

COMMUNITY MANAGEMENT OF RURAL WATER SUPPLY

Community Water ^{plus}



Centre of Excellence for Change, Chennai

Understanding the resource implications of the 'plus' in community management of rural water supply systems in India: Safe Water Supply, Dhar District, Madhya Pradesh



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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 2004 Vasudha Vikas Sansthan has been addressing drinking water needs in Dhar and adjoining districts of Madhya Pradesh. As part of this programme it has concentrated on achieving safe water supply coverage in a limited number of 'challenging' villages where groundwater sources have dangerous levels of fluoride. Through this approach the NGO has provided direct support to 20 villages and supplementary software support to another 35 villages. This support has concentrated on overcoming the fluoride issue by reviving traditional open dug wells – that, generally, have lower levels of fluoride than the deeper groundwater sources – and linking these wells to piped distribution systems. The NGO has worked through a community management model involving community-based drinking water sub-committees (DWSCs) in the villages that carry out day to day operation and minor maintenance activities of the system.

More broadly across the state, since 1960s, the Public Health Engineering Department (PHED) is responsible for drinking water supply in rural areas. Ninety-five per cent of the state is covered with PHED managed hand pumps and there are plans to develop a public bulk water supply system for fluoride affected areas in the future. As such, the villages in this case study have good PHED managed hand pump coverage and in some cases PHED supported piped water supply through single-village-schemes from tube wells. However, in several villages afflicted by fluoride, Vasudha Vikas Sansthan provided complimentary support along with PHED to tackle fluoride issue in a select number of villages. The PHED still provides support in these villages as well, in terms of maintaining handpumps that provide potable water (and the communities use the non-potable handpumps for other domestic purposes). The PHED has also recently started its own Social Mobilization Teams to strengthen the DWSCs for community management that is in operation in some villages. This case study is about the partnership and complimentary work of the NGO and government.

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

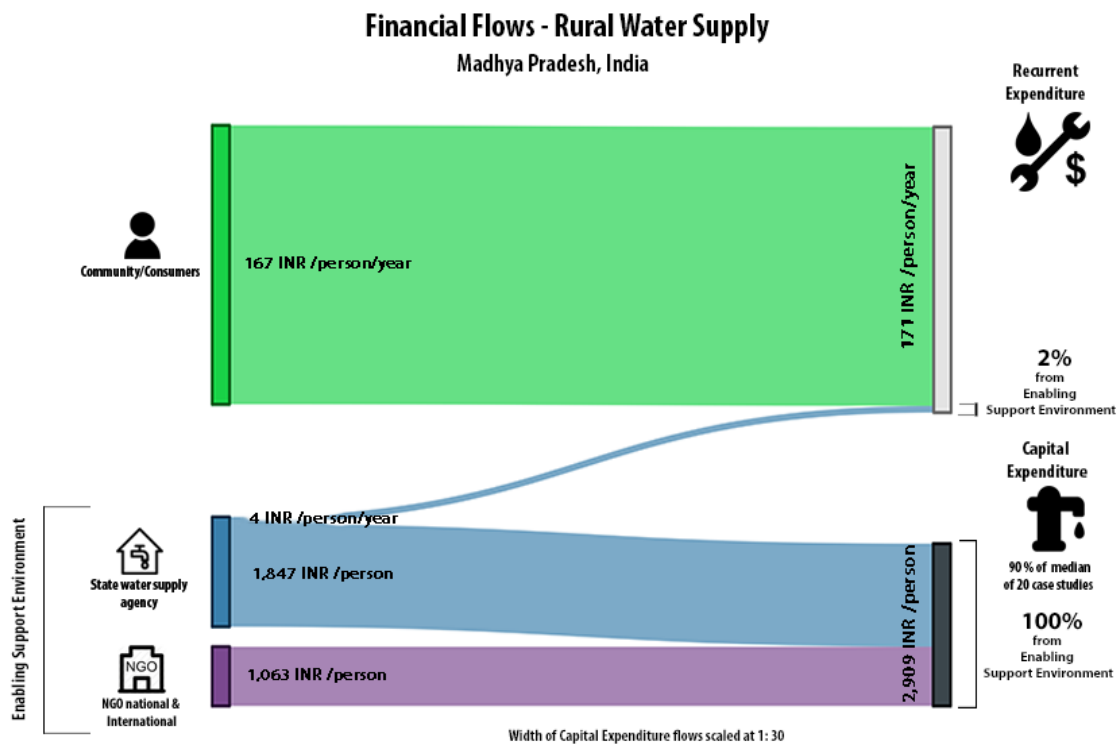
Source of funds	Use of funds - implementation			Use of funds - annual recurrent					RECURRENT EXPENDITURE TOTAL
	CapEx hardware	CapEx software	CAPEX TOTAL	OpEx labour & materials	OpEx power	OpEx bulk water	OpEx enabling support	CapManEx	
Community/consumers	-	-	-	INR 51	INR 13	-	-	INR 103	INR 167
Local self-government	-	-	-	-	-	-	-	-	-
State government entity	-	-	-	-	-	-	-	-	-
State water supply agency	INR 1,842	INR 4	INR 1,847	-	-	-	INR 4	-	INR 4
National Government	-	-	-	-	-	-	-	-	-
NGO national & international	INR 1,039	INR 24	INR 1,063	-	-	-	-	-	-
International donor	-	-	-	-	-	-	-	-	-
TOTALS	INR 2,881	INR 28	INR 2,909	INR 51	INR 13	-	INR 4	INR 103	INR 171
Median of 20 case studies			INR 3,231						INR 207
'Plus' %age	100%	100%	100%	0%	0%	-	100%	0%	2%
Median of 20 case studies			95%						57%

Notes: No CapManEx because schemes are new; State water supply agency committed to pay for CapManEx

The present report examines this support arrangement in more detail, in terms of the type and extent of support provided to villages as well as the costs involved. The institutional set-up is classified as a form of "community management with direct support" provided by both the NGO and PHED. However, the level of professionalisation of the community management is basic with the DWSCs only able to take on minor operation, maintenance and administrative activities. This is reflected in the service levels that they provide which are limited when compared to the comprehensive government norms. However they do provide a supply free from dangerous levels of

fluoride and in this way represents a crucial step in the service level ladder. The report ends by offering recommendations to improve the professionalization of the model that centre on the need for further standardisation of processes and procedures, especially regarding DWSC administrative functions.

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



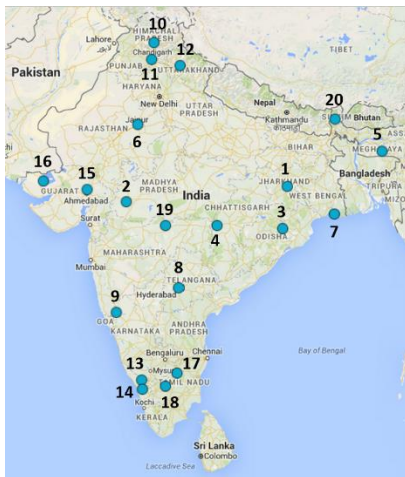
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The overall research project has investigated twenty reportedly successful community-managed rural water supply programmes and approaches across India, from which we have subsequently developed understanding on the support needed to make community-management 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.



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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

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1 Introduction

The present report is a part of the Community Water ^{plus} series of case studies on community-managed rural water supply in India. It documents the community-managed Piped Water Supply (PWS) schemes in Dhar district of Madhya Pradesh, and organisations that support the water committees, including the social development wing of PHED and NGOs. The report describes the support arrangements 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

Water, sanitation and hygiene services are central to addressing poverty, livelihoods and health. In order to meet the Millennium Development Goals (MDGs), Government of India (GoI) developed a national policy framework for rural drinking water supply, the 'National Rural Drinking Water Policy'. Last updated in 2013, the main goal of the policy is to provide every rural person with adequate water for drinking, cooking and other domestic needs on a sustainable basis. However, one of the main barriers in achieving this aim is the sustainability of systems; i.e. the operation and maintenance of infrastructure. In general, too many rural water supply systems function at sub-optimal level or non-functional due to poor maintenance, resulting in reduced coverage. To overcome this problem, the policy guidelines in Madhya Pradesh promote an 'apolitical' governance system through which Drinking Water Sub Committees (DWSCs) formed at the habitation level take on the management of water supply with support from PHED, Janpad Panchayaths, GPs, NGOs, and others.

Community management has long been recognised to be critical for rural water supply services. In fact, 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/or non-government organisations 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 by outsourcing of certain tasks to specialised individuals or enterprises.

In spite of several success stories in community management, mechanisms for support and professionalization are still to be institutionalised in policies, strategies and scaling-up to cover larger areas. Otherwise success stories remain as islands of success and achievement in certain controlled conditions. Such necessary support comes at a price, and at times it could be significant – 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

The present research examines 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 selected under 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 the outcome as stated above, 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?

The present report provides results from the case study of community-managed Piped Water Supply Schemes (PWSSs) in Dhar district supported by PHED Social Team in one village and NGOs in two villages. The Drinking Water Sub Committees (DWSCs) have been trained to manage these systems locally by themselves with concerted support. Vasudha Vikas Sansthan, a local NGO working in eight districts of Madhya Pradesh, technically supported by People Science Institute, Dehradun and sponsored by WaterAid, have helped setting-up this management and support structure and continued support to the water committees to manage the water supply delivery in two of the three villages studied. PHED, Madhya Pradesh now has an exclusive Social Development Team at district level and a block coordinator at each of the blocks and achieved considerable success in motivating and empowering the local DWSCs - one such village is another success story.

1.2.1 Conceptual framework

Community Water plus (community management of rural water supply systems) therefore is a research project that aims to gain insights into the type and level of support and professionalisation that is needed, and the resource implications of this 'plus' (in terms of money, staffing, and other factors), in order to achieve sustainable community management. To achieve this, the research investigates twenty case studies of 'successful' (as initially reported) community-managed rural water schemes across India where the range of States, and their varying socio-economic as well as hydrological conditions, gives a good sample of technologies and approaches which are of relevance to many lower-income countries. Ultimately, the hypothesis underpinning the research is that some level of external support is needed to deliver on-going high quality water services through a community management model. Key to this support is what this research labels the 'enabling support environment' (ESE) that fulfils both 'service authority and monitoring' functions, such as planning, coordination, regulation, monitoring and oversight, and 'direct support' functions, such as technical assistance and financial contributions (Lockwood and Smits, 2011).

The research focuses on the level of water service people receive so as to validate the degree of success found under the different programmes. The way in which the community are involved in delivering this service is considered through what the study terms the ‘community service provider’ (CSP), which is the entity that takes on the responsibility for everyday operation and minor maintenance of the water supply service. It is recognised that an effective CSP should reflect both the local community and the complexity of the water system, leading to divergent models of management and participation. However, firstly we investigate the form, function and resource implications of the ESE, along with an analysis of the strengths and weaknesses of this particular model. The study finishes with a detailed consideration of the total cost of providing water services, with a focus on the costs incurred by the ESE – whether directly or indirectly.

