

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: Gravity based Piped Water Supply in Meghalaya



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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

Meghalaya, the homeland of clouds, is located in the North-Eastern part of India. The State has a very unique ethnicity, strong traditions of governance and is endowed with abundant natural resources, mainly springs and streams. The State has the distinction of being one of the wettest regions in India with maximum rainfall of 12,000 mm in Cherapunjee. This research report pertains to the community management of successful drinking water supply systems in the context of the Meghalaya.

In the State, there are two departments of the government, the Public Health Engineering (PHED) and the Soil and Water Conservation (S&WCD), providing facilities for ensuring safe drinking water for the community. Besides the PHED constructed gravity based piped water supply schemes, the S&WCD promoted 'spring tapping chambers', commonly called 'community wells', which also play a major role in ensuring safe water for the community. The difficult terrain and the high labour cost in laying pipelines make the capital investment high in the piped water supply schemes. In all the best practices studied, the community manages the service delivery without any external support in Kleihshnong Sohra and Raitsalia (Mihmyntdu), and with partial support from the PHED in Mawklot. While in Raitsalia, the water is pumped up from a spring source to the distribution tank, in the other villages the schemes are totally dependent on gravity flow. The annual operating expenditure is about INR 51 per person in the case of the best practice at the State level.

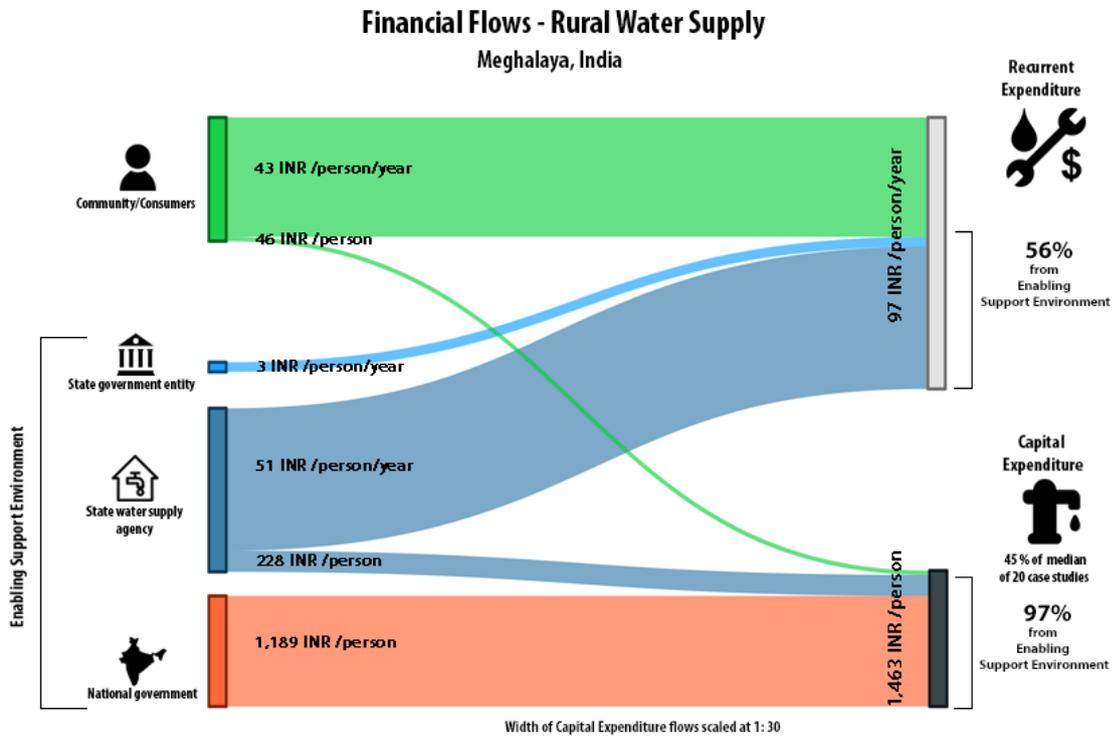
The analysis found that both the PHED and S&WCD work intensively at capital investment hardware, in building the necessary infrastructure for the community. However, there is no software input at the implementation or pre-implementation stage to involve the community or to educate them about the operation and maintenance of the facilities. If the systems remain unchanged, the community can manage by themselves. This may not be the case when they have to adopt new technologies such as using an electric pump to lift water from the source that is unavoidable if the service is to meet the growing demand for water associated with the changing life-styles. This will necessitate incorporating a software component at the preparation and implementation stages of the next level of capital investment.

Meghalaya 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 46	-	INR 46	INR 38	INR 5	-	-	-	INR 43
Local self-government	-	-	-	-	-	-	-	-	-
State government entity	-	-	-	-	INR 3	-	-	-	INR 3
State water supply agency	INR 228	-	INR 228	-	-	-	INR 49	INR 2	INR 51
National Government	INR 1,189	-	INR 1,189	-	-	-	-	-	-
NGO national & international	-	-	-	-	-	-	-	-	-
International donor	-	-	-	-	-	-	-	-	-
TOTALS	INR 1,463	-	INR 1,463	INR 38	INR 8	-	INR 49	INR 2	INR 97
Median of 20 case studies			INR 3,231						INR 207
'Plus' %age	97%	-	97%	0%	44%	-	100%	100%	56%
Median of 20 case studies			95%						57%

Community Water ^{plus}

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

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Appreciation and gratitude is also extended to the *Dorbar* and the residents of the villages Mawklot, Khleihshnong Sohra, Mihmyntdu and *Umlympung* for their cooperation in fulfilling various requirements under this research.

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.



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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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COMMUNITY MANAGEMENT OF RURAL WATER SUPPLY

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1 Introduction

Meghalaya is one of the ‘seven sisters’ States in the North-Eastern part of India with specific ethnic and cultural identity. The traditional local governance system practiced in this part has been upheld by the Government of India with a special provision in the constitution popularly known as ‘sixth schedule’ in order to integrate the tribal population in to the mainstream without affecting their originality. The cohesiveness and voluntarism prevailing among this community help protect their abundant natural resources to a large extent. The State is one of the wettest regions in the country recording an average of 2,818 mm rain annually, and with the highest in India 12,000 mm (470 inches) in a year in Cherapunjee. Given this context, this study explores what are the best practices in community managed drinking water supply systems in Meghalaya State.

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

1.2 Overall objectives of the research and research questions

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

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

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

This is further broken down in the following specific questions:

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

This report presents the study results based on the community managed gravity based piped water supply scheme from springs in Sikkim. The Gram Panchayats empowered with the 3Fs, funds, functions and functionaries, and necessary capacity are managing the system where the user community take part in planning, implementing, and in operation and maintenance of the facility.

1.3 Structure of the report

The following chapters present the analysis and findings of the data: Chapter 2 will describe the contributors to the Enabling Support Environment: the Public Health Engineering Department and the Soil and Water Conservation Department. The Community Service Providers' detailed description, their performance assessment, partnership etc are analysed and presented in Chapter 3. The household service levels are verified based on suggested criteria and are presented in Chapter 4. Chapter 5 presents the costs incurred for creating the enabling support environment for the best practice along with the financial costs summary tables. The conclusions from the study are presented in Chapter 6.

1.4 Concepts and Methodology

This section elaborates the research methodology adopted in this case study. An overview of all the research elements assessed is provided and it is followed by discussion on the units of analysis at which these assessments are done and how these units are sampled. After that, the tools and instruments which are used to do the analysis for each of the research elements are presented along with the relevant indicator sets and scoring.

Elements of research

Community Water ^{plus} (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^{plus} 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>

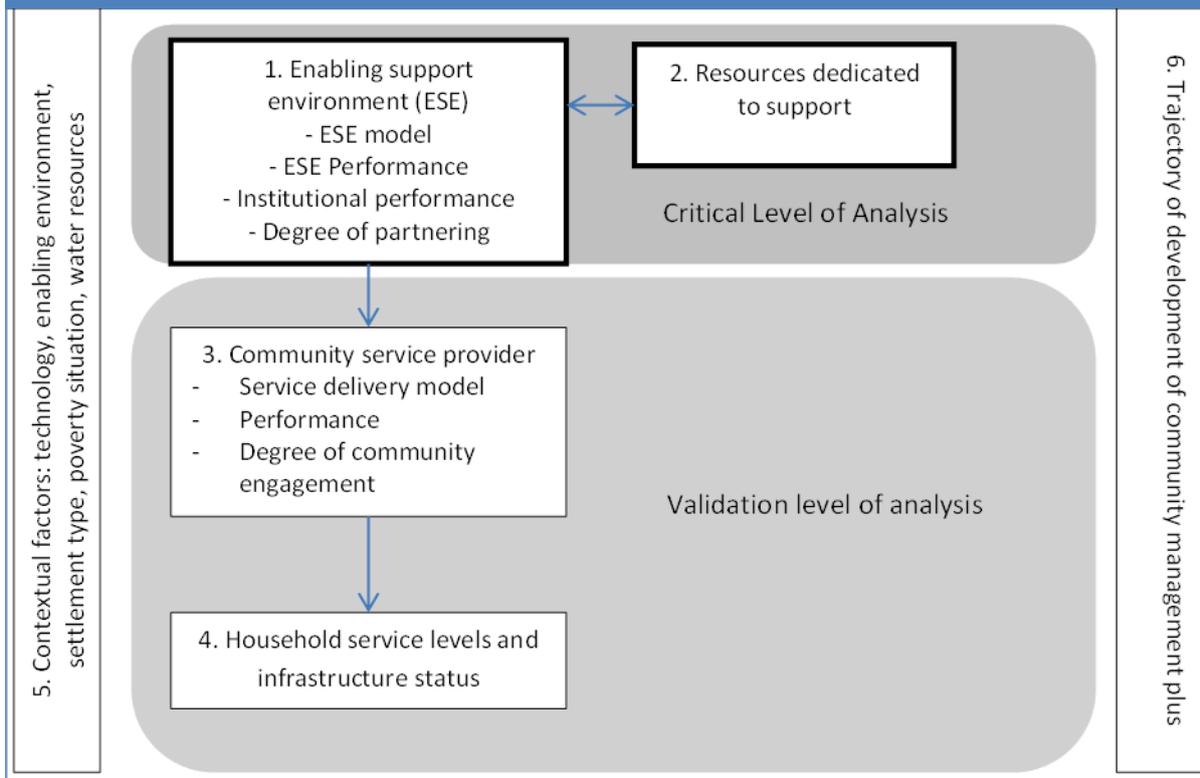


Figure 1.1 Elements of Research

1.5 Case study selection

Meghalaya was previously part of Assam and on 21 January 1972, the districts of Khasi, Garo and Jaintia hills separated from Assam and formed in to this new State. There are eleven districts, which are divided into eight sub divisions and thirty-nine blocks.





