How do people build and manage their own sanitation and water facilities

Holistic Rural Development Programme

Project Processes

Nayagarh District, Odisha

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4	OBC	Other Backward Classes
5	PWS	Piped Water Supply
6	SBM	Swachh Bharat Mission
7	SC	Scheduled Caste
8	SHG	Self Help Group
9	ST	Scheduled Tribe
10	VDC	Village Development Committee
11	VWSC	Village Water and Sanitation Committee

Acknowledgement

The HDFC Bank Parivartan supported Gram Vikas to undertake the Holistic Rural Development Programme (HRDP) in 17 villages of Nayagarh district. As part of the Programme, community-owned and managed integrated water and sanitation interventions were taken up in five villages.

Gram Vikas has been implementing the integrated water and sanitation programme where village communities come together to build toilets and bathing rooms and a piped water supply system with three taps providing safe water for every household. In addition to addressing the need for safe sanitation and water, the programme demonstrates how a socially inclusive, gender equitable, people-friendly and financially viable model of sustainable and holistic development, where everybody benefits, can be initiated. As of March 2022, 1344 villages covering 98,643 households have benefitted from the Programme.

This document is based on the experience of the five village communities - Biridihi, Kusumitara, Mankapalli, Similisahi, and Tulasipur - in Nayagarh, of building their own water and sanitation system. The study also captures best practices from other villages in Ganjam and Gajapati districts, which have built similar systems with support of Gram Vikas. The villages covered are Tamana, Nuasahi, Lunugundi, Chasa Kanamana, Hichhagandhi, Madhuramba, Dantaranala. Fieldwork for the documentation was carried out during December 2020.

We thank the villages, particularly, members of women self-help groups, village community leaders, elected Panchayati Raj representatives for participating in the study and sharing the details which forms part of this report.

The documentation was done by Ms. Beena Kumari Govindan, a Social Development Professional, with over 30 years of experience in Community Development, Livelihood, Water and Sanitation. She was supported by staff members of Gram Vikas in Nayagarh, Ganjam and Gajapati.

We acknowledge the financial support of HDFC Bank Parivartan.

Small big dreams: The promise of water on tap and a private toilet

Photo: Prasanta Kumar Naik

Village meeting at Mankapali

According to Manorama Behera of Mankapalli village in Nayagarh district of Odisha, no woman in her village could afford to wait for water in the morning. “Mornings are so busy”, she says. Typically in her village, women attend to almost all the morning chores at home. That includes washing, cleaning, cooking, and getting children ready for school. “In the midst of all these, when we have to go out and wait at the water tap, things go out of control”.

Children cannot go to school if food is not ready on time. “There was no certainty on when we get water, or even whether we will get it at all!” Mankapalli village used to get running water for 15 to 30 minutes once or twice a week. The only pattern they could see in water supply was that it was uncertain and unpredictable.

“Summer is always bad”, Manorama adds. Water supply to the villages, erratic as it was, stopped for weeks during summer. “Then the only source of water for the entire village would be the temple well. That increases the time spent as everyone had to wait for their turn to collect water”.

What do people do for morning ablutions in the face of such water scarcity? Constructing toilets would not be an option at all. Several villages had toilets constructed but never used as there was no water. How could one find water for use in toilets when drinking water itself is difficult to come by?

With the intervention by Gram Vikas through the HDFC Bank Parivartan project, Mankapalli village has ended its tryst with water scarcity. All the 106 households have benefitted from the piped water supply system, including 30 families from Scheduled Caste (SC) communities, 50 from Other Backward Classes (OBC), and 26 belonging to 'General' communities.

Prabhatini Jena of Similisahi village remembers the days when women and girls had to wait for the dark for ablutions. "It was a slow suffering for us. Because we had to wait till dark". And it was dangerous, especially when it was dark, they walked in fear of poisonous snakes. "And obviously, there was no light along the pathways".

In 2021, the village left behind those fears and moved ahead. All the households in Similisahi village have now got toilets; water is available throughout the day.

People of Kusumitara, another village covered by the project, had the bitter experience of a contractor fleeing with public money after constructing substandard toilets which were not of any use. This even led to the villagers being denied the subsidy that they were eligible for under Swachh Bharat Mission (SBM). The village developed an aversion not only towards contractors, but any agency coming from outside too.

Photo: Prasanta Kumar Naik

Minati Pradhan of Tulasipur village collecting water from the tap in her home

Overcoming the reluctance and aversion, Kusumitara village resolved to take up a water and sanitation project. The village had constructed a water distribution system; that too with a sensor-based management, probably a first of its kind run by a rural peasant community.

This is being made possible by the Gram Vikas - HDFC Bank Parivartan project, because it addressed the trust-deficit among the villagers. Gram Vikas's past achievements on the water and sanitation front helped in this endeavour. Villagers developed confidence in the programme as they heard about the success stories from other villages where Gram Vikas had implemented similar programmes.

Gram Vikas

Gram Vikas, a non-government organisation based in Odisha, is known widely for its work with communities in rural water and sanitation programmes through the design, build, operate, maintain model.

As of March 31, 2022, Gram Vikas has helped village communities build toilets and bathrooms in 1472 habitations benefitting 1,05,350 families; and have enabled access to potable water in 1344 habitations covering 98,643 families, through three taps, one each in the toilet, bathroom and kitchen.

Over four decades, Gram Vikas has partnered with several organisations and programmes for advancing its goals of just and equitable development.

HDFC Bank Parivartan Partnership with Gram Vikas

Gram Vikas's partnership with the CSR initiative Parivartan of the HDFC Bank that funds Holistic Rural Development Programme (HRDP), started in October 2017, as a four-year project to enable holistic development of 17 villages in Nayagarh district of Odisha. The project benefits 3605 households. The project design was developed on the basis of a participatory needs assessment carried out in these villages.

The Gram Vikas-HRDP project envisages dignified and healthy living for rural communities through simultaneous interventions in natural resource management, agriculture, livelihoods, social awareness, health education, water and sanitation infrastructure development, and leadership training for Self Help Groups (SHGs).