Figure 1 provides an overview of the different elements, whilst a detailed research methodology and explanation of the underlying has previously been published as part of the Community Waterplus project: “Understanding the resource implications of the ‘plus’ in community management of rural water supply systems in India: concepts and research methodology”, Smits, S., Franceys, R., Mekala, S. and Hutchings P., 2015. Community Water Plus working paper. Cranfield University and IRC: The Netherlands; please see <http://www.ircwash.org/projects/india-community-water-plus-project>

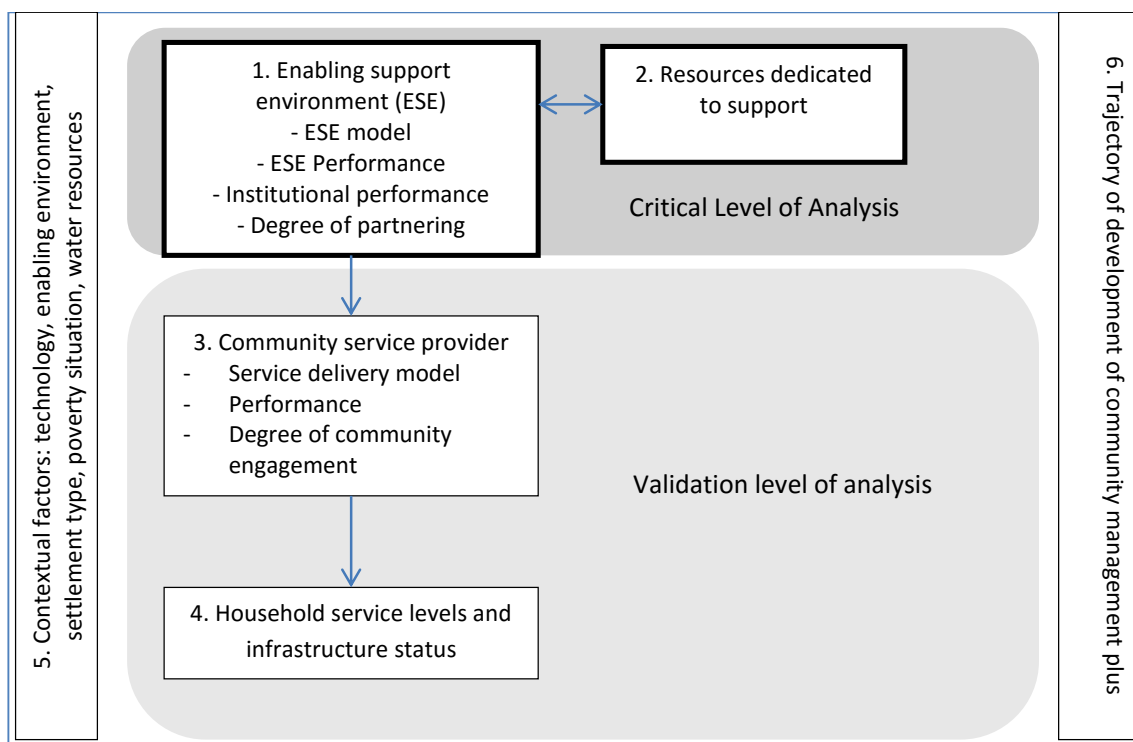


Figure 1 Elements of Research

1.2.2 Case study selection

In selecting twenty successful case studies, the research has scanned over 161 community-managed rural water supply programmes in India, covering a combined population of nearly 50 million people.

Through a detailed process of selection using both secondary data and pilot visits, 20 programmes were selected to become case studies.

The present case study in Madhya Pradesh is based on the success of NGO initiatives in fluoride affected areas (2 villages) and also by the social development team of PHED in one village. WaterAid India, when contacted suggested Dhar district, where community managed water supply programmes supported by them through Vasudha Vikas Sansthan are running successfully with technical support by People’s Science Institute, Dehradun. Executive Engineer, PHED, Dhar district suggested including one village supported by their social development team under Water Supply and Support Organisation (WSSO) that was started recently to be studied for community managed water supply system. Thus two villages supported by NGO and one village supported by PHED were chosen to be the study villages. NGO has worked extensively in the tribal dominated and water quality affected by excessive fluoride in Dharampuri and Umarban blocks and that formed the project area.

Two villages, namely Kalikirai, where the water supply scheme is running for over five years and Badi Chittari that is less than one year old were selected out of the NGO supported villages. Ratenpura village supported by social development team of PHED is another successful village selected, where community was empowered to maintain and manage the water supply systems. *Bankpura*, was chosen to be the control village, where community has been managing without any outside support. Locations of the blocks under the study are demarcated in the map given below:

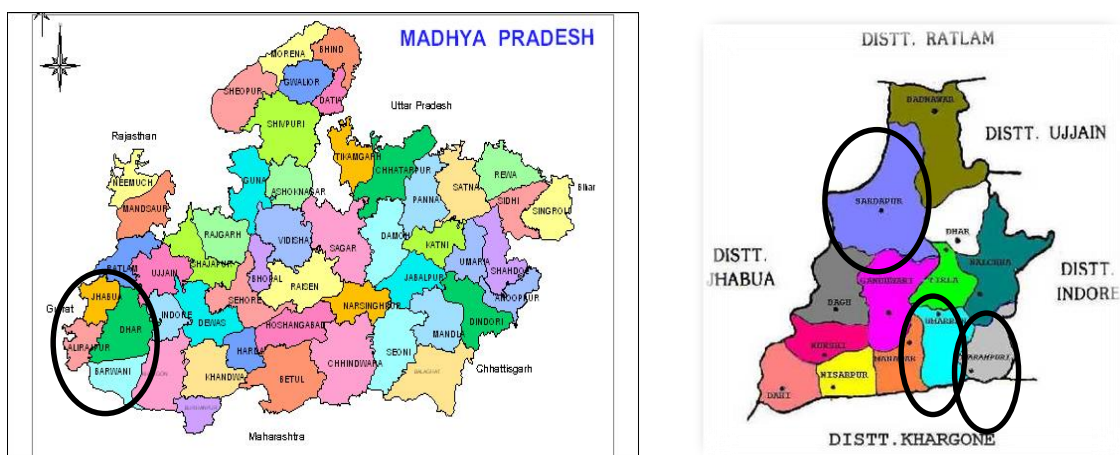


Figure 2 Location map of the blocks under study

1.2.3 Data collection and analysis

In order to have information, on each of the research elements, under this study the following data collection methods were used during the field visit between July 9-14, 2015 and August 5-9, 2015, complemented by literature review and discussions with key stakeholders from both government and non-government organisations:

Table 1 Data collection methods

Unit of analysis	Data collection methods
Enabling support environment	4 Key informant interviews (3 from Govt + one from NGO) 2 Focus group discussions (one with PHED and one with Vasudha Vikas Sansthan) Review of literature

Community Service Providers	11 Key informant interviews (2 from Vasudha Vikas Sansthan, 1 from PHED and the rest 8 from Drinking Water Sub Committee – water men and members) 4 Focus groups discussions with water committee members (in 4 villages) 4 infrastructure checks (1 in each village)
Households	120 Household surveys (30 in each village) 4 focus group discussion (1 in each village)

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)). Based on these scoring tables an analysis was conducted that sought to characterise the type and performance of the different institutions involved as well as give insight into the indicative cost of this support mechanism.

1.3 Structure of the Report

After this introduction chapter, Chapter 2 presents the Enabling Support Environment context. Chapter 3 details the description of the context in which the model of community-managed PWSs (with the support structure). Chapter 4 presents the description of households in the project villages and service level assessments. Costing of hardware and software components of water supply and their operation and maintenance costs are covered in Chapter 5. The sixth chapter focuses on the conclusions drawn based on the study conducted.

2 Enabling Support Environment (ESE) Context

Madhya Pradesh has improved drinking water coverage of 98%, placing itself among the ten best covered States in the country. The Government of Madhya Pradesh is strongly committed to improve on this and achieve universal water supply coverage. As of now, the main sources of water supply are hand pumps; a total of 5,72,756 hand-pumps have been installed and through this 95% of the population is covered across 1,27,559 habitations. These habitations are distributed among 51,533 revenue villages that fall in 22,948 Gram Panchayats. There are also 15,899 dug wells covering a population of 3% and the remaining 2% of the population is covered with 12,521 piped water supply schemes.

2.1 Background and origin of the Enabling Support Environment, and context in which it operates

This section first describes the background and origins of the PHED before moving on to discuss Vasudha Vikas Sansthan.

2.1.1 Public Health Engineering Department Background

Government of India introduced a variety of programs through policy changes throughout the Five Year Plans to address the issue of drinking water. The first national water supply and sanitation program was introduced during 1951-56 as part of health plan. The states gradually built up the Public Health Engineering Department (PHED) to tackle the problem of rural water supply and sanitation. In spite of this, it was found during mid-1960s that majority of the schemes were only being implemented in the easily accessible villages, neglecting remote villages with severe water scarcity. The government decided to address this by developing new guidelines that emphasised the importance of serving distant and challenging villages. As per the guidelines, this usually involved the simple approach of driving a tube well and installing a hand pump. Initially, Mahasagar type of hand pump was used but these were not very successful. Then Government of India in coordination with UNICEF therefore developed India Mark-1 and India Mark-2 hand pumps. Now only India Mark-2 hand pumps are installed on Tube Wells, as these are found to be very successful both in working and maintenance.

As the PHED expanded its work in rural areas it was necessary to strengthen the Electrical / Mechanical wing of the Department, because the main work was of drilling of tube wells. Around 1972, Government of India started a programme called “**Accelerated Rural Programme**” (ARP) with 100% funding. Under this programme, PHED prepared the schemes and the Government of M.P. sent them to Government of India for sanction and allotment of funds. Later on these powers were vested to State Government. Complimenting this federal support, there has also been three major foreign aided programmes in Madhya Pradesh that were designed to further capacitate the PHED. These were:

1. **UNICEF** donated ‘Down The Hole Hammer’ drilling rigs for drilling of tube wells
2. **DANIDA** helped the Department in Training the villagers in Operation & Maintenance of Hand pumps
3. **KFW (GERMANY)** provided considerable Technical and Financial help to the Department for Piped Water Supply Schemes in Bigger villages

Nowadays, the main aim and objectives of the PHED is to continue providing safe and potable water in both urban and rural areas. For the rural programme, the main responsibilities are given below:

- a. Survey & investigation and execution of schemes for providing safe and potable water in rural habitations. The target is now 55 lpcd although earlier it was 40 lpcd.
- b. Maintenance of hand pumps in rural areas.
- c. Survey & investigation and execution of Piped Water Supply (PWS) Schemes.
- d. Execute the works related to recharging of groundwater and rainwater harvesting works for improving yield of groundwater in the existing water sources-Tube-Wells & Dug Wells.
- e. Water Quality monitoring of existing water sources and to make alternative arrangements where water quality is not as per the prescribed standards.
- f. To ensure availability of safe and potable water within a lead of 500 Metre in plain area and within 30 metre lift in hilly area.

The strategy of the PHED is to ensure every habitation has a functioning tube well for drinking water supply (one per 250 people). It then installs either India Mark-II handpumps or develops a piped water supply scheme. The current coverage is given below:

Total number of Habitations	1,27,559
Total number of fully covered Habitations (>100%)	97,867
Total number of partially covered Habitation (75-100)	24,814
Total number of partially covered Habitation (50-75)	4,761
Total number of partially covered Habitation (25-50)	89
Total number of partially covered Habitation (0-25)	28

Piped Water Supply (PWS) schemes are normally provided for villages having population above 2,000. The respective Panchayats have to pass a resolution for taking over these schemes for running and maintenance. Sometimes a smaller village may be considered for piped water supply scheme due to special circumstances such as existing topography or availability of distant drinking water source. Such schemes are executed under either (a) State programme or (b) Accelerated Rural Water Supply Programme (ARWSP).

Total Piped water supply schemes completed	12,521
Total Piped water supply schemes working	11,425
Total Piped water supply schemes closed:	1,096
1. Due to source (dry)	194
2. Non-payment of Electricity bill By Gram Panchayats	143
3. Due to different reasons such as repairing of Pumps and Motors, etc.	759

The PHED now operates along these lines having had a long history of evolution. The current organisational set-up is provided in the Table and organogram below (as of January 2014).

Table 2 The approved posts of PHED as of January 2014

Sl. No.	Designation	Sanctioned Post	Remark
1 (a)	Engineer in Chief H.O.D.	1	Bhopal
1 (b)	Advisor	1	Bhopal
2	Director, Water Supply Organisation (C.E. Rank)	1	Bhopal
3 (a)	Chief Engineer (Civil)	4	Bhopal, Indore, Jabalpur & Gwalior
3 (b)	Chief Engineer (E/M)	1	Bhopal
4 (a)	Superintending Engineer (Civil)	24	10 at Commissioner H. Q.; 3 Project Circles at Bhopal, Indore and Chhindwara & rest in different offices
4 (b)	Superintending Engineer (E/M)	5	At commissioner H.Q.
5 (a)	Executive Engineer (Civil)	73	50 Divisions at 50 District H.Q.; 7 Project Dn.; 6 Maintenance Dn; 2 Quality Control Dn. at Bhopal and Sardarpur in Dhar Dist. And 8 nos. in different offices.
5 (b)	Executive Engineer (E/M)	11	7 at Commissioner H.Q. plus 1 at Mandleshwar for Indore W.S.S. and rest in different offices.
6 (a)	Assistant Engineer (Civil)	241	204 in Sub divisions & rest in different Offices.
6 (b)	Assistant Engineer (E/M)	62	46 Sub Divisions in 44 Districts; 2 Work Shop Sub Dn. at Jabalpur & Gwalior; and rest in different Offices. There is no Sub Dn. in 1.Datia, 2.Burahanpur, 3.Ashok Nagar, 4. Anup Pur, 5.Alirajpur, and 6. Singrauli Districts.
7 (a)	Sub Engineers (Civil)	974	In field and different offices.
7 (b)	Sub Engineers (E/M)	263	In field and different offices.

