilling their roles – particularly in the financial administration and acting as liaison with the user community, and with outsiders such as the Jalabandhu. The performance in these roles appears to be low. This is not because the water committees do a bad job, but because the system is set up to act at a low degree of professionalization. The contrast is sharp with the control villages, where there is no active water committee, as a result repairs are not done in a timely manner, and where there is not even a minimal cash reserve for small expenses.

4.4 Jalabandhu

Jalabandhus are private entrepreneurs, who provide handpump repair services. A group of them received training in 2009 by Water For People and were provided with a repair toolkit. Initially, they were also supported in promoting their activities, e.g., through sharing their contact details with *Gram Panchayats* and water committees.

In Digambarpur, there is one Jalabandhu offering his services. He does so through several modalities:

- Providing repair services directly to a water committee. In this case, a water committee calls him, and informs him of the type of problem experienced. The Jalabandhu estimates how much the repair would cost and checks with the water committee if funds are available, as the water committee is expected to pay directly. If the water committee has the funding, he carries out the repair within 1 or 2 days.
- Providing repair service in assignment from the *Gram Panchayats*. This happens when a water committee does not have the funds to cover the costs of the repair. In these cases, the *Jalabandhu* first makes a visit to the water point to assess the repairs that need to be done and makes a quotation for his services and the spare parts needs. This is offered to the *Gram Panchayat*. Once the quotation is approved, the repairs are carried out and upon its completion, the *Gram Panchayat* is billed. It may take several days before the repair is actually done, and in Digambarpur this only happens occasionally, as users prefer repairs to be carried out quickly, even though it costs them some money. In Digambarpur, the practice is now that only repairs that cost more than Rs 3000-4000 go via the Panchayat procedure. Smaller ones are all paid for directly by the water committee.

- Rehabilitation and conversion services, in assignments from the *Gram Panchayats* or NGOs. The last few years, the Jalabandhu has started expanding services from repairs to complete rehabilitations and conversions (changing of type of pump). Digambarpur Gram Panchayat, together with the NGOs, contracted the Jalabandhu for this work, as he was already familiar with much of the mechanical work needed for this, and he would eventually get work out of repairing them.

In Digambarpur, the Jalabandhu works full-time on these types of services, and has even two assistants who help him with that. Through these works he has been able to earn some Rs 80,000 per year, after expenses. However, he now seems to fall victim to his own success. Through the rehabilitation and conversion work, most water points are now in a very good state, requiring only minor repairs, through which he earns much less. In response to this, he has now started providing also plumbing services. For example, the Primary Health Centre in Digambarpur is being connected to the piped supply, and he supports making the in-house connections. He has also started providing services to water committees in neighbouring Gram Panchayats. However, committees in these areas are not yet used to this way of working and often don't have the money at hand. This means he needs to take the more time-consuming route of offering services on assignment via the Gram Panchayats. In addition, Digambarpur Angikar and the Gram Panchayat are now considering entering into an annual maintenance contract with the Jalabandhus so that there is a continuous preventive maintenance ensured to keep the hand pumps repair free.



“I am proud that all water points in Digambarpur are working and that I have been part of that”. Uttam Majundar, Jalabandhu

4.5 Participation assessment

The previous sections have indicated how water committees manage the water points on behalf of the community, and in that outsource the repair work to the Jalabandhu – though sometimes paid-for by the Gram Panchayat. This section assesses the extent to which communities participate in the decision-making around this. This is done by applying a ladder of different forms of participation to the various phases in the life-cycle of a service. Appendix 3 presents the detailed categorization of the type of participation found for the four villages. In this, a distinction is made between the three Digambarpur villages and the control village (see Table 6).

Table 6: Summary of the participation assessment

Stage of delivery cycle	Digambarpur villages	Control village
Capital Investment (implementation)	For two villages, no data as original construction took place long ago. The one assessed village (Majher para): participation by consultation	No data, as original construction took place long ago
Service delivery	Functional participation	Passive participation
Asset Renewal	Interaction participation	Interaction participation
Service enhancement or expansion	No data, as this hasn't taken place	No data, as this hasn't taken place

It was difficult to assess the participation of the community in the original implementation of the systems, as three water points were very old i.e 18-20 years. Only the one that completely newly constructed (the one in Majher para) was classified, as “participation by consultation”. That is, the

community was presented a standardized package of a technology option and management model of a water committee, supported by the Gram Panchayat and Jalabandhu. Though this was extensively discussed, the community couldn't select between alternatives, nor was there real space to discuss major amendments to this package, such as the technology. One crucial issue on which the community did decide though was the location of the tubewell.

During service delivery, the degree of participation is slightly higher, and classified as functional participation. Within the standardised service delivery model, communities decide on elements of it, such as for example the height of the tariff, or the nomination of the members of the water committee. As explained, there are few formal accountability mechanisms between users the water committee, but informally, there is space for discussion and engagement. In the control village, the level of participation was much less and classified as "passive participation". The management model was proposed by the NGO, but the community didn't get full clarity through the process on the purpose of the water committee, how it would work and operate, nor was there space for deciding on elements of it. Probably that is one of the reasons why very quickly the water committee disintegrated.

The degree of community participation is classified as stronger – i.e. as interaction participation – during the capital replacement phase. That is the moment, where communities through their water committees pro-actively approach the Gram Panchayat for support with the capital maintenance works, and where then a negotiated settlement is reached, on aspects such as the degree of co-financing expected from both water committees and Gram Panchayat. Also the type of technology is more vigorously discussed, as then water committees have experience with a particular type of technology, and may have seen experiences in neighbouring areas, and express strong technology preferences.

All in all, this means that none of the communities in none of the phases goes as far as self-mobilisation. Most participation is triggered externally by NGOs. This is probably also due again due to the fact that the standard package of handpump and water committee is one of the few options that is realistically applicable in this area.

5 Service levels

This chapter presents the next step in the validation of success found in this case study. It consists of assessing 1) the coverage, 2) the levels of service received by users, 3) equity in that, and 4) household views on supplies. This is done differentiating between the service from the handpumps and from the alternative piped supply.

5.1 Coverage

The coverage in all of the villages is 100%, all users having access to the handpumps within the stipulated distance, or to the alternative piped system (in Dakshin para).

5.2 Service levels from handpumps

As seen above, many users make a combination of the handpumps with other sources: ponds, but also some public stand posts from the piped supplies. Particularly for the ponds it is difficult to calculate a proper service level, as much of the use is an “in-stream” use, where users wash their laundry or utensils in the pond, and hence don’t use quantities of water nor can they quantify the time spent on accessing this water.

Therefore this analysis focused in first instance in establishing the service levels for the handpumps, as the primary focus of the study. The tables with the service levels for each village are presented in Appendix 2, the summary in Table 7 (for the three villages in Digambarpur) and Table 8 (for the control village), indicating also differences between summer and non-summer. Where the figures for both seasons are the same, they are presented as one.