Figure 1.2 Location and districts of Meghalaya

The State has a population of approximately 29.67 Lakhs according to 2011 Census. The population density of Meghalaya state is 132 persons per sq km and the State is spread over 22,429 Sq Km. This State is one of the wettest region of India, recording an average of 2818 mm rain annually, with a highest 12,000 mm (470 inches) of rains a year in Cherapunjee the wettest region of the country.

Sixth Schedule of Constitution of India

The Sixth Schedule provides for administration of certain tribal areas as autonomous entities. The administration of an autonomous district is to be vested in a District Council and of an autonomous region, in a Regional Council. These Councils are endowed with legislative, judicial, executive and financial powers. Most Council consists of up to 30 members including few nominated members. (The newest Bodoland Territorial Council is an exception; it is allowed up to 46 members). These constitutionally mandated Councils oversee the traditional bodies of the local tribes such as the Syiemships and Dorbars of the Khasi hills of Meghalaya.

There is a significant degree of variation in the functions devolved to various Autonomous Councils. For instance, the Bodoland Territorial Council has more power compared to the NC Hills Autonomous District Council though the latter has been in existence for decades before the former. This resulted in other areas also demanding further powers and greater autonomy.

Read more at: 1. SIXTH SCHEDULE [Articles 244(2) and 275(1)] available at [http://lawmin.nic.in/olwing/coi/coi-english/Const.Pock%20Pg.Rom8Fsss\(34\).pdf](http://lawmin.nic.in/olwing/coi/coi-english/Const.Pock%20Pg.Rom8Fsss(34).pdf)
2. <http://socialissuesindia.wordpress.com/>

Meghalaya comes under the region for which a separate legal enactment, Sixth Schedule of the Indian constitution. Therefore, the local governance of Meghalaya is different from the normally found Panchayat Raj System. However, there is also a three-tier system *Shnong* the village level, *Raid (Elakka)* level above village and *Syiem (Doloi)*, level above *Raid*. At the village level, the local governing body is known as *Dorbar Shnong* headed by *Rangbah Shnong* (Headman) and he has a council of executive members. These members are now elected and only men are allowed in the *Dorbar Shnong*. The General Body of *Dorbar* comprising all adult members of the community meet once a year normally or as frequently as decided by *Dorbar Shnong*. The term of *Dorbar* also varied between villages; from one year to 5 years. A village normally has three administrative divisions; upper region (*Khlieh Shnong*), middle region (*Sohbir*) and lower region (*Sohtyngst*). If the village is large, there will be sub-committees too and they are known as *Dong* or locality. Although a matrilineal society, there is no membership for women in the governing bodies. However, it was reported that there is a parallel body at each village only for women and by women. However, they don't interfere in the roles or functions of *Dorbar*. *Dorbar* takes care of all the welfare and developmental work at the Village level; Law and Order, Road and other infrastructure, Water and Drainage, Health and Family welfare, and Education come under their purview. They will be facilitating the implementation of all the Government Programmes by channelizing them to the grass root. The *Dorbar* collect a developmental fee. The amount and periodicity differs in each *Dorbar*. Predominantly an agrarian society, the State promote organic cultivation and takes various measures to promote environment.

Table 1.1 Units for the study

	Mawklot	Sohra <i>Khlieh Shnong</i>	Raitsalia Dong	<i>Umlympung</i>
District	East Khasi Hills	East Khasi Hills	West Jaintia Hills	East Khasi Hills
Distance from Shillong (State Capital)	7 kms	50 kms	60 kms	20 kms

For this case study, field research was conducted in three 'best practice' villages, *Sohra Khlieh Shnong*, *Mawklot* (both in East Khasi Hills District), and *Raitsalia Dong* in *Mihmyntdu* (West Jaintia Hills District) with a control village *Umlympung* (East Khasi Hills District)

The villages were identified based on discussion with experts at the State level as well as officials of the State Government, followed by extensive field visits. Among the three cases taken as best practices, *Sohra Khlieh Shnong* has a piped water supply system established approximately 50 years ago and now has 100 % coverage, nearly 80% household connections and 100% tariff collection and it is managed totally by the *Dorbar*. *Mawklot* PWS was established in the year 2007 with the help of the PHED through the Central Government Scheme, *Swajaldhara*, and it is managed by the *Dorbar*; though there are no household connections the system provides 100% coverage. *Raitsalia Dong* is the first habitation to get a piped water supply system in the *Mihmyntdu* village; the system was handed over to them by the Soil and Water Conservation Department in the year 2011.

Data collection was conducted during June to August, 2015. In total, 16 key informant interviews, 8 focus groups and 120 household surveys were conducted and material from secondary sources (such as organisational reports and water quality reports) were collected. All prices quoted are given in Indian Rupees (INR) and have been converted to 2014 prices. The reluctance to share information such as household land-holdings and income found commonly among all the villagers was a limitation. The informants felt offended by any further probe on their income in spite of the local field staff explaining to them the purpose in their language.

2 Enabling Support Environment

There are two Enabling Support Entities in the case of Meghalaya drinking water supply system who play at varying degrees: one is the Public Health Engineering Department with the sole motto of providing safe drinking water and ensuring sanitation and the other is Soil and Water Conservation Department which addresses the conservation of nature, water, soil, and vegetation in a holistic perspective. Both are two different departments of the State Government and functional since the inception of the State in 1972.

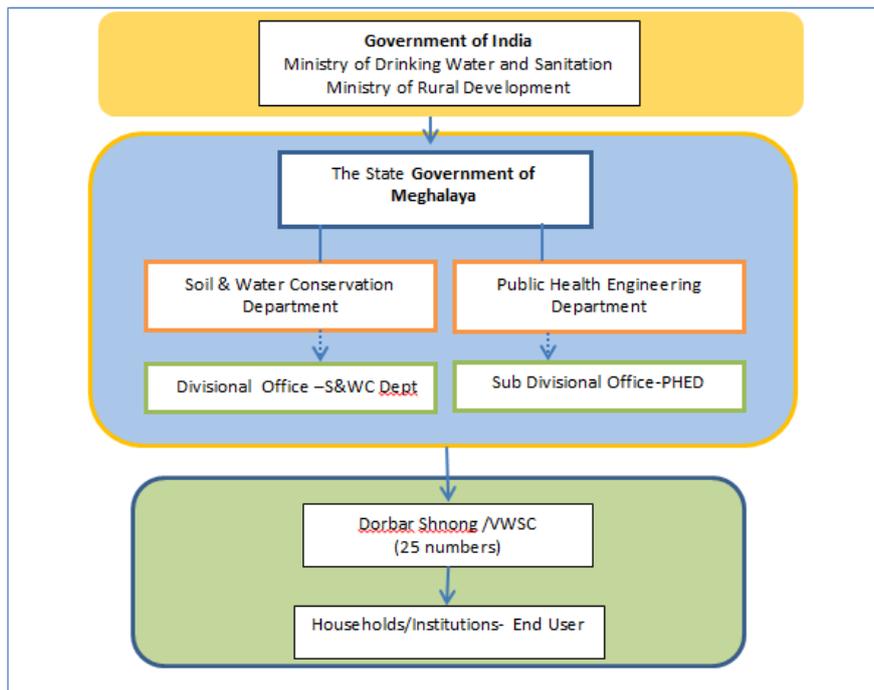


Figure 2.1 Enabling Support Environment in Meghalaya Water Supply

The **Public Health Engineering Department** has been established with the sole mandate of providing safe drinking water to the public and ensuring sanitation, implementing programmes by adhering to the NRDWP guidelines of Government of India. The Public Health Engineering Department became an independent Department in April 1972 from its earlier status of a separate wing of the Public Works Department. Initially the Department started functioning with two working Divisions with limited staff, and subsequently, due to increased volume of works, expanded to 4 circles, 17 working Divisions and 36 working Sub-Divisions. The Public Health Engineering Department under the Government of Meghalaya is run by one Principal Secretary, one Commissioner and Secretary and assisted by one Under Secretary. Over the period, the coverage with safe drinking water supply also has witnessed tremendous changes: from below 1% fully covered villages (only 60 in numbers) to current level of above 13% full coverage (1,381 habitations 13.17%).

PHED: Meghalaya

The Public Health Engineering Department of Government of Meghalaya was created under the Chief Engineer, PWD (R&B) PHE, till 1st April, 1972. This Department functioned as a separate wing of the PWD (R&B) headed by Additional Chief Public Health Engineer Meghalaya Shillong. Subsequently, the post of Additional Chief Public Health Engineer Meghalaya, Shillong was up graded to the post of Chief Public Health Engineer, Meghalaya, Shillong with effect from 2nd of April, 1972.