A key aspect of the project is enabling 586 households in five villages to build, own and manage integrated water and sanitation systems. It provides for every household to have access to their own toilet and bathing room with assured piped water supply through three taps in each household.

The Water and Sanitation component of the project is built around the approach called MANTRA.

MANTRA Core Values

1. All or None

The 100% Inclusion process ensures that every single household, including the poorest and socially excluded, in the village participate and contribute to the programme. Besides serving equity, the all or none approach also creates a unique opportunity for the entire village to work together for a shared purpose.

2. Share Costs

The community contributes significantly to the capital cost and bears the cost of running and maintaining facilities. This inclusive stake-building ensures that people continue to care for the results individually as well as by making demands on the village organization.

3. Take Responsibility

People 'take responsibility' from an early stage to generate consensus, mobilize local contributions, manage construction and take charge of operations and maintenance. This is a sound way to ensure long-term sustainability.

5.Financial Sustainability

The creation of a corpus fund and the maintenance fund ensure 'in built financial sustainability', and that future generations continue to be served and there is the availability of resources for maintenance of infrastructure

4. Equitable Participation

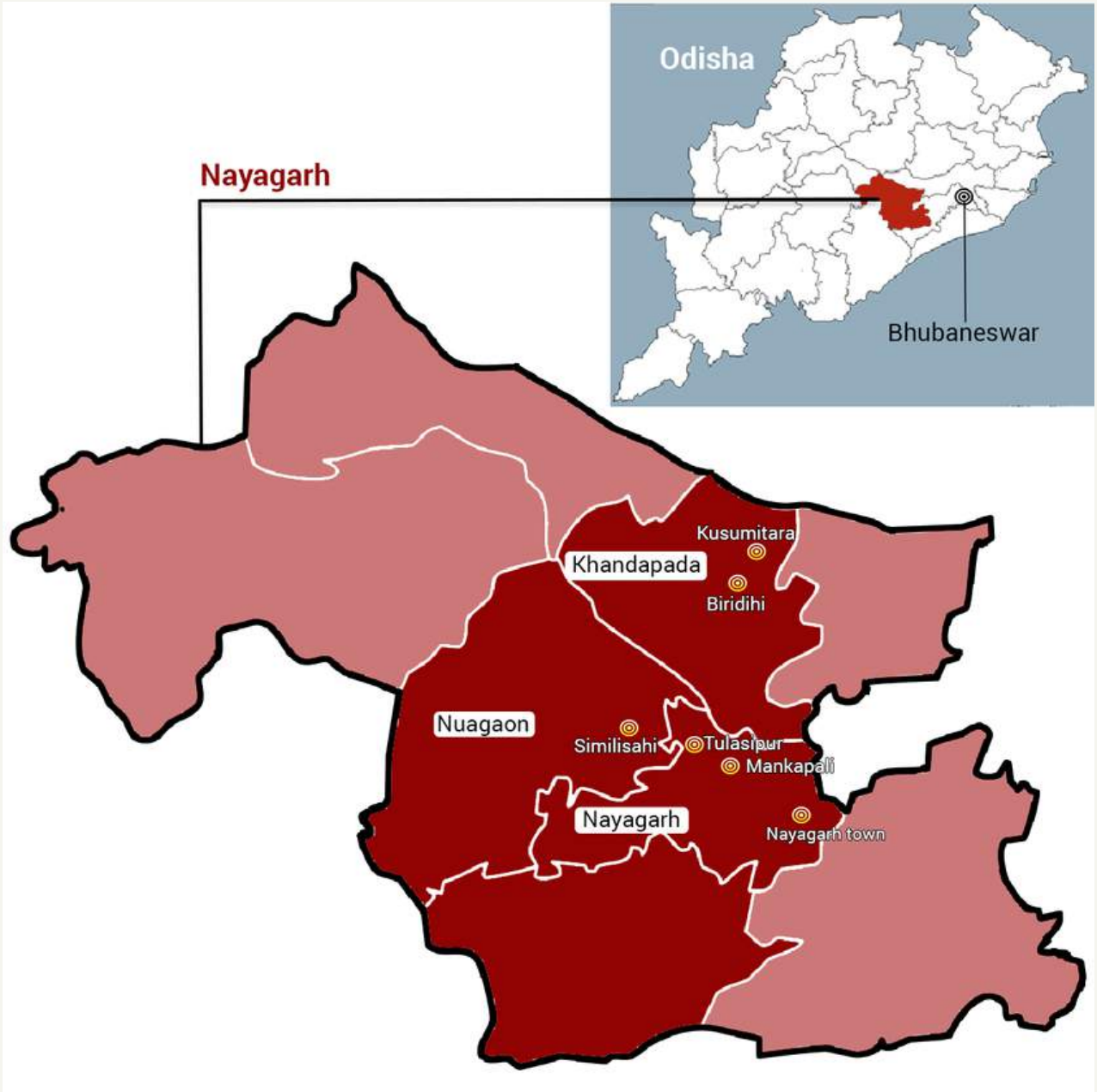
The process promotes affirmative steps to ensure that women and poor people are included in the management of asset and processes. This enables their active participation in creating and sustaining solutions meant for them and equitable sharing.

Project Locations

The experiences shared in this document are from five villages in Nayagarh district -Biridihi, Kusumitara, Mankapalli, Similisahi, and Tulasipur.

Water and sanitation projects under the programme were completed in all the villages between 2018 to 2021.

As these are new projects, the experiences of ensuring sustainability documented here are from similar projects that Gram Vikas has completed in other parts of Odisha.



Location of the five project villages

Project Processes

The project uses the established processes that Gram Vikas has developed through several years of engagement with communities implementing water and sanitation projects of similar nature. The sequence of the processes is as given below.

- Community mobilisation
- Formation and Strengthening of Village Water and Sanitation Committee (VWSC)
- Resource mobilisation
- Construction of household toilet and bathroom units
- Design and implementation of piped water supply
- Measures for ensuring sustainability of systems and services

Photo: Ajaya Kumar Behera

Women of Kantabania village separating earthworms from vermicompost

Community Mobilisation

Community mobilisation for establishing sustainable water and sanitation infrastructure starts from the very first visit to a project village. Recognising and understanding the village institutions is a prerequisite for initiating interactions with the villagers.

