

# COMMUNITY MANAGEMENT OF RURAL WATER SUPPLY

Community Water <sup>plus</sup>



**asci**  
Leadership through Learning

Administrative Staff College of India, Hyderabad

**Understanding the resource implications of the 'plus' in community management of rural water supply systems in India: a multi-village scheme in Amravati district, Maharashtra**



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October 2015



Community Water <sup>plus</sup> 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

This report details the services provided by Maharashtra Jeevan Pradhikaran (MJP) in Amravati District, Maharashtra which is a Multi-Village Scheme. The implementation of the large-scale multi-village Scheme, covering 156 villages and two towns in the Amravati District, has resulted in better water service provision in the rural areas of the district. It received acclaim both at international and national levels owing to achievement of 100 per cent metered household connections.

Maharashtra is covered by a saline track zone in the Purna River Basin, covering a total area of 4,692 square kilometres (sq km) in the Amravati, Akola, and Buldhana Districts. The ground water in this region is saline and unfit for human consumption. Therefore, gravity-fed schemes using surface water from a reservoir is the only technical option. This means in practice also that often multi-village schemes need to be developed, using a single dam. These are either Single-Village Schemes (maintained by Gram Panchayat or Zilla Parishad) or Multi-Village Schemes (maintained by Zilla Parishad or by MJP themselves. Around 65,000 Schemes have been created under MJP. More than half of these schemes are maintained by MJP. This '156 villages and two towns scheme' is entirely maintained by MJP. About 258 households on an average per village are served via this scheme.

The central government approves the budget for the water projects in general and disburses funds for the same. Usually, the central government's share is 50% of the project cost. The state government puts in another 50% to meet the total project cost. The gross cost of the scheme is INR 163.31 crores. Gross cost with escalation was INR 181.16 crores. INR 78 crores was loaned by HUDCO. It is the responsibility of MJP to prepare action plans and identify the budgetary requirements.

MJP is also responsible for monitoring the service levels as well as the water quality.

Day to day operation is the sole responsibility of MJP. Time-keepers and Valve-men at villages are contracted by MJP for O&M. With respect to capital maintenance and asset renewal, the responsibility again lies with MJP. The tariff is also collected by the Bill collectors who are employed by MJP. The whole auditing process and performance assessment also is taken care of by MJP.

Even though Village Water and Sanitation Committees (VWSCs) are formed in the villages during the implementation stage, their role is very limited. It is interesting to note how the VWSCs play the role of 'Watch Dog' and puts any eye on MJP's performance. The VWSCs also check for misuse of metered connections at household levels. In some villages, where tariff collection is a painful task, VWSCs step in and help MJP in tariff collection from problematic households. Efficient complaint redressal is in system due to extra effort put in by the VWSCs. In the whole process, an individual's responsibility is to pay tariff on monthly basis.

Though this mechanism is essentially one of direct public service provision with minimal community involvement, service levels are high, in terms of the quantity, quality and continuity of supply. However, in the control village in the tail-end, the service levels are very minimal. There seems to be equity within villages, but not across the villages, as witnessed by the problems in the tail-end village.

This is an indication that even in a more 'professionalized' service delivery approach, likely to be the future pattern as economic development continues at pace, there remains a role for real community involvement in rural water supply to ensure sustainable services to all, particularly those disadvantaged in any way, in this case at the tail-end of the design. There remains a need to hold

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service providers to account, whether through local government and political intervention or through some better empowered village water committee process.

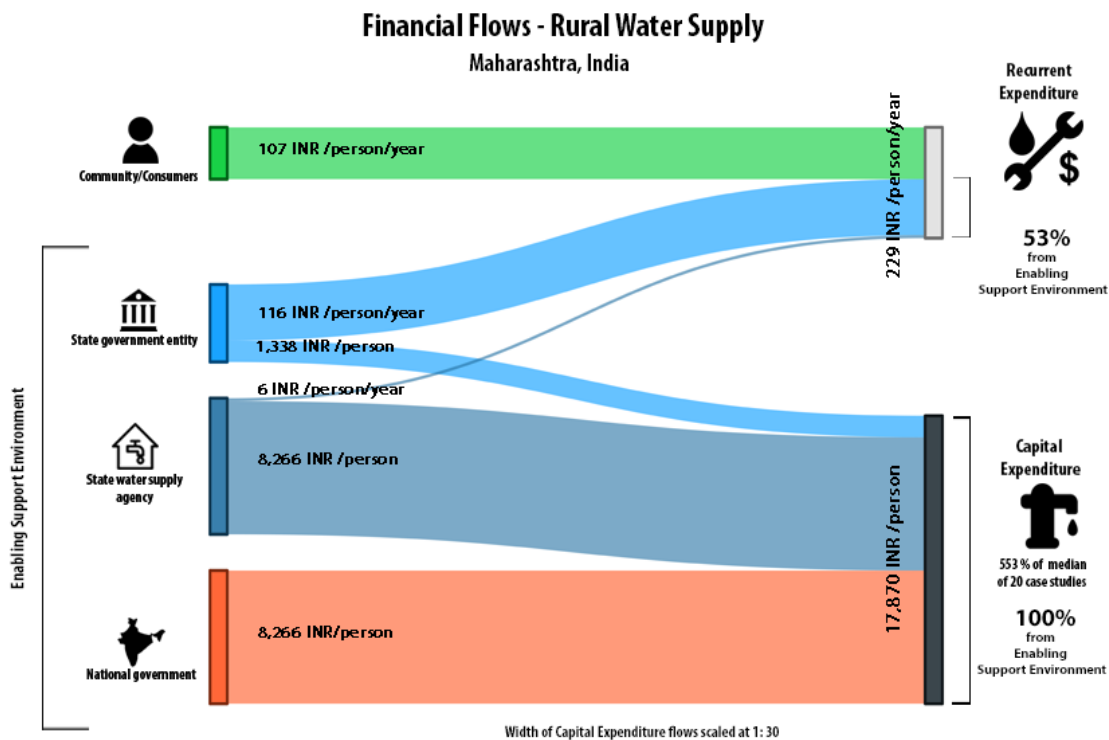
On an average, INR 229/person is estimated as the total annual recurrent cost with an average expenditure of INR 127/person is incurred for materials and supplies. All the financial transactions are within the purview of MJP. Approximately 50% of these recurrent costs are met in form of tariff collected from the households.

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

Source of funds	Use of funds - implementation			Use of funds - annual recurrent					RECURRENT EXPENDITURE TOTAL
	CapEx hardware	CapEx software	CAPEX TOTAL	OpEx labour & materials	OpEx power	OpEx bulk water	OpEx enabling support	CapManEx	
Community/consumers	-	-	-	INR 62	INR 1	INR 0.7	-	INR 44	INR 107
Local self-government	-	-	-	-	-	-	-	-	-
State government entity	INR 1,338	-	INR 1,338	INR 66	INR 3	INR 0.7	-	INR 47	INR 116
State water supply agency	INR 8,266	-	INR 8,266	-	-	-	INR 6	-	INR 6
National Government	INR 8,266	-	INR 8,266	-	-	-	-	-	-
NGO national & international	-	-	-	-	-	-	-	-	-
International donor	-	-	-	-	-	-	-	-	-
TOTALS	INR 17,870	-	INR 17,870	INR 127	INR 4	INR 1.4	INR 6	INR 90	INR 229
Median of 20 case studies			INR 3,231						INR 207
'Plus' %age	100%	-	100%	51%	73%	51%	100%	51%	53%
Median of 20 case studies			95%						57%

Notes: per capita costs have been calculated for the entire rural part of the service area of this multi-village scheme

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.



## Acknowledgements

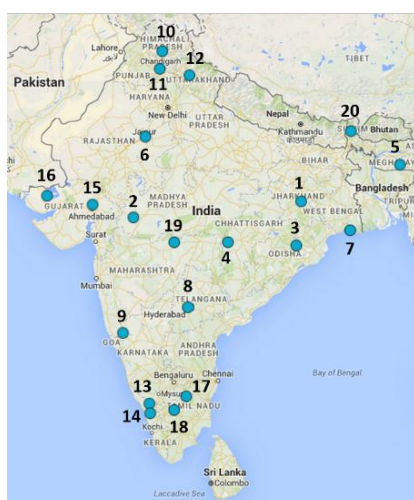
We would like to express gratitude to the team at Maharashtra Jeevan Pradhikaran (both at Headoffice and district level), particularly Mr. Prashant Bhamre for enabling us to undertake this research about Total Gravity Based Water Supply Scheme for 156 Villages in Amravati District. We also kindly acknowledge the support of various Maharashtra Jeevan Pradhikaran's staff who played a critical role during the ethnographic research, particularly Mr. Satish Bakshi. Also, we acknowledge the services of Mona Pantile and Rani Pandey for collection of household data. Finally, our sincere appreciation goes to the Gram Panchayats, Village Water and Sanitation Committees and communities who contributed their time to the discussions and interviews that form the basis of this report. All photos in the report are taken by Shaili Jasthi and Swapna Uddaraju, unless indicated otherwise.



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



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### The twenty case studies

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

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

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## 1 Introduction

This report is part of the Community Water <sup>plus</sup> series of case studies on community-managed rural water supply in India. It documents the case of MJP of a gravity based water supply scheme for 156 villages in Amravati District, Maharashtra with community involvement. The report describes this arrangement in detail, and assesses the effects of the support in terms of service delivery. It also provides an approximation of the costs involved in support.

### 1.1 Background to the case study, the topic and the community water plus project

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

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

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

### 1.2 Overall objectives of the research and research questions

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

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

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

This is further broken down in the following specific questions:

- What are the current modalities of successful community management and how do they differ in their degrees of effectiveness?



- What supporting organisations are in place to ensure sustainable water service delivery relative to alternative modes of supply?
- What are the indicative costs of effective support organisations?
- Can particular trajectories of professionalising and strengthening the support to rural water be identified?