The Public Health Engineering Department functioned independently and became fully a separate Department since 2nd April 1972 from its earlier status of a separate wing of the Public Works Department (R&B). Initially the Department started functioning with two number of working Divisions with limited staff, and subsequently, due to increased volume of works, expanded to 4 circle, 17 working Divisions and 36 working Sub-Divisions. The Public Health Engineering Department under the Government of Meghalaya is run by one Principal Secretary, one Commissioner & Secretary and assisted by one Under Secretary.

Organisational Chart of PHED, Meghalaya

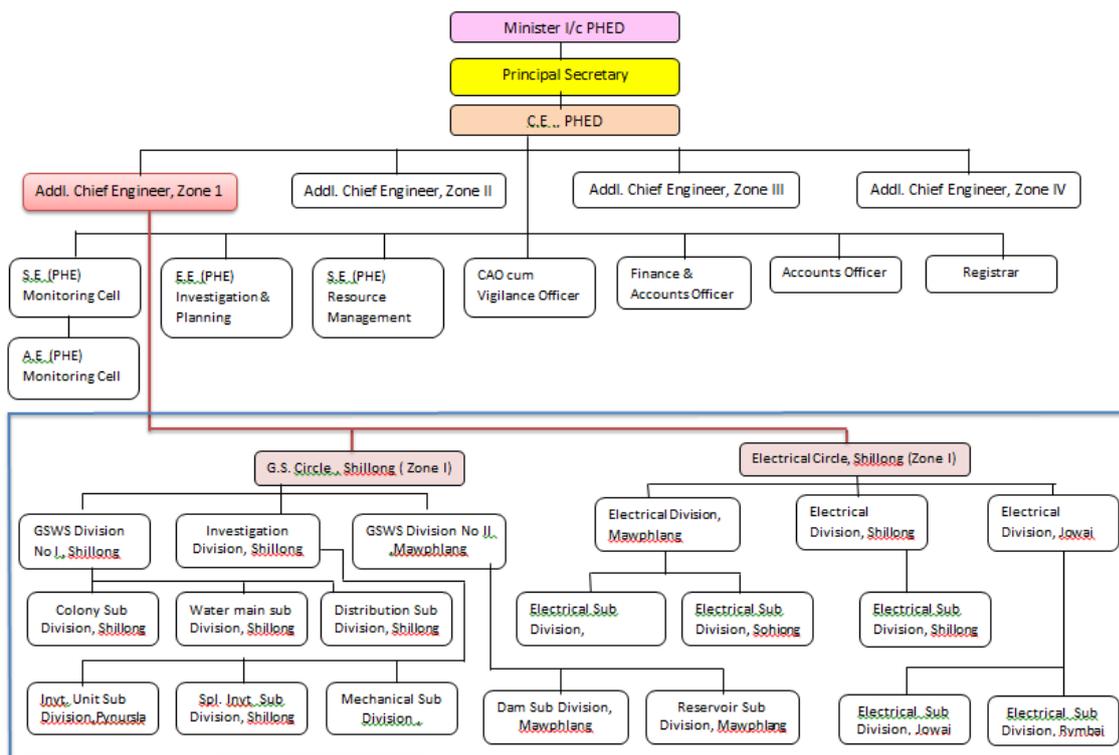


Figure 2.2 PHED Organogram

Source: Office of the Additional Chief Engineer, Zone 1, PHED

Overview of activities by the ESE: With funds from the Central Government allocation as well as from the State allocations, the State Government implements the various programmes to provide

safe drinking water for the population. The PHED is responsible for providing drinking water and ensuring sanitation for the population whereas the Soil and Water Conservation Department address the drinking water issue in a holistic perspective. Programmes of both the Departments are implemented through the *Dorbar*, the traditional local self-government. The presence of Village Water Supply and Sanitation Committees (VWSC) or scheme based Water User Associations is prevalent but cannot be generalised for all the villages in the State. A water Committee was observed in one case as a subcommittee of the *Dorbar*.

The PHED, represented by a Sub Divisional Office for about 25 villages, is responsible for provision of drinking water supply, and addresses the issue based on community's demand as well as based on availability of any schemes.

The local level office, the Sub Divisional Office (Electrical) of the PHED has 13 staff including the Sub Divisional Officer, JE, Site Assistants, Technicians and Draftsman. A common vehicle, a jeep, is available for the field visits. There are vacant positions and a lack of personnel is a problem cited in the field level work of this office.

From the community level, an application is presented by the *Dorbar* to the PHED office, normally to the nearest SDO through a personal visit and discussion. This request is further discussed by the JE with the community for clarity of the need and to consider various technical and financial options. This is then formulated as a scheme and sent from the sub-divisional office to the higher authorities for technical and financial sanction. The scheme is implemented and handed over to the *Dorbar* for its management. If community participation is a prerequisite as per the Scheme guidelines, efforts are taken for that but done only at the implementation stage. Once the scheme is implemented and handed over to the *Dorbar* there is hardly any support from the PHED except in major issues. Being simple gravity-based schemes, the complaints or repairs are also very limited. Quality testing is carried out by the PHED as per Government of India guidelines and it is reported that many community capacity-building programmes were organised in this regard. Auditing of financial expenditures is mainly a Government procedure and the PHED has to adhere to that and this refers mainly to the implementation stage or in the case of any major capital maintenance or repairs.

The *Dorbar* is responsible for the operation and maintenance of the scheme which they perform with support of the community. Minor repair and maintenance issues are managed by the *Dorbar*. Because of the involvement of the community/*Dorbar* at the implementation stage, they are aware about the technical issues and the distribution lay-out etc. and that helps them manage the minor repairs with ease. Monitoring the service levels is carried out by the *Dorbar*. The community/*Dorbar* is not involved in any water-testing measures. However, they are responsible and undertake cleaning activities at the source as well as at the distribution points; they do it as part of their regular village cleaning activities that takes place at least once in three months. All the expenditures incurred in this regard are placed before the General Body of the *Dorbar*. However, the record-keeping varies depending on the efficiency of each *Dorbar*.

The *Dorbar* has the authority to charge the water users. Household connections for drinking water are charged everywhere. The Raitsalia Dong (in Mihmyntdu) is an exception where there is a pumped scheme and the PSP users are also paying a tariff. Conflicts within the community for water

issues are rare, there haven't been any so far according to the key informants and there is no mandatory role for any entity to deal with conflicts.

Soil and Water Conservation Department:

The Soil & Water Conservation Department exists from the origin of the State of Meghalaya, and it is a major Department of the State implementing various measures for conserving the three most vital natural resources - soil, water and vegetation. The programmes/schemes implemented by the

The Soil & Water Conservation Department was earlier the Jhum Control Wing under the Forest Department in the erstwhile composite State of Assam and was subsequently created as an independent Department during 1959-60. When Meghalaya became a separate State the Department has also become part of the State.

The Objectives of S and W C Department are:

- To dissipate soil and water erosion caused by rainfall*
- To improve-soil-health and tilth*
- To enhance soil- moisture regime & water holding capacity in the soil profile*
- To promote sub-surface/base-flow and ground water recharge.*
- To harvest surface run-off/rain water for protective and productive purposes*
- To promote per unit area productivity of land-base activity in a sustainable matter.*
- To promote livelihood/gainful employment opportunities.*

Major Programmes of the Department

The programmes/schemes implemented by the Department include both Centrally Sponsored Schemes as well as State Plan Schemes.

A. State Plan Schemes

- (1) Soil & Water Conservation in General Areas.*
- (2) Watershed Management Programme.*

B. Centrally Sponsored Schemes

- (1) Integrated Wasteland Development Programme (IWDP).*
- (2) Integrated Watershed Management Programme (IWMP).*

C. Additional Central Assistance

- (1) Watershed Development project in Shifting Cultivation Areas (WDPSCA)*
- (2) Accelerated Irrigation Benefits Programme (AIBP)*

D. NABARD Loan

Rural Infrastructure Development Fund (RIDF)

E. Other Government of India Schemes

- (1) Soil Conservation for enhancing the productivity of degraded lands in the catchment of River Kopili in Jaintia Hills District under Macro-Management Mode of Agriculture Department, Meghalaya.*
- (2) Rastriya Krishi Vigyan Yojna (RKVY)*

F. Special Plan Assistance

- (1) Cherrapunjee Ecological Project- Restoration of Degraded Lands Under Sohra Plateau.*

Department comprise both State Plans as well as Centrally Sponsored Schemes, including the Integrated Watershed Management Programme (IWMP), Integrated Wasteland Development Programme (IWDP) and Rural Infrastructure Development Programmes with NABARD assistance.

The Spring Tapping Chambers / Community Wells which serve as a major source for drinking water is part of the IWMP entry level activities in most watershed programs.

Provision of drinking water facilities is taken up as one activity in the preparatory stage of Integrated Watershed Management Programmes. The Divisional Office that is in charge of programme implementation is almost the equivalent of a district level office and has many personnel in it but the data on number of total villages was not readily available. The Ranger who works at the local level, is in charge of four villages on average.

Invariably, all the villages studied had Community Wells /Spring Tapping Chambers provided by the Soil and Water Conservation Department. The need is identified by the community and the *Dorbar* represent the issue to the SWC Department and based on availability of scheme funding, the facility is constructed. Once the construction is complete, it is left to the community to use and maintain and there is no more responsibility from the Department's side as far as that facility is concerned. This is maintained well by the community and that is ensured by the *Dorbar*. The spring tapping chamber is the most preferred source for fetching drinking water even if there is piped water supply reaching home for many of the households.