In Nayagarh, villages typically have a village head, a village committee called Village Development Committee (VDC), and village assembly. Village assembly is also known as Village Sabha or Village General Body. VDC is typically an all-men forum. If the village is of mixed community, people from forward castes occupy the office of village head and the entire membership in VDC.

While women are the ones who feel the need for water and sanitation systems the most, they do not attend VDCs or village assemblies. Therefore, the first challenge typically is to convince the all-men VDCs on the need for toilet and bathroom facilities. On the other hand, there is always a demand for 24*7 water supply.

Community mobilisation strategies that the project adopts are important in overcoming the challenges that such a project typically faces. The important strategies include individual interactions with village leaders, using influential persons to convince the leaders, and organising exposure visits to villages with successful projects.

In order to move ahead with a water and sanitation programme, every village has to take a few decisions that ensure adherence to the non-negotiable aspects, as well as fixing stakeholder responsibilities.

These include five key elements:

1. Formation of a Village Water and Sanitation Committee (VWSC) ensuring representation of women (50%), Scheduled Caste and Scheduled Tribe families; this itself is a drastic shift from what a village is typically used to
2. Ensuring access of all sections of the community in the project, including the poorest families, in getting toilet and bathroom units constructed at their homes and 24*7 piped water supply
3. Cost sharing by the community including upfront contribution to a corpus fund (₹ 1000 per household)
4. Ensuring construction of toilet and bathroom units and water connection for all the new houses in future
5. Operation and maintenance of water supply by VWSC

There were two critical challenges in facilitating the above decisions at the community level. One, women's participation in decision making was new to village institutions. Two, funds were to be mobilised by the community for construction of toilet and bathroom units for the poorest.

Since the village leaders were already convinced about the project, they took the lead role in convincing the village General Body. It is at this point that the village resolves to go ahead with the project.

Photo: Paramananda Sethi

Village meeting at Biridhi

Community's own experiences in collective action could be an enabling factor in community mobilisation. For instance, Kusumitara village has had the experience of managing water for irrigation through Pani Panchayats.

"Everyone wanted water supply for sure; nobody had any doubt over there", says Kishore Chandra Pradhan, President, Village Development Committee of Kusumitara village. "However, many were reluctant to commit on constructing toilets and bathrooms".

After a lot of effort, they eventually succeeded in mobilising the community for creating sanitation facilities for all. Pani Panchayats played a key role here.

If it was Pani Panchayats that helped Kusumitara take a collective decision, it was the modern institution of Self Help Groups (SHGs) that worked in Similisahi village.

The project team used the platform of the SHGs functioning in the village to convince the households on the requirement of toilet and bath rooms and also about the importance of village participation. Of the twelve SHGs three were exclusive Scheduled Caste groups.

Once the village leaders were convinced about the programme, a baseline survey was conducted. Gram Vikas uses a household level survey to get the demographic details and also to build the baseline on water, sanitation, and health. The findings of the base line survey are presented in the village assembly to convince the villagers on the need for toilet and bathroom units as well as a project for piped water supply.

Photo: Prasanta Kumar Naik

Water tank under construction in Similisahi village.

Experiences from other Gram Vikas Projects

Ensuring 100% participation

A project can be successful only if it ensures the participation of the entire village throughout the project life cycle. Village Committee/VDCs adopt various methods to encourage participation. Using the church to influence the villagers as in Hichhagandhi village in Gajapati District, imposing a fine on absentees as happened in Chasa Kanamana village in Ganjam district, or even excommunication of absentees by the village assembly are means used for enhancing participation.

In Chasa Kanamana village, 60% of the households were not willing to participate in meetings relating to the project. They imposed a fine of ₹ 300 for not attending day time meetings and ₹ 100 for skipping meetings conducted at night time. On the other hand, there are villages like Madhuramba that approached Gram Vikas to initiate a water and sanitation programme after seeing the changes in Dantaranala where Gram Vikas had worked.

Formation and strengthening of VWSC

Once the resolution is taken on the *five key elements,* the village forms a Village Water and Sanitation Committee (VWSC) with women, SC and ST representation.

Office bearers of VWSC are also selected. In case of any objection to allow 50% women membership and representation for SC and ST, Gram Vikas takes the responsibility to convince the village about the MANTRA principles as a prerequisite to start a water and sanitation programme.

Photo: Bibekananda Pradhan

Village meeting in Dungapali, Ganjam district

Most of the women who are selected for VWSC are typically from Self Help Groups (SHGs). Anganwadi workers and other active women in the village are also selected to fill 50% membership of VWSC. The mandatory membership of women and Scheduled Caste (SC) and Scheduled Tribe (ST) households in VWSC ensures gender and social equity in decision making.

VWSC plays a key role in formulating and implementing the water and sanitation project for the village. Training programmes and exposure visits are organised for this. Since VWSC participates in project related activities from the beginning they become empowered to handle all aspects of sustaining water and sanitation facilities. Some of the secretaries of VWSCs have evolved into capable managers. Ranjan Kumar Behera, secretary of VWSC in Similisahi Village, for instance, can explain the Detailed Project Report (DPR).

Similisahi village has 155 houses of which 35 belong to SC. There are 13 members in VWSC and if we look at the composition of the committee, there are four persons from Scheduled Caste and six women. The secretary of VWSC is from a SC community. One of the women VWSC members is an anganwadi worker and others are from the SHGs associated with Odisha Livelihood Mission.

Photo: Debasis Sahoo

Pump house in Similisahi village

The VSWC has to keep a number of records which include minutes' book, cash book, stock book, and user fee register. The office bearers get hands on training in the upkeep of records.

"Initially I was not confident about writing records. The stock book was managed by Gram Vikas and they supported me in writing minutes' book. Gradually I learned how to write it", says Ranjan Kumar Behera, the VWSC secretary.

Experiences from other Gram Vikas Projects

Building local capacities in record keeping

The fact that some of the older villages maintain relevant records even after 7-8 years of commissioning the project proves the effectiveness of the early hands-on training. Madhuramba village in Gajapati district introduced a new register that accommodates both household level monthly water meter readings and payment status. The new register has been in use since they installed household level water meter two years after commissioning the scheme

Resource Mobilisation

The HRDP project provided partial financial support to villages for constructing toilet and bathroom units in every household as well as in establishing piped water supply for the entire village.