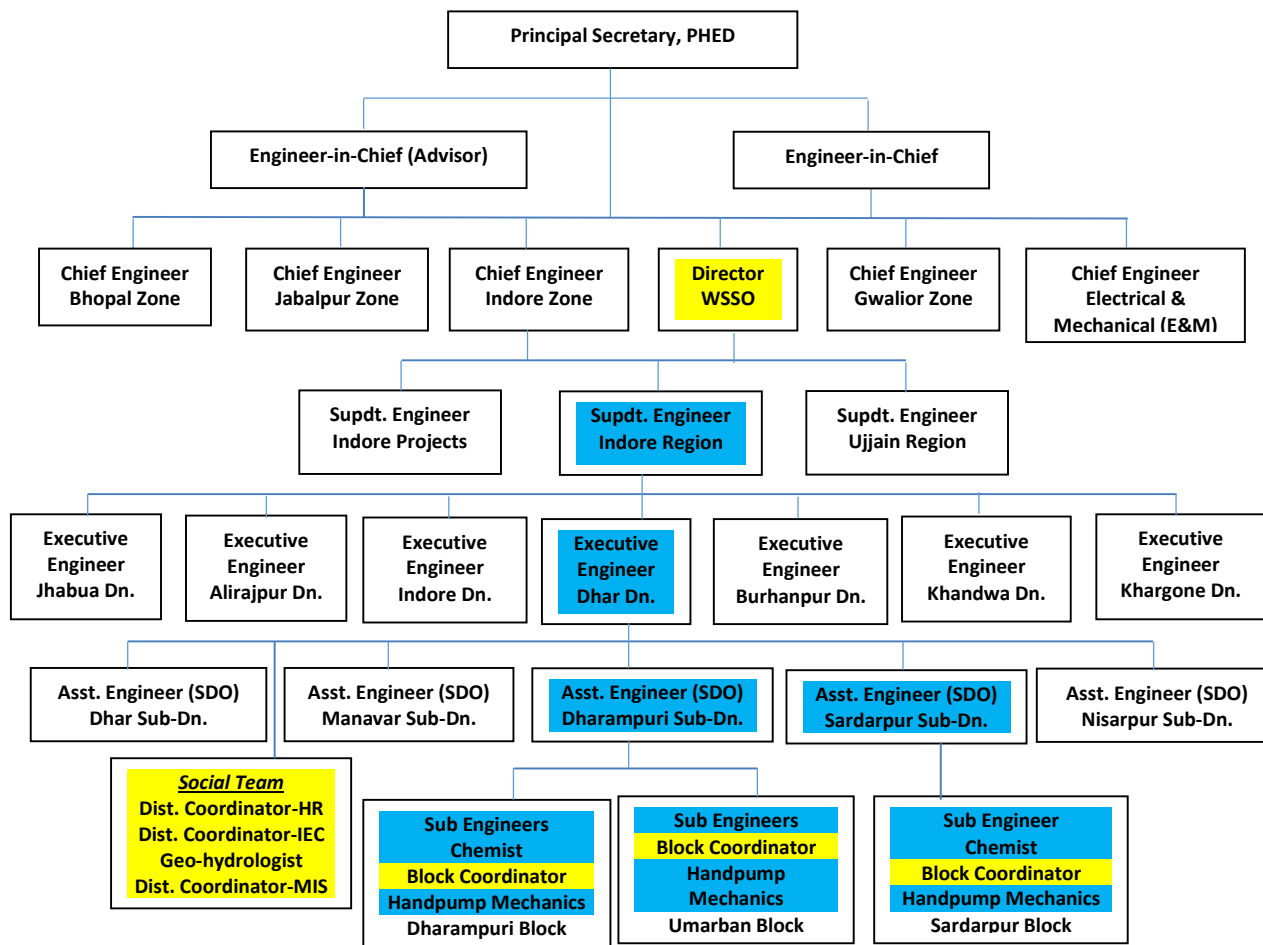


Figure 3 Organogram of PHED

2.2 Safe Drinking Water For All – the motto of Vasudha Vikas Sansthan

The approach of Vasudha Vikas Sansthan in the drinking water sector is to work mainly in the water quality affected areas and tribal settlements to provide safe drinking water through piped water supply system. This is in order to improve quality of life and make available more time for livelihood activities in these communities. Since the hand pumps tapping water below 30 meters have water quality issues, especially, fluoride, Vasudha Vikas Sansthan is concentrating on open dug wells that are about 10 meter deep and contain water throughout the year. These open wells are identified in discussions with the community and are then developed. These can be publicly owned as far as possible, otherwise privately owned open wells are also considered. The identified open wells are covered and protected against any contamination. Chlorination facility is provided to disinfect the water in order to provide bacteria free water. A power pump and the pipe line network are provided for distribution in the village and each individual household has to bear the cost of connection from the main distribution pipe line. In every village, normally, plastic (syntex) tanks of 2000 litres capacity and 1000 litres capacity tanks are placed at common places in consultation with the community.

Vasudha Vikas Sansthan works closely with communities through supporting Drinking Water Sub Committees. These are formed as per the norms of Government of Madhya Pradesh with community members trained on individual roles and responsibilities. In the course of working with community Vasudha Vikas Sansthan also keeps in touch with government agencies – including the PHED and two local government institutions the Janpad Panchayath and Gram Panchayaths. For any piped water supply scheme, the NGO sets the the tariff in consultation with the users and provides support and ‘handholding’ for some time.

The water supply arrangement at the habitation level from the sub-divisional level is given below showing both the ‘normal’ scenario from the government and also the set-up with the NGO support.

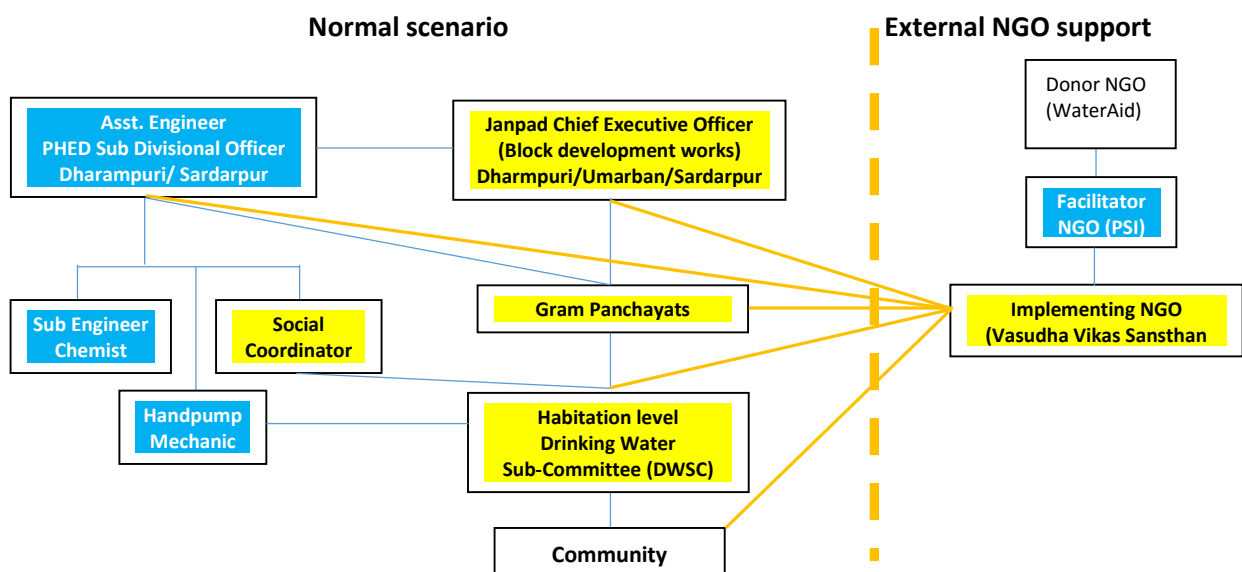


Figure 4 Water supply arrangement including O & M facility at habitation level

2.3 Enabling environment support activities and description

In Madhya Pradesh, rural water supply is provided mainly through hand pumps but wherever the local government comes forward (and in water quality affected villages) PWSS is also encouraged. The hand pumps are regularly maintained by the trained hand pump mechanics of PHED whilst any PWSs are maintained by the DWSCs formed and trained for the purpose. In the present study, two PWSS villages supported by NGO (Vasudha Vikas Sansthan) and one village supported by PHED are taking care of the water supply system (O&M). The support activities and tools do not differ much between the PHED and NGO supported villages. However, the best practices villages that are supported by PHED and NGO differ from the control village where the continuous support and monitoring are limited from the government authorities. It is observed that in best performing villages, that the agencies are in continuous contact with communities, whereas in the control village, the infrastructure was created then the community were left to manage it without any software support. The ESEs in the case of best performing villages are well-coordinated as both engineering and social development teams work in close coordination. The social development team would hold a series of discussions with the community and oriented them to collaborate with government/NGO whichever the case is.

In the NGO supported villages, the software part has been given more emphasis and the monitoring has been there. DWSCs were empowered to fix the user charges and collect the tariffs and also to spend the money as per decisions exclusively taken by them. The DWSCs were also empowered to hire maintenance staff from their own village although the government still covered the power charges involved in maintaining the schemes. The support activities and tools are detailed below for PHED as wells NGO, based on the interaction with both the parties.

Table 3 ESE-1 (PHED) Support Activities and Tools

Type of activity	Is this type of activity undertaken by the ESE?	Way of providing support	Name of intermediary	Modality of support	Frequency of support	Are tools or methods used in support of these activities?	Consistency of use	Who developed these tools?	Explanations and comments
Monitoring and control (auditing)	Yes	Both (directly to service provider and via an intermediary)	Janpad Panchayat & Gram Panchayat	Both (On request and supply based)	1	Yes	Sometimes	ESE	State level PHED and Govt. issues the orders
Water quality testing	Yes	Directly to service provider		Both (On request and supply based)	2	Yes	Always	ESE	Each of the subdivisions have an exclusive laboratory
Water resources management	Yes	Directly to service provider		Supply based	1	Yes	Sometimes	ESE	Standard methods are in use for different rainfall and geological setting.
Technical assistance	Yes	Directly to service provider		Both (On request and supply based)	1	Yes	Always	ESE	
Conflict Management	Yes	Directly to service provider		On request	2	Yes	Sometimes	ESE	Roles and responsibilities of DWSCs at habitation level and other rules framed by PHED from time to time are used
Support in identifying investments needs	Yes	Directly to service provider		Both (On request and supply based)	2	Yes	Always	ESE	Standard methods are evolved by PHED and MDWS and AAPs are prepared
(Re)training of service provider	Yes	Both (directly to service provider and via an intermediary)		Both (On request and supply based)	2	Yes	Sometimes	ESE	Janpad and Gram Panchayat are responsible
Information and communication activities	Yes	Both (directly to service provider and via an intermediary)	Janpad Panchayat & Gram Panchayat	Supply based	4	Yes	Always	ESE	The services of Janpad and Gram Panchayat and PHCs are available
Fund mobilization	Yes	Directly to service provider		Supply based	1	Yes	Always	ESE	PHED works out the details on annual basis and MDWS supports the same

Table 4 ESE-2 (Vasudha Vikas Sansthan) Support Activities and Tools

Type of activity	Is this type of activity undertaken by the ESE?	Way of providing support	of	*Name of intermediary	Modality of support	Freq uency of support	Are tools or methods used in support of these activities?	Cons istency of use	Who develo ped these tools?	Explanations and comments
Monitoring and control (auditing)	Yes	Directly to service provider	to		Both (On request and supply based)	2	Yes	Always	ESE	PSI, Dehradun Govt. of India guidelines WaterAid for technical work
Water quality testing	Yes	Directly to service provider	to		Both (On request and supply based)	4	Yes	Always	ESE	
Water resources management	Yes	Directly to service provider	to		Both (On request and supply based)	1	Yes	Sometimes	ESE	
Technical assistance	Yes	Directly to service provider	to		Both (On request and supply based)	4	Yes	Sometimes	ESE	
Conflict Management	Yes	Directly to service provider	to		Both (On request and supply based)	6	Yes	Sometimes	ESE	
Support in identifying investments needs	Yes	Directly to service provider	to		Both (On request and supply based)	2	Yes	Always	ESE	
(Re)training of service provider	Yes	Directly to service provider	to		Both (On request and supply based)	4	Yes	Always	ESE	
Information and communication activities	Yes	Directly to service provider	to		Both (On request and supply based)	12	Yes	Always	ESE	
Fund mobilization	Yes	Directly to service provider	to		Both (On request and supply based)	1	Yes	Sometimes	ESE	

2.4 Enabling environment performance indicators

This section provides an assessment of the degree of professionalism, institutional performance, and client satisfaction of PHED together with Social Development Professionals deployed in the PWSS of Ratenpura. It also assesses these matters in the Kalikirai and Badichitri villages supported by Vasudha Vikas Sansthan. Perceptions were obtained from the officials of PHED & NGO through interactions and also cross-verified at field level with DWSCs and Gram Sabhas through Focus Group Discussions (FGDs). An assessment of the ESE professionalization was made based on various indicators, as shown in the tables below. Based on the principles of QIS, scores were allocated for each ESE ranging from 0 (reflecting low performance) to 100 (indicating high performance).