Table 7: Distribution of households with different service levels from handpumps in Digambarpur (n = 88)

Service level	Quantity		Accessibility		Water quality perception	Reliability
	Summer	Non-summer	Summer	Non-summer	Summer and non-summer	Summer and non-summer
High	0%	0%	24%	35%	85%	20%
Improved	0%	0%	20%	27%		38%
Basic	0%	0%	15%	19%	11%	0%
Sub-standard	6%	1%	33%	15%	3%	32%
No service	94%	99%	8%	3%		6%
No data	0%	0%	0%	0%	0%	5%

Table 8: Distribution of households with different service levels from handpumps in Durganagar Kanchantala (n = 30)

Service level	Quantity	Accessibility		Water quality perception		Reliability
	Summer and non-summer	Summer	Non-summer	Summer	Non-summer	Summer and non-summer
High	0%	3%	17%	63%	63%	20%
Improved	0%	27%	20%			3%
Basic	0%	17%	27%	27%	30%	0%
Sub-standard	7%	40%	33%	10%	7%	53%
No service	93%	13%	3%			20%
No data	0%	0%	0%	0%	0%	3%

As can be observed, in both the Digambarpur villages and the control village, the service level for quantity of water was classified as sub-standard or no service. That is due to the fact that the amounts that people obtain from the handpumps was below the reference 40 lpcd, or even below the 20 lpcd. This is due to the fact that people only fetch water for drinking and cooking and other smaller household uses – including water for cattle - from the handpumps, a practice confirmed

during the focus group discussion. Those domestic uses that require more water (personal hygiene, laundry, washing utensils) are generally done as “in-stream use” in the ponds themselves.



Photo 8: Water is also used for small productive uses, like cattle

Accessibility – expressed as the time spent on collecting water – presents a large spread within a village. This is not surprising, as with point sources there are always households that live closer to a water point than others and thus spend less time on fetching water. There is a marked difference between Digambarpur where 59-82% of the households had an access level of basic or higher and the control village where that was only 47-63%. This difference is probably due to the fact that in *Durganagar Kanchantala* there is effectively only one functional handpump, meaning people need to walk further and probably queue longer.

This issue is also reflected in the reliability indicator (a combined measure of total down-time and response time in case of break-downs). In Digambarpur, 58% of the households had a reliability of supply classified as basic or higher, whereas that was only 23% in *Durganagar Kanchantala*. However, this indicator needs to be interpreted with caution. Looking at the responses in detail, it seems more to be a perception of reliability, as respondents gave widely differing answers on the number of break-downs and time it takes for a repair to take place, even when referring to the same water point.

Finally, the perceived water quality was overall high Digambarpur, whereas that was for many more people basic or sub-standard in Durganagar Kanchantala.

In none of the service level parameters was a strong difference observed between summer and non-summer. This is probably due to the fact that the source of water is deep groundwater, which is not affected a lot by seasonal variation.

All in all, this validates that the service level in Digambarpur is higher – particularly in terms of accessibility and perceived reliability, and to a lesser extent perceived water quality – than in Durganagar Kanchantala. Still, for many households in Digambarpur the overall service is sub-standard. The handpumps alone cannot meet all water needs, a gap that is filled by the numerous ponds.

5.3 Service levels from piped supplies

In Dakshin para, the piped supply also plays a role as an alternative source for 13 interviewed families; in fact two of the interviewed households consider the piped supply as their main source. Also two households from Pancham (No 5) Gheri accessed this source as a second supply (see Table 9).

Table 9: Distribution of households with different service levels from the piped supply in Pancham (No 5) Gheri and Dakshin para (n = 17)

	Quantity	Accessibility		Water quality perception	Continuity	Reliability
Service level	Summer and non-summer	Summer	Non-summer	Summer and non-summer	Summer and non-summer	Summer and non-summer
High	0%	59%	65%	0%	0%	29%
Improved	0%	6%	24%		0%	0%
Basic	6%	24%	6%	100%	88%	0%
Sub-standard	0%	0%	0%	0%	0%	0%
No service	88%	6%	0%			35%
No data	6%	6%	6%	0%	12%	35%

As with the handpumps, the quantity used is for most families well-below the 20 lpcd, and thus classified as “no service”. The explanation for this is similar to the one of the handpumps that much of the water is obtained from the open ponds. Accessibility – i.e. time spent to fetch water – from the public stand pipes of the piped supply – is very high: 89-95% of the households having an accessibility level of basic or higher. Those who live close to a stand post do access these with little time. However, the fact that only about a third of the interviewed households do access the piped supply at all also indicates that overall access to piped water in the village is low. The water quality from the piped supply is perceived lower at “a basic” level, as compared to water from the handpumps. As mentioned, due to the frequent pipe burst, various interviewees indicate that they fear contamination of the water. Continuity is rated as basic, as water is available only for two hours a day. But the reliability of that supply is rated in a mixed manner. A third of the interviewees consider it to come in a regular pattern, another third thinks the opposite, and another third didn’t know how to answer this question. During the focus group discussion, the women revealed that at least in the case of repairs for handpumps they can approach the water committee or Jalabandhu but in case of piped water supply they do not know whom to approach. Even if someone reports to the PHED engineer it takes a much longer time for the piped water supply to be repaired.

All in all, this means that the overall level of service from the piped supply is similar to the one from the handpumps: higher in accessibility, but lower in quality, and mixed in terms of reliability. But the main difference lies in the fact that the piped supply is only accessed by a small part of the population.

5.4 Equity in service levels

From the tables above, one can see that the starkest differences in levels of services are in:

- The accessibility indicator for handpumps, which have a wide spread
- The reliability indicator for handpumps, which equally have a wide spread
- Access to one or more alternative sources

An analysis was made of different socio-economic factors to assess whether there is a correlation between some of these and the service levels in terms of accessibility and reliability. This showed a slight tendency for accessibility to be lower among the scheduled caste – though those classified as Other Backward Castes have a relatively high level of accessibility. Also, accessibility was higher among the landowners than among those without land. No correlation could be seen between reliability and socio-economic indicators. This can be explained probably by the fact that, as mentioned above, this was more a measure of perceived reliability.

Access to alternative sources was also found not to be related to any socio-economic data. All the interviewed families had access to a family pond.

5.5 User satisfaction with the service received

Apart from the reflections on the service level obtained during the focus group discussion, as discussed above, the survey also tried to quantify the level of satisfaction with the handpump supply service. As shown in Table 10, a bit less than half of the interviewees are very satisfied with the supplies, and half are somewhat satisfied. There are no marked differences between summer and non-summer. The latter is probably due to the fact that the handpumps are using deep groundwater, which is not affected much by seasonality. What is also notable that satisfaction in the control village of *Durganagar Kanchantala* is lower than in the other villages. Very few people there are very satisfied with the service, where that percentage is much higher in the other villages.

Table 10: User satisfaction with the handpump supplies

	Not satisfied		Somewhat satisfied		Very satisfied	
	Summer	Non-summer	Summer	Non-summer	Summer	Non-summer
Pancham (No 5) Gheri (n=30)	2	2	14	17	14	11
Dakshin para (n=28)	1	1	12	12	15	15
Majher para (n=30)	3		9	9	18	21
<i>Durganagar Kanchantala</i> (n=30)	2	2	25	23	3	5
Grand Total (n=118)	8	5	60	61	50	52

Appendix 7 contains further details on satisfaction with the other alternative supplies. The ponds show a marked difference between summer and non-summer. During the non-summer users are as satisfied with the ponds as with handpumps. But this drops during summer, probably because then ponds start to dry up. The few people who have access to a piped supply are somewhat satisfied with the service.