For constructing a toilet and bathroom unit, there is a subsidy under the Swachh Bharat Mission (SBM) with each household receiving ₹ 12,000 and HRDP project provided additional subsidy. The money from Swachh Bharat Mission (SBM) is available only on completion of construction of a toilet unit. HRDP project provided ₹ 10,000 for a new toilet and bathroom unit and ₹ 7,000 for repairing an existing toilet and retrofitting of bathing rooms.

Photo: Prasanta Kumar Naik

Overhead tank under construction in Mankapalli village

Thus, with HRDP project support, each household received support of ₹ 22,000. This leaves a deficit of ₹ 13,000/household for a new toilet and bathroom unit, not an easy amount for most of the households. This gap is met through collection of locally available materials, making country bricks, and labour participation in toilet construction. Individual households take responsibility of resource mobilisation and toilet construction with technical inputs from Gram Vikas.

A summary of the project details across the project villages is given in the table below; it also shows the part of the costs shared by the community. The cost sharing may include direct contribution by the households as well as mobilisation from collective sources.

Name of village	Tulsipur	Similisahi	Kusumitara	Mankapalli	Biridihi
Number of households	141	150	36	106	150
Households constructing new toilet-bathing room	100	150	35	74	113
Financial Information – Construction of Toilet & Bathing Room – Per Household, in ₹					
Cost of construction of new Toilet Bathroom	22,000	25,000	25,000	25,000	27,000
Household own contribution-value of materials and labour	4,000	7,000	15,000	7,000	17,000
Subsidy from Swachh Bharat Mission (for eligible households	12000	12000	Nil	12000	Nil
Grant from Project	6,000	6,000	7,000	6,000	7,000
Financial Information – Construction of Piped Water Supply System					
Total cost of establishing PWS except land cost(₹ lakh)	20.00	20.42	20.53	15.57	30.62
Grant from Project (₹ lakh)	18.09	18.20	19.82	13.44	25.65
Village contribution from community funds (₹ lakh)	0.23	0.42	0.16	0.36	0.48
Village contribution - value of land(₹ lakh)	7.00	4.00	7.00	6.00	8.00
Household Contribution - value of materials and labour (₹ per HH)	1192	1199	1549	2010	3316
Household contribution in cash towards corpus fund (₹ per HH)	1,000	1,000	1,000	1,000	1,000
Village contribution as % of total cost	34%	31%	46%	43%	56%

The cost of water supply scheme varies from village to village depending on the water source, size of tank, and distance to be covered by piped water. HRDP project meets 80-85% of the total cost for piped water supply while the remaining portion comes from community through local resource mobilisation and labour contribution.

Cost sharing by the community is one of the key components in ensuring success and sustainability of community-based water and sanitation projects. Communities use different ways to share the cost, while working within their limited resources. Cost sharing also includes mobilising additional resources for inclusion of the most vulnerable and deprived families in the village, who themselves may not be able to make financial or labour contributions, depending on their situation. In Kusumitara village, the VDC took a collective decision to contribute to the vulnerable households and exempted them from labour contribution.

Photo: Prasanta Kumar Naik

Surface level water reservoir atop a hill in Biridihi village

The commonly used means of cost sharing in HRDP project villages are the following.

- Contribution to corpus fund – A mandatory contribution of ₹ 1000/ household by all participating households. This fund is meant for extending water and sanitation facilities to new households in the village in future. Collection of corpus fund is a prerequisite for Gram Vikas to start the technical survey and design process for the water supply scheme.
- Labour contribution – Villagers participate in components of construction that involve unskilled labour, which includes trench digging, site clearing, and supporting roles in construction. Labour component is typically 13-17% of the project cost.
- Collection and use of locally available materials – Stones and sand are collected from local sources for use in construction. There are also cases where villagers collect support materials for construction, for instance, poles for concreting.
- Land for locating source or tank – this can be village common land or private land.

Labour days required for the project vary from village to village depending on the distance to be covered, village size, and the size of the storage tank.

Experiences from other Gram Vikas Projects

Community contribution through collection of local resource material

Madhuramba village in Ganjam district of Odisha is inhabited by Saura, a tribal community. When they initiated a Gram Vikas project in water and sanitation, they went for extensive collection of locally available materials for use in the project. This reduced the total cost of the project and allowed inclusion of the poorest families that could not afford participation in the project on their own.

Photo: Sitaram Mohanty

Materials procured by members of Similisahi village

The villagers used own labour to collect stone for construction and coarse aggregate for concrete by breaking the boulders strewn around in the common land in the village spread over four acres. In addition, the villagers collected sand from Radho Bandho river and transported it using tractors to the village.

Villages also rely on use of common property and contributions by individuals to share the cost of the project as was seen in Similisahi, Tulasipur, Mankapalli and Biridihi.

Bore well and pump house of Similisahi village are located alongside the Bhubaneswar-Balangir highway No 57. The area of the plot housing the unit is about 600 square feet. The tank is located 672 m away from the source at an elevation of 20m from the pump house, on the top of a hill owned by the village. The VDC contributed 200 square feet of village land for the tank. If the cost for these two plots is considered, the total cost of the water supply scheme would become more than ₹ 24 lakh instead of ₹ 20,42,000.

In Tulasipur village Labanya Biswal, a member of the VWSC donated 450 square feet of land in addition to 1500 sq ft of land contributed by the village. Here the total cost of the land alone comes to ₹ 7 lakh.

In Biridihi, the community cleaned the space above the hill located in the middle of the village. The VDC supported constructing cement concrete steps up to the 50,000 Litre water storage tank made on the hill top. The VDC managed to spend up to 48,000 in constructing the approach steps.

In the Mankapalli village, the VDC provided landscape near the Lord Shiva Temple on the highway. The space was utilised for the water tank and for waste sorting centre. The VDC along with the Waste Management Committee manages the infrastructures. There was an abandoned bore well which was utilised as water source after flushing and cleaning.