Figure 2.3 Soil and Water Conservation Department Organogram

Source: Department of Soil and Water Conservation Government of Meghalaya

Among the villages studied and presented in this report; case of Mawklot has a gravity based piped water supply scheme implemented by PHED according to the NRDWP guidelines under the Swajaldhara in the year 2007.

Sohra *KhleiShnong* has a gravity based piped water supply scheme that is independent of PHED, established more than 50 years ago serving 80% of the population and one part of this village also has PHED provided piped water supply. The control village *Umlympung* has a piped water supply system provided by the PHED. There is no PHED facility in Raitsalia Dong/ Mihmyntdu village but there is a power pump piped water supply scheme provided by the S&WC Department.

Table 2.1 Activity and Responsibility Matrix

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

COMMUNITY MANAGEMENT OF RURAL WATER SUPPLY

Community Water ^{plus}

Table 2.2 Enabling Support Environment Descriptors

	PHED		S&WCD	
	Response	Comments	Response	Comments
Type of organisation	Other public body	Public Health Engineering Department of Government of Meghalaya	Other public body	Divisional Office of Soil and Water Conservation Department; Ranger
Modality of support	Mixed model, whereby communities request support when needed, but where the support entity also provides support on a scheduled basis	The authority has a scheduled visit plan. But actually the visits are made when there is something urgent and this is less frequent than what is scheduled.	Supply-driven, whereby the support authority visits the community on a scheduled basis	When the community approach them with the requirement for Community well, and if the S&WCD has any schemes available with them, they start the work. If no funds available with them S&WCD, the request is turned down
Rural Population Served by ESE	90816	average; estimated based on 2011 Census of India data	16000	In this particular case, officer in charge takes care of 4 villages
Number of Service Providers Served by ESE	25		4	
Total operational expenditure (transport, communication, etc) made by the support services authority related to water and sanitation	Approximately INR 2,892,000		Approximately INR 24,000	
OpEx ESE Support / Population Served	INR 31.8		INR 1.50	

COMMUNITY MANAGEMENT OF RURAL WATER SUPPLY

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2.1 Enabling support environment performance indicators

Table 4 ESE Performance Indicators

Indicator	PHED Score	Explanation	S&WC Score	Explanation
Indicator 1.1. Formality of the mandate for support	100	The PHED has a clear mandate, but lack of personnel is mentioned as a problem	100	S&WC Department has the mandate for conservation of land, water and vegetation. Drinking water forms only a very limited part in their role. Construction of community wells or Spring Tapping Chambers from where the nearby households collect water for drinking, cooking, washing and bathing is one work. There is no role for the Dept in its maintenance or management
Indicator 1.2 Working methods	75	The PHED has tools and methods for all technical areas of support and apply whenever need arise. But they are unable to do it on a regular basis for want of personnel	50	They have standard designs for the well/tapping chamber and associated structures. But after the construction there is no support and it is left to the community to manage.
Indicator 1.3 Information management	25	There is no regular information gathering process	0	The ESE doesn't keep track at all of the service providers its supports
Indicator 1.4 Communication between service support authority and service providers	50	The service providers when in need approach the ESE office or contact the Junior Engineer meant for their area. Access is not that easy according to the community (eg Mawklot, the community has approached the office many times to get some information regarding their service)	0	There is very limited communication between the ESE and the service providers it supports. They may work together on other issues but not for drinking water supply service
Indicator 3.1 Client satisfaction	25	there is no mechanism to monitor client satisfaction	0	The ESE doesn't keep track at all of the satisfaction of the service providers it supports

2.2 Enabling support environment institutional assessment

Organisational autonomy: The ESEs, PHED and S&WCD, are two constituents of the State Government and they have their own organisational policies, and makes appropriate changes from time to time in accordance with the State level policies and objectives. With the abundant natural fauna and flora, the State Government is taking various measures to preserve its sanctity. The State is in the process of finalising their Water Policy and enacting the Law that is based on the principles of (i) Reasonable and equitable utilisation, (ii). Participatory water development and management, (iii). Sustainable Use, (iv). Water use efficiency, and (v) Public Trusteeship of Water Resources. Drafts are available for reference.

Leadership of the ESEs found to be pro-active; provides clear sense of mission, and involves the people with the mission; at the State as well as at the District levels. Management and administration as per the State Government's rules and protocols are maintained. This sometimes creates delays in decision making as well as in implementation.

Community orientation is very much prevalent among the different officials. The traditional system of local governance that demands a lot of voluntarism at individual level would have contributed to this attitude and behaviour. The interaction between officials and the community/*Dorbar* also testify that there is no such divide between officials and community, and no such authoritative behaviour of officials. However, when it comes to the schemes and its implementation they stick to the guidelines, notwithstanding certain exceptions. There exists a complaint redressal system at the PHED but the effectiveness of it is doubtful based on the responses received from the community service provider. The chances of community/community service provider interaction for the PHED are more than that for the S&WCD as far as the drinking water facilities are concerned. However, for other soil and water conservation activities the S&WCD officials have more interaction with the community.

Developing and Maintaining Staff are as per the government procedures. The field level staff (JE down line) do not seem to have had any training after induction. The staff are proud of their organisations, their positions and a team spirit is also prevalent among them.

At the higher authority level of the ESE, the relevant organisational issues, interaction with external institutions or individuals etc are maintained. The draft water policy, water law are examples of the efforts taken at the higher officials' level.

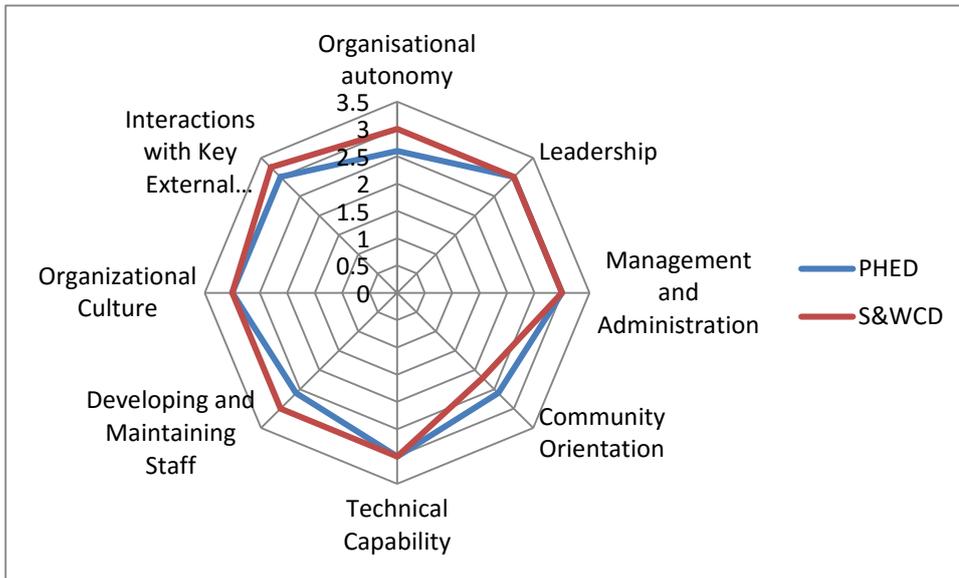


Figure 6 Institutional Assessment of ESE

2.3 Enabling support environment partnering assessment

The partnership between ESE and CSP are assessed here. The data indicates that the partnership varied between the different ESEs. The PHED partnership is collaborative in the best practice case in all the service delivery phase. The partnership of S&WCD is operational and that takes place only during capital investment phase in the best practice cases. The CSPs of the best cases *KhleiShnong* Sohra and *Raitsalia Dong* manage all the service delivery requirements including capital maintenance and service enhancement.

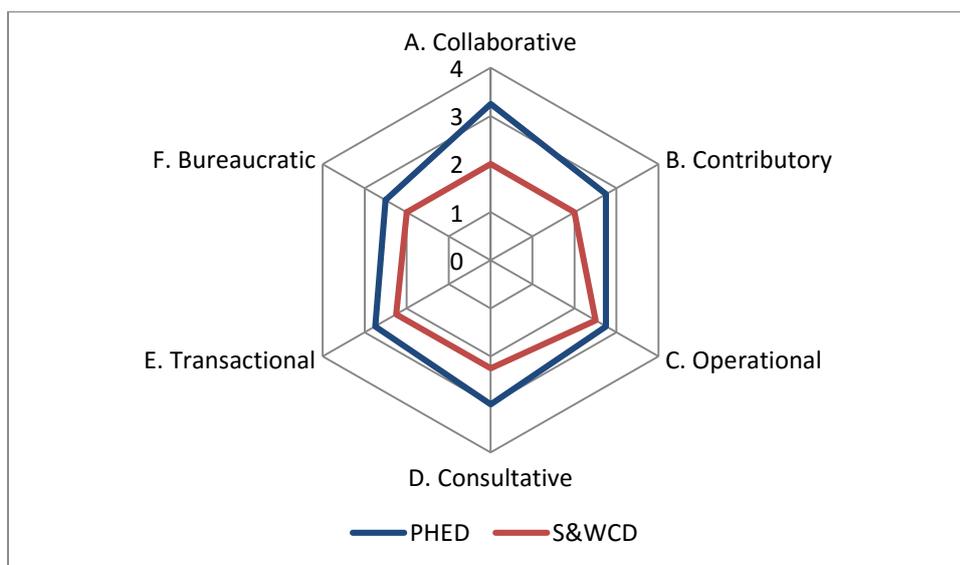


Figure 7 Partnership Assessment

COMMUNITY MANAGEMENT OF RURAL WATER SUPPLY

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Table 5 Partnership Assessment