Table 5 ESE-1's (PHED) QIS (Qualitative Information System) indicators

Indicator	Score	Explanation
Indicator 1.1. Formality of the mandate for support	100	The ESE has a clearly articulated vision, mission and/or objectives for its support function, which is also supported by a policy mandate
Indicator 1.2 Working methods	100	The ESE has tools and methods for all of the areas of support it provides and applies those in a systematic manner, such as the social processes by social development team are ensured.
Indicator 1.3 Information management	100	The ESE has one or more tools to track the performance of the service providers it supports and uses that to monitor its own impact
Indicator 1.4 Communication between service support authority and service providers	100	The ESE has a number of communication channels that are well used for contact with the service providers it supports.
Indicator 3.1 Client satisfaction	75	The ESE monitors client satisfaction, and more than 90% of the service providers attended last year, indicate satisfaction with the support received

Table 6 ESE-2's (NGO) QIS indicators

Indicator	Score	Explanation
Indicator 1.1. Formality of the mandate for support	100	The ESE has a clearly articulated vision, mission and/or objectives for its support function, which is also supported by a policy mandate
Indicator 1.2 Working methods	100	The ESE has tools and methods for all of the areas of support it provides and applies those in a systematic manner
Indicator 1.3 Information management	100	The ESE has one or more tools to track the performance of the service providers it supports and uses that to monitor its own impact
Indicator 1.4 Communication between service support authority and service providers	100	The ESE has a number of communication channels that are well used for contact with the service providers it supports.
Indicator 3.1 Client satisfaction	100	The ESE monitors client satisfaction, and more than 90% of the service providers attended last year, indicate satisfaction with the support received

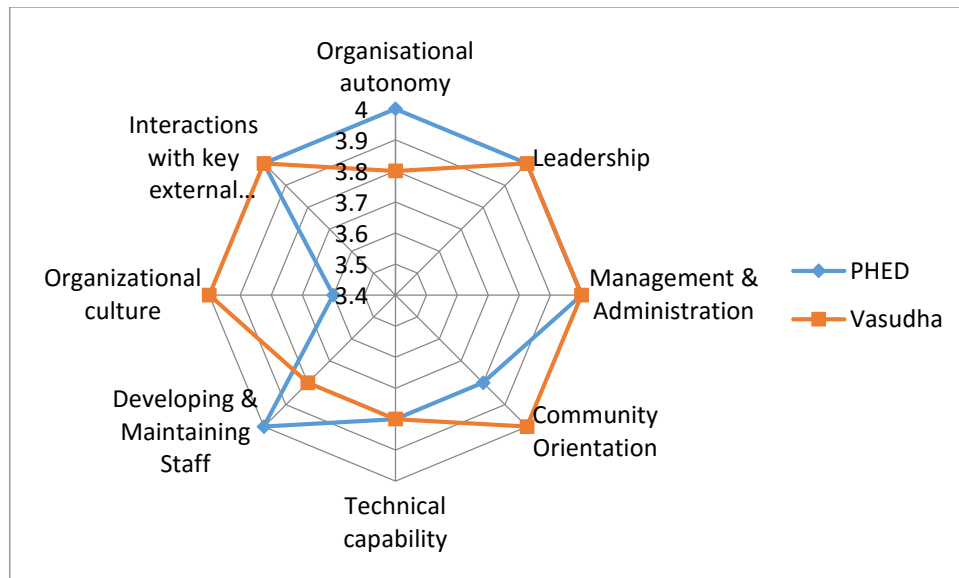
The tables 5 & 6 above show that PHED and NGO have a strong and formal mandate with a clearly articulated vision, as that of the Ministry of Drinking Water & Sanitation. Additional tools and processes for community mobilization and software activities were included by both PHED and NGO. In case of PHED, there is an exclusive social development team at the district level and one block level coordinator to support the DWSCs. Similarly, the strength of NGO has been its social mobilizers, who were always providing required support on software components of the project. The Engineers from the technical team were also trained on community empowerment and to work closely with the DWSCs formed for the purpose.

2.5 Enabling environment institutional assessment

The ESEs' internal institutional performance was also assessed in detail, using a number of questions for each parameter, which are then averaged to a score from 1 to 4, results of which are described below. Each component of the institutional performance is described below for both PHED and NGO.

Table 7 ESE-Institutional Assessment (4 = high, 1 = low)

Institutional Assessment	PHED	NGO (Vasudha Vikas Sansthan)
Organisational autonomy	4	3.8
Leadership	4	4
Management & Administration	4	4
Community Orientation	3.8	4
Technical capability	3.8	3.8
Developing & Maintaining Staff	4	3.8
Organizational culture	3.6	4
Interactions with key external institutions	4	4



Organizational Autonomy: PHED is mandated to follow the NRDWP guidelines but can set its own internal plans and goals so to achieve them. The action plans that are prepared aim at meeting the expected long-term demands of the community in a phased manner and are prioritised on a needs-basis based on coverage, water quality and source and system sustainability parameters. Similarly NGO is bound by the guidelines issued by the donor and facilitating agency and that of NRDWP guidelines, but the compensation to its staff is bound by the approved budget, which in comparison to government is bit on the lower side.

Leadership: There is an amicable atmosphere in the PHED and NGO, and the staff work in harmony. In fact, the systems that are in place for redressal mechanism in PHED as well in NGO are very good, thereby the service to the community is very good.

Management & Administration: The management team supervises and provides required guidance to the teams during project execution in both cases of ESE. In particular, the communication between the ESE and CSP is more pronounced in the project villages. Here, the training and orientation of ESE officials had been different and hence the proactive nature of is more prevalent.

Community Orientation: Orientation and training of ESEs' officials on participatory skills and community development have resulted in understanding the service deficiencies and in identifying lasting solutions in project villages. The reciprocative response from the CSP (DWSCs) and community will further strengthen the bonds leading to sustainable service delivery as observed in the field. However, the community orientation was observed to be better in case of NGO, as compared to PHED, due to strong relationship of NGO with the community.

Technical Capability: The officials of PHED and NGO are well qualified and technically competent to undertake the jobs as required and this has been clearly evident from the discussions, field visits and type of infrastructure created in all the villages. There is room for improvement as the maintenance of the valves, and fixing of taps and meters to the individual households can be better planned.

Developing and maintaining staff: In case of PHED, there are set procedures for refresher training of staff and regular promotions and annual increments and the permanent nature of employment. In case of NGO, the training courses and refresher training are dependent on project support by the donor partner and also staff continuity, as the staff may leave for lucrative jobs.

Organisational culture: NGO scored better than the PHED on this parameter as the people joining the NGO show strong commitments to the community development and there is less hierarchy due to the small number of staff. In case of PHED, there are stringent norms and procedures that need to be followed and the selection of the staff and their transfers do matter.

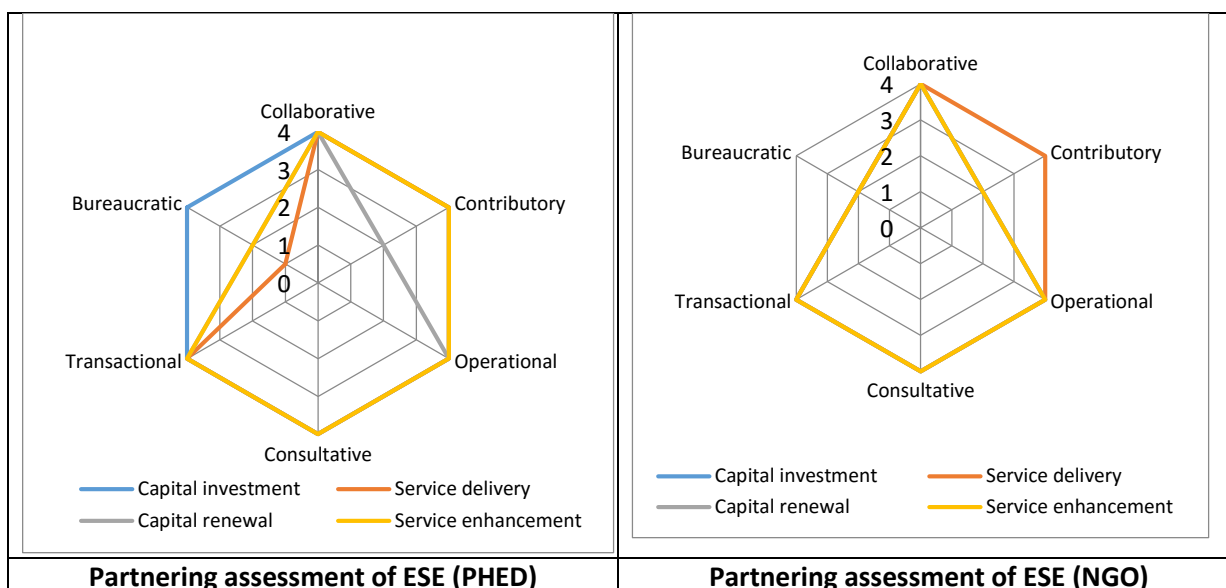
Interaction with key external institutions: The coordination with local institutions will depend upon empowered and enthused CSPs (DWSCs) that come forward and demand the services in a very amicable way, as observed in three project villages. *Bankpura* village though has a formal DWSC, but the way of communication is weak and still there is room for improvement in ensuring the drinking water security. Both PHED and NGO have good linkages with relevant line departments like Janpad and Gram Panchayaths, Electricity Department, revenue department as it would help in identifying the proper sources, cost effective designs, energy savings and optimising the use of resources.

2.6 Enabling environment partnering assessment

An assessment was made on the types of partnering that are found between the ESE and CSP. Partnering in the present study refers to an 'agreed-upon arrangement between two or more parties to work towards shared objectives – an arrangement in which there is (i) sharing of work, responsibility and accountability; (ii) joint investment of resources; (iii) shared risk-taking, and (iv) mutual benefit'. It is assessed in terms of capital investment, service delivery, capital renewal and service enhancement. The partnering assessment is given below against each ESE, i.e. PHED and NGO separately depending on the type of parameters, viz, collaborative, consultative, operational, consultative, transactional & bureaucratic.

Table 7 ESE-1 (PHED & NGO) Overall Partnering Assessment

Type of partnering	Capital investment		Service delivery		Capital renewal		Service enhancement	
	PHED	NGO	PHED	NGO	PHED	NGO	PHED	NGO
Collaborative	4	4	4	4	4	4	4	4
Contributory	4	2	4	4	2	2	4	2
Operational	4	4	4	4	4	4	4	4
Consultative	4	4	4	4	4	4	4	4
Transactional	4	4	4	4	4	4	4	4
Bureaucratic	4	2	1	2	2	2	2	2



Capital investment: In case of PHED, the costs on capital investment like the distribution pipeline network were shared in Ratenpura village and in NGO supported villages, the infrastructure was totally provided with assistance from donor partner. In case of Ratenpura village, a standardised model of hardware and software provision during implementation was adopted as per the norms of PHED depending on the type of terrain. In Kalikirai and Badi chitri villages supported by NGO, the hardware was decided mutually, especially with more weightage for community choice.

Service delivery: Regarding the O & M both PHED and NGO share the same set of principles and encouraged the community to share the responsibilities and contribute. The villages served by NGO had a standard model of water supply system, whereas the one supported by PHED in Ratenpura allowed the public to develop their own supply system suiting to their requirements.

Capital renewal: PHED and NGO share similar set of parameters for capital renewal. They save and pool financial resources to get the best products without compromising on the quality and thereby the costs may have increased. Both PHED and NGO expressed that they are open to the views of the community and encourage their participation in decision making rather than changing the assets; however the stage has not reached in the project villages for this service.

Service enhancement: On the service enhancement front both the ESEs, PHED and NGO expressed similar views and they said that they will go with the decisions of the community and do not impose any of their ideas, but provide only guidance and support, as and when required. The service enhancement will be planned in next stage, once the DWSCs evolve and manage their resources in a better way, over a period of time.

3 Community Service Provider context

In this section the experiences related to support at the village level are examined and presented by investigating the community service providers that have been supported by the ESE. The details of four villages and their service providers including assessment of their performance and partnering are provided below.