Dug well in Mankapali

Photo: Ajaya Kumar Behera

Construction of household toilet and bathroom units

The unit cost of toilet and bathroom varied from ₹ 22,000 in Tulasipur to ₹ 27,000 in Biridihi. Mobilising households for constructing toilet was a tough task due to various challenges faced by the households.

In order to construct a toilet and bathroom unit, minimum of 54 square foot of land was required, and finding such space nearby was difficult considering the limited space between two houses.

Several households had already availed SBM subsidy, however the poor quality of construction left the toilets unusable. In Kusumitara, the construction of substandard toilets by the contractor left them unusable. Such households were not eligible for further subsidy under SBM and they had to mobilise more money than others.

There were also a few usable toilets with pits in poor condition. Renovating such pits under severe space constraints was another concern that Gram Vikas had to resolve. Low demand for toilet from certain households due to lack of water was another challenge faced.

Gram Vikas adopted a strategy of keeping construction of toilet and bathroom facilities as a prerequisite for installation of water systems. The strategy has its roots in the link between water and sanitation; there cannot be safe drinking water without sanitation while sanitation is impractical without water availability.

Gram Vikas typically provides a mobilisation advance to the VWSCs for purchasing materials and initiating toilet and bathroom construction. In all the five study villages, where toilet and bathroom construction was completed, it was the households that made procurement of all items required for construction. These include cement, steel bars, sanitary items, bricks, and sand. In addition, they also hired skilled labour.

Conventionally, toilet construction in Gram Vikas projects starts with selection and training of masons from the community; including exposure visits to other project villages as well as hands-on training. However, masons with experience in toilet construction are now available in most places. In HRDP project villages Gram Vikas provided technical support and construction of toilet and bathroom units is done by the households.

Design and Implementation of Piped Water Supply (PWS)

Processes involved in designing and implementing a piped water supply system for the villages are the following.

- Technical survey and preparation of Detailed Project Report
- Source development
- Procurement of materials
- Construction of reservoir
- Pipe laying and Household Connection

Technical survey and preparation of Detailed Project Report (DPR)

Identifying the water source and the location of water tank is the first step in the technical process related to a water supply scheme. This responsibility is vested with the VWSC. Villagers typically depend on local diviners to identify suitable locations for a water source. Once the source is identified, the location of the reservoir is finalised. Decisions on allocating identified locations and agreement for using village land are needed at this stage.

Gram Vikas team starts the technical survey for water supply scheme when the toilet and bathroom construction is nearing completion, corpus fund is set up and agreement for using village land is signed.

Ranjan Kumar Behera, secretary to VWSC, Similisahi village says “We identify potential locations for source and tank in consultation with elders of the village and project team using the service of a water diviner. A village assembly is required to be convened to take a decision to use the village land for developing source and tank.

Subsequently we as VWSC execute an agreement with village head and VDC. VWSC then communicates this to Gram Vikas and on receiving this communication Gram Vikas starts technical survey. We were part of the entire process and it helped us learn the technical aspects of water supply scheme which would be useful in managing the scheme”.

After completing the technical survey Gram Vikas prepares DPR which covers estimate, plans, layouts, sectional elevation, schematic diagram etc. When DPR gets ready VWSC organises a village general body meeting to discuss project details and cost sharing aspects based on the DPR.

Experiences from other Gram Vikas Projects

Identification of water source

Usually villagers prefer the services of water diviners to confirm water availability. When the first two bore wells failed in Madhuramba village, in Gajapati District, they opted for the services of a hydrogeologist to decide on the third location.

Source development

The most essential component of any water supply scheme is the source; development of the source is the most challenging aspect in the projects. Even though source development is done after confirmation of water availability scientifically or using local knowledge, there are chances of failure. There have been cases of source failure in Gram Vikas projects too.

Bore wells, open wells, springs, or a combination of these are used as sources in most of the water supply schemes promoted by Gram Vikas. While Similisahi, Tulasipur, Mankapalli, and Kusumitara villages have bore wells as their source, Biridihi opted for a shallow tube well.

Once source development is completed, yield test is done. This is to ensure that sufficient water-yield to meet the demand of the village is available. If the test indicates deficient water-yield, an additional source is developed to augment the first or the first source is abandoned and another one is developed. In all the villages, the yield test showed availability of sufficient water.

Photo: Paramananda Sethi

Overhead water tank in Kusumitara village

Experiences from other Gram Vikas Projects

Challenges in identification of water source

Madhuramba and Hichhagandhi villages in Gajapati are examples of initial failure of water sources. There was insufficient water in the first two bore wells installed in Madhuramba. They identified two more locations and chose one site with the help of a hydrogeologist and were able to get sufficient water from this source.

If a source fails one or two years after commissioning a scheme, villagers have to mobilise resources for development of a new source. Hichhagandhi village faced such a situation. They had developed a spring as part of source augmentation within one year after commissioning the scheme, while the bore well was in use. After a year, the bore well failed.

The alternative source that they developed helped them. But the quantity from the spring was not sufficient to cater to the total demand. Therefore, they drilled another bore well, which also failed. Drilling a third bore well was not easy for two reasons, 1) the location identified was at a higher elevation than the village with no road access and 2) costs were prohibitive. The village committee decided to first develop a road to the identified site to bring the drilling machine and drilled the bore well.

The source of Nuasahi village in Ganjam district is an open well, constructed two kilometres away from the village inside the forest. This is a gravity scheme with an overhead tank located in the village. When the village faced water scarcity issues after three years, they drilled a new bore well to meet the water needs in summer.

Procurement of materials

Cement, steel bars, stone, rubble, sand, and pipe and plumbing accessories were purchased centrally. Gram Vikas ensures the quality of materials. VWSC does hiring of skilled and unskilled labour. Once the construction process is completed painting and branding is the responsibility of VWSC.

Communities assess the quality of materials procured using their own techniques. “During trial run and pressure test of the scheme, I rode my bike with a pillion rider over the pipes to assess its strength”, says the secretary of Similisahi VWSC. When the pipe withstood the load successfully, the villagers were convinced about its quality!

Construction of water reservoir

Water reservoirs are constructed in two ways - overhead tanks on pillars or a ground level tank constructed at an elevated place to ensure sufficient head.