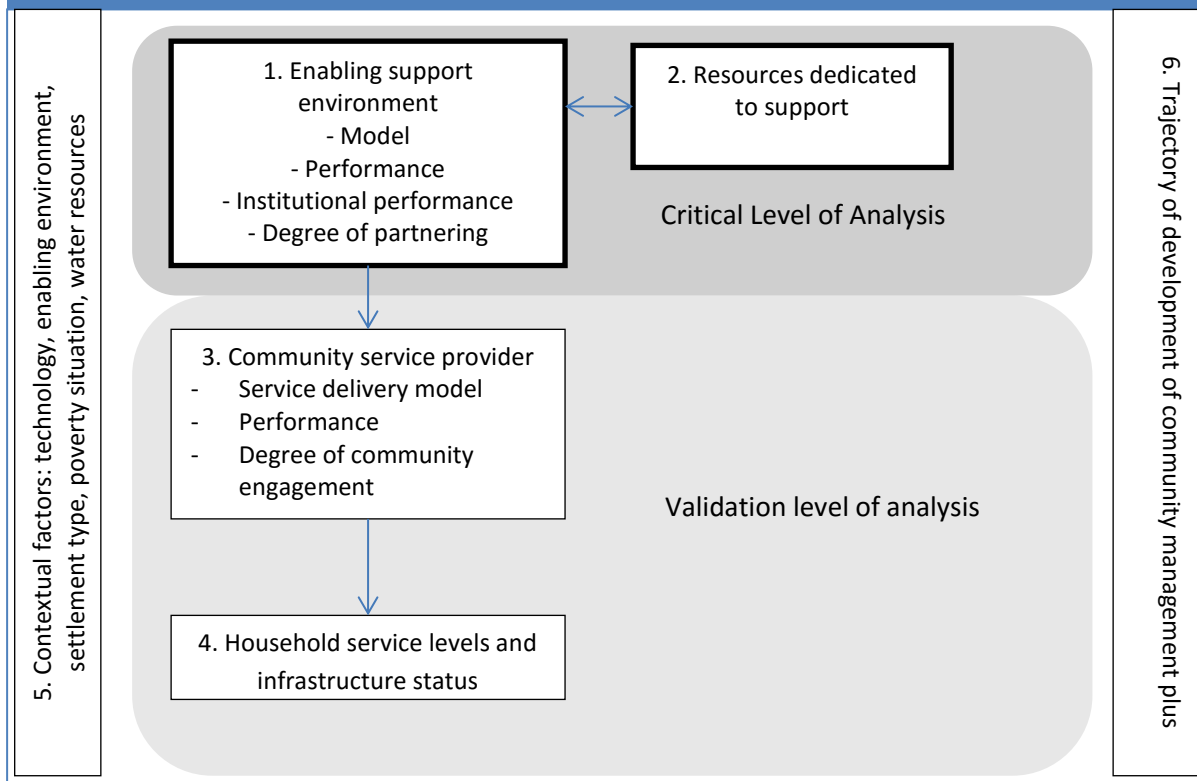
This report provides the results from one of the case studies investigating the services provided by Maharashtra Jeevan Pradhikaran (MJP) in Amravati District, Maharashtra, and the involvement of communities in the scheme.

### 1.3 Concepts and Methodology

Community Water<sup>plus</sup> (community management of rural water supply systems) 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 1.1 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 Water<sup>plus</sup> 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 1.1 Elements of the research**

## 1.4 Case study selection

In shortlisting twenty successful case studies, the research team 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.

In rural water supply, the main cost component would be the electricity bill summing to a big number, sometimes also responsible for the failure of a scheme. Maharashtra Jeevan Pradhikaran has achieved 100% household connection – with metering - entirely based on gravity supply. This technology option is selected also because of the prevailing salinity conditions of the groundwater. The choice for gravity fed systems with reservoirs has implied though that many schemes are multi-village schemes. Because of the scale of the system, MJP manages the entire system, but with community involvement. The 100 percent metered piped water supply for households and has been honoured in the Limca Book of Records. But in gravity systems, it is often the initial development costs that are very high. Also, often the real costs are the eventual replacement costs of the infrastructure .In this context; it is felt that this case would enable us to understand the key take away points that would help in efficient service provision.

For the purpose of this case study, three villages in Amravati district – Nardoda, Jasapur, Chandrapur were selected in which there is a valid level of community involvement. In addition, a fourth village – *Khairi*, a tail-end village, has been selected as a control, which is facing severe water scarcity and salinity problems as well.



Data collection was conducted during the months of June-July of year 2015. In total, 10 key informant interviews, 9 Focus Group Discussions and 120 household surveys were conducted and materials from secondary sources (such as organisational reports) are collected.

**Table 1.1 Data Sources**

Unit of Analysis	Data Sources
Enabling Support Environment	<ul style="list-style-type: none"> <li>• 8 Key Informant Interviews</li> <li>• 1 Focus Group Discussion</li> <li>• Secondary Information</li> </ul>
Service Provider	<ul style="list-style-type: none"> <li>• 2 Key Informant Interviews (Time Keeper and Valve Man)</li> <li>• 4 Focus Group Discussions (1 in each village with the Gram Panchayat and Village Water Sanitation committee)</li> <li>• Secondary Information</li> </ul>
Households	<ul style="list-style-type: none"> <li>• 120 Household Surveys ( 30 in each Village)</li> <li>• 4 Focus Group Discussions (1 in each Village)</li> </ul>

## 1.5 Structure of the report

Chapter 1 introduces the case study and presents the concepts and methodology used for this study. The second section focuses on Maharashtra Jeevan Pradhikaran which carries out the Enabling Support Environment (ESE) functions, ensuring service provision. Following this, the third section details the community involvement in the four selected villages and the household service levels achieved. The fourth chapter presents the financial data that computes a figure to enable the provision of services for sustainable community management of rural water systems. The conclusions follow.

## 2 Organisation and functioning of Maharashtra Jeevan Pradhikaran

### Background and origin of the ESE, and context in which it operates

Maharashtra Jeevan Pradhikaran (MJP) was established as per Maharashtra Water Supply and Sewerage Act 1976. It was originally part of Urban Development and Public Health Department. MJP's main objective was rapid development and proper regulation of water supply and sewerage services in the state. The Board was subsequently named as Maharashtra Jeevan Pradhikaran on December 07, 1996. MJP performed integrated and vital role in planning, designing, implementation and subsequent operation and maintenance of water supply and sewerage sector in the state. MJP's role was redefined after implementation of 73rd and 74th constitutional amendments as the water projects became demand responsive rather than supply-driven.

#### Reorganization of MJP

Various types of works are being carried out by MJP through its state-wide spread over field offices. It was under consideration to segregate the specific works, i.e., operation and maintenance, project management, consultancy, advanced technology support, routine execution of urban and rural schemes etc, and to keep them under control of specifically designated offices so as to get the desired results. The issue was discussed in the 111<sup>th</sup> meeting of the MJP Board wherein it was decided to wind up the offices of the Regional Chief Engineers and to re-allocate the focused responsibilities, as stated above, to them at the central level. According to this Board's approval, MJP is reorganized by MJP's order dated November 03, 2011 and other subsequent orders.

### 2.1 Development and scale of the multi-village scheme

In Maharashtra, there is a saline track zone in the Purna River Basin, covering a total area of 4,692 square kilometres (sq km) in the Amravati, Akola, and Buldhana Districts. The ground water in this region is saline and unfit for human consumption. In Amravati District, there are 14 talukas or blocks, of which six are affected by salinity, for a total affected area of approximately 1,738 sq km. Of the approximately 355 villages in the Amravati District, the affected areas are primarily located in the Daryapur Tehsil (146 villages), Bhatkuli Tehsil (111 villages), and Anjangaon Tehsil (48 villages) (Figure 4).

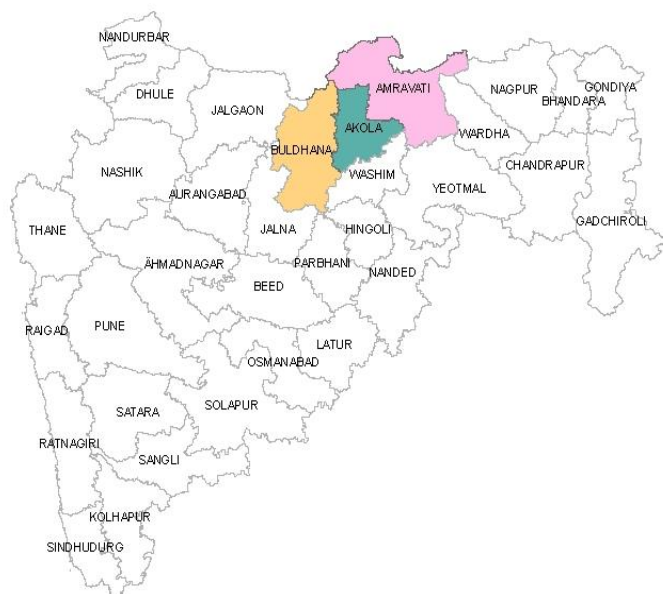


Figure 2.1 Saline Districts in Maharashtra. Source:MJP



**Figure 2.2 Severity of Salinity in Amravati District, Maharashtra. Source: MJP**

To combat this situation, the local MLA and the officers of Maharashtra Jeevan Pradhikaran (MJP) planned to prepare a Regional Water Supply Scheme project, with the newly-constructed Shahanoor Irrigation Dam, serving as a source of safe, pure water and ensuring water security for the people of the saline track zone. The dam is situated at an altitude of 413.5 meter. It demonstrated a potential for a massive multi-village scheme on gravity flow requiring zero energy.

Initially, 156 villages and two towns (Anjangaon and Daryapur) were targeted for the proposed schemes as they faced severe water scarcity. The dam was constructed by the Irrigation Department in the 1990s and planning for the preparation of a water supply scheme was initiated in 1994 by the MJP. Surveying work was carried out and in 1997; the proposal was submitted to the Government of Maharashtra for administrative approval; which was sanctioned on October 15, 1998, for 181.16 crore, and work began the following year.

The main reasons for the initiation of this scheme were:

- Inadequate and uncertain water supply,
- Salinity in ground water,
- The life of old schemes was exhausted,
- No revenue recovery,
- Depletion in water source,
- Heavy energy charges,
- Agitation from villagers and public representatives for secured water supply.







**Photograph: Water Treatment Plant**

With a view to ensuring an uninterrupted supply of water over a huge network of 156 villages and two towns using gravitational force from the WTP, 11 Main Balancing Reservoirs have been constructed. Of 11 MBRs, two are allocated to the two towns and nine for the 156 villages. From the MBR water flows to a number of Elevated Service Reservoirs, which typically meet the drinking water needs of one or two villages.