3.1 Context and descriptors of the community service providers

For the present study, four villages have been selected to assess the guidance and support of NGO and the PHED. This includes Kalikirai and Badichitri villages supported by the NGO and Ratenpura by the social development unit, in addition to the regular services of PHED. The control village, *Bankpura*, is a typical case, wherein the involvement of external agencies has been nominal and only at the beginning of the project and subsequently being managed by the DWSC themselves. All these villages are in Dhar district which is in south-west part of Madhya Pradesh and dominated with tribals and quality affected in some parts due to high Fluoride content.

Like other states, Madhya Pradesh government also follows the system of developing infrastructure provision of safe drinking water in rural areas through PHED and handing over to Gram Panchayaths in case of PWSS and maintaining the hand pumps by themselves. Gram Panchayaths with the support and guidance of Janpad (block level) Panchayath form the Drinking Water Sub Committees (DWSCs) and train them on Operation and Maintenance of water service delivery. However, the MP government does not impose having the elected representatives of GPs in the DWSC, rather the decision of choosing the DWSC members is left to the Gram Sabha of respective habitations. The term of the DWSC is five years period, after it is formed and it has no link to the term of the elected body of Gram Panchayath. The study area falls in three different blocks, two in the south east portion of the district and another one northern portion. The salient features of the project villages are given below:

Table 8 Salient features of study villages

Particulars	Kalikirai		Badi Chitri		Ratenpura	Bankpura	
Name of the GP	Tarapur		Kalibavdi		Ringnod	Mehgaon	
Block name	Dharampuri		Umarban		Sardarpur	Dharampuri	
No. of Households	78		71		210	187	
Population	425		367		1125	850	
Tap connections	50		42		170	128	
Water source	Private Well	Open	Community well	Open	Deep Borewell	Community well	Open well
ESE	Vasudha Sansthan PHED	Vikas +	Vasudha Sansthan	Vikas + PHED	PHED	PHED	
No. of hand pumps	6		4		3	4	
Water tariff per month in INR	40		50		60	50	

Kalikirai village, Tarapur GP, Dharampuri block

Kalikirai village, traditionally was dependent on open wells to meet the drinking and domestic water needs. However, after the installation of hand pumps, people were using the hand pumps. Many people in the block and neighbouring blocks complained about their health, especially joint pains. Then the water quality of the hand pumps was assessed and it was found that the concentration of Fluoride was in excess of 1.5 mg/litre. Then all the sources were tested and the hand pumps with excessive fluoride content were marked with yellow colour, indicating that these are not fit for drinking and cooking purpose.

WaterAid, an international donor agency was contacted by the local NGO – Vasudha Vikas Sansthan and requested for assistance. WaterAid suggested for identifying the solutions and that the community be made not only aware of the ill effects of the water quality but also to empower them to manage the water supply systems. Later, Vasudha Vikas Sansthan held meetings with the public and with the technical assistance of People's Science Institute, Dehradun decided to revive the traditional drinking water sources – open dug wells by protecting them from contamination, and developing the infrastructure for piped water supply. Chlorination was one of the measures to ensure bacteria free safe water and ensuring the availability of drinking water to all by erecting three plastic tanks for water supply at convenient places. DWSC was formed by Vasudha Vikas Sansthan at the very beginning of the project (March 2009) as per the norms of GoMP guidelines and got the due recognition from the Janpad Panchayath and PHED such that in future the DWSC can avail their services.

After lot many discussions and water sample analysis, it was decided unanimously that the private open dug well of Mr. Parbat Singh was identified to be the source, and he agreed to provide the water to the village. He was given the responsibility of water man and was trained to operate the pump and take care of the valves, and other infrastructure. Out of 78 households, today 50 have the tap connections and they pay a monthly tariff of INR 40 per month. Mr. Parbat Singh only manages the account and also is made responsible for the maintenance of the pump and meet the costs, if the need be. His open well was developed with proper parapet wall, and a centrifugal power pump of 3 HP was installed by the NGO. The entire distribution network in the village was laid by the NGO with due support from the community and DWSC. Each individual household was to bear the cost of individual household connection in terms of pipes and other accessories to tap water from the distribution pipe line.

There are six hand pumps in the village and these are maintained directly by PHED. DWSC complaints if any of the hand pumps are not working either directly to the handpump mechanic or the Gram Panchayath. On receipt of the complaint, even verbally, the Handpump mechanic visits the habitation and attends to the complaint. DWSC and the community support the handpump mechanic of PHED as and when they visit for maintenance of the hand pumps. People use water from hand pumps for domestic purpose other than drinking and cooking.

The success of the water supply system is due to the diligent work of waterman and the support of the NGO. DWSC meets only when there is a crisis, but normally the waterman takes care of the problem. He collects the tariff and maintenance function is also his responsibility.

Badi Chitri village, Kaliboudi GP, Umarban block

The problem of fluoride and the process followed to provide the Piped Water Supply System is same as that of Kalikirai village by the NGO. There is only one difference, i.e. the source is a community open dug well. The well is provided with a barbed wire mesh cover. This village, five years back also had the water supply system from the same source but only a few public taps were there. The pipe line was damaged and the electrical parts like starter and other equipment were stolen and nobody took any interest. There are four hand pumps in the village, of which two are with high fluoride content and the other two are potable.

There are 71 households in the village at present; of these, 42 households have individual household tap water connections and the rest 29 families depend on 3 plastic tanks (cumulative capacity being 5000 litres = 2 tanks of 2000 litres capacity and one tank of 1000 litre capacity) placed in the habitation as per the decision taken by the DWSC and supported by the Gram Sabha. DWSC was formed in the beginning of 2014 and the scheme is pretty new and is being maintained by the DWSC since May 2015. DWSC has appointed one waterman, with an honorarium of INR 1,000 per month. Monthly water tariff of INR 50 per tap connection is being collected and the houses without tap connection do not pay any tariff as of now. Water tariff collected is deposited into a bank account maintained with Dhar-Jhabua Grameena Bank at Kaliboudi.

The DWSC has been trained to take care of the water supply system and chlorination process. The success of Badi Chitri water supply programme is due to a) balanced DWSC composition of wise and enthusiastic youth, and b) constant support and awareness programme.

Ratenpura village, Ringnod GP, Sardarpur block

Drinking water supply scheme in Ratenpura was facilitated by Social Development Unit of PHED. DWSC was formed in August 2013 and the scheme is in operation since January 2014. There are 210 households in the village at present; of these, 170 households have individual household tap water connections and the rest of the families depend on their neighbours. Initially, the drinking water supply was from borewells with hand pumps and also a water supply scheme managed by the Gram Panchayath. The water supply was not regular and expensive in terms of getting a tap connection i.e. INR 1150 was to be deposited. After the formation of DWSC, it was decided that the new connection and development charges be fixed at INR 550 and the concerned household shall pay for the pipe line from the distribution pipe network and contribute labour for digging and connecting the pipe line. DWSC has decided to collect a monthly water tariff of INR 60 per tap connection.

A deep borewell of about 500' (152 meter) is the source. There is a 50,000 litre capacity Over Head Tank (OHT) in the village. Water supply was very irregular and only 74 households had the tap connection. Once the DWSC was formed, valves were established at one per 10 households. Water supply is limited to one hour and it is decided to supply water once in every 3 days. People store water accordingly and all the 170 tap connections get sufficient quantity of water. A decision has been made to give connections to the rest 40 households and plan for 24 X 7 water supply system. During 2014 and 2015 summer months, there was shortage of water supply. DWSC supported by the Gram Sabha could arrange water from the nearby private borewells and ensured water supply.

The success of Ratenpura water supply programme is due to a) Committed DWSC, b) An enthusiastic Block Level Coordinator of PHED supported by a district social development unit and c) constant awareness programme. However DWSC has to be trained on book keeping & account maintenance.

Bankpura village, Mehgaon GP, Dharampuri block

Drinking water supply scheme in *Bankpura* was facilitated by Gram Panchayat funds and MLA funds. PHED also dug a well but it was not successful. The DWSC was formed about 8 years back and the scheme is in operation since then. There are 187 households in the village at present; of these, 128 households have individual household tap water connections and the rest 59 households depend on their own open wells dug in their farms. The open well that supplies water for about 10 months in a year is located close to the village and adjacent to a local stream. Recently, a check dam has been constructed close to the well but on the downstream and the DWSC closed a pit that was dug in the stream to remove sand for construction purpose. During summer, for two months, a private open well located about one kilometre away from the village is used and the well owner is kind enough to provide water. Water from this well is pumped into the well near the village and from there, water is again pumped. There is no overhead tank but only a small tank of about 2000 litres capacity is there near the school.

Drinking water supply from borewells with hand pumps was also in use for quite some time. After the water from hand pumps was found to be contaminated with fluoride, all the people stopped using the water for drinking and cooking purposes. There are four hand pumps, but all of them are contaminated with fluoride and hence water from these sources is used only for domestic purposes, and whenever the PWSS from open well is defunct.

DWSC has fixed INR 100 for any new connection and the concerned household shall pay for the pipe line from the distribution pipe network and contribute labour for digging and connecting the pipe line. DWSC collects a monthly water tariff of INR 50 per tap connection. Nine valves are placed in the village at different locations such that water supply is ensured for households living on a higher elevation. Water supply is limited to half-an-hour to one hour and the pumping is done for 3 to 4 hours a day. The waterman collects the tariff and keeps the account, and he is paid a monthly honorarium of INR 3,000. He only maintains the accounts and submits the same to the DWSC and is also discussed in the Gram Sabha. The water tariff was revised two years back and it was raised from INR 30 to INR 50 a month. GP provides bleaching powder through ASHA worker to disinfect the well, but the people are not sure of water quality. The DWSC has not received any refresher training and the accounting system needs to be improved. The water supply is totally managed by the DWSC, but not much support is available from anybody.

The DWSC was trained initially, and later no follow-up was done either by Gram Panchayat/PHED or by any NGO. However, the DWSC still are continuing with good service delivery due to the inherent strength and commitment of the DWSC members and the waterman. There are no women members in the DWSC and the maintenance of books of accounts is very poor. The excess amount is kept with waterman only and not deposited into any bank account. However, the local community could get the assistance from local politicians including MLA for improving the capital infrastructure.

3.2 Community service provider indicators

The performance of the CSP in its functions of governance in terms of accountability, participation, gender balance, and fiscal management are assessed across the villages. The details are given below:

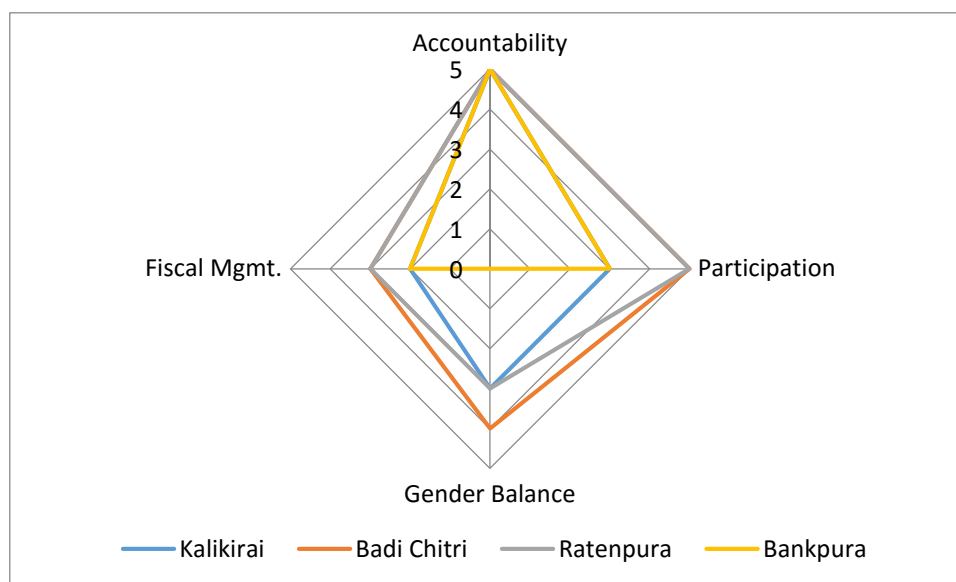


Figure 6 Performance of CSPs across study villages

	Kalikirai	Badi Chitri	Ratenpura	Bankpura
Accountability	5	5	5	5
Participation	3	5	5	3
Gender Balance	3	4	3	0
Fiscal Mgmt.	2	3	3	2

A five point scale was used to assess the DWSCs on governance parameters; 5 being excellent; 4=very good; 3=Good; 2=Fair; 1=Poor and 0=nil. The governance parameters such as accountability and participation are excellent in Badi Chitri and Ratenpura as all the DWSC members take responsibility and participate in all the meetings and take proactive steps to ensure smooth functioning of the system. In Kalikirai and *Bankpura* villages, watermen play a crucial role and have good control over the water supply system and water tariff collection and in these villages, DWSCs also take responsibility during crisis in any physical infrastructure maintenance. Gender balance was better observed in Badi Chitri village compared to other study villages, as they were present during the discussions with the researchers also. It is absent in *Bankpura* village, as there are no women members in DWSC. In Kalikirai and Ratenpura, there are women members in DWSC but their participation was limited. Fiscal management is the weakest parameter observed across the study villages, as it appears that the training is inadequate. In Badi Chitri and Ratenpura villages, the bank accounts have been opened and only the excess sum after meeting the expenses is deposited. In case of Kalikirai and *Bankpura* villages, it is the weakest parameter, as there is no bank account and only the watermen know the actual status.