Phase in service delivery cycle Type of partnering	Capital investment phase	Service delivery phase	Capital maintenance phase	Service enhancement or expansion phase
Collaborative	Mawklot (CSP) and PHED (ESE): they shared responsibility for decisions regarding hardware (e.g. infrastructure) and software (e.g. capacity building) development during implementation, the CSP contributed 10% of the cost and overseen the work with occasional visits to the site.	Mawklot, and Umlympung : Service delivery is the responsibility of CSP, with minimal support from ESE in the case of PHED for major repair or maintenance anything happens.	Mawklot : So far no capital maintenance issue has come up. If it arises ESE and CSP share responsibility for decision making regarding asset renewal	Mawklot : so far not taken up anything. But they have plans and are discussing with the ESE for support. ESE and CSP share responsibility for decisions regarding service enhancement or expansion
Contributory				
Operational	Raitsalia Dong (CSP) and S&WCD (ESE) worked together, CSP present during the work, helping contributing labour and/or resources to deliver hardware and software provision during implementation. No cost contribution but they have discussed the scheme in advance.			
Consultative	Umlympung (CSP-Control) and PHED (ESE): ESE and CSP communicate regularly during implementation with structured opportunities for feedback and dialogue as part of the protocol in implementing the government sponsored scheme. No cost sharing or modification in the scheme to suit the community's requirement.			
Transactional				
Bureaucratic			Umlympung : Already facing some issues but unable to approach the ESE.	Umlympung : Expecting support from ESE; but not materialised so far.
	KhleiShnong Sohra (CSP): The present executive committee of the CSP is unable to recall how the capital investment phase was carried out. According to them the system was established some 50 years ago. And the CSP, Durbar of KhleiShnong Sohra run the scheme independently without any ESE.	KhleiShnong Sohra (CSP) and Raitsalia Dong (CSP) Entire responsibility of service delivery is taken up by the CSP. No role for ESE.	KhleiShnong Sohra (CSP): Asset renewal carried out by the CSP only Raitsalia Dong (CSP): capital maintenance carried out by the CSP (repairing the chamber-structure)	KhleiShnong Sohra (CSP): Service enhancement measures are taken up by the CSP only. Raitsalia Dong (CSP): so far not taken up but they are planning to do it by themselves

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3 Community Service Provider

The three villages studied including the control village belong to East Khasi Hills district, one of the most developed districts of Meghalaya and one village belonged to West Jaintia Hills.

Table 6 General context of CSPs

	Mawklot	KhleihShnong Sohra	Raitsalia Dong	Umlympung
GIS Location around	@25.5526535, 91.8314015	@25.2819936, 91.7120194	@25.4697825, 92.2248896,	@25.4702921, 91.8301087
No of HHs	403	763	73	500
% HHs with pucca houses	30	50	17	7
% landholding Hhs	63	93	100	97
% HHs with ration card	90	90	30	73
% ST HHs	100	100	100	100
Average HH size, and the range number of members	6, 2--10	7, 1--24	9, 3--25	7, 2--17
Average no of children per HH	2	3	4	3
Occupation, based on discussions and observations	One third work outside including government, the rest are engaged in different work in the local area	Three fourth work locally, and in rural / agriculture oriented jobs	One third work in Jowai and other towns, rest are locally employed	Less than a fifth work outside, majority engage in farm employment
Socio-Economic Status- ranking based on observations only among the four : top (1) to bottom (4)	2	1	3	4
Water Supply System	Gravity based Piped water supply- Managed by <i>Dorbar</i> -only PSPs	Gravity based Piped water supply- Managed by <i>Dorbar</i> -77% HSCs with 100% tariff collection	Power pump based Piped water supply- Managed by User Committee-only PSPs- monthly tariff INR 50- 80% tariff collection	Gravity based Piped water supply- Managed by <i>Dorbar</i> - PSPs&HSCs-no tariff -

Invariably all the households have sanitary toilet and flower garden at their home. Rearing of animals such as cow, pig, chickens is widely practiced by majority of the households. Generally, very neat appearance for the village and the roads within at all the villages; with sign boards and information /notice boards placed at appropriate places. Plastics are hardly used in any of these villages.

Due to the terrain and disperse location of the households, and landslides piped water supply becomes expensive in these areas.

Cleaning of the source, the surroundings of PSPs and other community wells are carried out as part of the regular cleaning work of the entire village taken up once in every four to six months. Every household should participate in the cleaning process by sending at least one member to represent them. This is a voluntary activity and only for the tea or snacks expenses the *Dorbar* collect money from each household, around INR20/-. For cleaning the tank, normally a person is engaged whenever they see a need; it is not regular.

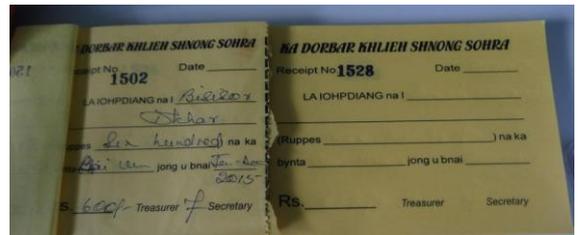
The scheme in Mawklot was discussed with the community (*Dorbar*) and VWSC was constituted, community contribution was mobilised and the community was involved while the facility was constructed. As per Scheme guidelines, the facility was handed over to the VWSC in the year 2007, however, now the facility is managed by the *Dorbar* and VWSC is inactive. Operation and Maintenance met by the *Dorbar* and they are seeking the support of PHED for a proposed major enhancement in the scheme. The *Dorbar* is unable to find funding for the proposed enhancement although they have explored availability of any special funds with local MLA/MP. Now they have represented the issue to PHED and are looking forward to their help. There are no household connections yet and hence they have not decided on charging any tariff.

Repair in the system: Minor repairs have to be met by the *Dorbars* and any major repair in the system requiring above INR 5,000 is normally done by the PHED. Even if they have repairs costing more than INR 5,000 the *Dorbar* immediately attend the work and get the amount reimbursed from the PHED. Some initial repair work in the tank or intake structure was done by the Contractor who did the construction work of the scheme. All minor repair is handled by local plumbers and sometimes by Khalasi (unskilled worker of PHED). However, the *Dorbar* don't maintain record of all the repairs or expenditures. When there is a need the *Dorbar* collects money from the users and spend directly. Repairs and complaints are attended within 24 hours, and normally during 10 AM to 4 PM of the day when there is no water distribution in the line.

Dorbar Shnong meet often and all the developmental issues including water are discussed and the actions are taken. The general body of *Dorbar* reportedly meet once a year and the *Dorbar Shnong* presents the annual plan, expenditures and other relevant issues. (It was reported that they record all the proceedings, however, the record was not shown to or a copy of which was not shared with the field team. Repeated requests also did not yield any result from them.)



Office of the Dorbar, Khleihshnong Sohra and a copy of the receipt they issue for water tariff



3.1.1 Infrastructure snapshot

Table 7 Infrastructure

	Mawklot	KhleihShnong Sohra	Raitsalia Dong	Umlympung
Source	Spring about two kms away from the village	Spring about 4 kms away from the village	Spring within 250 meters	Spring within a kilometer
Type of scheme	Single Village	Single Village	Single Village- small community	Single Village
Distribution system	Only through PSPs, numbering 40. The PSP at many places are open pipes without any closures	585 Household tap connections,	6 PSPs,	Only PSPs, but few unauthorized Household tap connections are there
Community Wells/ Spring Tapping Chambers	6 -Used extensively by the community to fetch mainly drinking water	25-Used by the community to fetch mainly drinking water	2-Used by the community to fetch mainly drinking water	25-Used by the community to fetch mainly drinking water

Source, pump room and distribution tank at Raitsalia Dong





Storage tank
at Mawklot
and in
Umylympung



Community Well – different models



A sacred grove from where the river Myntudu originates and just outside the grove a community well facility is constructed



3.2 Community service provider descriptors

Table 8: Current institutional set-up

	Legal Status of Water Committee
Mawklot	A formal VWSC was formed but currently inactive and the water supply is managed by the <i>Dorbar</i> .
KhleihShnong Sohra	The facility is managed by the <i>Dorbar</i> and there is a Water Supply Committee within the <i>Dorbar</i> to look in to water supply related issues
Raitsalia Dong	There is an informal Water User Association where all those users of the PSPs are members.
Umlympung	The <i>Dorbar</i> only manages the water supply
	Governance and accountability
Mawklot	<i>Dorbar</i> though a traditional local governance system, there is also a democratically elected executive committee, and a general body which meets once a year when the <i>Dorbar Shnong</i> has to report all the developments and plan for the next year.
KhleihShnong Sohra	<i>Dorbar</i> is the traditional local governance system of Meghalaya which has got special provision under the 6th Schedule of Indian Constitution. It used to be traditional body but nowadays elections are held to select the members. All adult members have the voting right, but only men are eligible to become members in the <i>Dorbar Shnong</i> , the executive body. Here the <i>Dorbar Shnong</i> is very active and have sub-committees for different issues. The general body meeting is held once a year and the <i>Dorbar Shnong</i> has to report all the developments and plan for the next year to the general body. At this village, finance of the <i>Dorbar</i> is audited by an independent auditor, and presented at the General Body.
Raitsalia Dong	They have an executive committee comprising 12 members of which 5 are women selected from the users. It's almost two years since they elected these office bearers/executive committee members by voice vote. Each member takes up responsibilities like Secretary, bill collector, two to collect water charges, paying the electricity bill, etc. Only the users are members and all the users are members too. But there is no bank account or any records other than a minute book.
Umlympung	<i>Dorbar</i> is the traditional local governance system of Meghalaya which has got special provision under the 6th Schedule of Indian Constitution. It used to be traditional body but nowadays elections are held to select the members. All adult members have the voting right, but only men are eligible to become members in the <i>Dorbar Shnong</i> , the executive body. The general body meeting is held once a year and the <i>Dorbar Shnong</i> has to report all the developments and plan for the next year.
	Activities - staffing levels
Mawklot	According to the Headman and Secretary, they have only volunteers and not paid staff. There is a valve operator who is a volunteer from the <i>Dorbar</i> , and a non-technical assistant (Khalasi) paid by PHED who assist them whenever there is a need like a minor repair.
KhleihShnong Sohra	There are 4 persons working; two admin assistants, one plumber, and one security guard besides the office bearers like Headman, Secretary and Treasurer who are available on call. The plumber who work as a regular staff takes care of the day to day operation of water supply, and minor repair also. But they also get person from outside if there is a need. No treatment of water. Tariff collected at the <i>Dorbar</i> office where the users have to come and remit. One Admin Assistant at the <i>Dorbar</i> office will collect the tariff, maintain the records such as registry of users, repairs and maintenance, purchase of materials and stock register etc and almost everything is computerized. There is no water security plan as such but the <i>Dorbar</i> undertakes catchment management activities, and rain water harvesting.
Raitsalia Dong	A pump operator is appointed by the Committee who takes care of the day to day operation and maintenance. All the other work are carried out by the Committee Members – volunteers- like collecting the tariff, remitting the electricity etc.
Umlympung	No staff, all the work are carried out by <i>Dorbar</i> members except the help of two non-technical person employed by PHED ; whenever there is a need; like a minor repair they can be called