6 Costs and financing of service delivery through handpumps

As shown above, a range of organisations are involved in service delivery through the handpumps in Patharpratima. These take on different parts of the various cost categories. This, however, makes it difficult to see the complete picture of all the costs, and how these are shared between them. This chapter seeks to provide clarity on that. This has been done by looking at the actual expenditures made by the four enabling support entities over the last year(s), as well as by financial modelling of the life-cycle costs of different types of handpumps, using the 'AtWhatCost' model, developed and used by Water For People. This model uses generic costs of installing, maintaining and replacing different types of pumps, and makes financial projections over the life-span of such a pump.

6.1 Capital investment expenditure

The capital investment in a tubewell with handpump is around INR 180,000 at 2013 prices. These costs are a bit higher for India Mark-II pumps, and lower for the PHE-6 ones – though the latter are recently no longer favoured as they can't reach sufficient depth. This amount includes both the capital costs, as well as the software around it, such as community mobilization, decision-making on the location and the initial set-up and training of the water committee. Table 11 summarises the total investments in the 8 new water points that were developed in the fiscal year 2013-2014 in the Digambarpur Gram Panchayat area.

Table 11: Capital investments in Digambarpur in 2013-2014

Funding source	Capital expenditure on hardware (INR)	Capital expenditure on software, including salaries and overhead (INR)	Total capital expenditure (INR)
Digambarpur Gram Panchayat	175,000	55,125	230,125
Patharpratima block office	466,667	15,556	482,222
Digambarpur Angikar	-	66,551	66,551
Water For People	628,895	-	628,895
Community	36,850	-	36,850
Total	1,307,412	137,231	1,444,643

It shows clearly how the different organisations all contribute to the water point development. The two government entities do so both through cash contributions but also through the staff time of their engineers and other staff, the value of whose salaries are included in the overview above. Water For People contributes also with the hardware investments, whereas Digambarpur Angikar focuses solely on the software side. Communities contribute a small percentage to the costs as well.

Furthermore, it can also be seen that the software amounts to about 10% of the entire capital investment costs. This mainly is staff time of the government and NGO officers.

Assuming some 50 user families, of each around 5 persons, the total per person costs of a new water point are INR 722/person. This is a bit below reference data from Andhra Pradesh for boreholes with handpumps (Burr and Fonseca, 2013). This may be due to the fact that in West Bengal, cheaper manual drilling can be applied, and water tables are higher than in Andhra Pradesh.

In the comparison Gram Panchayat of Dakshin Gangadharpur, actually a higher capital investment took place of almost INR 2 million to install 18 new tubewells, this being roughly equivalent to INR 444/person. But this amount excludes the salaries of government staff and other contributions, so represents an under-estimation of the total capital investment made. It is not surprising that a higher investment takes place in Dakshin Gangadharpur as coverage is lower than in Digambarpur, and thus

more funds are needed to reach full coverage and also the software component which is totally lacking.

6.2 Operation and minor maintenance expenditure

Very little empirical insight into the operation and minor maintenance was obtained. Though three of the four visited water points have been operational for a long time (18-20 years), they have only started systematically tracking their expenditure for a few years. In this, no clear distinction is made between operation and minor maintenance expenditure and the bigger capital maintenance expenditure – described below – is often co-financed between water committees and Gram Panchayat.

We have therefore taken the contributions made per household per year (INR 20 per household per year in the first neighbourhood, INR 60 per household per year in the other two neighbourhoods) and from the resulting per person contribution have subtracted the total recorded by the Gram Panchayat as a community contribution to capital maintenance to give the best evidence-based understanding of the community contribution to operating expenditure. We have then ‘sense-checked’ this figure against the reported Jalabandhu income for the year after expenses.

Further, we have checked these figures against what ‘ideal operation and minor maintenance expenditure’ should be – based on the modelling in the Water for People ‘AtWhatCost’ spreadsheet - and then compared that to current tariffs.

The ‘AtWhatCost’ model in essence considers four types of operation and minor expenditure: materials (those having a life-span of less than five years), water quality testing, transport costs of the water committee and maintenance fees to the Jalabandhu. These are all ideal expenditure requirements for the type of technology considering the actual costs of these items and normal life-spans of the components of the pumps. The model calculates how these expenditures will evolve over time, amongst others correcting for inflation and taking into account replacement periods of the different materials. The projected required expenses (in US\$/year) are presented in the Figure 8 below.

As can be seen, current ideally required annual expenditure per pump is around 20 US\$, and this will gradually grow towards 50 US\$ (for the PHE-6) and 60 US\$ (for the India Mark-II). For the latter the increase in expenditure is a bit steeper, particularly as maintenance fees increase more rapidly. PHE-6 can be more easily maintained within the community, whereas the India Mark-II requires the services of a Jalabandhu. It is also noted that water quality testing makes up a big part of the expenses. In reality, the water committees rarely do this.