3.3 Community service provider participation assessment

This section provides an overview of the extent of community participation in service delivery. Participation is understood functionally as ‘an active process whereby beneficiaries influence the direction and execution of development projects rather than merely receive a share of project benefits’ (Paul, 1987). Using a participation ladder adapted from Arnstein (1968) and Adnan et al. (1992) and specifically designed for this project, the degree of community participation in community service provision is assessed at each stage of the service delivery cycle: capital investment, service delivery, asset renewal, and service expansion. The discussions with CSP members and the household survey formed the basis to arrive at conclusions given below.

Table 9 Participation assessment of CSPs across study villages

	Capital Investment	Service delivery	Asset Renewal	Service enhancement/ expansion
Kalikirai	1. Self Mobilization The community practices self-supply and seeks to improve this, or have developed an implementation plan and seek external support	2. Interaction participation The community in partnership with the service provider engage in joint-decision making regarding appropriate arrangements for administration, management and operation and maintenance	1. Self Mobilization The community practices self supply and invests in asset renewal, or identifies need and seeks external support for asset renewal	1. Self Mobilization The community practices self-supply and invests in service enhancement or expansion, or identifies need and seeks external support for service enhancement or expansion
Badi Chitri	1. Self Mobilization The community practices self-supply and seeks to improve this, or have developed an implementation plan and seek external support	1. Self Mobilization The community take responsibility for administration, management and operation and maintenance, either directly or by outsourcing these functions to external entities	N/a This measure is not applicable to this CSP	1. Self Mobilization The community practices self-supply and invests in service enhancement or expansion, or identifies need and seeks external support for service enhancement or expansion
Ratenpura	1. Self Mobilization The community practices self-supply and seeks to improve this, or have developed an implementation plan and seek external support	1. Self Mobilization The community take responsibility for administration, management and operation and maintenance, either directly or by outsourcing these functions to external entities	1. Self Mobilization The community practices self-supply and invests in asset renewal, or identifies need and seeks external support for asset renewal	1. Self Mobilization The community practices self-supply and invests in service enhancement or expansion, or identifies need and seeks external support for service enhancement or expansion
Bankpura	1. Self Mobilization The community practices self-supply and seeks to improve this, or have developed an implementation plan and seek external support	1. Self Mobilization The community take responsibility for administration, management and operation and maintenance, either directly or by outsourcing these functions to external entities	1. Self Mobilization The community practices self supply and invests in asset renewal, or identifies need and seeks external support for asset renewal	1. Self Mobilization The community practices self-supply and invests in service enhancement or expansion, or identifies need and seeks external support for service enhancement or expansion

It can be observed that CSPs in all the villages are having good control over all the parameters in participation assessment, as the ESEs (PHED & NGO) have organised the communities and also provided the necessary technical and financial support in organising the piped water supply. It can also be noted that in Madhya Pradesh, as such there are very few piped water supply systems and the maintenance of the hand pumps is well taken care of by PHED, and also the project villages are smaller in size. There is a good ‘problem redressal mechanism’ in PHED, especially in operation and maintenance of drinking water infrastructure. Moreover, the ground water availability is not a major constraint in the project villages. Both PHED and NGO have trained the CSPs in operation and

maintenance though the CSPs need to be trained properly on book keeping and maintenance of accounts. In case of Badi Chitri village, the asset renewal could not be assessed as the system is new.

3.4 Community Service Provider Costing

Community-based management is partly built upon the principle that user tariffs can cover the operation and maintenance expenditure of rural water supplies. In all the villages, the Operational Expenditure (OpEx) expenses are met from the user tariff collected. For the year 2014-15, the user tariff collected fell a little short in Kalikirai village by INR 1,100 but the service provider, Mr. Parvat Singh, gets the benefit of using the pump provided by the NGO for irrigating his lands also. In other villages, there has been a surplus only because the collections are regular and expenses are well within the limits. However, the support from ESE(s) in the form of water quality testing and chlorination and the maintenance of hand pumps by PHED directly provides the necessary assistance required. The following table presents the OpEx details of four study villages for the year 2014-15.

Table 10 Community Service Provider costing across study villages for the year 2014-15

Particulars of Expenditure	Kalikirai	*Badi Chitri	Ratenpura	Bankpura
Staff salaries of those involved (annual)	12,000	12,000	21,600	36,000
Electricity charges	7,000	7,000	0	18,000
Physical maintenance cost (includes replacements)	6,100	4,160	70,800	16,500
Chlorination + water quality testing	0	0	0	0
Administration + MISC.	0	0	0	0
Actual expenditure	25,100	23,160	92,400	70,500
Actual expenditure per person	59	63	82	83
Particulars of income	Kalikirai	Badi Chitri	Ratenpura	Bankpura
Household tap connection charges	24,000	25,200	1,22,400	76,800
Non-house connections	0	0	0	0
Commercial connections	0	0	0	0
Interest on deposit	0	0	0	0
Any other income	0	0	0	2,000
Total income	24,000	25,200	1,22,400	78,800
Surplus/deficit	-1100	2,040	30,000	8,300
Surplus/deficit per person	-2.59	5.56	26.67	9.76

*Note: The system in Badi Chitri village is operational only since this April 2015 and hence the income and expenditure have been extrapolated for one year for calculation purpose, based on the expenses incurred for three months from April to June 2015.

It can be inferred from the above that the assured water supply with household tap connections, well trained VWSCs, enthusiastic youth ably supported by elders and women can ensure collection of water tariff to meet the operational expenditure. However, the annual incremental increase has to

match the inflation and raising costs of spares have to be planned carefully. PHED at the divisional and sub-divisional level has to work in collaboration with PRIs to strengthen the capacities of DWSCs in order to deliver the services in a sustainable manner to ensure drinking water security.

4 Household service levels

In all the villages, DWSCs operate as service provider and manage the water supply. In order to get an insight into the service levels that people receive, household surveys are organised using a closed format through random sampling. In each village, 30 households were selected and information collected to understand coverage and service level in terms of quantity, quality, accessibility and reliability. The results of the analysis for the above characteristics are presented below.

4.1 Description of households

It could be seen from the data presented below that all the surveyed households belong to Hindu religion in all the project villages. As Dhar district is basically a tribal dominated district, it can be observed that in three villages all the surveyed households belong to Scheduled Tribe, except in case of Ratenpura, where eight households out of 30 surveyed belonged to others caste. The percentage of households that are below the poverty line varied from 30% in Ratenpura to 70% households in Kalikirai and *Bankpura*, whereas the BPL families that of Badi Chitri remained at 40%.

Table 11 Distribution of households in terms of religion, caste and economic status

Village	Religion			Caste			Economic status
	Hindu	Muslim	Christian	SC	ST	Others	BPL
Kalikirai	30	0	0	0	30	0	21
	100%	0%	0%	0%	100%	0%	70%
Badi Chitri	30	0	0	0	30	0	12
	100%	0%	0%	0%	100%	0%	40%
Ratenpura	30	0	0	0	22	8	9
	100%	0%	0%	0%	73.3%	26.7%	30%
Bankpura	30	0	0	0	30	0	21
	100%	0%	0%	0%	100%	0%	70%

4.2 Household coverage and service levels

The consolidated service levels across sources and villages are provided only for the summer period, as the water supply services during summer are more important than the non-summer period. The consolidation of service levels works out to increase service level in some categories (i.e. quantity as more combined litres) but reduce it in others (i.e. accessibility as more combined minutes dedicated to collecting water). The service levels have been adjusted accordingly. The control village is coming out with the highest overall service level in terms of quantity due to the household storage found there. In all the best performing villages, the storage capacity of the households is lower, but it serves their needs and as the water supply is regular and reliable, and the hand pumps are also in use for purposes other than drinking and cooking. Water usage is minimal and as per the need. It was observed that the water quality in all the study villages is good as they are tapping the shallow groundwater zone in three villages (Kalikirai, Badi Chitri and *Bankpura*) that gets replenished with every monsoon and the bacteriological contamination is addressed through regular chlorination.

Only in Ratenpura, the source is deep borewell but has good yield and also does not have any contaminations beyond the permissible limits of water quality.

Table 12 Overview of Service Levels in Kalikiraye (all sources)

Service Level	Quantity	Accessibility	Quality	Continuity	Reliability
High	3%	0%	100%	0%	87%
Improved	10%	0%	0%	0%	0%
Basic	53%	3%	0%	100%	0%
sub-standard	33%	30%	0%	0%	0%
no service	0%	67%	0%	0%	0%
n/a	0%	0%	0%	0%	13%

Table 13 Overview of Service Levels in Badi Chitri (all sources)

Service Level	Quantity	Accessibility	Quality	Continuity	Reliability
High	0%	0%	100%	0%	83%
Improved	0%	0%	0%	0%	10%
Basic	20%	27%	0%	97%	0%
sub-standard	67%	47%	0%	0%	0%
no service	7%	20%	0%	0%	0%
n/a	7%	7%	0%	3%	3%

Table 14 Overview of Service Levels in Ratenpura (all sources)

Service Level	Quantity	Accessibility	Quality	Continuity	Reliability
High	67%	100%	100%	0%	57%
Improved	17%	0%	0%	0%	27%
Basic	17%	0%	0%	100%	0%
sub-standard	0%	0%	0%	0%	0%
no service	0%	0%	0%	0%	0%
n/a	0%	0%	0%	0%	17%

Table 15 Overview of Service Levels in Bankpura (all sources)

Service Level	Quantity	Accessibility	Quality	Continuity	Reliability
High	83%	0%	100%	0%	57%
Improved	17%	0%	0%	0%	27%
Basic	0%	50%	0%	100%	0%
sub-standard	0%	50%	0%	0%	0%
no service	0%	0%	0%	0%	0%
n/a	0%	0%	0%	0%	17%

In summary, Ratenpura village scores better on majority of the aspects due to sustainable source and good distribution system and good maintenance by the DWSC. Water quality is well taken care in all the villages. Continuity and Reliability of the services were observed to be good in all the villages and in the best performing villages the Reliability has a better score. The socio-economic and cultural aspects verses the livelihoods and living standards and the literacy levels, location of the villages also need to be considered. Though there is a lower level of score under quantity in case of Kalikirai and

Badi Chitri villages, where the NGO has played a major role, one has to consider the higher satisfaction levels of the community with regard to water supply. Thus, the models need to be rated as per the convenience and satisfactory levels of the community.

5 Costing

This section presents the costs associated with supporting rural water supply in Dhar district. It provides data, where available, on both Capital Expenditure (CapEx) on software and hardware. Following this it presents the current costs of Operational Expenditure (OpEx) as well as estimates for direct and indirect support costs. These costs help in identifying the ‘plus’ component that supports the sustainable functioning of community-managed rural water supply systems. All costs are given in INR unless otherwise specified. The costs incurred in the past are adjusted to 2014 prices using the annual average consumer price index calculated by the Reserve bank of India. Software costs are based on 2014 prices and the number of man days and salaries gathered in key informant interviews at the ESE level. The costs were collected from PHED & NGO.

5.1 CapEx (Hardware & software)

CapEx costs may be categorized into two – hardware and software components. First we present CapEx on hardware, which covers investment in initial construction costs as well as staff salaries for technical design, preparation of tender and construction supervision. A summary of what hardware costs covered in each village is described now, followed by a table detailing the actual costs:

- In case of Kalikirai and Badi Chitri villages, the pumping equipment, major distribution network in these villages was provided by NGO; whereas PHED has installed hand pumps as it has done for all the villages in Madhya Pradesh.
- In case of Ratenpura village, the hardware costs of borewell, Over Head Storage Reservoir and the pumping equipment was provided by PHED. The distribution network was also originally installed by the PHED/GP yet because it was dysfunctional the community made a contribution by collecting INR 550 from each household to re-lay the distribution network. Concerned households also provided the pipe lines for themselves, besides shramadan (labour work in kind) to lay the distribution pipe lines.
- In case of *Bankpura*, MLA development funds were used to lay the distribution network but they need to be replaced.