Similisahi and Biridihi village has a bore well in the valley and tank placed on the top of a hill while Tulasipur, Kusumitara and Mankapalli have a bore well and overhead tank close to each other.

Water reservoirs in such schemes are designed with capacity that would be sufficient for a projected population over the next thirty years. Volume of the water tank is estimated as half the water requirement for the projected population at 70 litres of water per capita per day. The community in general and the VWSC in particular develop knowledge on these aspects through the stages in project design and implementation.

When construction process is completed VWSC takes the responsibility of curing the concrete by regular wetting of the surfaces. In Similisahi village, after construction of water tank on the hill top, the villagers constructed another small temporary tank to store water pumped from a well in the valley for curing the reservoir after construction. The similar approach was taken by the community of Mankapalli and Tulasipur while Biridihi community used pond water and Kusumitara used the river water with a pumping system which was already available for irrigation purposes.

Pipe laying and providing household connections

Trench digging for laying the pipe is an important component of any water supply project in terms of effort, and typically accounts for a bulk of the share of contribution by the community. Each VWSC has a system for monitoring the share of each household.

The 160 families in Similisahi village in Nayagarh district contributed three days of labour each. When people are busy with their livelihood related engagements or are unable to provide labour due to other reasons, they either hire machinery and divide cost among them or engage labourers. When male members of ten families in Similisahi village failed to do the tasks that they were expected to, some of them contributed cash and others used hired labour to compensate for their absence. In Tulasipur, Biridihi and Mankapalli villages, people hired machinery for trenching while several people contributed labour.

Experiences from other Gram Vikas Projects

Contributions and participation by households

Families in Madhuramba village in Gajapati contributed 15 days each. This was because Madhuramba being a small village with 35 households, their per capita cost was high. Some villages use rotation system to allow participation of all families without affecting their livelihoods. Madhuramba and Hichhagandhi villages in Gajapati district divided the households into four groups of ten houses each for facilitating this. There were five houses with extended families and they worked in two groups. They used rotation system for ensuring participation of all households in trenching works, for collecting wooden poles from forest and also for collecting sand from river.

Photo: Prasanta Kumar Naik

Completed water reservoirs in Tulasipur (left) and Similisahi (right) villages

Pipe laying and other plumbing works are done by professional plumbers. During this process the VWSC gets hands on training that helps them understand the depth of trench to be maintained for pipes to be safe from damage, different types of pipes to be used for various terrains, how pumping main is connected, how distribution main and distribution lines are connected, how joining of two pipes is done, how sufficient pressure is maintained by using different size of pipes, functions of valves, how and where to provide household connections etc.

Every household gets three water taps as part of the project: one for the bathroom, a second one for the toilet, and third for all other uses including cooking and drinking. The third water tap would be at a location based on the preference of the women in the family.

Anganwadis and schools in the village also get water connections from the scheme.

Experiences from other Gram Vikas Projects

Monitoring household level water usage

Photo: Prasanta Kumar Naik

Community members of Similisahi village in front of their kitchen garden

Madhuramba village in Gajapati district had no water meter when the scheme was commissioned. The village has a solar pumping system; water is pumped twice a day for 24 hour supply. Regular water supply with no system to monitor consumption led to wastage; people were even using potable water for watering plants in the kitchen garden. The user fee was fixed at ₹ 30 per household, irrespective of the quantity consumed.

The village soon realised the indiscriminate use of water; they also anticipated that this could lead to over extraction and eventual failure of the source. They decided to install water meter for every household, and engaged two volunteers to take meter reading and collect user fee. The immediate effect was a change in user fee from the flat rate to ₹ 15 to ₹ 60 per month according to the quantity of consumption. The results were impressive; the village saw substantial reduction in wastage of water and usage of waste water for kitchen gardens.

Once house connections are completed Gram Vikas conducts pressure tests to check for leakages before commissioning and handing over the scheme to the village.

Water meters will be installed in four out of the five HRDP project villages; one village, Kusumitara will have a sensor-based system and therefore would not require water meter.

Measures for ensuring Sustainability of water and sanitation systems and services

Sustainability of systems and service delivery depends on a number of factors. In the context of community-based water and sanitation schemes, the following are critical.

- Proper operation and maintenance of water supply scheme
- Source sustainability
- Institutional sustainability
- Proper maintenance of toilet and bath room facilities
- Ensuring toilet and bathroom units and water facilities for new houses

Proper operation and maintenance of water supply scheme

Operation and maintenance of water facilities is the responsibility of VWSC. Pumping schemes require higher operational care than gravity schemes.

Villages collect a user fee for operational expenses. Tulasipur has decided a monthly user fee of ₹ 100 per month. It is generally based on the average electricity bills that they have to pay.

Each village adopts a different system for collecting user fees. All expenses related to operation and maintenance of the water supply scheme are to be met from the user fee. Tulasipur village has entrusted the responsibility to collect user fee with a VWSC member.

Anganwadis and schools located within the villages are in general exempted from paying user fee. In Similisahi village, there are 27 students in the *Anganwadi* and 118 students in the upper primary school located within the village. 'It's our children studying in this school, so we are happy to give them water free of cost', says Prabhatini Jena, the *Anganwadi* helper who is also a member of the VWSC.

All pumping schemes, unlike gravity schemes have operators - either paid or volunteers. All the schemes in HRDP project villages in Nayagarh district are electricity-based pumping schemes. Therefore, systematic operation is critical in ensuring consistent functioning.

In Similisahi village where the system started functioning in March 2021, the VWSC secretary takes care of the day-to-day operations. Tulasipur village, which started functioning in March 2020, has a paid operator at ₹ 1500/month.

All these five villages have trained plumbers from within the community who can attend to minor repairs. They gained the required skills through the hands-on training that they got as part of implementation of the water supply scheme.

Experiences from other Gram Vikas Projects

Contribution towards user fees

In Nuasahi village in Ganjam district, a village of Kondh tribes, user fee of ₹ 500 per household was collected on yearly basis during harvest season. When users expressed difficulty in bulk payment, the village decided to switch to monthly collection of ₹ 30 and assigned the responsibility to the self-help groups (SHGs) in the village. They collect the user fee during 13th to 16th (Odia Sankranti) every month. As the village uses gravity source for ten months they pay only minimum electricity charge during that period, which comes to ₹ 150. For the remaining two months they depend on borewell; as a result the electricity charge shoots up to more than ₹ 1000 per month.