**Photograph: Main Balancing Reservoirs and Elevated Service Reservoirs**

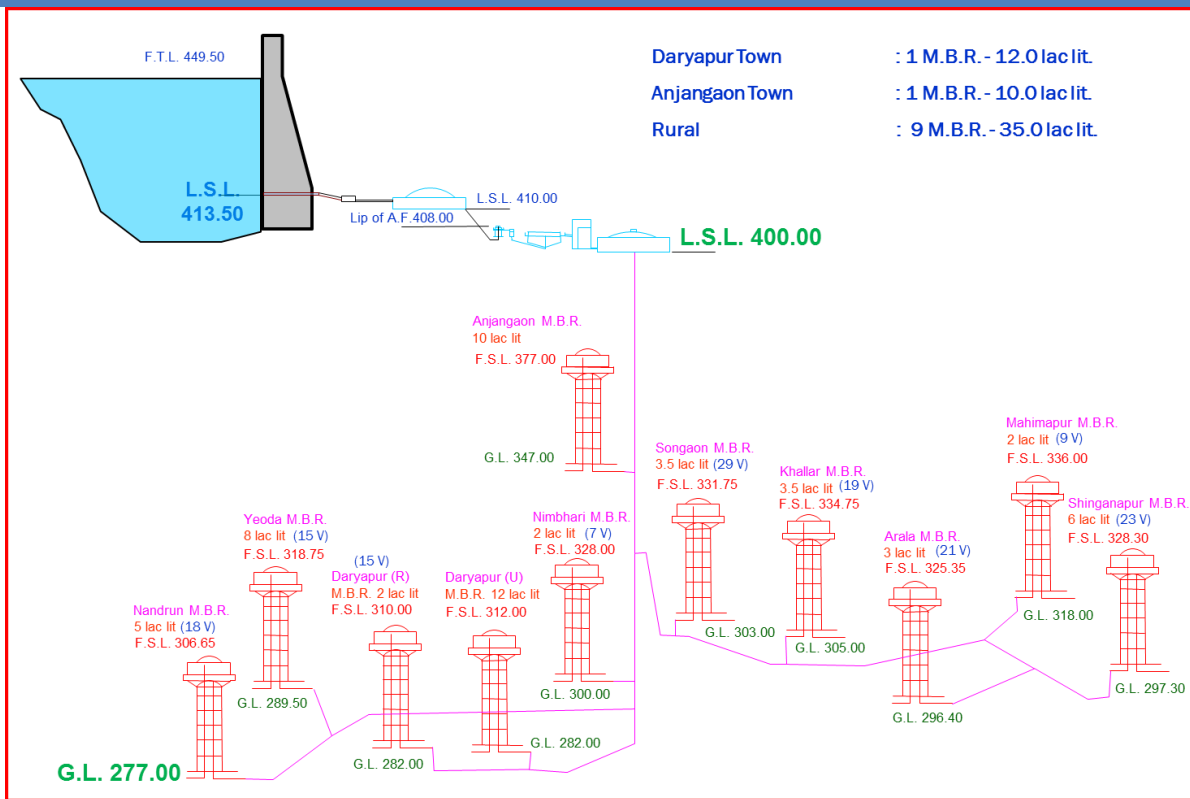
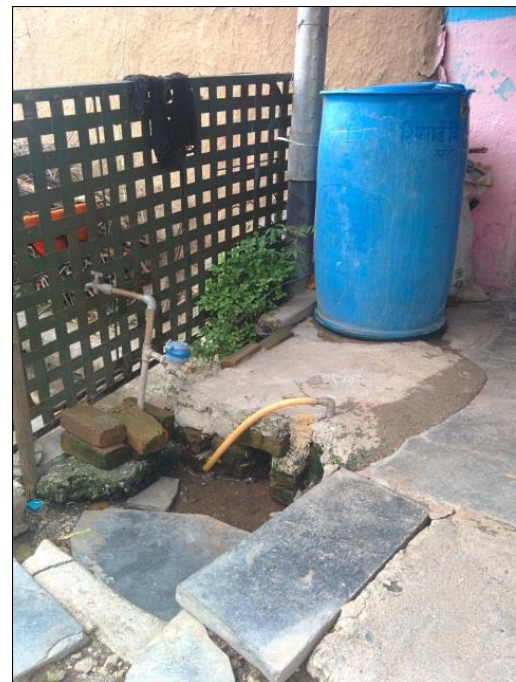


Figure 2.4 Flow Diagram for the Combined WSS

The MVS supplies water to 156 villages and two towns by . There are 27,178 connections in the 156 villages and 15,985 in the two towns. All households have a water meter and the water tariff is paid according to the meter reading with the slab system based on the following:

- 0 to 15,000 litre: INR 6.60 per 1,000 litre
- 15,001 to 20,000 litre: INR 10 per 1,000 litre
- 20,001 to 25,000 litre: INR 13.30 per 1,000 litre
- 25,001 and above: INR 27.50 per 1,000 litre
- For Non-domestic: INR 40.70.



Photograph: Metered Household Connection



## 2.2 Descriptive indicators of MJP

Maharashtra Jeevan Pradhikaran is a government body, operating as a Board under the Government of Maharashtra. Originally part of Urban Development and Public Health Department, Maharashtra Water Supply and Sewerage Board (MWSSB) was established on 1st January 1977 and later renamed as Maharashtra Jeevan Pradhikaran on 7th December 1996. Its mandate is as follows:

### Mandate of MJP as per MJP Act

- To prepare, execute, promote and finance the schemes for supply of water and for sewerage and sewerage disposal;
- To render all necessary services in regard to water supply and sewerage to State Government and local bodies and on request to private institutions or individuals also;
- To prepare draft State Plans for water supply, sewerage and drainage on the directions of the State Government;
- To review and advise on tariff, taxes, fees and charges of water supply and sewerage systems, in the areas of MJP and the local bodies which have entered into an agreement with MJP;
- To assess the requirements of materials and arrange for their procurement and utilisation;
- To establish State standards for of water supply and sewerage services;
- To review annually the technical, financial, economic and other aspects of water supply and sewerage system of every scheme of MJP or the local bodies which have entered into an agreement with MJP;
- To establish and maintain a facility to review and appraise the technical, financial, economic and other pertinent aspects of every of water supply and sewerage scheme in the State;
- To operate, run and maintain any water works and sewerage system, if and when directed by the State Government on such terms and conditions and for such period as may be specified by the State Government;
- To assess the requirements for manpower and training in relation to water supply and sewerage services in the State;
- To carry out applied research for efficient discharge of the duties and functions of MJP;
- To perform such of the duties and functions, which are being performed by the Maharashtra Environmental Engineering Services, as may be specified from time to time by the State Government;
- To perform and discharge such other duties and functions as are allotted to MJP under other provisions of the Act or as may be entrusted to it by the State Government.

MJP is headed by a Member Secretary. Director Finance, Director, Technical and Chief Administrative Officer report to Member Secretary. Chief Engineers report to the directors and they are responsible for different circles (areas of operation). There are six Chief Engineers and 13 circles.

The working model of MJP is supply-driven. MJP creates schemes and handovers them to local governments (Zilla Parishad) or it itself looks after O&M depending on the scale of the schemes. Usually, smaller schemes are handed over to the local governments. The larger ones are taken care by themselves. Around 65,000 Schemes have been created under MJP. These are either Single Village Schemes or Multi Village Schemes (. More than half of these schemes are maintained by MJP.

Zooming into the operations of MJP in the multi-village scheme, there are at present 129 permanent members and 118 outsourced contractual personnel (such as valve men) working in this scheme. Out of the 247 professionals, 211 work for the 156 villages and 36 of them work for the two towns (20 are for Anjangaon town and 16 are for Daryapur.).

**Table 2.1 Staff Composition**

Staff working for 156 villages scheme in Amravati District
1 Chief Engineer
1 Superintending Engineer
1 Executive Engineer
2 Sub-Divisional Engineers
5 Sectional Engineers
8 Time-keepers in Daryapur and 1 in Anjangaon
90 Valve-men in Daryapur and 7 in Anjangaon
18 Meter Readers in Daryapur and 3 in Anjangaon
74 Support staff

Most of these activities are supply based. Following are the activities undertaken by them:

- **Monitoring and control (auditing):** Monitoring is done on everyday basis by the Time-keepers and Valve-men. The work/progress is monitored by engineers at periodic intervals.
- **Water quality testing:** Orthotolidine or OT Test for residual chlorine is employed on daily basis by MJP staff in selected points of the network. Bacterial tests are performed periodically i.e. on every third day. INR 400/sample is paid by MJP towards these tests.
- **Water resources management:** The source for this scheme is Shahanoor. Source strengthening programmes are taken up at regular intervals.
- **Technical assistance:** Time-keepers and Valve-men are readily available in the village for any sort of assistance.
- **Conflict Management:** Usually, everyone gets good quantity of water and hence there are no issues of conflicts. But, if a situation as such arises, Time-keepers and Valve-men would try to negotiate between the people with help of Gram Panchayat and where situation is out of control, the case is taken to the Police department. In cases where people do not receive good quantity of water, the water committees approach the officers for solutions.
- **Support in identifying investments needs:** MJP identifies investment needs. Sometimes, when the O&M is not met through tariff collection, additional amounts are sought out from the state government in the form of incentives.
- **(Re)training of service provider:** All the MJP Staff (From Class I to Class IV) are trained at periodic intervals at Maharashtra Environmental Engineering Training and Research Academy (MEETRA). Whenever any person gets promoted, he/she is also trained. Training on Technical, Skills, Communication, Stress Management, Computer Proficiency, etc. But, VWSCs are not trained.

## Roles and Responsibilities of all the stakeholders

The central government approves the budget for the water projects in general and disburses funds for the same. Usually, the central government's share is 50% of the project cost. The state government puts in another 50% to meet the total project cost. It is the responsibility of MJP to prepare action plans and identify the budgetary requirements.

MJP is also responsible for monitoring the service levels as well as the water quality. As such there is no social intervention design and implementation plan in this scheme. However, Village Water and Sanitation Committees (VWSCs) are formed in the villages during the implementation stage.

Day to day operation is the sole responsibility of MJP. Time-keepers and Valve-men at villages are directly involved in O&M. With respect to capital maintenance and asset renewal, the responsibility again lies with MJP. The tariff is also collected by the Bill collectors who are employed by MJP. The whole auditing process and performance assessment also is taken care by MJP.

The role of VWSCs in this scheme is very limited. It is interesting to note how the VWSCs play the role of 'Watch Dog' and puts any eye on ESE's performance. The VWSCs also check for misuse of metered connections at household levels. In some villages, where tariff collection is a painful task, VWSCs step in and help ESE in smoothening out the process. Efficient complaint redressal is in system due to extra effort put in by the VWSCs.

In the whole process, an individual's responsibility is to pay tariff on monthly basis.