In two of the best practice villages, the Dorbar manage the facility where as in one the Water User Committee manage the facility. In the control village also, it is the Dorbar manage the facility. There wasn't support from any NGOs or external organisations in any of the village studied and it was only the government departments, PHED and the S&WCD. In KhleihShnong Sohra, there is an Engineer who is a resident of the area in the Committee and he provides technical guidance and support on voluntary basis.

Table 9 CSPs and their future plans

	Future Plans
Mawklot	In order to provide HSCs, they need more water. The community has identified a perennial spring source but this is at a lower elevation. Therefore they require a pumping up system from that source. They expect PHED support in this and request has been sent to PHED about three years ago. If they have to make a contribution they are ready, but unable to bear the entire cost.
KhleihShnong Sohra	Now the <i>Dorbar</i> water supply covers 9 out of 11 localities (wards) and there is demand from the left out area to provide them the water from the <i>Dorbar</i> supply though they get water from PHED facility. As the present reservoir capacity is not adequate to add more consumers, the <i>Dorbar</i> has not taken any action. The <i>Dorbar</i> is planning for doubling the reservoir capacity which they would do by themselves and may not depend on an outside support.
Raitsalia Dong	The community is happy at present that they can collect water without the slogging much through the PSPs compared to the earlier situation of climbing up the hill with water pots. Although they would like HSCs, at present there is no plan for expansion as they do not have adequate resources. Presently, they can manage the service what they have; paying the electricity bill and salary for the pump operator etc from their own money. If there is any repair in the system also they are prepared to manage. The S&WCD who constructed the present facility has withdrawn and do not support anything more.
Umlympung	The water they get from the PHED supply is very limited in quantity and want to improve and expand service. However, the distantly located households and the landscape makes the effort very expensive. They expect the PHED to do that for them.

3.2.1 Detailed focus on who is doing what

3.2.1.1 Community Service Provider/VWSC Focus Group

Community Service Provider, the *Dorbar*, is strong local body with utmost control of what is happening at the community/village level. The community abide by the rules and regulations put forth by the *Dorbar* and the *Dorbar* also enforce them. They are the powerful body to facilitate all the welfare or developmental programmes at the village level. All the related government departments have to be working in consultation with them for implementing the various schemes. *Dorbars* are apolitical and every household should represent in the general body that is held once in a year. There is a community cohesiveness that goes with the *Dorbar's* decisions. If a day is allotted to community cleaning, every household should participate in that and we have observed that participation is with 100% conviction and not under compulsion. There is no social division as all belong to the same Tribal community and this could be a contributing factor for the cohesiveness within a village. However, this cannot be generalised to other levels.

The *Dorbar* make use of the resources, be it natural or human, they have locally. The skilled people or educated people come forward voluntarily to contribute to the development of the village and this voluntarism is harnessed by the *Dorbar* for the development of the village/community.

Implementing more and more fully government funded programmes without much software component to effectively channelize this voluntary spirit of the *Dorbar*/community, may make the *Dorbar* and community get trapped in 'provider-user' or 'giver-taker' kind of relationship.

There are weak *Dorbar* also like that in *Umlympung*. Although majority of the community come under the control of the *Dorbar*, there are few powerful who misuse the facilities. A few private people have constructed water tanks on top of an elevated area that is public property, pump up water from the springs and sell to the households, as revealed in the discussions with community. So far the *Dorbar* hasn't taken any action in this regard. The community want water and they are willing to pay, the *Dorbar* can take appropriate action and provide better service for the community.

There is no representation of women at the *Dorbar*.

3.2.1.2 Activity & Responsibility Matrix at community service provider level

At the Capital investment stage, the government agencies PHED or S&WCD are responsible to complete the specific task where the *Dorbar* is involved in an overall supervision level, in the interest of the village community. It is the pooled resources of Central and State Governments funds the investments, with small contribution from the community level. These two government entities are found to be focusing only on the hardware, though the interaction of the officials with the community help the community understand many issues, these interactions are not structured or focussed to drive an expected change. The software stage is seldom taken care. However, being a self-mobilised community, the demand and community preparation is carried out by *Dorbar*, and they get involved in the structure implementation stage. For example, Mawklot Swajaladhara Scheme: The scheme implemented by the PHED based on a demand from the community. There was an old system existed and it was rehabilitated in 2007 under Swajaldhara with a total cost of INR 24 Lakhs. There was 10% contribution paid by the community and a VWSC was constituted as per the GoI guidelines. Now, the VWSC is not active and the water supply is managed by the *Dorbar*.

At the operation and maintenance stage, the *Dorbar* is able to manage due to less technical intricacies in the Schemes. The pressing need for water makes the community (users) to abide by the rules (obligations) set by the *Dorbar* (service provider); they pay the tariff, or pay for the repairs taken up, and partake in the managing the catchment and water resources.

Quality monitoring is under the purview of PHED only and the community or *Dorbar* doesn't seem to pay attention for that. The PHED collect samples from the PHED schemes periodically as per GoI norms; and the results are informed to the community only if there is any problem. Generally, the spring water is believed to be the cleanest water and the community/*Dorbar* do not feel the need to test the quality. This was testified under this research with water samples tested from the source not showing any bacterial contamination at all.



Poly pipes carrying water from private springs



Source point, filtering structure and the storage tank in Mawklot

3.3 Community service provider indicators

Table 10 Overview of infrastructure being managed:

	Mawklot	KhleihShnong Sohra	Raitsalia Dong	Umlympung
Source condition	Spring about two kms away from the village. It is open and the <i>Dorbar</i> keep a watch on this area to avoid any spoil plays	Spring about 4 kms away from the village, open but kept neat	Spring within 250 meters, covered with a concrete structure. Due to overflow of water with strong force the structure often get damaged. The community repair that.	Spring within a kilometer
Year of construction	2007	1960's (50 years ago)	2012	2005
Intake structure	Open ground level reservoir with sand filtration chamber, rectangular shape and 30000 ltr capacity. In order to pressure up the water to the reservoir, water drawn from different points are joined at one point and this is about a km away from the tank. The system is functional and in good condition.	Closed ground level reservoir in circular shape. In order to pressure up the water to the reservoir, water drawn from four points are joined at one point and this point is about 4 km away from the tank. The system is functional and in good condition. The tank is 30000 ltr capacity.	Syntex tank of 10000 ltr capacity. The source spring is a lower level of about 30 ft and 250 mtrs away. The water is pumped up using 7.5 HP motor.	Open ground level reservoir with sand filtration chamber, rectangular shape and 30000 ltr capacity. The system is functional and in good condition.
Power pump	No	No	7.5 HP	No
Distribution system	Only through PSPs, numbering 40.	585 HSCs,	6 PSPs,	Only PSPs, but unauthorized HSCs few are there
Tap stands	The PSP at many places are open pipes without any closures. The surroundings are neatly maintained			
Community Wells/ Spring Tapping Chambers	6- well constructed, safety doors are available to half of them	25- well constructed with safety doors for many of them	2 – well constructed	25 well-constructed with safety doors for nearly half of them

The Scheme documents were not available and it was therefore not possible to verify information such as the length of pipeline etc. and the key informants were not very sure about such information.

Consideration of overall service provider capability:

Leadership - The leader of the *Dorbar* is elected person and bound to change over a period of time. The necessity to perform and better perform is there. This is creating good leadership qualities among the Headman of *Dorbars*. The *Dorbar Shnong* has besides Headman, a Secretary, a Treasurer and group of members. There is a team spirit and they are found to be action oriented. Among the villages studied, the *KhleihShnong* Sohra has a very excellent leadership, not just the Headman but all the other members are also very active, followed by the *Mawklot* and *Raitsalia*.

Management & Administration - Management and administration depends on the capability of the *Dorbar Shnong*; as they do not have training in management or administration issues as part of the system. As observed earlier, in *KhleihShnong* Sohra the management and administration is excellent, every records are maintained, information is shared with others and transparency is maintained presumably due to their higher socio-economic condition. But for others, a system couldn't found although they say that it exists. The *Raitsalia Dong* Water User Association also started with records but the system is not maintained. However, the members are very well aware about what is happening in the scheme/system administration.