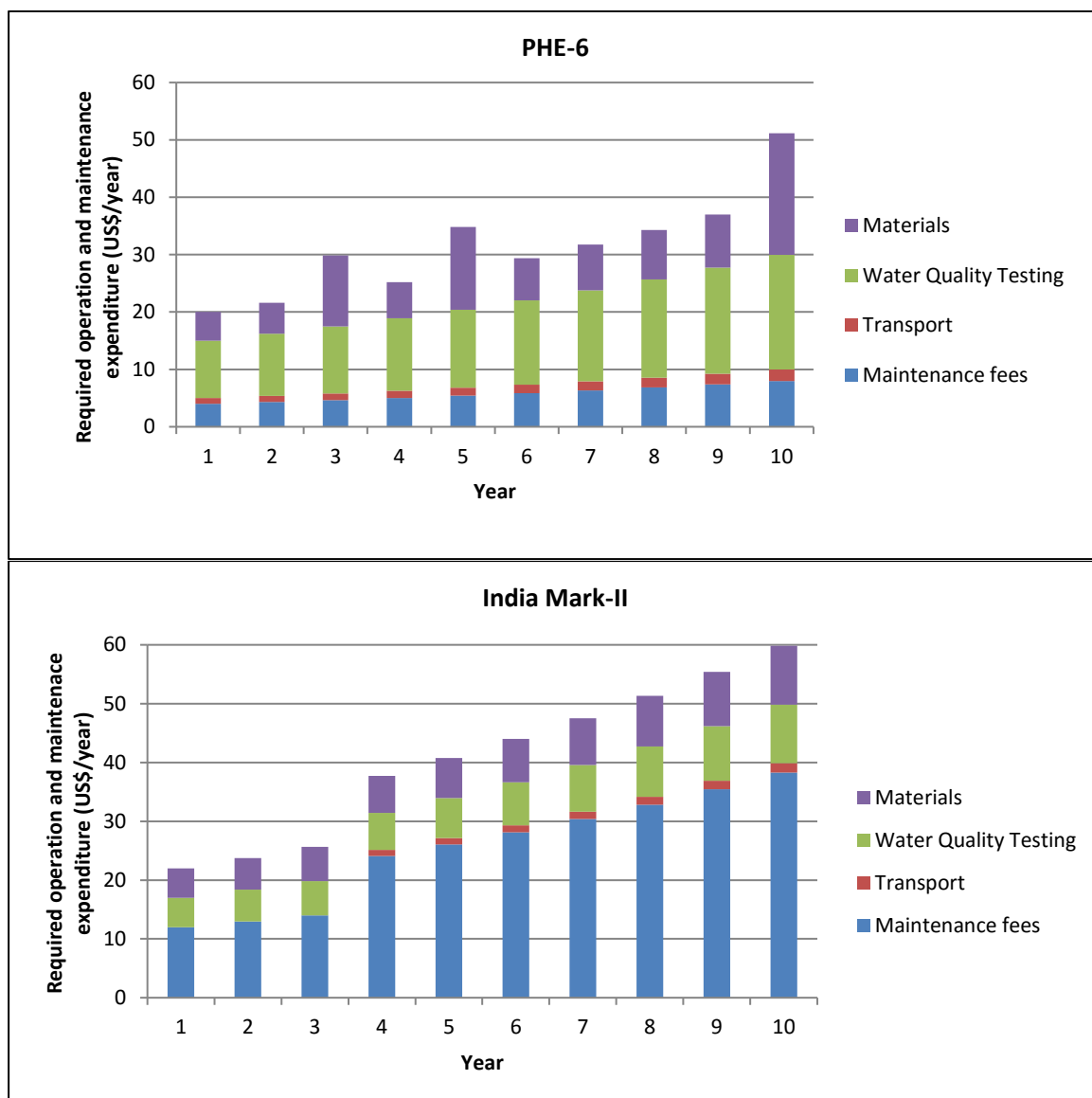


Figure 8: Projected required operation and minor maintenance expenditure for PHE-6 and India Mark-II pumps

This implies that at least some 20 US\$/year (around INR 1,000) need to come from tariffs to cover these operation and minor maintenance needs, irrespective of whether it is an India Mark-II or PHE-6, which is equivalent to some INR 4 /person/year. Current revenue of all three villages in Digambarpur was sufficient, though only just in Dakshin neighbourhood. Further modelling with ‘AtWhatCost’ shows that with a starting tariff of INR 60/household/year, an annual inflation correction is needed to ensure that the tariffs remain sufficient into the future to cover at least operation and maintenance.

Though there are obvious differences between water committees – e.g. some have more or less users than the standard of 50 households - the current tariffs observed seem adequate to cover operation and minor maintenance with some contribution to capital maintenance costs in Digambarpur.

In the control area of *Durganagar Kanchantala*, however, there is an issue. No tariff is levied. So whenever a small repair is needed, a special collection needs to be organised for the few spare parts. This leads to the problem already observed that the response time to break-downs is longer.

6.3 Capital maintenance expenditure

Though capital maintenance expenditure is often seen as a recurrent cost, in practice it is treated as bulky one-off expenses in the Patharpratima area. That is, whenever a major replacement is needed, or even a conversion (i.e. deepening of the tubewell and change from a PHE-6 to Temple Pump), it is treated as if it were a small project. The Gram Panchayat, sometimes the NGOs, and the water committees put money together for the works. This is often also used as an opportunity to establish a water committee where there was none, or re-train it (which are classified as direct support costs – see below).



Photo 9: The Gram Panchayat collects community contributions to conversion works

But this category of costs also includes smaller – or better said – medium-sized expenses, which are too high for a water committee to take on, but are relatively small to the Gram Panchayat and are thus treated as recurrent expenditure. The reconstruction of platforms would fall under this category. Table 12 summarises the various expenditures on capital maintenance made in Digambarpur in fiscal year 2013/2014. The Digambarpur Gram Panchayat keeps detailed accounts of the works that fall under this, including the contributions coming from communities to some of these works (though it doesn't allocate these per line item). The contribution from the block office is an estimate based on the total expenditure on capital maintenance in the entire block. Salary costs of government staff are based on approximations of time spent by the various staff on supporting and overseeing these works.

Table 12: Expenditure on capital maintenance in Digambarpur Gram Panchayat

	Flushing and resinking tubewells (INR)	Repairs of pumps and platforms (INR)	Salaries of government staff (INR)	Total (INR)
Digambarpur Gram Panchayat	189,241	24,000	70,875	294,116
Patharpratima block office	133,333		4,444	137,778
Community	51,950			51,950
Total	408,524		75,319	483,844

It is difficult to convert the total amount of INR 483,844 to unit costs, as there is no detailed record of each maintenance work and the number of people benefitted by it. But dividing the number by the total population of the Gram Panchayat would yield a reference unit cost of some INR 19/person/year.

In order to assess whether this level of expenditure is actually sufficient, the 'AtWhatCost' model was used to assess the ideal capital maintenance requirements, based on the life-spans of different components of the pump and tubewell. AtWhatCost expresses capital maintenance expenditure as a bulky one-off cost in those years where it takes place, but not as an annualised expenditure. However, doing an annualisation (that doesn't take into account inflation), would lead a required capital maintenance expenditure of 0.10 US\$/person/year for PHE-6 pumps and 0.75 US\$/person/year for India Mark-II pumps. So the obtained expenditure for Digambarpur would be adequate for PHE-6 pumps, but insufficient for India Mark-II ones. Also considering that AtWhatCost doesn't contemplate the government costs, it probably means that Digambarpur currently is under-spending on the required capital maintenance needs, but not significantly. As more and more pumps are replaced by India Mark-II pumps, the Gram Panchayat will need to step up its expenditure in this cost category.

This analysis could not be done for Dakshin Gangadharpur as only data was obtained on the cash expenditure on capital maintenance (INR 731,844), but other data on community contributions and from others were missing.

6.4 Direct support costs

The final cost category is the direct support. This mainly consists of the salary costs of the block office the NGO's Water For People and Digambarpur Angikar, where it must be noted that the support of the latter directed mostly to the water committees and the former to the Gram Panchayat itself. The contribution of the Gram Panchayat itself could not be valued, as the persons supporting water committees are the councillors, which is an unpaid function. These councillors carry out overall – though not systematic monitoring of the water supplies. The engineer who works for the Gram Panchayat mainly focuses on capital works and capital maintenance, and his time has been included in the valuations made above. The Gram Panchayats administrative staff, also paid functions, do not provide direct support to the water committees. The monetary value of the direct support from different sources over the last fiscal year is presented below in Table 13.

Table 13: Expenditure on direct support in Digambarpur Gram Panchayat

Funding source	Amount spent on direct support (INR/year)
Patharpratima block office	12,800
Water For People	577,278
Digambarpur Angikar	111,356
Total	701,434
Total per person (INR/person/year)	28

The table shows that by far the most expenditure on direct support is the contribution from Water For People. This includes for example, the work done on monitoring service delivery using FLOW, but also the support to the Gram Panchayat in drafting resolutions around water committees, applied research, (re)training of Jalabandhus and the support to Digambarpur Angikar itself.

This total amount can be converted to a unit cost, by dividing it through the entire population of the Gram Panchayat, yielding some INR 28/person/year (0.45 US\$/person/year). This amount is below international reference data on direct support, but above what was found in Andhra Pradesh (Smits et al. 2011).

No detailed calculation has been made for the comparison Gram Panchayat of Dakshin Gangadharpur, but in that case, probably only the small amount spent by the block office would be available as the NGOs only have had minimal presence there last year.

6.5 Summary of overall costs and sources of funding

Having seen the various costs in detail, the Table 14 below provides a summary of these, as well as the sources of funding. It reiterates that of the capital investment costs, around 10% are for software, and the remainder for hardware. These costs are largely carried by the NGOs and government. Of the annualised expenditure, minor operation and maintenance is actually the smallest part, less than 10%. Both the capital maintenance and the ongoing direct support form important parts of these costs. Capital maintenance costs come mainly from the government, whereas the direct support in software mainly comes from the NGOs.