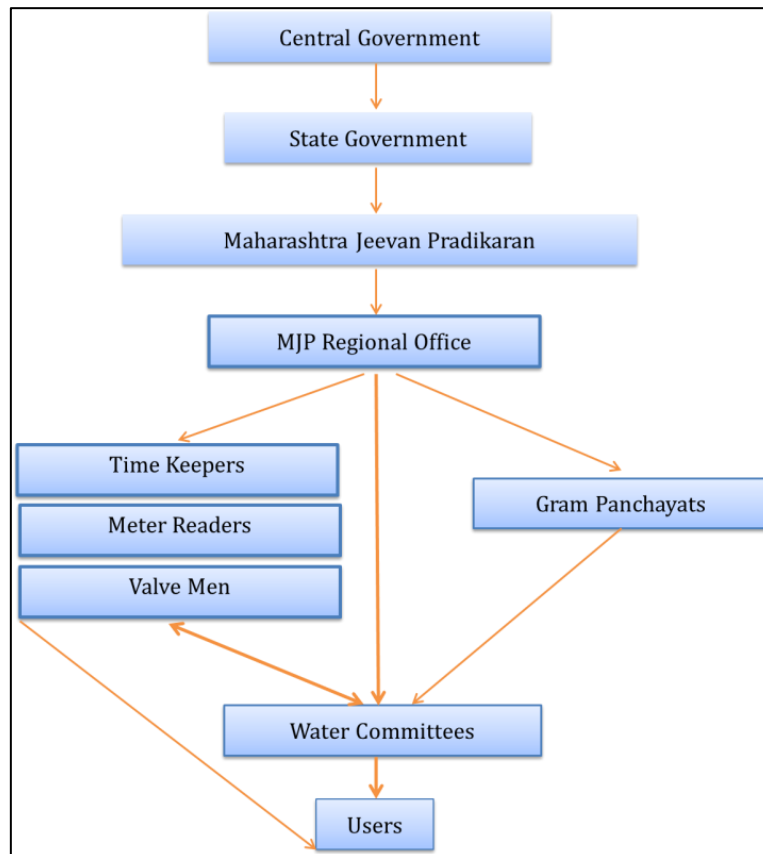


Figure 2.5 Stakeholder mapping of WSS

## 2.3 Performance indicators of MJP

An assessment was made of the performance of the support entities in their respective roles, against a number of predefined scores as per the research protocol.

Maharashtra Jeevan Pradhikaran (MJP) is a government body operating as a Board under the Government of Maharashtra. There is an existence of a formal mandate for support to service providers. Number of standard tools and instruments for support are applied in a structured manner. Work is done systematically and effectively. Informal tools such as experience-based knowledge are also applied at field level. However, there is no mechanism of information sharing with the service providers, but the time-keepers are actively involved in an informal dialogue with the Sarpanch (Chair of VWSC) or any active member(s) of VWSC for smooth coordination. The time-keepers and valve men are the point of contact at a community level. Their phone numbers are made available to the community. Apart from these people, the sub-divisional officer may also be contacted directly on his mobile for any sort of grievances.

MJP supports the VWSCs in - monitoring and controls (auditing), water quality testing, water resources management, technical assistance, conflict management and in identifying investments needs. The average time that passes between a request for support and the support being provided is 12 hours. Requests are addressed usually within a day or maximum within 24-36 hours.

When it comes to O&M, MJP serves all the 158 villages on daily basis. Hence, the effectiveness would be 100%. There are 158 communities and the ESE has a staff of 211, hence the efficiency would be about 1.3 staff per community.

The O&M expenditure for the year 2014-15 is INR 5,87,13,153. An average amount of INR 3,71,602 was spent of each service provider in the year 2014-15. The number of support visits cannot be quantified as the field staff visit their designated villages on daily basis.

## 2.4 Institutional Assessment of MJP

In this section, MJP is assessed on various parameters to understand its strengths. Following is the outcome of the research undertaken to assess the strengths and weaknesses.

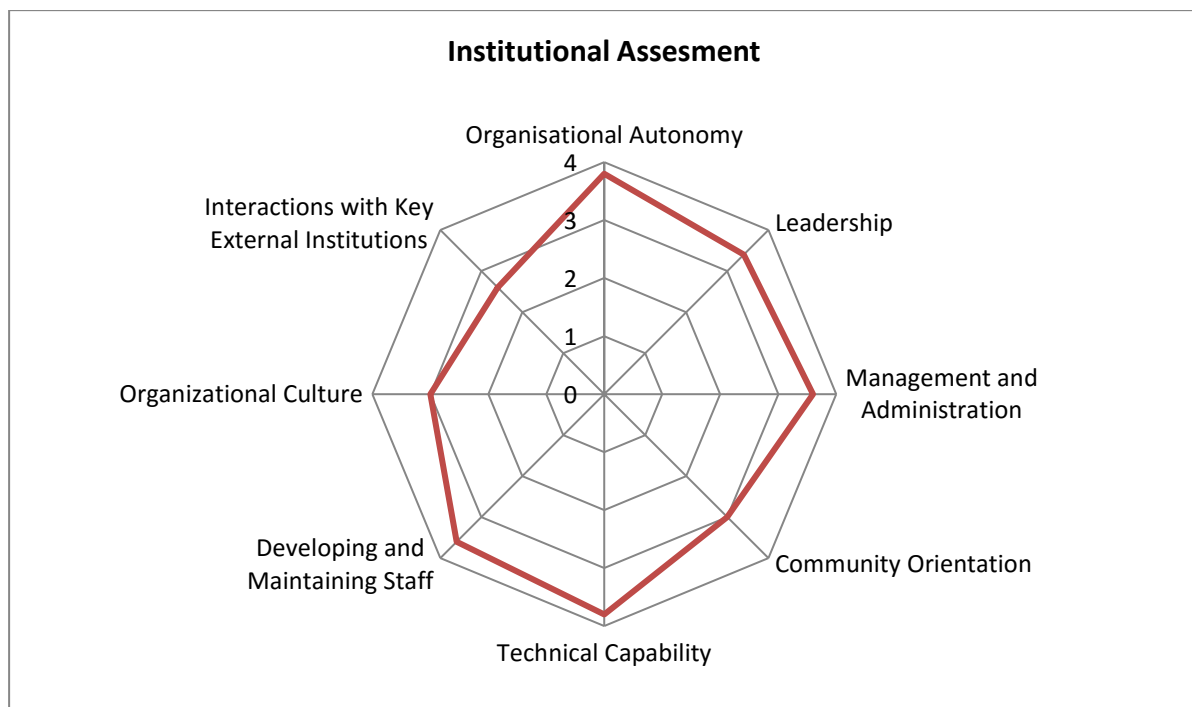


Figure 2.6 Institutional Assessment

**Organizational Autonomy:** The MJP has its own organisational policies and goals and changes them as necessary to provide guidance and direction in achieving the objectives of the institution. Action plans are prepared every year. Proposals are formulated. In case of deficit, Government of Maharashtra gives an incentive fund based on few conditions (which are met by MJP). Both long-term planning and short-term planning is done. Exposure visits to neighbouring states, countries are also taken to keep track of latest advancements in technology as well as service provision. Organogram clearly defines the roles and responsibility of every individual, which are followed and practiced. Government pay scales are applicable to the employees; hence, dropout rate is negligible.

**Leadership:** It is evident from the field visits and interviews that the engineers demand a huge respect and are seen motivating their staff to perform better. Confidential Reports are prepared every year and sent to head office to track performance of each and every employee. The process of maintaining sense of balance between future vision and everyday operational matters is inevitable. The use of gravity based scheme itself proves how the engineers use the technology that is favourable to the local topography. Most of the employees demonstrates personal integrity and instil a sense of integrity in others. Also, exposure visits to other successful cases ensure cross-learning.

**Management and Administration:** During the field visits and interviews, it was clearly established the officers of higher rank has clarity of their own and others' roles and responsibilities. They communicate roles and expectations clearly to others and involve them in the process of defining their roles and responsibilities. Daily Activity reports are prepared for time keepers and valve men and other field staff. Apart from this, every professional has a personal file which tracks his/her performance. These reports are carefully scrutinized for their performance. There is a separate section which looks after finance. All the financial records are well maintained. All the project related files are computerized and readily available when required.

**Community Orientation:** One of the key successes of this scheme is their reach to the every nook and corner of the coverage area. Time-keepers do share a good relation with the communities and the communities look up to them for any sort of assistance. They are readily available in the village every day and also, their phone numbers are shared with everyone. The complaint redressal system isn't a formal one, but the informal procedure (wherein a person reaches out to an officer on his mobile) works just fine. There is no systematic procedure to educate communities, but the field staff works with GP/water committees in some cases.

**Technical Capability:** All the engineers have a background in engineering and other professional staffs have profession degrees concerning their expertise. All of them together work in achieving the desired results. The four-stage chlorination is a result of their technical capability. The beauty of this scheme is that the technology is designed in such a way that it is adept to the local topography. The entire scheme is based on gravitation. All the engineers are in-house and almost 120 people are out-sourced to meet other technical demands. The engineers always try to improve the existing technology for better service provision.

**Developing and Maintaining Staff:** MJP has its own Research and training center - Maharashtra Environmental Engineering Training and Research Academy (MEETRA) at Nashik. It conducts various training courses for employees of MJP as well as local bodies. These trainings cover the various aspects such as capacity building, various technical trainings of the need of an hour, communication skills, etc. The staff of MJP is trained at this centre. Those professionals who have been promoted to the next

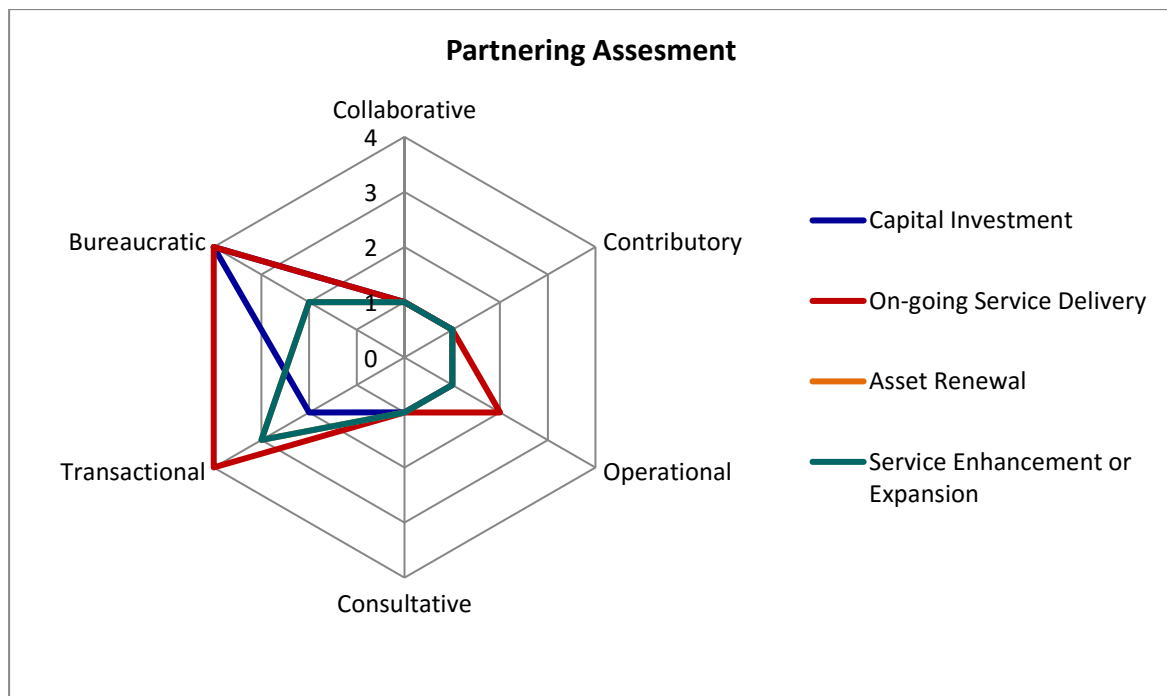
level also receive training on different aspects. Government pay scales are applicable to the employees. A clear system of recruitment through entrance examinations is followed. However, people cannot be easily fired. And there is a good career growth for the engineers.