Overall, the capital expenditure in terms of hardware has been much higher as compared to the human resources costs to execute the schemes. The percentage of hardware human resource costs to the total hardware costs varied from 1.45% in Kalikirai to 3.28% in *Bankpura* indicating adoption of standard models for infrastructure creation with minimum supervision from the ESE staff. The costs are also dependent on the population to be served and the location of the sources from the habitations. In some cases, the sharing of costs by community also matters as does the quality and depth of groundwater. The details are given below:

Table 16 CapEx Hardware

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Particulars of Costs	Kalikirai	Badi Chitri	Ratenpura	Bankpura
Total CAPEX Hardware costs (INR)	15,10,000	12,10,000	18,50,000	11,25,000
Hardware HR costs (INR)	22,160	19,136	50,456	38,123
Total Hardware costs (CAPEX+HR costs) in INR	15,32,160	12,29,136	19,00,456	11,63,123

CapEx on software covers the expenses for initial capacity building and training. Community Mobilizers are involved in empowering the community in general and DWSC in particular. The NGO has spent lots of its time in creating the awareness in tribal dominated areas with limited population and it can be observed that per person costs are higher there as compared to PHED assisted villages. The costs involved in this phase are grouped into CapEx Software. The following costs are captured for the software component during the implementation of the scheme. In case of *Bankpura*, no costs were incurred recently, except the formation of DWSC in the beginning of the scheme and the responsibility assumed by the DWSC and the community being cohesive.

Table 17 CapEx Software

Particulars of Costs	Kalikirai	Badi Chitri	Ratenpura	Bankpura
Software HR costs (INR)	8,367	7,225	2,012	0
Travel and subsistence costs (INR)	4,157	3,589	7,718	0
Any information materials and supplies costs (INR)	2,500	2,500	5,000	0
Total estimated CAPEX Direct Support costs (INR)	15,024	13,314	14,730	0

It can be observed from the consolidated cost tables given below, that the CapEx hardware and CapEx software costs are dependent on the type of source and the number of people that will get the service.

5.2 Recurrent costs

Recurrent costs include expenditure on labour, chemicals and regular purchases of other materials at the CSP level. Routine maintenance is needed to keep systems running at peak performance, but does not include major repairs. Salaries of pump operators, valve men, support staff are payable by the people. The costs of hand pump maintenance has not been included, as PHED provides this service and the costs are absorbed by them directly. PHED, GoMP has earmarked INR 1,000 on an average for maintenance of the hand pumps. The DWSC members inform the GP or sometimes even directly to the hand pump mechanics to put back the default ones and are normally attended within 48 hours or at the most in a week's time. There is a stringent redressal mechanism to combat any delay in maintenance of hand pumps and thus their maintenance is well taken care. The tariff in piped water supply villages has been fixed based on the expenditure incurred and is shared equally by all households using the service. In case of Ratenpura, the tariff is as per the direction of PHED, where as in other villages it has been decided by DWSC themselves.

Table 18 Costs involved in OPEX Direct Support

Particulars of Costs	Kalikirai	Badi Chitri	Ratenpura	Bankpura
Staff salaries of those involved (annual)	12,000	12,000	21,600	36,000

Electricity charges	7,000	7,000		18,000
Physical maintenance cost (includes replacements)	6,100	4,160	70,800	16,500
Total estimated annual OPEX Direct Support costs	25,100	23,160	92,400	70,500

From the table no. 18 it can be observed that the major expenses are towards pump operators and electricity charges except Ratenpura village, where the source being a deep borewell and the power pump maintenance is little bit on higher side and also they replaced the old distribution lines. The annual water tariff collection for 2014-15 is given below:

Table 19 Water tariff collected to meet the expenditure (2014-15)

Particulars	Kalikirai	Badi Chitri	Ratenpura	Bankpura
Household tap connection charges	24,000	25,200	1,22,400	76,800
Non-house connections	0	0	0	0
Any other income	0	0	0	2000
Total	24,000	25,200	1,22,400	78,800
Actual expenditure	25,100	23,160	92,400	70,500
Surplus/deficit	-1,100	2,040	30,000	8,300

It can be observed from the above that the expenditure in case of Kalikirai village exceeded the expenditure, but the waterman and owner of the source would have gained from the previous year and also uses the pumping infrastructure for irrigation purpose sometimes.

5.3 Capital maintenance costs

Capital maintenance costs are met by the ESE's funds, as the paying capacity of the people is very limited. In case of major break down, PHED bears the cost. DWSC manages minor repair and expansion works by paying from the user charges collected and special funds collected for the purpose as in the case of Ratenpura village. DWSC is responsible for the service delivery and employs only the waterman to meet its logistical support. Any technical requirement is hired from the open market and in case of electrical repairs the expenses are paid from the user charges collected. PHED and NGO have adequate human and financial resources for providing the required support. DWSCs have been able to provide and maintain service level at a level that meets the local demand though may not be providing 55 lpcd or more with the help of ESE. In the absence of capacitation, the role of DWSC is becoming negligible. Still the DWSCs need to be empowered.

5.4 Overview of costs

The overview of costs per person in best performing villages ranges between INR 184 in case of Ratenpura as compared to INR 340 in Kalikirai and INR 385 in Badi Chitri villages. The costs in case of *Bankpura*, the control village are much lower, i.e. INR 168 per person as there are not any software costs. The costs in case of Kalikirai and Badi Chitri appear to be high, as the number of hand pumps that have been constructed contain Fluoride and hence the costs are higher. Moreover the costs of NGO were to be added as there are two ESEs working simultaneously. Moreover, creation of a

source, whether it is for 1,000 people or for 100 people, under favourable groundwater conditions will be the same, but per person costs will be higher wherever the population is small.

Table 20 Summary Cost Table (INR)

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

Source of funds	Use of funds - implementation			Use of funds - annual recurrent					RECURRENT EXPENDITURE TOTAL
	CapEx hardware	CapEx software	CAPEX TOTAL	OpEx labour & materials	OpEx power	OpEx bulk water	OpEx enabling support	CapManEx	
Community/consumers	-	-	-	INR 51	INR 13	-	-	INR 103	INR 167
Local self-government	-	-	-	-	-	-	-	-	-
State government entity	-	-	-	-	-	-	-	-	-
State water supply agency	INR 1,842	INR 4	INR 1,847	-	-	-	INR 4	-	INR 4
National Government	-	-	-	-	-	-	-	-	-
NGO national & international	INR 1,039	INR 24	INR 1,063	-	-	-	-	-	-
International donor	-	-	-	-	-	-	-	-	-
TOTALS	INR 2,881	INR 28	INR 2,909	INR 51	INR 13	-	INR 4	INR 103	INR 171
Median of 20 case studies			INR 3,231						INR 207
'Plus' %age	100%	100%	100%	0%	0%	-	100%	0%	2%
Median of 20 case studies			95%						57%

Notes: No CapManEx because schemes are new; State water supply agency committed to pay for CapManEx

Table 21 Summary Cost Table (PPP USD\$)

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

Source of funds	Use of funds - implementation			Use of funds - annual recurrent					RECURRENT EXPENDITURE TOTAL
	CapEx hardware	CapEx software	CAPEX TOTAL	OpEx labour & materials	OpEx power	OpEx bulk water	OpEx enabling support	CapManEx	
Community/consumers	-	-	-	\$ 2.93	\$ 0.72	-	-	\$ 5.85	\$ 9.51
Local self-government	-	-	-	-	-	-	-	-	-
State government entity	-	-	-	-	-	-	-	-	-
State water supply agency	\$ 105.01	\$ 0.25	\$ 105.26	-	-	-	\$ 0.23	-	\$ 0.23
National Government	-	-	-	-	-	-	-	-	-
NGO national & international	\$ 59.22	\$ 1.36	\$ 60.58	-	-	-	-	-	-
International donor	-	-	-	-	-	-	-	-	-
TOTALS	\$ 164.23	\$ 1.61	\$ 165.84	\$ 2.93	\$ 0.72	-	\$ 0.23	\$ 5.85	\$ 9.73
Median of 20 case studies			\$ 184.16						\$ 11.78
'Plus' %age	100%	100%	100%	0%	0%	-	100%	0%	2%
Median of 20 case studies			95%						57%

Notes: No CapManEx because schemes are new; State water supply agency committed to pay for CapManEx

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 (<http://data.worldbank.org/indicator/PA.NUS.PRVT.PP>) in order to give the best interpretation of India costs in global terms.

6 Conclusions

The measures described throughout the report in Kalikirai and Badi Chitri villages were due to the efforts of Vasudha Vikas Sansthan and in case of Ratenpura by PHED's Social Mobilization Team that promoted high levels of community participation and management of the drinking water supply system. These efforts have made the marked difference in the functioning of the water supply scheme, as evident from high proportion of household connections and regular payment of water tariffs. The level of professionalization at community level still needs to be improved by training the DWSCs and their functionaries mainly in record keeping and maintenance of books of accounts. They also need to be empowered to improve the service levels and more advanced activities like undertaking water security and quality assessment measures and water metering. The community as of now is covering OpEx costs in the project villages, but needs to improve on supply systems.

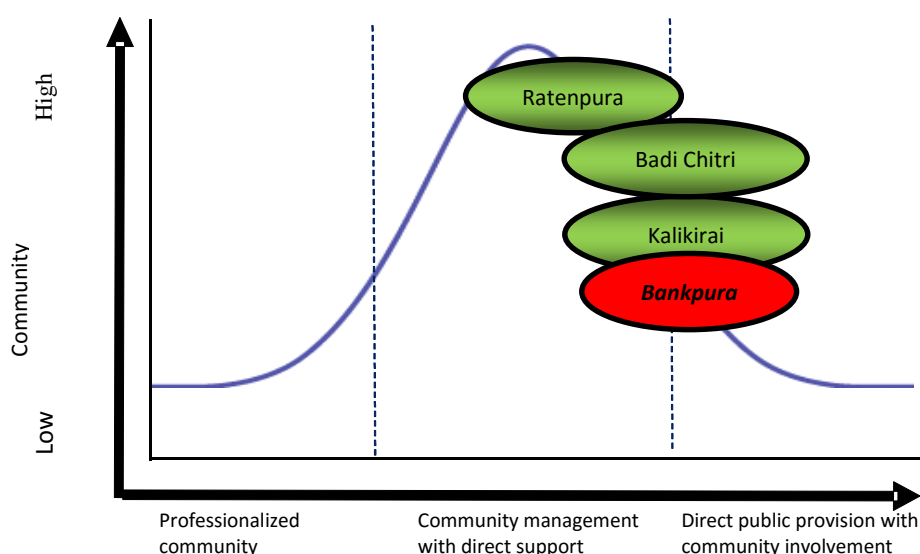


Figure – 7: Villages allocated on the community management continuum

Normally, Madhya Pradesh government bears the initial Capex and CapManEx that constitute the major proportion of OpEx in providing drinking water supply to its citizens in the rural area. Based on the continuum of Community Management given in the Community Water Plus Concept and Methods paper (Smits et al. 2015), the performance of best practice villages can therefore be conceptualised to be a form of “Community Management with Direct Support”, whereas the control village can be located just below the success cases representing a model of “Community Involvement with Direct Support”, as the professional approach of maintaining the books of accounts needs to be improved.

The NGO model of shallow dug wells together with hand pumps by PHED costs about INR 3,480 and that of PHED with the Social Mobilization Team costs about INR 1,705 per person. The conventional model where the GP and the DWSC have assumed the responsibility, the cost is about INR 1,370 per person. The difference in costs has been mainly due to the population size and type of water source. Out of the capex, the software part constitutes only about INR 24 in case of NGO support and INR 4 in case of PHED supported Social Mobilization Team. But the cost of PHED's Social Mobilization Team

has been considered at the block level expenditure and at present only very few schemes (on an average 3 PWSS) are being supported.

PHED and the NGO are found to be effective ESEs given the complex physico-socio-economic and cultural background of the state. They follow a professionalised support model, with clear vision and division of roles and responsibilities that provides comprehensive and structured support, in a demand-responsive manner. It is performing its role in an effective manner, but can improve in several aspects, including monitoring client satisfaction, addressing issues related to source and system sustainability. It is also found to focus mainly its support role during the implementation of new infrastructure, or asset renewal and enhancement, whilst support to service provision, is done only on-request basis, and not in a structured manner. During capital investments, partnering is consultative in the sense that ESE and CSP jointly decide on what to be developed but follow standard procedures for how to develop it, in terms of financing, procurement rules, training and technical designs.

The following points need to be considered for improving the drinking water services in terms of ***'ensuring adequate safe water with high reliability and sustainability for all'*** at an affordable cost to meet the operation and maintenance costs.