Chasa Kanamana village in Ganjam district, where Gram Vikas had completed a similar project, there is a system of 'late fee' for delayed payment of user fee. The village charges user fee at ₹ 60 per month. The user fee typically varies between ₹ 30 to ₹ 100 per month.

Operator is either engaged on a voluntary basis, as seen in Nuasahi, Lunugundi, and Tamana in Ganjam, or on payment basis as in Madhuramba and Hichhagandhi in Gajapati. Chasa Kanamana in Ganjam pays ₹ 2000 per month to the operator.

In Madhuramba in Gajapati, the operator visits every house to take water-meter reading and collects user fee. They keep registers for recording meter readings. Chasa Kanamana VWSC has an office facility with all the records kept there. They have distributed a small book to each household to record user fee. User fee is collected during general body meetings organised during Sankranti days every month.

Dasarath Pradhan, Secretary VWSC, Chasa Kanamana says "We have a proper system for everything. Our operator never switches on the pump when the voltage is low even if the tank is empty". Such care is important in ensuring better life for the pump.

Delayed payment attracts a late fee of ₹ 10 each. Tamana village has adopted a yearly collection system. Defaulters of user fee are not allowed to attend village festivals. All villages charge extra money as user fee for additional water supplied for functions. This is a source of income for the VWSC.

There are examples of villages managing operational crises. The 10HP pump used by the Tamana village water supply scheme failed twice. When it happened for the first time VWSC spent ₹ 17,000 for repair but it did not work for long. During the second breakdown VWSC decided to abandon the pump and purchased a new one spending ₹ 70,000. Nuasahi village also met with damage to the pump and they spent ₹ 20,000 to repair it.

There are trained plumbers in most villages now, some are formally trained by Gram Vikas and some received hands-on training during the implementation process. Chasa Kanamana village gets support from the VWSC of a nearby village when major repairs are required. Narendra Pali in Tamana learned plumbing from Gram Vikas and he in turn trained five others in the village. Now all of them make a living out of this.

Source sustainability

Water Source sustainability depends on different factors such as source recharge measures, judicious extraction and use of water, and proper maintenance. Water supply schemes in Similisahi, Tulasipur, Kusumitara, Mankapalli, and Biridihi villages have bore-wells as source. These sources do not have any artificial recharge system. However, HRDP project has initiated cleaning up and protection of all ponds which help recharge ground water in the area. The protected ponds in Mankapalli and Similisahi are evidence for this. The bore wells in Biridihi and Kusumitara are in the river plain. So they are perceived to have a good water yield across the seasons.

Judicious use of water also means protecting and using other sources in the village for non-drinking purposes. In Similisahi village they have five hand pumps and three open wells. They use water from the piped water supply scheme for drinking, cooking, and toilet while using other sources for cleaning animals, washing clothes, and gardening. Similarly, Tulasipur village has five open wells and ten hand pumps; all are being used. Three out of the five open wells, and five out of the ten hand pumps are protected from contamination.

Similarly, the open wells and hand pumps of Mankapalli, Biridihi and Kusumitara are functional and are being maintained by the communities on a periodic basis. HRDP promoted sanitation and hygiene programs promoting the cleanliness of the water source peripherals for improved hygiene.

Experiences from other Gram Vikas Projects

A Community's efforts for keeping the water sources active

Nuasahi village in Ganjam has done recharge systems with seventy-three gully plugs in upper stream area for the open well dug inside the forest. In addition to this, many check dams have also been constructed across lower streams to ensure water availability in ponds. Villagers use these ponds for bathing and agricultural purposes.

Photo: Debasis Sahoo

Pond in Similisahi village renovated under the project.

Source being the most critical component of a water supply scheme, judicious use of water is crucial; over-extraction can potentially lead to source-failure. This is where controlling water wastage and monitoring the use become critical, in addition to their importance in keeping the system economically viable.

The new technology of ultrasound sensors along with automated valves being installed in Kusumitara would be effective in reducing wastage as well as in promoting judicious usage. This will help in preventing over-extraction, and contribute to sustainability of the source. Monitoring of extraction and use would be easy for them.

Experiences from other Gram Vikas Projects

Monitoring water usage

The VWSC in Chasa Kanamana village undertakes house visits twice in a month for monitoring water usage. If wastage of water is observed, they initially give a warning, and impose a fine of ₹ 1000 in case of repeated offense. So far they have fined eight people and have got ₹ 8000. This system of disincentive on wastage has led to people taking proper use of water seriously.

In the case of bore wells, possibility of periodic cleaning/ maintenance is limited. Some villages have augmented their water supply by adding one more source to the scheme. Nuasahi village has bore-well and open well as their sources. In such cases, lesser extraction during rains helps enhance life of the bore-well.

Institutional Sustainability

Institutional Sustainability has its own challenges. The institutions that have direct stakes in sanitation and water programmes are village assembly called Village Sabha, Village Development Committee (VDC), and Village Water and Sanitation Committee (VWSC).

Traditionally, women never attended village general body meetings or VDC. Though men from all social groups are eligible to attend village meetings, office bearers were from forward castes, or at the most from Other Backward Classes (OBC) in villages with multiple communities.

HRDP project has brought out a transformation in this culture; the project villages have constituted VWSCs as people's agency for leading implementation of sanitation and water related activities; VWSCs have membership of all social groups and women. Such steps towards inclusion are important for sustainability of institutions.

Experiences from other Gram Vikas Projects

People's agencies for sustainability of the project

In Tamana village there is only VDC (though the village keeps separate bank accounts for water and sanitation purposes). Here the women attend all meetings including the village assemblies.

In another village, Chasa Kanamana, the village assembly selects both village committee (traditional) and VWSC.