**Organizational Culture:** There is an amicable atmosphere in the office. The team is strong and work in good spirits. Such massive scheme needs good understanding among the members of team coupled with strong cooperation from each other. The team displayed all these positive traits and also share a sense of ownership and pride in the work they do. The office infrastructure is comfortable and meets the demands of their jobs. The office has good facilities and is depicted as a good place to work by the employees.

**Interactions with Key External Institutions:** The head office at Mumbai is the one which stays well informed about external policy, financial, and regulatory issues and actions. The Member Secretary and Chief Engineers play a critical role in maintaining direct contact with the key individuals in all important external entities. In some of the schemes, District Water and Sanitation Committees and Panchayati Raj institutions are involved in the provision of services.

## 2.5 Enabling support environment partnering assessment

This section narrates the degree of partnering between the Maharashtra Jeevan Pradhikaran and the Water Committees. The nature of partnership varies across different stages of project. MJP prepares a generic scheme plan, which is then introduced to the water committees.



**Figure 2.7 Partnering Assessment**

The water committees have no role in preparing the technical designs. Hence, the partnership in this phase is more bureaucratic in nature. During the on-going service delivery phase, bureaucratic and transactional relationships are stronger as MJP dictates the system for administration, management, and operation and maintenance and water committees' role in administration is minimal. The financial



resources for service delivery are also from MJP. The water committees identify the need for asset renewal and approach MJP. Asset renewal is dependent on negotiations between MJP and water committees and is independent on timelines. However, the financial resources are provided by MJP only. The water committees share information regarding service levels, technology status and population with MJP to enable proper planning for service enhancement or expansion. MJP takes up this work following a request from the water committees for service expansion. Overall, a strong bureaucratic and transaction relationships were observed, which exhibits a stable and competent performance of MJP. Community organisations have no professional or trained experience; yet, their presence is good enough to ensure continued and efficient services from the MJP.

## 3 Community Service Provider

This chapter weighs on the working model and the performance of the community organisations... To do so, this chapter first provides the context of the villages where the validation took place, describing their location and socio-economic characteristics of the population. This is followed by a reconstruction of the history of water development, based on the results of the focus group discussions with users and water committees. This is followed by the assessment of the community organisations, using the descriptors and indicators and participation scores. This leads to conclusions on the extent to which communities are involved in the service provision tasks.

### 3.1 Context

The four villages that are selected for this village are – Nardoda, Jasapur, Chandrapur and *Khairi*. All these four villages belong to Daryapur block, Amravati District, Maharashtra. All these villages have struggled with severe water scarcity as these regions were drought prone and the water was saline in nature. These villages are now served with piped water supply by MJP from the year 2001 onwards. Water committees are constituted with the help of communities by MJP in each and every village. Sarpanch is the chair of Water Committee. The control village for this study is *Khairi*, a tail-end village, where the Water Committee is not active and the water supply to this village doesn't meet the population demand. The population demographics of the four villages is given in the below table.



**Photograph: A consumer in front of her house in one of the selected villages.**

**Table 3.1 Characteristics of the villages**

illages	Nardoda	Jasapur	Chandrapur	<i>Khairi</i>
<b>Block</b>	Daryapur	Daryapur	Daryapur	Daryapur
<b>Population</b>	2,500	450	565	450
<b>No. households</b>	350	85	197	102
<b>Water Source</b>	Shahanoor Dam	Shahanoor Dam	Shahanoor Dam	Shahanoor Dam
<b>Service provider</b>	MJP	MJP	MJP	MJP
<b>Community organisation</b>	Water Committee as a sub-standing committee of the Gram Panchayat	Water Committee as a sub-standing committee of the Gram Panchayat	Water Committee as a sub-standing committee of the Gram Panchayat	Water Committee as a sub-standing committee of the Gram Panchayat

Economic conditions of the four villages are assessed based on the data collected from 30 household surveys in each village. From the below table, Chandrapur has high quality of housing (about 83%), whereas nearly 50% of the houses from Jasapur fall in this category. More than half of the houses in Nardoda belong to medium quality and one third of houses in *Khairi* fit in this category. Agriculture is the main economy of the village and most of them have land to cultivate crops. Landless people are found to be working as labours in others' agricultural lands.

**Table 3.2 Economic Indicators**

Economic indicators	Nardoda	Jasapur	Chandrapur	Khairi
<b>House type</b>				
Low quality	10%	10%	7%	23%
Medium quality	57%	40%	10%	33%
High quality	33%	50%	83%	43%
<b>Landownership</b>				
Landowners	77%	63%	73%	80%
Landless	23%	37%	27%	20%
<b>Ratio card</b>				
Yes	100%	100%	100%	100%
No				
<b>Income (male household head)</b>				
Up to 25,000	13%	60%	43%	47%
Up to 50,000	67%	33%	33%	43%
Up to 100,000	20%	3%	13%	10%
Up to 250,000	0%	3%	10%	0%
250,000+	0%	0%	0%	0%
<b>Employment (male household head)</b>				
1 - Agricultural	77%	63%	63%	80%
2 - Agricultural Wage Labour	23%	37%	23%	20%
3 - Gov/Regular/Irregular Non-Farm Employment	0%	0%	7%	0%
4 - Self-Employment Including Business	0%	0%	7%	0%
6 - Others	0%	0%	0%	0%
7 - Retried	0%	0%	0%	0%
8 - Homemaker	0%	0%	0%	0%

Social indicators were also collected as part of the household survey. Except Nardoda, all the other villages are Hindu-centric. In Nardoda too, Hinduism is dominant with 7 % of Muslims. Chandrapur has almost 60% of SCs where as other three villages have a majority of backward class residents. However, *Khairi* has more than half of its population fall under the Below Poverty Line (BPL). In Chandrapur, literacy is quite low, about 27% have a tenth degree as compared to other three villages where at least half of them have passed tenth class. The average household size in these villages ranges from 4.5 to 5.5 as shown in the table below.

**Table 3.3 Social indicators in the villages**

Social indicators	Nardoda	Jasapur	Chandrapur	Khairi
<b>Religion</b>				
Hindu	93%	100%	100%	100%
Muslim	7%	0%	0%	0%
<b>Caste</b>				
BC	63%	83%	20%	73%
MBC	7%	0%	0%	0%
SC	27%	17%	60%	27%
ST	3%	0%	3%	0%
<b>Education (male household head)</b>				
1- Illiterate	3%	0%	10%	3%
2 - 1st To 5th Class	27%	17%	27%	17%
3 - 6th To 10th Class	53%	53%	27%	43%
4 - Intermediate	13%	20%	17%	27%
5 - Degree	3%	7%	20%	10%
6 - Post Graduate	0%	3%	0%	0%
<b>Household size</b>				
Average (mean)	5.4	4.5	4.6	4.5

### 3.1.1 Infrastructure snapshot

This is a multi-village scheme as outlined in the second chapter. The infrastructure snapshot only assess the status of the infrastructure within the village, and not the bulk supply infrastructure.



**Photograph: Household connection**

**Table 3.4 Infrastructure Snapshot**

System component	Nardoda	Jasapur	Chandrapur	Khairi
<b>Hand pump</b>	Yes, but not working.	No	No	Donated by 'World Vision'. But the water has a lot of salt content.
<b>Treatment plant</b>	MJP follows four-stage chlorination centrally; hence, there is no requirement for a treatment plant in each village.			
<b>Main line</b>	Yes, since 10 years. (PVC Pipeline - 22+ years of lifespan).	Yes, since 14 years. (PVC Pipeline - 22+ years of lifespan).	Yes, since 14 years. (PVC Pipeline - 22+ years of lifespan).	Yes, since 10 years. (PVC Pipeline - 22+ years of lifespan).
<b>Reservoir</b>	Yes, since 14 years. ESR - 70,000 Litres in capacity, with a life span of 35+ years.	Yes, since 14 years. ESR – 30,000 Litres in capacity, with a life span of 35+ years.	Yes, since 14 years. MBR - 3.5 Lakh Litres in capacity, with a life span of 35+ years.	Yes, since 10 years. 2 km far from village. Shared with one more village. 30000 litre capacity ESR.
<b>Pressure-break tanks</b>	Not, in the village, but spread over across the scheme area.			
<b>Chlorinator</b>	Everyday Chlorination by valve man apart from 3 stages of chlorination. Chlorination before half an hour of supply.			
<b>Distribution network</b>	Full household distribution network which is 10 years old. It is a PVC pipeline with 22+ years of lifespan.	Full household distribution network which is 14 years old. It is a PVC pipeline with 22+ years of lifespan.	Full household distribution network which is 14 years old. It is a PVC pipeline with 22+ years of lifespan.	Full household distribution network which is 10 years old. It is a PVC pipeline with 22+ years of lifespan.

## 3.2 Community service provider descriptors

In the year 2001, MJP helped the communities in constituting the Water Committees in their respective villages. It laid out a rule that a water committee would be the sub-standing committee, providing services to the village as well as handholding support to MJP. The constitution of the water committee is - Sarpanch, Tanta Mukhi (Conflict Resolution Person), Talati (Record Keeper), School Head Master, Secretary of Gram Panchayat and Elected Members of Gram Panchayat.

There is no separate election for choosing the representatives of the committee. Most of them are elected representatives of the Panchayat system. Talati and the School head masters are government employees. There are no legal statutes but, each and everyone have a general understanding of their roles and responsibilities.



**Photograph: The chair of Water Committee with the Sub-divisional Engineer of MJP.**

The household connectivity is almost at 60% (except for Jasapur which has 100% coverage). This is for a fact that there are a number of shared connections in the village. Two or three houses share one metered connection. There is a general understanding of sharing the water among the users. The users use a pipe to draw water from the metered source until their storage tank.

A slab system is followed for collecting water tax. The details of this system are given in the table below. A user has to pay INR 605 (INR 500 as a deposit, INR 100 for Provision Certificate and INR 5 for application form) for a new connection. An additional cost of about INR 3500 (INR 1000 for meter, INR 2000 for pipes and INR 500 as labour charges) have to be borne by the consumer.