Community Orientation - The CSP, *Dorbar*, is very much oriented to the community's welfare and the executive members themselves are members of the community add to their commitment to the community. There was not much of a difference between the study villages in this aspect.

Technical Capability - Technical capacity of the *Dorbar* varied between the villages studied, though minor technical issues to manage the water supply are managed by all. For major problems they depend on skilled persons from outside. It was only *KhleihShnong* Sohra employs a regular plumber and the *Raitsalia Dong* employs a regular Pump Operator.

Developing & Maintaining Staff - Again, it was *KhleihShnong* had regular paid staff both technical and administrative and *Raitsalia* had the technical (pump operator) on regular employment.

Organisational Culture - The *Dorbar* members are proud of being in that position, and a team spirit was also found among them. They all have office building but it is only *KhleihShnong* Sohra has made it a full-fledged office with all required infrastructure. It appears the position and responsibilities they have make them more proud than the physical infrastructure.

Interactions with Key External Institutions - The *Dorbar Shnong* interact with all the government agencies with regard to implementing various programmes. For water supply too, the PHED and the S&WCD are the agencies they interact often and there is no presence of any NGOs

3.4 Community service provider participation assessment

Building on the idea of a participation ladder, the level of community participation at each stage of the service delivery cycle: Capital investment (implementation), Service delivery – administration, management and operation and maintenance, Asset renewal, and Service enhancement or expansion is assessed for the villages under study.

Initially, a need identified by the community is represented to *Dorbar*. If it is a 'community well' kind of requirement, the S&WCD will be approached and depending on availability of funds, they construct the well or deny the same. If it is for a piped water supply, the PHED is approached. PHED

study the proposal and make official investigations, and then develop the scheme document followed by getting funds allocated from the Government. Once the fund is allocated, they implement the scheme as per the guidelines. If it has a community participation component like forming VWSC or so, they go by that. Otherwise, they complete the scheme and hand over to the *Dorbar*. Mostly, *Dorbar* takes interest to go and oversee the work when it is carried out. It is the *Dorbar* who decides about if they need PFs or HSCs, and that is also determined by the financial allocations available. Fixing the charges is also left to the *Dorbar*.

Service delivery is the responsibility of *Dorbar* and only in case of any major repair they can approach the PHED. In practice, getting the work done through PHED is felt to be taking time due to the protocols and the service delivery can't wait for such long, the repair will be carried out by the *Dorbar*. The amount spent will be reimbursed to the *Dorbar* later. S&WCD do not have any role in service delivery.

For asset renewal and service enhancement also, the first request go from *Dorbar* as they monitor the service level. PHED will address this only if they have financial allocation available. Instead of waiting for long, if the *Dorbar* is efficient they do it by themselves.

Table 11 CSP Participation Assessment

Stage of delivery cycle	Capital Investment (implementation)	Service delivery	Asset Renewal	Service enhancement or expansion
1. Self-mobilisation	Khleih <i>Shnong</i> Sohra	Raitsalia Dong Khleih <i>Shnong</i> Sohra Mawklot <i>Umylmpung</i>	Raitsalia Dong Khleih <i>Shnong</i> Sohra	Raitsalia Dong Khleih <i>Shnong</i> Sohra
2. Interaction participation	<i>Umylmpung</i> Mawklot Raitsalia Dong		Mawklot	Mawklot
3. Functional participation				
4. Participation by consultation			<i>Umylmpung</i>	<i>Umylmpung</i>
5. Passive participation				

3.5 Community Service Provider Costs

This information is gathered from the financial details provided by CSPs. Only Khleih*Shnong* had an audited financial report. Raitsalia Dong had it noted in their note book. For the other two, it was only the oral information.

Table 12 CSP cost and revenue for water

	Mawklot	Khleih <i>Shnong</i> Sohra	Raitsalia dong/ Mihmyntdu	<i>Umylmpung</i>
Annual Revenue INR 2014	21,000	379,700	24,000	18,000

Annual Expenditure at CSP 2014	21,000	279,893	20,000	18,000
Population	2,418	5,341	441	3,500

Community Service Provider Financial Details

Table 13 Community Service Provider Financial Details

	Mawklot	KhleihShnong Sohra	Raitsalia Dong/ Mihmyntdu	Umlympung
Annual Revenue INR (2014)	21,000	379,700	24,000	18,000
Annual Expenditure (2014)				
Opex Labour INR	6,000	143,950	14,000	3,000
Opex Power INR	0	0	6000	0
Opex Chemicals INR			0	
Opex Minor Spares INR	15,000	123,093	0	15,000
CapManEx Hardware INR	0	12,850	0	
CapManEx Software INR	0	0	0	0

The Raitsalia Dong pays the power tariff for the pumping up system at a domestic rate of around INR 3.05 whereas the commercial rate for power INR 5.40 per unit; thereby making a difference of INR1,063 a year which in the context of this overall research our analysis recognises as a state subsidy.

4 Household Service Levels

4.1 Coverage

Due to the terrain and disperse location of the households bringing water to each household is a difficult task. For example, in Mawklot, there are 40 PSPs and one PSP is used by 7 households on an average. The water distribution is twice a day, 7 to 10 in the morning and 4 to 7 in the evening. Most of households have water storage facility outside the house. In order to make it easy a commonly practiced method is that they use synthetic hose pipe to collect the water. The pipe is bought by the households themselves and used to connect the PSP and their household storage. The households split the time / duration of water availability and by turn they collect the water. At some PSPs, it was observed that a container, normally a tin, is kept under the tap to collect the water when it comes and the households simultaneously use the hosepipes to drain water to their storage from the tin container. Most of the PSPs are just open pipes and do not have closures. During water shortage, that happens during winter season in December to March, the community wells are used. During summer, both piped water and rain water are used by the community.

Table 14 Coverage by Piped Water Supply System

	Water Supply Coverage (%HHs)	Coverage through HSCs (% HHs)	Timings of supply
Mawklot	100	0	7-10 in the morning and 4-7 in the evening
KhleihShnong Sohra	100	77	24 X7
Mihmyntdu	68	0	7-10 in the morning
Umlympung	57	0	6-8 in the morning

Besides the piped water supply, there are the community wells/spring tapping chambers in every village and most of them are perennial sources for drinking water. Being a natural facility, the location may not be easily accessible, sometimes located at the foot hills, resulting very strenuous climb on a sloppy terrain with water pots on the back. With the changing quality of life and preferences for people, not many can spend time to fetch water from the springs. However, most of the households collect water from the spring for drinking purpose even if they have HSC of piped water supply. Very few households have private sources like spring in own land.

4.2 Quantity, Accessibility, Quality, Continuity, Reliability

Invariably for all the households surveyed, the primary source is the facility provided by the CSP. Very few cases of own sources were found.

Data from the household survey reveals that availability of water close to their house makes it very convenient and reduces the strain for the women who normally go and fetch water from the springs located often at very inconvenient places. Piped water supply thus making many changes for them and with their own adaptations like hosepipes things are made much more easy.

In the villages where 24X7 supply is not there, water is supplied throughout the day only for death; and there is no special supply for any other events such as festival or weddings etc. For such occasions, if the family wants they buy from private tankers. Private business of water is common; if

there is a spring with adequate supply in the land, the land/house owner sells the water. The rates are around INR 150 for a tank of 500 litres.

Focus Group discussion with the community found that they are satisfied with the service; and there weren't any complaints or qualms expressed in the discussion about the water supply, except a quality issue in *KhleihShnong* Sohra.

In Mawklot the some of the PSP users use synthetic hosepipes to draw home the water. They divide the water availability time and each household use it by turn. Asked about any conflicts due to the division of time or availability of water etc, they said "so far nothing has come up like that between us. Even if someone need more water, we adjust and give. All of us are related and belong to close knit clans. Moreover, if there is no water at the tap and if it is urgent we go to the community wells to fetch water, wash clothes etc. So, no such tension for water happens between us."

In Raitsalia Dong of Mihmyntdu, the hardship they had in fetching water from the spring that is about 30 feet down and climbing up with water has come down with the piped water supply. Now there are only 5 tapstands and there is a long waiting time at the tap stand. Never mind the long wait, the households especially women are very happy about the facility. The Water User Committee also has many women as office bearers (Mihmyntdu is the village from where the river Myntdu originates, the river passing through Bangladesh before joining the Bay of Bengal).

The community wells available in the villages are also put in to effective use by the community. And as there are washing stones and other facilities done by the S&WCD, most of the clothes washing takes place there.

The households in the control village *Umlympung* manage their water requirement with the help of the community wells and private springs as they do not get adequate water from the piped water supply provided by the *Dorbar*. The coverage is only for a part of the village and the households in those area too have reported the force of water in the distribution system is very low and they can't get adequate water for their use.