- **Sources, their quality and sustainability:** All the sources have to be owned by the community rather than by private/ individual, so that there will be high reliability in un-interrupted services and there will not be any problem for making investments by the public bodies and the community. All the sources need to be protected from environmental pollution and especially the open wells need to be provided with wire mesh. Chlorination has to be ensured for shallow groundwater and surface water bodies as these are prone for bacteriological contamination. Water quality monitoring and surveillance can be decentralised by training some of the DWSC members and waterman. This has to be supported by GP and PHED with adequate infrastructure at the DWSC level. Suitable source sustainability measures need to be adopted for all the sources for longevity and reliable supply of water and continuous maintenance by the community. There is a need to take measures for source sustainability from the beginning so as to prevent drying of sources as the costs will be prohibitive if one has to create a new source. DWSC members need to be educated and trained on rainwater harvesting to recharge groundwater as no appropriate policy is in place at present to sustain the groundwater levels/sources.
- **Institutional sustainability:** The chief lesson emerging from various drinking water supply approaches is that local level institutions matter for the community as local needs and management of the same are better done by the community. However there is a great need to build up certain key capacities of these bodies. The local society needs to gear up to accept the challenge of being vigilant about water governance, source sustainability, controlling the wastage, water quality monitoring and surveillance, and managing waste water. DWSCs need to be strengthened through rigorous ESE follow-up until empowerment of the community. This is being addressed as per the revised norms of government of Madhya Pradesh, published on 20.01.2015 in their gazetteer under Panchayat and Rural Development Division. However, it might be better to outsource to NGOs for this purpose. These NGOs can be provided with requisite training. One block level coordinator, district level HR and IEC coordinators presently

working under PHED be attached to Janpad and Zilla Panchayat respectively for effective monitoring and guidance to the DWSCs, as the operation and maintenance responsibility is vested with Janpad & Zilla Panchayats that operate through Gram Panchayats. There is also a need to link the DWSCs with GPs, as is followed in other states like Karnataka for ensuring better coordination and support from government as and when required for effective operation and maintenance.

- **Water tariff flexibility:** Government of Madhya Pradesh in their recent publication has fixed the norms of water tariff, its collection process, and utilisation to meet the operation and maintenance of the water supply service. This can be made little more flexible by delegating the responsibility to DWSCs to decide the tariffs based on the expenditure related to operation and maintenance and also to meet the repair costs and for replacement of minor assets. DWSCs need to be strengthened on annual action plan preparation for operation and maintenance, book keeping and proper maintenance of accounts and also to have some reserves for asset replacement whenever required. The income and expenditure statements should be made public on quarterly basis and at least twice a year the gram sabha held to ensure transparency and accountability.
- **Swaraj (self-governance) to Suraj (good governance):** People collectively developed rules for supply and management of water and ensured these were adhered to by all. This has been possible through a participatory process of decision making which was facilitated by the implementing partner organisations. The approach believed in people and their ability to design, implement and manage the water and sanitation facilities. The concept of **Swaraj** or self-governance has thus been improved into **Suraj** or good governance.
- **Empowerment:** It is a process which requires time and investment to build the capacities of communities in general and that of DWSC members in specific from the initial stages itself. Creating and nurturing of people's institutions as a collective for taking their own decisions is the culmination. Only then people's institutions demand services from the government and progressively improve the service standards.

APPENDICES

Table – 22: CSP-1 Best Practice Activity and Responsibility Matrix (Kalikirai village)

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

Community Water ^{plus}

Table – 23: CSP-2 Best Practice Activity and Responsibility Matrix (Badi Chitri village)

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

Table – 24:CSP-3 Best Practice Activity and Responsibility Matrix (Ratenpura village)

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

Table – 25: CSP-4 Control Activity and Responsibility Matrix (Bankpura village)

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

Table – 26: Type of support activities received by the CSP Best Practice 1

Type of support activity	Does the CSP receive this type of support?	Who provided the support*	*Other, please specify	Modality of support	Frequency of Support	Comments / Explanations
Monitoring and control (incl. auditing)	Yes	NGO		supply-based	2	The scheme has been handed over and the local water man who is also the owner of the source manages the show
Water quality testing	Yes	NGO	Also PHED	Both on request and supply-based	2	Pre-monsoon and post monsoon water quality testing is done by NGO and also by PHED
Water resources management	No	n/a		n/a		There was no need in the past one year
Technical assistance	No	n/a		n/a		There was no need in the past one year
Conflict Management	No	n/a		n/a		There was no need in the past one year
Support in identifying investments needs	No	n/a		n/a		There was no need in the past one year
(Re)training of service provider	No	n/a		n/a		There is a need to re-train the CSP as systems can be improved.
Information and communication activities	No	n/a		n/a		There is a need for IEC activities to the CSP and for public as systems can be improved.
Fund mobilization	No	n/a		n/a		There was no need in the past one year
Other (specify)						

Table – 27: Type of support activities received by the CSP Best Practice 2

Type of support activity	Does the CSP receive this type of support?	Who provided the support*	*Other, please specify	Modality of support	Frequency of Support	Comments / Explanations
Monitoring and control (incl. auditing)	Yes	NGO		Both on request and supply-based	4	This being new village more support was required
Water quality testing	Yes	NGO		supply-based	3	PHED also took samples twice
Water resources management	Yes	NGO		Both on request and supply-based	1	A cover was provided to the openwell to protect the source and regular water treatment chemical for bacteriological disinfection was also provided
Technical assistance	Yes	NGO		supply-based	2	PSI, Dehradun provided regular technical support besides Vasudha Vikas Sansthan, the local NGO
Conflict Management	No	n/a		n/a		There were no conflicts
Support in identifying investments needs	Yes	NGO		Both on request and supply-based		
(Re)training of service provider	Yes	NGO		supply-based	2	Still some more focussed training is required
Information and communication activities	Yes	NGO		supply-based	2	
Fund mobilization	Yes	NGO		Both on request and supply-based		Worked out the details in close collaboration with the CSP and community
Other (specify)						

Table – 28: Type of support activities received by the CSP Best Practice 3

Type of support activity	Does the CSP receive this type of support?	Who provided the support*	*Other, please specify	Modality of support	Frequency of Support	Comments / Explanations
Monitoring and control (incl. auditing)	Yes	Other Government agency	PHED Social wing	Both on request and supply-based	4	On quarterly basis and as and when required basis, the service is provided
Water quality testing	Yes	Other Government agency	PHED	supply-based	2	Pre-monsoon and post-monsoon water samples collection and analysis was done by PHED
Water resources management	Yes	Other Government agency	PHED Social wing	Both on request and supply-based	2	During the summer, alternative arrangements were worked out as the source was not in a position to meet all the water requirement.
Technical assistance	Yes	Other Government agency	PHED	On request		For new connections, valve placement was suggested.
Conflict Management	n/a	n/a		n/a		There were no conflicts
Support in identifying investments needs	Yes	Other Government agency	PHED	On request		For new connections, required material procurement was facilitated
(Re)training of service provider	No	n/a		n/a		There is a need to retrain the CSP for better systems management and book keeping
Information and communication activities	No	n/a		n/a		There is a need for IEC activities to the CSP and for public as systems can be improved.
Fund mobilization						
Other (specify)						

Table – 29: Type of support activities received by the CSP Control 4

Type of support activity	Does the CSP receive this type of support?	Who provided the support*	*Other, please specify	Modality of support	Frequency of Support	Comments / Explanations
Monitoring and control (incl. auditing)	No	n/a		n/a		No support was provided
Water quality testing	Yes	Other Government agency	PHED	supply-based	2	Routine water quality work was done
Water resources management	No	n/a		n/a		People themselves closed a big pit which was used open defecation near the major water source (open well)
Technical assistance	No	n/a		n/a		No support was provided
Conflict Management	n/a	n/a		n/a		CSP is a cohesive group and there were no conflicts in the previous year
Support in identifying investments needs	No	n/a		n/a		NGO (Vasudha Vikas Sansthan) started interacting with the CSP but no action initiated yet
(Re)training of service provider	No	n/a		n/a		Training to CSP is very much required for systems management and book keeping
Information and communication activities	No	n/a		n/a		There is a need for IEC activities to the CSP and for public as systems can be improved.
Fund mobilization	No	n/a		n/a		
Other (specify)						

Table – 30: Infrastructure status snapshot tool CSP Best Practice 1

System component	Presence	Functioning	Age in relation to life-span	Physical condition (good, reasonable, poor)	Comments / Explanations
Intake structure	Yes	Yes	six years against 15 years	Good	This was installed by NGO (Vasudha Vikas Sansthan) on a private openwell
Borehole	n/a	n/a		n/a	Open well is the source
Handpump	Yes	Yes		Reasonable	Two HPs are in good condition. Water quality is an issue
Motorised pump	Yes	Yes		Good	
Diesel generator					
Electricity panel	Yes	Yes		Reasonable	
Treatment plant					
Main line	Yes	Yes		Good	
Reservoir	Yes	Yes		Good	There are 3 plastic tanks at different parts of the village to provide the service
Pressure-break tanks					
Chlorinator	Yes	Yes		Reasonable	Chlorination is done at the source and the chemical is changed once in a fortnight
Distribution network	Yes	Yes		Good	
Tap stands					
....To be expanded when necessary					

Table – 31: Infrastructure status QIS tables CSP Best Practice 1

Indicator	Score	Explanation
Infrastructure status snapshot scoring (piped water supply)	100	
Infrastructure status snapshot scoring (hand pumps)	75	

Table – 32: Infrastructure status snapshot tool CSP Best Practice 2

System component	Presence	Functioning	Age in relation to life-span	Physical condition (good, reasonable, poor)	Comments / Explanations
Intake structure	Yes	Yes	One year/15 years	Good	Recently installed by NGO (Vasudha Vikas Sansthan) on an open well
Borehole	n/a	n/a		n/a	Open well is the source
Handpump	Yes	Yes		Good	Water quality problem is there
Motorised pump	Yes	Yes		Good	
Diesel generator					
Electricity panel	Yes	Yes		Good	
Treatment plant					
Main line	Yes	Yes		Good	
Reservoir	Yes	Yes		Good	There are 3 plastic tanks at different parts of the village to provide the service
Pressure-break tanks					
Chlorinator	Yes	Yes		Good	Chlorination is done at the source and the chemical is changed once in a fortnight
Distribution network	Yes	Yes		Good	
Tap stands					
....To be expanded when necessary					

Table – 33: Infrastructure status QIS tables CSP Best Practice 2

Indicator	Score	Explanation
Infrastructure status snapshot scoring (piped water supply)	100	
Infrastructure status snapshot scoring (hand pumps)	75	

Table – 34: Infrastructure status snapshot tool CSP Best Practice 3

System component	Presence	Functioning	Age in relation to life-span	Physical condition (good, reasonable, poor)	Comments / Explanations
Intake structure					
Borehole	Yes	Yes	2 years/15 years	Good	Done by PHED
Handpump	Yes	Yes		Good	Only 3 hand pumps
Motorised pump	Yes	Yes		Good	
Diesel generator					
Electricity panel	Yes	Yes		Good	
Treatment plant					
Main line					
Reservoir	Yes	Yes		Good	50,000 litre capacity OHSR is there
Pressure-break tanks					
Chlorinator					
Distribution network	Yes	Yes		Good	
Tap stands					
<i>....To be expanded when necessary</i>					

Table – 35: Infrastructure status QIS tables CSP Best Practice 3

Indicator	Score	Explanation
Infrastructure status snapshot scoring (piped water supply)	100	
Infrastructure status snapshot scoring (hand pumps)	75	

Table – 36: Infrastructure status snapshot tool CSP Control 4

System component	Presence	Functioning	Age in relation to life-span	Physical condition (good, reasonable, poor)	Comments / Explanations
Intake structure	Yes	Yes	8 years/15 years	Good	Open well is the source
Borehole					
Handpump	Yes	Yes		Good	Water quality problem is there
Motorised pump	Yes	Yes		Good	
Diesel generator					
Electricity panel	Yes	Yes		Good	
Treatment plant					
Main line	Yes	Yes		Reasonable	Needs replacement
Reservoir					
Pressure-break tanks					
Chlorinator	Yes	Yes		Reasonable	ASHA worker supplies the chemical
Distribution network	Yes	Yes		Reasonable	Needs replacement as it is old and also one reservoir is required.
Tap stands					
....To be expanded when necessary					

Table – 37: Infrastructure status QIS tables CSP Control 4

Indicator	Score	Explanation
Infrastructure status snapshot scoring (piped water supply)	75	
Infrastructure status snapshot scoring (hand pumps)	75	