**Table 3.5 CSP Descriptors**

Village	Nardoda	Jasapur	Chandrapur	Khairi
<b>Entity</b>	Water Committee with support from Gram Panchayat			
<b>Population covered</b>	2500	450	565	450
<b>Members of governing body</b>	12	9	11	9
<b>Staff</b>	Nil	Nil	Nil	Nil
<b>Coverage</b>	100%	100%	100%	67%
<b>Household connection coverage</b>	64 %	100%	69%	66%
<b>Household connection among vulnerable groups (SC/ST)</b>	81%	100%	72%	52%
<b>Meters</b>	Household metered connections			
<b>Tariff (per month)</b>	Rate/1000 Litres: Upto 15000 Litres - INR 6.60 15001 - 25000 Litres. - INR 10 More than 25000 Litres. - INR 13.30 For Institutions - INR 27.50 For Non-domestic - INR 40.70			
<b>Connection costs</b>	INR 605			

### 3.2.1 Detailed focus on who is doing what

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

#### VWSC

Focus group discussions were held in each village, one with the water committee and the other with the communities. These focus group discussions aimed at understanding the general roles and responsibilities of the water committees, and their role in water service provision. During these discussions, it was understood that there is a very thin line between the water committees and the Gram Panchayats. This could be due the fact that most of the members of the Gram Panchayat are the members of the water committee too. The role of Sarpanch is crucial in terms of decision making and leading the services forward. Though there is distortion in the roles and responsibilities of the water committees, the communities expressed satisfaction as the job is being done.

In this scheme, operation and maintenance is with MJP. Time Keeper and valve operators are salaried employees of MJP. The water committee acts as watch dog, helping MJP to perform well (mainly in terms of water service provision on daily basis; for parameters like quantity, quality and continuity). It also checks illegal use of water and has the authority to put a stop to misuse of water. The tariff is also

collected by MJP, and hence penetration into the village becomes easier with the help of water committees. Water committees go door to door along with the MJP staff to aid in tariff collection.



**Photograph: The chair and members of the Water Committee with the Time-keeper of the village.**

It is also interesting to note how these water committees are efficient in addressing complaints. The community approaches the water committee in case of any complaint, which in turn writes a complaint letter to MJP's concerned authority and gets the work done with a day or two. Often, a success in a village is attributed to this efficient working model between the three stakeholders – MJP, water committees and the community. The control village doesn't have a strong presence of this committee which could be one of the reasons for low level of service provision.

### **Activity & Responsibility Matrix at community service provider level**

The table below depicts the roles and responsibilities of the service providers. That is, it shows who is responsible, involved, interested and pays for things at the community level.

**Table 3.6 Activity and Responsibility Matrix**

Entities / Actors	Central Government	State Government	MJP	Gram	Water	Time Keeper	Valve	Bill Collectors	Households
Allocation of finance / Budgetary approval	RES + PAY	RES + PAY	RES	INT	INT				
Monitoring service levels & water quality		INT	RES + PAY	INT	INV	RES	RES		INT
Project planning	INT	INV	RES	INT	INT				INT
Infrastructure design & implementation	INT	INV	RES	INT	INT				INT
Social intervention design and implementation									
Operation and minor maintenance		INT	RES + PAY	INT	INV				INT
Ongoing software support to community									
Water resources management measures	INT	INT	RES + PAY	INT	INT				INT
Capital Maintenance and renewal		INT	RES + PAY	INT	INT				INT
Major repair			RES + PAY	INT	INV	RES	RES		INT
Approval of user charges		INT	RES	INT	INT				INT
User charge collection			RES + PAY	INT	INV			RES	INT
Management of community involvement			INT	INV	RES	INV	INV		INT
Community capacity development & Training									
Dispute resolution			RES	INT	RES	RES	INT		INT

Paying of water charges		INT	INV	INT	RES	RES			RES + PAY
Institutional & human resources development	INT	INT	RES	INT	INT				INT
Auditing		INV	RES			INV	INV		
Evaluation/performance assessment		INT	RES	INT	INV				

### 3.3 Performance indicators

The performance of the VWSC was assessed using a series of Qualitative-Information System (QIS) indicators. Though there are no legal statutes for the formation of water committees, the members represent different sectors and categories. The Sarpanch of the Gram Panchayat is also the chair of the water committee. Though the panchayat system has good accountability mechanisms, all the concerns related to water service provision are immediately handled by the committee members who in turn take the help of MJP's staff to find a solution within a day or a maximum of two days. Respecting the law, 33% positions in the committees are reserved for the women members. Since, most of the works are performed by MJP staff, the committee members aren't professionally trained in any aspects. One of the major tasks of MJP is to collect taxes from the users. This responsibility is not with the water committees but it is the duty of the bill collectors who are appointed by MJP. But, it is difficult for MJP to collect taxes without the interference of committees, proving that the role of committees is crucial to MJP in penetrating into the villages. In Nardoda, non-payment rate is 2.24, in Jasapur it is nearly 20%. The committee was successful in facilitating collection of tariff from all the users in Chandrapur. In *Khairi*, where the committee is weak, the non-payment rate is as high as 85%. The other indicators are listed in the table below.

**Table 3.7 VWSC Indicators**

Indicators	Nardoda	Jasapur	Chandrapur	Khairi
<b>Selection of the Board</b>	<b>QIS Score: 50</b> There is no formal document describing how elections should take place, but users and VWSC have a general understanding of how it would work. This informal procedure was followed during the last elections. MJP plays a key role in the constitution of CSP. Members from other committees also have a role in the water committee. Sarpanch, Tanta Mukhi (Conflict Resolution Person), Talati, School Head Master, Secretary of GP, Elected Members of Gram Panchayat are a part of this committee.			
<b>Accountability mechanisms</b>	<b>QIS Score: 25</b> The VWSC has at least one mechanism through which users are informed and accountability is provided. But this is not used regularly. The CSP do not have a major role in information sharing or accountability. The time-keeper and valve men from MJP are readily available who perform the above said duties.			

## Community Water <sup>plus</sup>

<b>Cash Reserves</b>	<b>QIS Score: 0</b> The VWSC doesn't manage any cash reserve whatsoever.	
<b>Book Keeping</b>	<b>QIS Score: 0</b> The VWSC doesn't use any book keeping tool whatsoever.	
<b>Technical folders</b>	<b>QIS Score: 25VWSC</b> The CSP has no map, design or operational manual and guideline of the system but can access those from relevant government bodies, when it needs to. Water committees can access these files whenever required from the block office.	
<b>Registry of operational information</b>	<b>QIS Score: 0</b> The VWSC doesn't keep any of the five types of records.	
<b>Water meters</b>	<b>QIS Score: 100</b> All users with household connections have water meters. The bill reading is done by the MJP Officials. However, water committees play a major role in tariff collection and in tracking the non-revenue water.	
<b>Water Security</b>	<b>QIS Score: 0</b> No water security measures are taken, neither is any plan in place	
<b>Water Quality Management</b>	<b>QIS Score: 100</b> A comprehensive water quality management plan is in place that has been provided by MJP. This plan is being executed. Water Committees also independently collect the water samples and gets it tested at the local PHC.	<b>QIS Score: 25</b> Even though a water quality management plan is in place, the water committee does not use this plan regularly.

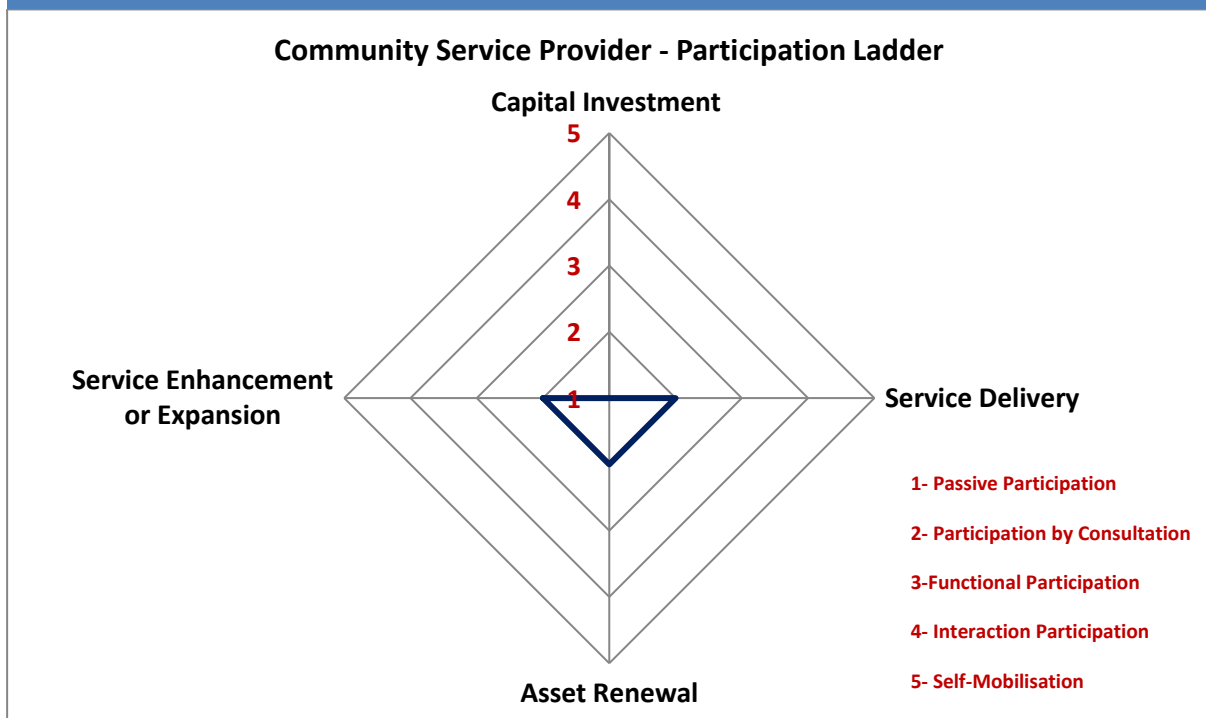
### 3.4 Community service provider participation assessment

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). Building on the idea of a participation ladder (Arnstein, 1968; Pretty, 1994; Adnan et al., 1992), the degree of community participation in Community Service Provision is assessed at each stage of the service delivery cycle:

- Capital Investment (Implementation)
- Service Delivery – administration, management and operation and maintenance
- Asset Renewal
- Service Enhancement or Expansion

It identifies the following types of participation:

Figure 3.1 briefs the Participation typology in the four villages. Since all the four villages have same type of participation, the typology is reflected in a single diagram.



**Figure 3.1: Participation Ladder**

**Capital Investment:** The 156 villages and two towns scheme is designed and operated by MJP. Community members are informed about the project implementation as per an externally designed plan.

**Service Delivery:** The committee has limited powers in service delivery where the major role is played by MJP. MJP takes care of administration, management and operation and maintenance functions and the committees have no formal decision making power to demand alternatives. However, both MJP and the water committees work together in achieving service provision.