Table 14: Summary Cost Table (INR)

West Bengal Summary Cost Table - calculated as the average cost per person, that is averaging across the three 'successful' villages

Source of funds	Use of funds - implementation			Use of funds - annual recurrent					RECURRENT EXPENDITURE TOTAL
	CapEx hardware	CapEx software	CAPEX TOTAL	OpEx labour & materials	OpEx power	OpEx bulk water	OpEx enabling support	CapManEx	
Community/consumers	INR 17	-	INR 17	INR 7	-	-	-	INR 2	INR 9
Local self-government	INR 297	INR 33	INR 330	-	-	-	INR 1	INR 17	INR 18
State government entity	-	-	-	-	-	-	-	-	-
State water supply agency	-	-	-	-	-	-	-	-	-
National Government	-	-	-	-	-	-	-	-	-
NGO national & international	INR 291	INR 31	INR 322	-	-	-	INR 28	-	INR 28
International donor	-	-	-	-	-	-	-	-	-
TOTALS	INR 605	INR 64	INR 669	INR 7	-	-	INR 28	INR 19	INR 55
Median of 20 case studies			INR 3,231						INR 207
'Plus' %age	97%	100%	97%	0%	-	-	100%	89%	83%
Median of 20 case studies			95%						57%

Notes: Data is for the village Digambarpur only, as no data could be obtained for the other best practice villages

Table 16 Summary Cost Table (PPP USD\$)

West Bengal Summary Cost Table - calculated as the average cost per person, that is averaging across the three 'successful' villages

Source of funds	Use of funds - implementation			Use of funds - annual recurrent					RECURRENT EXPENDITURE TOTAL
	CapEx hardware	CapEx software	CAPEX TOTAL	OpEx labour & materials	OpEx power	OpEx bulk water	OpEx enabling support	CapManEx	
Community/consumers	\$ 0.97	-	\$ 0.97	\$ 0.41	-	-	-	\$ 0.12	\$ 0.53
Local self-government	\$ 16.93	\$ 1.87	\$ 18.80	-	-	-	\$ 0.03	\$ 0.98	\$ 1.01
State government entity	-	-	-	-	-	-	-	-	-
State water supply agency	-	-	-	-	-	-	-	-	-
National Government	-	-	-	-	-	-	-	-	-
NGO national & international	\$ 16.60	\$ 1.76	\$ 18.35	-	-	-	\$ 1.57	-	\$ 1.57
International donor	-	-	-	-	-	-	-	-	-
TOTALS	\$ 34.50	\$ 3.62	\$ 38.12	\$ 0.41	-	-	\$ 1.60	\$ 1.10	\$ 3.11
Median of 20 case studies			\$ 184.16						\$ 11.78
'Plus' %age	97%	100%	97%	0%	-	-	100%	89%	83%
Median of 20 case studies			95%						57%

Notes: Data is for the village Digambarpur only, as no data could be obtained for the other best practice villages

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>).

Conclusions

Since 2006 Water For People has followed a programmatic approach to comprehensively address water (and sanitation) needs in Patharpratima block (and the neighbouring Sagar Block) of West Bengal. Central to that approach was the concept of concentrating efforts in a limited number of Gram Panchayats so as to reach everyone in such an area with water supply through handpumps, before moving to a next one. In addition, efforts went into addressing the observed need of improving sustainability of service delivery. This was done by putting in place maintenance arrangements at different institutional levels: water committees for day to day operation and minor maintenance, Jalabandhus providing repair services to water committees and on assignment to Gram Panchayats, grassroots NGOs to support the water committees and working closely with local government to develop appropriate by-laws and other local resolutions.

This study set out to assess this support arrangement in more detail, in terms of the type and extent of support that is provided to these community-managed handpumps, the effects this has on service delivery and the resource implications of it. The study took place in what is claimed to be the most successful Gram Panchayat in the area, Digambarpur; findings are contrasted to the neighbouring Gram Panchayat of Dakshin Gangadharpur, where the support structure was not set-up.

The study found that through the work of Water For People a complex of four organisations has evolved that are supporting community-managed rural water supply. Gram Panchayats provide the first line of support to water committees, and in turn are supported by the block authorities. The grassroots NGOs, in this case Digambarpur Angikar provides software support and help programme implementation and is in turn supported by Water For People. The service provider functions are shared between Gram Panchayat (funding and coordinating major maintenance), water committees (operation and administration) and the Jalabandhus (repairs). This contrasts sharply to the control area, where the service provider function is almost exclusively fulfilled by the Gram Panchayat – though in fact barely fulfilled.

There is a marked difference in the performance of the government and the NGO “branch” of the support arrangement. The Gram Panchayat (and block) present strong local leadership and willingness and to support community management, but they lacking professional skills, tools and resources to do so. They also have a low level of institutional performance with limited financial autonomy and technical and organisational capacity. The NGO branch has medium to high performance indicators, and where there are lower scores, these are explained by the relative new relationship between Water For People and Digambarpur Angikar. Still, also in the NGO branch the application of tools and methods for some support areas (e.g. guidelines for community management; indicators for service provider performance) and ways to track the service providers it has supported are lacking. But all in all, the two branches complement each other well, and cover most of the support areas, including both the hardware and software parts.

The research also sought to validate the performance of the service providers. It found that the water committees indeed constituted a form of community management, with the committees fulfilling administrative and organisational roles around water management on behalf of the community, and with functional to interactive types of community participation. However, the level of professionalization of the water committees is very basic. This is reflected for example in the semi-formal governance set-up of the water committees as self-help groups, but not as service providers, the absence of statutes or clear election procedures. Also administration is done in a basic manner. Only the technical maintenance is professionalised through the outsourcing of this task to the Jalabandhus.

All in all, this means that the set-up can be classified as a form of “community management with direct support”, in the Figure 9 below. The community does most of the maintenance but receives significant support. Digambarpur now has the potential – and the need – to further professionalise as indicated by the arrow.