Table 15 Household Service Level

Service Level	Quantity %	Accessibility %	Quality %	Continuity %	Reliability %	Overall %
Mawklot						
High	97%	93%	93%	90%	100%	83%
Improved	3%	3%	0%	0%	0%	3%
Basic	0%	0%	7%	10%	0%	13%
KhleihShnong Sohra						
High	73%	70%	50%	50%	63%	30%
Improved	10%	13%	0%	10%	10%	13%
Basic	3%	3%	43%	30%	0%	20%
Raitsalia Dong						
High	0%	0%	90%	0%	50%	0%
Improved	3%	3%	0%	0%	7%	3%
Basic	0%	0%	7%	0%	0%	0%
Umlympung						
High	57%	57%	40%	0%	53%	23%
Improved	3%	3%	0%	0%	0%	0%
Basic	0%	0%	40%	30%	0%	27%

Water Tariff:

The two villages KhleihShnong Sohra and Raitsalia Dong are collecting a water tariff. INR 50 per month is the charge for households in both the villages. In KhleihShnong Sohra, they have different rates for commercial purpose and institutional purposes. The households are charged INR 800 as the fee for a new connection. It is 100% tariff collection in KhleihShnong Sohra and in Raitsalia Dong it is near 80%. For the households in KhleihShnong Sohra, there is a fixed date for them to go and pay the tariff at the office of the *Dorbar* for which they will be issued a receipt. For failure to pay in time a fine is imposed and if they fail to pay for three months consecutively the HSC will be disconnected. The *Dorbar* has saved INR 10 lakh for water related expenditures which they say they might use if service enhancement is required. At Raitsalia, there are a few households which can't afford to pay and they might pay one month and the next month they may not. Anyway, the amount they collect is used to pay the salary for the Pump Operator and to pay the electricity charges.

Households' arrangements in Mawklot



4.3 Equity

The population in these villages are 100% Tribals and there is no inequality in terms of provision of water from the CSP.

4.4 Community and household views

In the olden days when the community was satisfied with the water available in the nearby springs, they themselves went, collected and carried home. The Community Wells made at the springs, with a neatly constructed tapping chamber from where the water can be collected, and a cloth washing facility with proper drainage, is the most common water source one can see in rural Meghalaya. Now, due to improved quality of life and with higher aspirations, most of the children have started attending schools, and the men have started working outside the immediate home. This results in lack of any helping hand to fetch water in the morning on the one hand and the necessity of getting ready before school / work time for the members in the family. As a consequence, most the families in the community now prefer to have piped water supplied to home. Thus, the demand for piped water supply has increased. This has resulted in a booming private market for drinking water as well.

From Focus Group Discussion

Now, the children are going to school and fetching water in the morning from the spring has become difficult. Morning I got to cook food before the children leave for school.

I can't climb up with the water ... I used to bring two three pots in one go when I was young... I keep them in the bamboo basket and carry ... Now I have become aged, children are going out to work they have no time and want water in the morning.... The pipe is very convenient

We are very much satisfied with this water supply and happy that we are able to collect the water we require. For uses at home, cooking, washing vessels, drinking We take the water from the community well for drinking, that is tastier....

We didn't have any problem with the supply.... Any repair, the RangbahShnong attend immediately....

We pay the water charges every month at the Dorbar office....

If there is any problem for water, we call the Dorbar office...



Water carried home from a community well

5 Enabling Support Environment Costing

The capital infrastructure costs varied according to the system established. For Khleih*Shnong* Sohra, it was difficult to obtain to the cost as the system dates back to 1950's. However, an approximation was done taking in to consideration the cost of providing such an infrastructure today as per the rate approved by the Government of India.

Table 16 Capital costs

	Mawklot	Khleih <i>Shnong</i> Sohra	Mihmyntdu	<i>Umlympung</i>
CapEx Total INR 2014	3507,000	5313,000	592,900	3411,500
Community contribution	350,700	(contribution made but unrecorded)		
CapEx software	0	0	0	0

The recurrent costs for cleaning (Opex Labour) is calculated taking in to consideration the number of days they spent to clean the system etc. and in reality the community volunteers to do the work without any charges being incurred. Therefore the overall financial analysis discounts this figure **.

Table 17 Recurrent costs and revenue

	Mawklot	Khleih <i>Shnong</i> Sohra	Mihmyntdu	<i>Umlympung</i>
Annual Revenue INR	21,000	379,700	24,000	18,000
Annual Expenditure (2014)				
Opex Labour INR	6,000**	143,950	14,000	3,000
Opex Power INR	0	0	6000	0
Opex Chemicals INR			0	
Opex Minor Spares INR	15,000	123,093	0	15,000

The Raitsalia Dong pays the power tariff for the pumping up system at a domestic rate (of around INR 3.05) whereas the commercial rate for power INR 5.40 per unit; thereby delivering a state subsidy of INR1,063 a year.

Table 18 Capital maintenance costs (where recorded)

	Mawklot	Khleih <i>Shnong</i>	Mihmyntdu	<i>Umlympung</i>
Annual Expenditure (2014)				
CapManEx Hardware INR	0	12850	0	
CapManEx Software INR	0	0	0	0

Table 19 Summary cost table (INR)

Meghalaya 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 46	-	INR 46	INR 38	INR 5	-	-	-	INR 43
Local self-government	-	-	-	-	-	-	-	-	-
State government entity	-	-	-	-	INR 3	-	-	-	INR 3
State water supply agency	INR 228	-	INR 228	-	-	-	INR 49	INR 2	INR 51
National Government	INR 1,189	-	INR 1,189	-	-	-	-	-	-
NGO national & international	-	-	-	-	-	-	-	-	-
International donor	-	-	-	-	-	-	-	-	-
TOTALS	INR 1,463	-	INR 1,463	INR 38	INR 8	-	INR 49	INR 2	INR 97
Median of 20 case studies			INR 3,231						INR 207
'Plus' %age	97%	-	97%	0%	44%	-	100%	100%	56%
Median of 20 case studies			95%						57%

Table 20 Summary cost table (PPP USD\$)

Meghalaya 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	\$ 2.61	-	\$ 2.61	\$ 2.18	\$ 0.26	-	-	-	\$ 2.44
Local self-government	-	-	-	-	-	-	-	-	-
State government entity	-	-	-	-	\$ 0.20	-	-	-	\$ 0.20
State water supply agency	\$ 13.00	-	\$ 13.00	-	-	-	\$ 2.81	\$ 0.11	\$ 2.91
National Government	\$ 67.76	-	\$ 67.76	-	-	-	-	-	-
NGO national & international	-	-	-	-	-	-	-	-	-
International donor	-	-	-	-	-	-	-	-	-
TOTALS	\$ 83.38	-	\$ 83.38	\$ 2.18	\$ 0.46	-	\$ 2.81	\$ 0.11	\$ 5.55
Median of 20 case studies			\$ 184.16						\$ 11.78
'Plus' %age	97%	-	97%	0%	44%	-	100%	100%	56%
Median of 20 case studies			95%						57%

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>).

6 Conclusions

In Meghalaya State, there are two entities, the PHED and S&WCD, providing facilities for ensuring safe drinking water for the community.

Both the PHED and S&WCD work intensively at capital investment hardware, in building all the necessary infrastructure for the community.

There is no evident investment in software such as water issues education at the implementation or pre-implementation stage.

If the systems remain completely the same, that is as a gravity based piped supply without using any new technology eg. a power pump, the community can manage by themselves. This may not be the case when they have to adopt new technologies – which is likely to be unavoidable with the growing demand and changing life-styles. This necessitates incorporating a software component at the preparation and implementation stages of capital investment.

The difficult terrain and the high labour cost in laying pipelines are the major part in the capital investment now. The recurrent expenditure is about INR 97 per person in the case of the best practice at the State level, approximately half of that found in the remainder of the 20 case studies investigated by this research.

The community is a self-mobilised group, not only for water, but for other areas also and hence they are involved in the implementation stage too. They are environmentally conscious.

The cohesiveness in the community can be better utilised if there is an enhanced software component at the preparation and implementation stages of the schemes.

References

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Appendices

All the tables that are produced

Table A1 - ESE1 PHED- Overall Partnering Assessment

	Stages of Service Delivery Cycle				
Type of partnering	Capital investment (implementation)	Service delivery: administration, management and operation and maintenance	Capital renewal score	Service enhancement or expansion	Mean average Score
A. Collaborative	Agree (3)	Strongly Agree (4)	Agree (3)	Agree (3)	3.25
B. Contributory	Agree (3)	Strongly Agree (4)	Disagree (2)	Disagree (2)	2.75
C. Operational	Agree (3)	Disagree (2)	Agree (3)	Agree (3)	2.75
D. Consultative	Agree (3)	Agree (3)	Agree (3)	Agree (3)	3
E. Transactional	Agree (3)	Agree (3)	Disagree (2)	Agree (3)	2.75
F. Bureaucratic	Agree (3)	Agree (3)	Disagree (2)	Disagree (2)	2.5

Table A2 - ESE2 S&WCD Overall Partnering Assessment

	Stages of Service Delivery Cycle				
Type of partnering	Capital investment (implementation)	Service delivery: administration, management and operation and maintenance	Capital renewal score	Service enhancement or expansion	Mean average Score
A. Collaborative	Agree (3)	Strongly Disagree (1)	Disagree (2)	Disagree (2)	2
B. Contributory	Disagree (2)	Disagree (2)	Disagree (2)	Disagree (2)	2
C. Operational	Strongly Agree (4)	Disagree (2)	Disagree (2)	Disagree (2)	2.5
D. Consultative	Agree (3)	Disagree (2)	Disagree (2)	Disagree (2)	2.25
E. Transactional	Agree (3)	Disagree (2)	Disagree (2)	Disagree (2)	2.25
F. Bureaucratic	Disagree (2)	Disagree (2)	Disagree (2)	Disagree (2)	2

Table A4 Revenue and Expenditure- Khleihshnong Sohra

The following expenditure was available from the audited statements of accounts of the KhleihShnong Sohra for the year 2013-14, and it was not available for other CSPs

Head of expense	Amount INR
Salary of Plumber-	60000
materials cost -	58075
wages to the main line work	22150
cost of plumbing materials /distribution	54600+42700
Cost of pipe	128500
new connection expe	1940
new taps	3700
repair of village taps	2400
repair &cleaning of community wells	4000
brick/cement	775
transport cost for pipe	500
repair in intake chamber	11113
sand cement	3290
transport charges/loadmen	1500
welding cost	300