**Asset Renewal:** Community members approach MJP for asset renewal but have no formal decision making power to demand alternatives.

**Service Enhancement or Expansion:** Community members are asked about service enhancement or expansion but have no formal decision making power to demand alternatives.

In all the four villages, there is no community involvement in planning, designing, execution and O&M of water service delivery programmes. The water committees play a role of mediation between MJP and the consumers, helping both of them.

### 3.5 Household Service Levels

For the level of service provision to be assessed, various parameters such as quantity, quality, accessibility, continuity and reliability have been established with the help of thirty household surveys undertaken in each village. This section starts by providing an overview of the coverage in the villages that is followed by a detailed overview of service levels. The final sections discussed the equity of supply as well as the community view of the water service, as articulated in the focus group discussions and surveys in each village.



## Coverage

The below table shows household connectivity is shown almost at 60% (except for Jasapur which has 100% coverage). There are a number of shared connections in the village. Two or three houses share one metered connection. There is a general understanding of sharing the water among the users. The users use a pipe to draw water from the metered source until their storage tank. There is only one handpump in *Khairi* which was donated by 'World Vision' and not a part of MJP. However, the water from this handpump is unfit for drinking as it has a lot of salt content in it.



**Photograph: a shared connection between two houses.**

**Table 3.8 Coverage**

Village	Nardoda	Jasapur	Chandrapur	<i>Khairi</i>
<b>Population covered</b>	2500	450	565	450
<b>Coverage</b>	100%	100%	100%	67%
<b>Household connection coverage</b>	64 %	100%	69%	66%

## Quantity, Accessibility, Quality, Continuity, Reliability

Water is provided to the community via individual household metered connections. Every village has a time-keeper and valve men who look after the service provision. This is the water source for all the four villages. Absence of subsidiary source implies the dependability on this only source of water. This water is used for drinking and also fulfils the need of all other activities of the day.

**Quantity:** Nearly 40%, 30% and 37% of the survey respondents of Nardoda, Jasapur and Chandrapur have reported high quantity, i.e >80 lpcd of water. Almost half of the survey respondents in Chandrapur said that they have an access of 60-80 lpcd. In the control village, nearly half of them reported that they have severe water crisis, with an intermittent water supply of 20-40 lpcd in a day. In other tail-end villages, where water supply is intermittent, the water committees play a crucial role in informing MJP about the situation. MJP would then arrange for water tankers to substitute the low quantity of water which was supplied previously. However, in *Khairi*, the water committee doesn't take the ownership of informing MJP about the poor services. People in this village find it difficult to meet

their demands with the less quantity of water that is supplied to them. Table 4.2.1 depicts the quantity levels in all the four villages.

**Table 3.9 Quantity %- Household service levels in all the four villages. (n=30)**

Village	Nardoda	Jasapur	Chandrapur	Khairi
<b>High</b>	40%	30%	37%	0%
<b>Improved</b>	27%	30%	43%	10%
<b>Basic</b>	33%	40%	20%	37%
<b>sub-standard</b>	0%	0%	0%	47%
<b>no service</b>	0%	0%	0%	7%

**Accessibility** is the cumulative time spent by a household on collecting water. Since all the households have a household connection, accessibility is classified as high in all the four villages. Table 4.2.2 depicts the accessibility levels in all the four villages.

**Table 3.10 Accessibility % - Household service levels in all the four villages. (n=30)**

Village	Nardoda	Jasapur	Chandrapur	Khairi
<b>High</b>	100%	100%	100%	100%
<b>Improved</b>	0%	0%	0%	0%
<b>Basic</b>	0%	0%	0%	0%
<b>sub-standard</b>	0%	0%	0%	0%
<b>no service</b>	0%	0%	0%	0%

**Water Quality** is assessed in two ways – through users’ perception through the household survey and through assessment of water quality parameters through water quality tests at system level. All thirty households in the all the villages perceive the water quality to be high. The tests that were conducted by the research team also second their perception. Table 4.2.3 depicts the quality levels in all the four villages.

**Table 3.11 Quality % - Household service levels in all the four villages. (n=30)**

Village	Nardoda	Jasapur	Chandrapur	Khairi
<b>High</b>	100%	100%	100%	100%
<b>Improved</b>	0%	0%	0%	0%
<b>Basic</b>	0%	0%	0%	0%
<b>sub-standard</b>	0%	0%	0%	0%
<b>no service</b>	0%	0%	0%	0%

**Continuity** of supply is defined by the average number of hours that water is available at the tap. Nardoda, Jasapur and Chandrapur have reported that the water supply meets basic standards, i.e. available for about one hour per day. In *Khairi*, people have expressed anguish over the sub-standard service of continuity. Table 4.2.4 depicts the continuity levels in all the four villages.

**Table 3.12 Continuity % - Household service levels in all the four villages. (n=30)**

Village	Nardoda	Jasapur	Chandrapur	Khairi
<b>High</b>	0%	0%	0%	0%
<b>Improved</b>	0%	0%	0%	0%
<b>Basic</b>	100%	100%	100%	0%
<b>sub-standard</b>	0%	0%	0%	100%
<b>no service</b>	0%	0%	0%	0%

**Reliability** is understood through a combination of two factors - the predictability with which supplies are provided and this the response time to break-downs. From the survey, the reliability of the water services in all the three successful villages is high. Due to severe intermittent water supply, people expressed the absence of reliability of the services. Table 4.2.5 depicts the continuity levels in all the four villages.

**Table 3.13: Reliability % - Household service levels in all the four villages. (n=30)**

Village	Nardoda	Jasapur	Chandrapur	Khairi
<b>High</b>	100%	100%	100%	0%
<b>Improved</b>	0%	0%	0%	0%
<b>Basic</b>	0%	0%	0%	0%
<b>sub-standard</b>	0%	0%	0%	0%
<b>no service</b>	0%	0%	0%	100%

Overall, water service provision meets the basic requirements of the three villages. MJP and the water committee have a great task of improvement in the service provision to *Khairi*, where the service levels are nil.

### 3.6 Equity

From the above tables, it is clear that MJP is able to meet basic requirements of water in the three villages. MJP is able to reach every individual and every corner in the village. The data doesn't show 100 % household connectivity as there are some shared connections between two or three households. Caste (especially SC/ST) doesn't play any role in altering the quality of services. All of the residents pay the same amount for a new connection and also pay the same tariff with respect to the quantity of water that is consumed. Similarly, the services from MJP and committee members are same towards every individual.

From the FGDs, it was noted that *Khairi*, being the tail-end village, has an undulating terrain, due to which it is facing intermittent water supply. However, the other villages at the tail-end of the schemes have reported good service provision. The water committees in these villages have been active and were in regular contact with MJP requesting for additional support whenever there is shortage of water. So, the absence of a strong water committee may also be treated as a reason for failure in service provision in *Khairi*.

### 3.7 Community Service Provider Costs

In this scheme, all the costs are borne by MJP and the water committees do not handle any finance-related matters. MJP meets the O&M expenditure through the collection of tariff from the households.

In case of any shortage of funds, the Government of Maharashtra provides the incentives to meet the expenditure. However, MJP has to recover at least 90% of the O&M costs through tariff collection. The water quality tests that are the responsibility of the committees are done by PHC centres at free of cost. Hence, water committees do not maintain any financial records as there is no requirement for accounting procedures. MJP meets the O&M costs through tariff collection which are summarized in section four.



**Photograph: MJP has attained success in reaching every corner of the village.**

### 3.8 Community and household views

Amravati district was drought affected and the water that was available had high salt content. For years, people had no proper water supply. After the completion of this 156 village scheme, most of the villages are blessed with good water supply. During the focus group discussions, the respondents of Nardoda, Jasapur and Chandrapur have expressed their satisfaction for the water service delivery. The economic conditions of these villages are comparatively low and most of their income is based on agriculture. They are happy that the service levels are meeting their demand. All of the respondents expressed that they were content and would pay tariff or their continued support and services. Also, the respondents praised MJP for their tremendous support and customer grievance system. Even in case of major repairs, expansions are asset renewal; the residents needn't worry as it is the responsibility of MJP. The residents opined that this type of service provision is ideal and has to be practiced everywhere too.

In *Khairi*, the weak water committee is not aiding in the betterment of the water service provisions. The supply is very intermittent and haphazard. This unreliability of service has also resulted in low tariff collection in this village. The respondents also mentioned that MJP would provide water through tankers during the absence of water supply. However, this would only be possible if the information is shared with MJP regarding the absence of water supply. The situation becomes worse when the



## Community Water <sup>plus</sup>

committee is not active and there is no one in the village to take the responsibility (as most of them are farmers or wage labourers) of conveying the grievances to the authorities.



**Photograph: Women in *Khairi* request for better services.**

## 4 Enabling Support Environment Costing

### 4.1 Capital costs

CapEx hardware: Individual schemes were initially submitted for two towns – Anjangaon and Daryapur and then for 156 villages for which the source is Shahanoor Dam. To avoid repetitions of pipelines, treatment plant, etc., a combined scheme was proposed by MJP. This combination has resulted in a saving of INR 82.63 crores as shown in the below table.

**Table 4.1 Net saving due to combined scheme**

Cost of Anjangaon Town WSS	INR 31.58 Crores
Cost of Daryapur Town WSS	INR 44.21 Crores
Cost of 156 Villages RWSS	INR 169.15 Crores
Total Cost of the individual schemes	INR 244.94 Crores
Total Cost of the combined scheme	INR 162.31 Crores
<b>Net saving due to combination</b>	<b>INR 82.63 Crores</b>

Out of this 162.31 Crores project, INR 9658.78 Lakhs is spent for the rural areas, i.e. 156 villages in the year 2002. The scheme is now catering to 158 villages. The Shahanoor Irrigation Dam was constructed at a cost of 56 Crore, of which 15.34 Crore (27.04 per cent) was contributed by the MJP. All costs have been adjusted for inflation and calculated at 2014 prices in the Summary Cost Tables below.

**Table 4.2 CapEx Costs of the scheme**

Village	Nardoda	Jasapur	Chandrapur	Khairi
Number of households	350	85	197	102
Population supported	2500	450	565	450
CAPEX Hardware costs	INR 61,13,152	INR 61,13,152	INR 61,13,152	INR 61,13,152
Cost of the Dam	INR 4,17,481	INR 4,17,481	INR 4,17,481	INR 4,17,481
Total CapEx Costs	INR 65,30,633	INR 65,30,633	INR 65,30,633	INR 65,30,633

In this scheme, there is no allocation of funds towards the software costs. Also, this scheme is 100% funded by the government. Hence, the community did not make any financial contributions towards the capital costs.