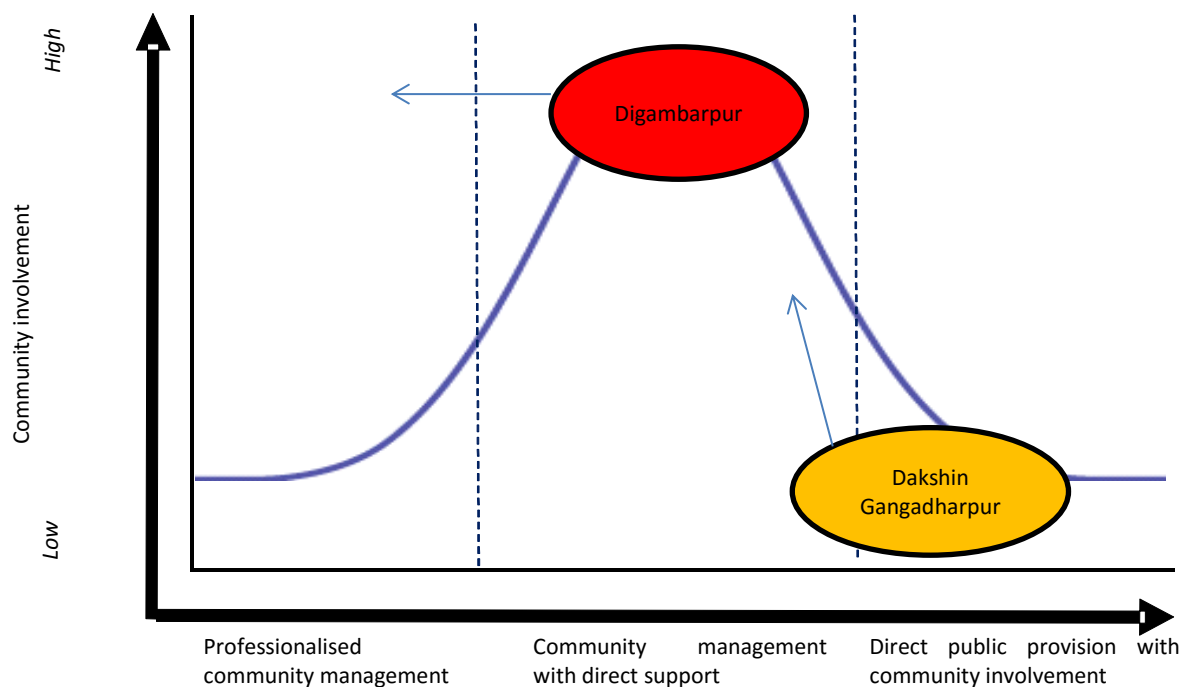


Figure 9: Locating the two Gram Panchayats in the continuum of community management

The control Gram Panchayat of Dakshin Gangadharpur on the other hand is located in this continuum under “direct public provision with community involvement”. This Gram Panchayat is expressing interest to move towards a stronger form of community management, similar to Digambarpur.

This would be needed because the validation also confirmed that the service level in Dakshin Gangadharpur is below the one in Digambarpur, particularly in terms of accessibility and reliability. Through the direct public provision model, break-downs cannot be quickly addressed and pumps are out of function for a longer time, meaning people also need to walk longer to fetch water. Even though the situation in Digambarpur is better, the overall level of service appears very basic. This is largely due to the fact that the quantities obtained from the handpumps are very low. People use them only for drinking and cooking; other users like washing and laundry are done in the numerous open ponds.

The costs of this service delivery model are shared between the various organisations involved. Capital costs are largely carried by the government and NGOs, with communities providing only a small contribution. The level of software support during capital investment – considered crucial to the success of this model is some 10% of total capital costs.

Communities can cover the full operation and minor maintenance costs. Through a combination of the analysis of current tariffs and modelling of the needs, it seems current tariffs, though low, can cover these costs.

However, for capital maintenance, tariffs are clearly insufficient. And in fact, the bulk (about 90%) of capital maintenance costs is carried by the government. Communities only contribute 10%. The total capital maintenance costs. The current expenditure – combined by communities and government – is about INR 19/person/year, which is probably on the low side, when compared to modelled requirements, though not significantly lower.

The expenditure on direct support is mainly made by the NGO branch of the support model, and currently stands at an equivalent of INR 46/person/year.

Based on these findings, it is concluded that a clear support model has evolved to support community-managed handpumps in Patharpratima, both in terms of the (technical) capital maintenance of these handpumps, as well as in the software of community management. Through that support, water committees can function and carry out basic organisational and financial management and outsource technical maintenance to Jalabandhus. As a result, everyone in Digambarpur has now access to functional handpumps – even though these provide only a basic level of service for drinking and cooking mainly – and reliability and accessibility are higher than in areas where this form of supported community management is absent. This has been achieved by dedicating an estimated 10% of capital investments to software activities, including the setting up and training of water committees. It now costs about INR 46/person/year to provide ongoing support, both for capital maintenance and for direct support – recognising that the operation and minor maintenance requirements can be and are covered by communities, at a level of INR 9/person/year in this study.

In spite of these relative successes, it is considered that there is now room for further professionalization. This applies in first instance to the water committees. This would include having standard statutes for these committees and clear election procedures. But it may also include trying out slightly different organisational set-ups, such as for example having one water committee taking care of several pumps, rather than one committee per pump, so as to achieve more economies of scale. Professionalization can also be considered for the support entities themselves. They could standardize much of their work in products and tools, such as guidelines and manual for water committees, or monitoring of the satisfaction of the water committees with the support provided.

References

- Adnan, S., Barren, A., Nurul Alam, S. M., & Brustinow, A. (1992). *People's participation: NGOs and the flood action plan*. Dhaka, Bangladesh: Research and Advisory Services
- Burr, P. and C. Fonseca. 2013. *Applying a life-cycle costs approach to water; Costs and service levels in rural and small town areas in Andhra Pradesh (India), Burkina Faso, Ghana and Mozambique*. WASHCost working paper 8. The Hague, the Netherlands: IRC International Water and Sanitation Centre
- Demirjian, A. 2002. *Partnering in Support of International Development Initiatives: The INTOSAI Case Study*. Consulting and Audit Canada
- Fonseca, C., Franceys, R., Batchelor, C., McIntyre, P., Klutse, A., Komives, K., Moriarty, P., Naafs, A., Nyarko, K., Pezon, C., Potter, A., Reddy, R. and Snehathatha, M., 2011. *Life Cycle Costs Approach; Costing sustainable services*. Briefing Note 1a (second edition). The Hague, the Netherlands: IRC International Water and Sanitation Centre
- Franceys, R. and Gerlach, E. 2008. *Regulating water and sanitation for the poor: Economic regulation for public and private partnerships*. London, UK: Earthscan.
- Government of West Bengal, 2011. *State Water Policy*. Kolkata: Government of West Bengal.
- Harvey, P.A. and Reed R.A., 2006. Community-managed water supplies in Africa: sustainable or dispensable? *Community Development Journal*, 42 (3), pp. 365-378.
- Lockwood, H. and S. Smits. 2011. *Supporting Rural Water Supply: Moving towards a Service Delivery Approach*. Rugby, UK: Practical Action Publishing
- MDWS-Ministry of Drinking Water and Sanitation, 2013. *National Rural Drinking Water Programme*. [online database] Available at: <<http://indiawater.gov.in/IMISReports/NRDWPMMain.aspx>> [Accessed 9 July 2013].
- Moriarty, P. Smits, S., Butterworth J. and R. Franceys. 2013. Trends in rural water supply: towards a service delivery approach. *Water Alternatives* 6(3): 329-349
- Poole, B., Friesen, J., Hashemi, M., and D. Strand. 2012. *Jalabandhu Impact Evaluation Report*. World Water Corps: USA
- Pretty, J. N. (1994). Alternative systems of inquiry for sustainable agriculture. *IDS Bulletin*, 25(2), 37-48. University of Sussex: IDS.
- Schouten T. and Moriarty P., 2003. *Community Water, Community Management; From System to Service in Rural Areas*. London, UK: ITDG Publishing
- Smits, S., Verhoeven, J., Moriarty, P., Fonseca, C. and H. Lockwood. 2011. *Arrangements and cost of providing support to rural water service providers*. WASHCost working paper 6. IRC International Water and Sanitation Centre
- Smits, S. and K. Baby. 2013. *Islands of success; Towards water, sanitation and hygiene services for Everyone, Forever in Patharpratima and Sagar blocks, West Bengal, India*. Triple-S Working Paper 5. The Hague, the Netherlands: IRC International Water and Sanitation Centre, and Kolkata, India: Water For People
- Smits, S. Mekala, S. Franceys, R. & Hutchings, P. (2015). *Community Water Plus Concepts and Research Methods*. Community Water Plus Working Paper 1.
- Stern, P., Townsend, D., and Stephens, R., 2007. *Telecommunications Universal Access Programs in Latin America*. Latin American Forum of Telecommunications Regulators (Regulatel): Bogotá, Colombia