### 4.2 Recurrent costs & revenue – Opex, hardware & software

Recurrent costs are also entirely borne by MJP. Community contributions are in form of tariff collection. Tariff is collected based on the amount of water that is consumed. Hence, the O&M costs are met with the contribution from the communities. Table 5.2 lists the recurrent costs.

**Table 4.3 Recurrent costs**

Village	Nardoda	Jasapur	Chandrapur	Khairi
Staff salaries of those involved in OPEX Direct Support (annual)	INR 85,401	INR 85,401	INR 85,401	INR 85,401
Travel and subsistence costs (annual) of OPEX Direct Support	INR 966	INR 966	INR 966	INR 966



## Community Water <sup>plus</sup>

Any information materials and supplies costs (annual) of OPEX Direct Support	INR 0	INR 0	INR 0	INR 0
<b>Total estimated annual OPEX Direct Support costs</b>	<b>INR 86,366</b>	<b>INR 86,366</b>	<b>INR 86,366</b>	<b>INR 86,366</b>

### 4.3 Materials and supplies costs

These costs involve electricity charges, chemical for water treatment, water CESS, purchase of bulk water, and any other costs that are involved for maintenance of the scheme.

**Table 4.4 Materials and supplies costs**

Village	Nardoda	Jasapur	Chandrapur	Khairi
Electricity charges	INR 1,633	INR 1,633	INR 1,633	INR 1,633
Chemicals	INR 3,695	INR 3,695	INR 3,695	INR 3,695
Water CESS	INR 50	INR 50	INR 50	INR 50
Purchase and/or delivery of bulk water	INR 989	INR 989	INR 989	INR 989
Repair or capital maintenance	INR 68,669	INR 68,669	INR 68,669	INR 68,669
<b>Total Costs</b>	<b>INR 75,040</b>	<b>INR 75,048</b>	<b>INR 75,045</b>	<b>INR 75,053</b>

Our analysis indicates that consumer tariffs cover only half of the annual recurrent expenditure, following a 100% contribution from the State for the initial capital expenditure.

**Table 4.5 Summary Cost Table (INR)**

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

Source of funds	Use of funds - implementation			Use of funds - annual recurrent					RECURRENT EXPENDITURE TOTAL
	CapEx hardware	CapEx software	CAPEX TOTAL	OpEx labour & materials	OpEx power	OpEx bulk water	OpEx enabling support	CapManEx	
Community/consumers	-	-	-	INR 62	INR 1	INR 0.7	-	INR 44	INR 107
Local self-government	-	-	-	-	-	-	-	-	-
State government entity	INR 1,338	-	INR 1,338	INR 66	INR 3	INR 0.7	-	INR 47	INR 116
State water supply agency	INR 8,266	-	INR 8,266	-	-	-	INR 6	-	INR 6
National Government	INR 8,266	-	INR 8,266	-	-	-	-	-	-
NGO national & international	-	-	-	-	-	-	-	-	-
International donor	-	-	-	-	-	-	-	-	-
TOTALS	INR 17,870	-	INR 17,870	INR 127	INR 4	INR 1.4	INR 6	INR 90	INR 229
Median of 20 case studies			INR 3,231						INR 207
'Plus' %age	100%	-	100%	51%	73%	51%	100%	51%	53%
Median of 20 case studies			95%						57%

Notes: per capita costs have been calculated for the entire rural part of the service area of this multi-village scheme

Please see following page for these costs in USD\$:

**Table 4.6 Summary Cost Table (PPP USD\$)**

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

Source of funds	Use of funds - implementation			Use of funds - annual recurrent					RECURRENT EXPENDITURE TOTAL
	CapEx hardware	CapEx software	CAPEX TOTAL	OpEx labour & materials	OpEx power	OpEx bulk water	OpEx enabling support	CapManEx	
Community/consumers	-	-	-	\$ 3.52	\$ 0.06	\$ 0.04	-	\$ 2.50	\$ 6.12
Local self-government	-	-	-	-	-	-	-	-	-
State government entity	\$ 76.26	-	\$ 76.26	\$ 3.74	\$ 0.17	\$ 0.04	-	\$ 2.65	\$ 6.60
State water supply agency	\$ 471.17	-	\$ 471.17	-	-	-	\$ 0.35	-	\$ 0.35
National Government	\$ 471.17	-	\$ 471.17	-	-	-	-	-	-
NGO national & international	-	-	-	-	-	-	-	-	-
International donor	-	-	-	-	-	-	-	-	-
TOTALS	\$ 1,018.60	-	\$ 1,018.60	\$ 7.26	\$ 0.23	\$ 0.08	\$ 0.35	\$ 5.15	\$ 13.07
Median of 20 case studies			\$ 184.16						\$ 11.78
'Plus' %age	100%	-	100%	51%	73%	51%	100%	51%	53%
Median of 20 case studies			95%						57%

Notes: per capita costs have been calculated for the entire rural part of the service area of this multi-village scheme

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

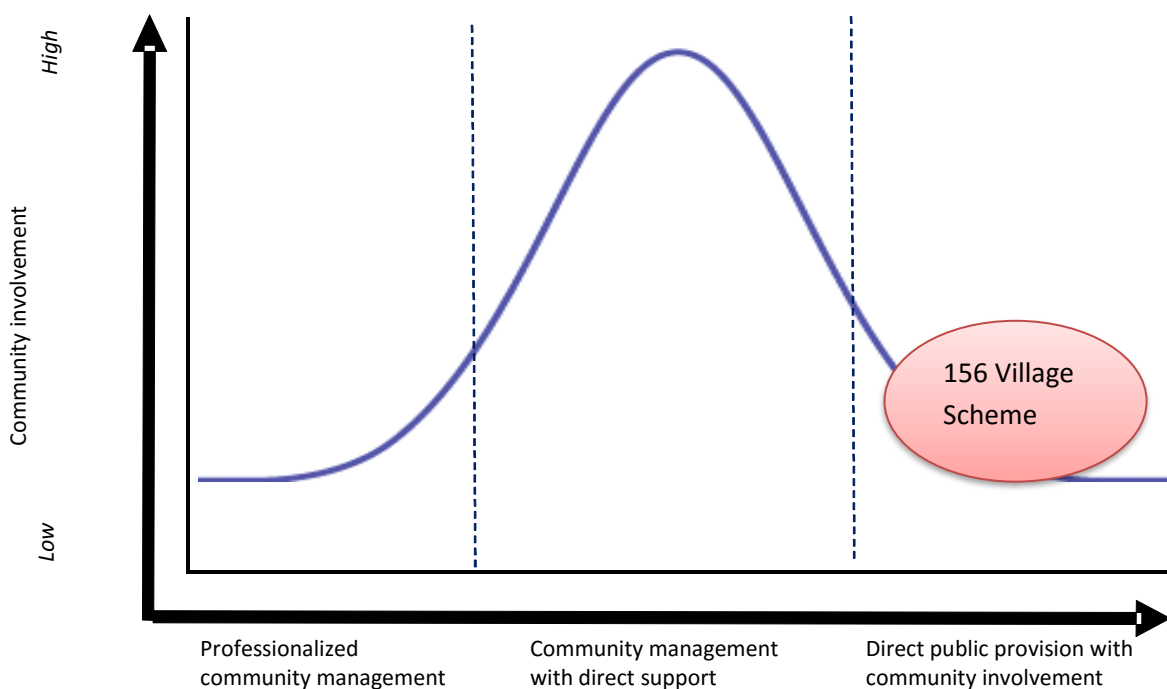
## 5 Conclusions

This 156 Villages and two towns scheme is the largest one in Maharashtra. It is an example of good engineering where the entire scheme runs entirely on gravity; cutting down on enormous amounts of electricity costs, which reportedly would sum up to almost one Crore a month.

This scheme is considered as a blessing to the saline affected area where people faced severe water stress due to absence of a reliable water source. There are no standposts in this scheme, but the distribution is through 100% metered house connections.

Government is able to collect taxes from nearly 90% of the users which signify high satisfaction levels with the services provided. Though tariffs represent only half of recurrent costs.

People consider this source as reliable. The consumers also echoed unanimously that with the advent of this scheme, there is reduction in diseases and hence, reduction in medical expenses. Consumers are extremely satisfied with this safe and assured water supply scheme.



**Figure 6.1: Identifying the level of community involvement in the scheme.**

MJP has direct links with the communities and their staff can be easily reached by both the water committee members as well as the consumers. Hence, complaint redressal is high. A Time-keeper and a valve-man (sometimes two, depends on the size of the village) are the direct contact points in the village. These people belong to rather the same village or to the neighbouring villages. Hence, they are perceived to be trustworthy and the relationships nurtured are strong. Consumers approach them without any inhibitions, and in turn these professionals also seek their help in better service provision.

One of the features of this scheme is that it is entirely funded by the government. Ideally, this is the scenario which is envisioned, but becomes difficult to put in to practice in this big nation with varied

diversity. MJP was successful in maintaining this scheme which initially covered an area of 75 km by 75 km. The service is being expanded into other regions as well.

It was also observed that the initial CapEx costs are relatively high compared to other investments in WSS. However, the more the number of beneficiaries, the less cost per individual.

The Government of Maharashtra extends its full support to scheme and contributes financial resources in the form of incentives to meet O&M in case of shortage of funds received from tariff collection.

Because of the hydrological conditions, a multi-village scheme has been necessarily opted for as a technological solution. This scheme is entirely managed by MJP, acting both as an implementer and a service provider. Through service levels are high in the assessed villages; the same services were not up to the mark in the control village in the tail-end.

Like in all other infrastructure schemes, the more the number of households served, the lower the cost of Operation and Maintenance would be.

In the past, people knew the meaning of water scarcity, and hence one of the successes of this scheme is attributed to the fact that scarcity leads to efficient conservation of the present water resources. Henceforward, MJP achieved to meet the basic needs of the consumers and thus recognised by various prestigious awards for their commendable services.

However, the Water Committees have only some token roles to fulfil – a kind of intermediary between MJP and the village - and do not have any decision-powers at all. In this model, there is limited space for community participation. In the context of the Community Water *plus* 20 case studies across India of 'successful community management' this particular case should be seen as something of an 'outlier' in that community management can best be described as minimal to non-existent. The case was chosen as reportedly successful being seen as a forerunner of 'the future' in that volunteerist community management has been replaced, as in the cities perhaps, by community responsibility, through paying tariffs.

This model therefore illustrates the classic example of a shift in the nature of services where professionalized support is sought out with contributions from the community. This model is more evident in urban setting where the community involvement/contribution is more in the form of tariff. The success of this model in the rural context could pave a way for seeking professionalized services in the water sector. However, the failure to serve this study's 'control village' with adequate water, whilst being part of the same multi-village scheme, also indicates the need for an appropriate level of community management and involvement to ensure adequate services even as the country moves towards professionalized services.

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