COMMUNITY MANAGEMENT OF RURAL WATER SUPPLY

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Appendix 1: Activity and responsibility matrix

Entities	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	INV																		
PHED	RES			RES		RES			RES	RES									
Gram Panchayat	INT	RES	RES	INT	INT	INT + PAY	INT	INT	RES + PAY	RES + PAY			INT	INT + PAY	INV				
Block office	INV		INV	RES + PAY				INV	RES + PAY	RES + PAY									
NGOs (DA and Water For People)		INV	RES + PAY	RES + PAY	RES + PAY	INT	RES + PAY		INV + PAY		INV		RES + PAY	RES + PAY	INV		RES + PAY		
Water committee				INV	INV	RES + PAY	INV		INV + PAY	INV + PAY	RES	RES	RES	INV	RES				
Jalabandhu				INV					RES	RES									
Households						INV			INV	RES + PAY	RES			INV	INV	RES		INV	

Legend: RES = responsible; INV = involved; INT = interested; PAY = paying.

Appendix 2: Performance score of enabling support entities (ESE)

Indicator	Digambarpur Angikar	Digambarpur Gram Panchayat	Patharpratima block	Water For People
1. Degree of professionalization				
1.1 Existence of a formal mandate for support to service providers (QIS score)	25 -The ESE has an implicit understanding of its objectives, but lacks a formal policy mandate	100 - The ESE has a clearly articulated vision, mission and/or objectives for its support function, which is also supported by a policy mandate	100 -The ESE has a clearly articulated vision, mission and/or objectives for its support function, which is also supported by a policy mandate	75 - The ESE has a clearly articulated vision, mission and/or objectives for its support function, but this is not supported by a policy mandate
1.2 Number of standard tools and instruments for support applied in a structured manner (QIS score)	25 - The ESE has tools and methods but not for all the areas of support it provides, and doesn't apply those systematically	25 - The ESE has tools and methods but not for all the areas of support it provides, and doesn't apply those systematically	No data	100 - The ESE has tools and methods for all of the areas of support it provides and applies those in a systematic manner
1.3 Existence and use of structured mechanisms for tracking information on performance of the service providers (QIS score)	25- The ESE only keeps track of the service providers it supports in an informal and ad hoc manner	25 - The ESE only keeps track of the service providers it supports in an informal and ad hoc manner	25 -The ESE only keeps track of the service providers it supports in an informal and ad hoc manner	100 - The ESE has one or more tools to track the performance of the service providers it supports to monitor its own impact
1.4 Existence of structured mechanisms for communication with the service providers (QIS score)	50 - The ESE has one communication channel that is easily accessible to the service providers it supports	50 - The ESE has one communication channel that is easily accessible to the service providers it supports	50 - The ESE has one communication channel that is easily accessible to the service providers it supports	50 - The ESE has one communication channel that is easily accessible to the service providers it supports
2. Performance of the ESE				
2.1 Number of types of support provided	6	6	1	6
2.2 Average time between a request for support and the support being provided	No data	No data	No data	No data
2.3 Percentage of all service providers in area that received support last year	26%	29%	No data	No data
2.4 Number of systems attended in the last year per staff member	5	50	No data	No data
3. Client satisfaction				
3.1 Service providers indicating satisfaction with the support received (QIS score)	25 - The ESE has an implicit understanding of how satisfied its clients are with the support	25 - The ESE has an implicit understanding of how satisfied its clients are with the support	25 - The ESE has an implicit understanding of how satisfied its clients are with the support	0 - The ESE doesn't keep track of the satisfaction of the service providers it supports

Appendix 3: Socio-economic profile of households

Social characteristics of the households surveyed

Name of village	Average household size	Religion				Education			
		Hindu - GC	Hindu- OBC	Hindu -SC	Muslim	Illiterate	1 st – 10 th class	Intermediate	Degree
Pancham (No 5) Gheri (n=30)	4.6	18	11	1		4	21	3	2
Dakshin para (n=30)	5.9	7	4		19	15	12	1	2
Majher para (n=30)	6.0	11		18		1	24	4	1
Durganagar Kanchantala (n=30)	6.1	8	1	21		12	16	1	1
Total (n=120)	5.6	63	16	40	19	32	73	9	6

Economic characteristics of the households surveyed

Name of village	Landowner	Type of ration card			Main employment						Average total annual income
		AAY	APL	BPL	Farmer	Agricultural labourer	Construction	Other off-farm employment	Self-employed	No data	
Pancham (No 5) Gheri (n=30)	27		18	12	7	11	3	7	2		INR 59,027
Dakshin para (n=30)	22	3	15	12	12	9	4	3	1	1	INR 37,483
Majher para (n=30)	16		22	8	17	7	5	1			INR 35,767
Durganagar Kanchantala (n=30)	25		16	14	20	5	3	1		1	INR 37,552
Total (n=120)	90	3	71	46	56	32	15	10	3	2	INR 42,541

Appendix 4: Community service provider descriptors and performance indicators

Community service provider descriptors

Descriptor	Pancham (No 5) Gehri	Dakshin para	Majher para	Durganagar Kanchantala
1. Type of organisation	Semi-formal water committee	Semi-formal water committee	Semi-formal water committee	Inactive water committee
2. Members of governing body	9	9	9	2
3.1 Coverage	100%	97%	100%	Unknown
3.2 Coverage with household connections	0%	0%	0%	0%
3.3 Coverage among SC/ST households	No data	No data	No data	No data
4.1 Tariff structure (Rs/household/year)	20	60	60	None levied
4.2 Contribution to capital costs (Rs/household)	40	25	130	5

Community service provider (CSP) performance indicators

Indicator	Pancham (No 5) Gehri	Dakshin para	Majher para	Durganagar Kanchantala
<i>Governance</i>				
1.1 Percentage of legal requirements for establishment of service provider complied with	100%	100%	100%	100%
1.2 Presence of statutes	No	No	No	no
1.3 Selection of the Board of the service provider (QIS score)	25 - There is no formal document describing how elections should take place, but users and CSP have a general understanding of how it would work. This informal procedure was followed during the last elections with minor deviations.	0 - No elections whatsoever are taking place for the governing body of the CSP	0 - No elections whatsoever are taking place for the governing body of the CSP	0 - No elections whatsoever are taking place for the governing body of the CSP
1.4 Information sharing and accountability mechanisms (QIS score)	50 - The CSP has at least one mechanism through which users are informed and accountability is provided. This is used regularly.	50 - The CSP has at least one mechanism through which users are informed and accountability is provided. This is used regularly.	25-The CSP has at least one mechanism through which users are informed and accountability is provided. But this is not used regularly.	0 - The CSP has no mechanisms through which users are informed about the service, nor is there a way for users to participate.
1.5 Percentage of women in the governing body of the CSP	44%	100%	100%	100%
1.6 Percentage of members of the governing body of the CSP who have received formal training for their function	100%	100%	100%	0%

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<i>Finance</i>				
2.1 Financial balance of last year's revenue and expenditure	INR 597	INR 1,100	INR 1,800	INR 0
2.2 Cash reserves (QIS score)	50 - The CSP actively has a cash reserve, either in the form of a petty tax box or bank account, which it regularly replenishes	25 - The CSP actively has a cash reserve, either in the form of a petty tax box or bank account, which it replenishes on an irregular basis	50- The CSP actively has a cash reserve, either in the form of a petty tax box or bank account, which it regularly replenishes	25 - The CSP actively has a cash reserve, either in the form of a petty tax box or bank account, which it replenishes on an irregular basis
2.3 Book keeping (QIS score)	50 -The CSP regularly tracks its income and expenditure sheet and produces an annual account.	50 - The CSP regularly tracks its income and expenditure sheet and produces an annual account.	50 - The CSP regularly tracks its income and expenditure sheet and produces an annual account.	25 - The CSP registers its income and expenditure in a haphazard and irregular way.
2.4 Non-payment rate: percentage of users who own more than three months of water fees	0%	0%	0%	100%
<i>Technical performance</i>				
3.1 Technical folder (QIS score)	25 -The CSP has no map, design or operational manual and guideline of the system but can access those from relevant government bodies, when it needs to	25 - The CSP has no map, design or operational manual and guideline of the system but can access those from relevant government bodies, when it needs to	25 - The CSP has no map, design or operational manual and guideline of the system but can access those from relevant government bodies, when it needs to	0 - The CSP has no map, design or operational manual and guideline of the system nor is it able to access those from relevant government bodies
3.2 Registry of operational information (QIS score)	100 - The CSP has more than two of the five types of records and all are up to date	25 - The CSP has only one of the five types of records	25 -The CSP has only one of the five types of records	25- The CSP has only one of the five types of records
3.3 Response time (hours to get a repair done)	2	N/a	N/a	2160
3.4 Water metering	N/A	N/a	N/a	n/a
3.5 Waters security measures (QIS score)	0- No water security measures are taken, neither is any plan in place	0 - No water security measures are taken, neither is any plan in place	0 -No water security measures are taken, neither is any plan in place	50 - At least one water security measure is being taken, though not as part of a comprehensive water security plan
3.6 Water quality management (QIS score)	0 - There is no water quality management plan in place.	0 -There is no water quality management plan in place.	0 - There is no water quality management plan in place.	0 -There is no water quality management plan in place.

Appendix 5: Participation score

Stage of delivery cycle	Pancham (No 5) Gehri	Dakshin para	Majher para	<i>Durganagar Kanchantala</i>
Capital Investment (implementation)	No data, as this took place 18 years ago	No data, as this took place 18 years ago	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 this took place 18 years ago
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 changes
Asset Renewal	2. Interaction participation: The community in partnership with the service provider and/or support entities engage in joint-decision making regarding appropriate arrangements for administration, management and operation and maintenance	2. Interaction participation: The community in partnership with the service provider and/or support entities engage in joint-decision making regarding appropriate arrangements for administration, management and operation and maintenance	2. Interaction participation: The community in partnership with the service provider and/or support entities engage in joint-decision making regarding appropriate arrangements for administration, management and operation and maintenance	2. Interaction participation: The community in partnership with the service provider and/or support entities engage in joint-decision making regarding appropriate arrangements for administration, management and operation and maintenance
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

Appendix 6: Service levels

Number of households with different levels of service from handpumps in Pancham (No 5) Gheri (n= 30)

Service level	Quantity		Accessibility		Water quality perception		Reliability	
	Summer	Non-summer	Summer	Non-summer	Summer	Non-summer	Summer	Non-summer
High	0	0	12	17	23	22	7	7
Improved	0	0	7	8			9	9
Basic	0	0	5	3	5	6	0	0
Sub-standard	3	1	6	2	2	2	12	12
No service	27	29	0	0			0	0
No data	0	0	0	0	0	0	2	2

Number of households with different levels of service from handpumps in Dakshin para (n=28)

Service level	Quantity		Accessibility		Water quality perception		Reliability	
	Summer	Non-summer	Summer	Non-summer	Summer	Non-summer	Summer	Non-summer
High	0	0	6	7	24	25	3	3
Improved	0	0	6	8			14	14
Basic	0	0	3	8	4	3	0	0
Sub-standard	0	0	10	3	0	0	10	10
No service	28	28	3	2			0	0
No data	0	0	0	0	0	0	1	1

Number of households with different levels of service from handpumps in Majher para (n=30)

Service level	Quantity		Accessibility		Water quality perception		Reliability	
	Summer	Non-summer	Summer	Non-summer	Summer	Non-summer	Summer	Non-summer
High	0	0	3	7	28	29	8	8
Improved	0	0	5	8			10	10
Basic	0	0	5	6	1	1	0	0
Sub-standard	2	0	13	8	1	0	6	6
No service	28	30	4	1			5	5
No data	0	0	0	0	0	0	1	1

Number of households with different levels of service from handpumps in Durganagar Kanchantala (n=30)

Service level	Quantity		Accessibility		Water quality perception		Reliability	
	Summer	Non-summer	Summer	Non-summer	Summer	Non-summer	Summer	Non-summer
High	0	0	1	5	19	19	6	6
Improved	0	0	8	6			1	1
Basic	0	0	5	8	8	9	0	0
Sub-standard	2	2	12	10	3	2	16	16
No service	28	28	4	1			6	6
No data	0	0	0	0	0	0	1	1

Number of households with different levels of service from the piped supply, as main or alternative source in Pancham (No 5) Gheri and Dakshin para (n=17)

Service level	Quantity		Accessibility		Water quality perception		Continuity		Reliability	
	Summer	Non-summer	Summer	Non-summer	Summer	Non-summer	Summer	Non-summer	Summer	Non-summer
High	0	0	10	11	0	0	0	0	5	5
Improved	0	0	1	4			0	0	0	0
Basic	1	1	4	1	17	17	15	15	0	0
Sub-standard	0	0	0	0	0	0	0	0	0	0
No service	15	15	1	0					6	6
No data	1	1	1	1	0	0	2	2	6	6

Appendix 7: User satisfaction

User satisfaction with handpump supplies

	Not satisfied		Somewhat satisfied		Very satisfied	
	Summer	Non-summer	Summer	Non-summer	Summer	Non-summer
Pancham (No 5) Gheri (n=30)	2	2	14	17	14	11
Dakshin para (n=28)	1	1	12	12	15	15
Majher para (n=30)	3		9	9	18	21
<i>Durganagar</i> <i>Kanchantala</i> (n=30)	2	2	25	23	3	5
Grand Total (n=118)	8	5	60	61	50	52

User satisfaction with ponds

	Not satisfied		Somewhat satisfied		Very satisfied	
	Summer	Non-summer	Summer	Non-summer	Summer	Non-summer
Pancham (No 5) Gheri (n=29)	6	2	22	21	1	6
Dakshin para (n=24)			21	16	3	8
Majher para (n=30)			25	3	5	27
<i>Durganagar</i> <i>Kanchantala</i> (n=30)	4	3	25	22	1	5
Grand Total (n=113)	10	5	93	62	10	46

User satisfaction with piped supplies

	Not satisfied (summer and non-summer)	Somewhat satisfied (summer and non-summer)	Very satisfied (summer and non-summer)
Pancham (No 5) Gheri (n=1)			1
Dakshin para (n=15)	3	11	1
Grand Total (n=16)	3	11	2