Record keeping is part of ensuring transparency and institutional continuity. All these HRDP project villages in Nayagarh keep bank passbook, cash book, resolution register/ minutes' book, stock book, user fee register, and visitors' register. During the implementation process the VWSC gets hands-on training on the upkeep and maintenance of these records. Besides, there are 'leadership development' training conducted which enables the VDCs to lead the village development in participatory ways.

Financial sustainability also contributes to institutional sustainability. All these villages have collected and deposited a corpus fund (₹ 1000 per household) for meeting future water and sanitation demands.

Establishing linkage with local governments and other government institutions is important for meeting future water and sanitation demands and for ensuring sustainability of services.

Experiences from other Gram Vikas Projects

Building capacities of village institutions

The fact that some of the older villages maintain relevant records even after 7-8 years of commissioning the project proves the effectiveness of the early hands-on training. Madhuramba village keeps a combined register that accommodates both household level monthly water meter readings and payment status.

Some villages have more amount in their kitty than expected. When people in Nuasahi village got labour charge for making gully plugs in the upstream of their water supply source, they contributed 20% of their income to the VWSC fund. They purchased 50 cents of land in 2021 for ₹ 53,000 out of the money they had in their VWSC account.

Some villages use revenue from common property for the VWSC funds. Nuasahi village has a cashew plantation (four acres) from which the village gets ₹ 15,000 / year as revenue. Similarly, Lunugundi village makes ₹ 10,000 per year from leasing out their cashew plantation and ₹ 8000 from paddy land over a three year period. Tamana village has 17 acres of fruit plantation as common property of the village. The village committee uses the revenue from that for financing repairs in case of major breakdowns.

Experiences from other Gram Vikas Project

Local Resource Mobilization

Chasa Kanamana village has established a successful linkage with the Gram Panchayat and has got support worth of ₹ 9,03,000. The Gram Panchayat drilled an additional bore well, constructed a compound wall, built iron steps for the water tank, and also repaired the water tank using that money.

Proper maintenance of toilet and bath room facilities

Proper maintenance of toilet and bathroom is the responsibility of individual households. Timely maintenance is required for the systems essential for ensuring quality of drinking water. Since there are masons available in most of the villages, repairs of toilets and bathrooms is not an issue. Households pay for the service.

Ensuring toilet and bathroom units and water facilities for new houses

Ensuring sanitation and water facilities for new houses is the responsibility of the village in general and the Village Water and Sanitation Committee (VWSC) in particular.

When demand for new toilet and bathroom facilities and water connections emerge in a village, the VWSC can extend support for getting government assistance/ subsidy, provide technical inputs, offer additional financial support from the corpus fund, sensitise them on proper use and maintenance of water and sanitation facilities etc.

Photo: Sitaram Mohanty

Sandhayrani Pradhan of Tulasipur village collecting water from her tap

Experiences from other Gram Vikas Projects

Ensuring sustainability of systems

Tamana village, has set constructing a toilet and bathroom unit as a prerequisite for getting water connection for a new household. When the scheme was commissioned in year 2000 in Tamana, there were only 84 houses. Now the village has 94 houses and they all have toilet and bathroom units with water connectivity. This ensures the sustainability of the programme by bringing in the new households into the project's fold.

VWSCs decide on the conditions for bringing in new families into the project, thus maintaining total coverage. 'We had passed a resolution at the time of project implementation that every new house has to construct toilet and bathroom unit as per the design we give. If they don't follow the directions, we won't give them water connection', says Rajendrakumar Pradhan, President VWSC, Chasa Kanamana village.

The design is similar to the toilet and bathroom units that exist in the village. The village committee ensures that each new household builds toilets accordingly. Such conditions are typically insisted on not for discouraging inclusion, but, on the other hand for maintaining certain characteristics of the existing scheme.

'If required we support new households in getting subsidy from Swachh Bharat Mission also', said Manasi Pradhan who is a VWSC member and SHG leader of Chasa Kanamana. There are twelve new houses who constructed after the scheme was commissioned and all of them have got toilet and bathrooms with water connectivity. VWSC uses the service of local plumbers for providing new water connections. It is the responsibility of the households to meet the expenses.

Sauri Pradhan's toilet and bathroom, Tulasipur village

Photo: Ajaya Kumar Behera

Reflection of MANTRA values in the Project

"All or None' approach or inclusion of the poorest families in the village into the project fold, a necessary condition for initiating a Gram Vikas project, is a challenge that villagers address in different ways.

Similisahi Village in Nayagarh district had three households, poorest of the poor, whom they normally exempted from any contribution for the village. These were landless people, one among them a widow, and the other two were with physical disabilities; one of them was blind. The village contributed ₹ 2000 to each of the families for them to construct toilet and bathrooms. In Kusumitara, individual households with resources made contributions to meet the additional cost.

Photo: Sitaram Mohanty

Santi Jani of Ghogoda village, Ganjam district, drawing water from the tap in her kitchen

Vulnerable families are exempted from labour contribution. Cross subsiding vulnerable households is a practice followed in project villages to ensure their access to water and sanitation facilities.

'All or None' approach is not just about ensuring access to the marginalised and the vulnerable; it is also about ensuring their membership and participation.

'Selecting a SC person as the official of any village level committee was unthinkable in a village with mixed communities' says a member of the VWSC in Biridihi village. This case explains the way social dynamics work in village contexts.

In Similisahi village though the number of SC households is only 35 out of 160, there are four SC members in VWSC and the secretary and cashier are from that social group. This kind of VWSC system has brought in a lot of changes in the attitudes of the community, though it had been a gradual and slow process.

Photo: Prasant Kumar Naik

Completed overhead water tank in Tulasipur village

Experiences from other Gram Vikas Projects

All or none: Including the vulnerable and the poorest

An example from Tamana, one of the first villages where Gram Vikas initiated sanitation and water programmes shows how the villages follow the principles of inclusion even years after commissioning the scheme.

This scheme was commissioned in 2000 with a spring in the forest as its source. After four years, in 2004, wild elephants damaged the source and villagers were forced to develop a new source. They identified the location for a new open well on a paddy field in 2006. The village decided for a day of labour contribution from each household (Total 94) to complete the well.

The digging process was not easy and the sides of the well collapsed several times during digging. They excluded four houses from contributing labour as they were old or suffering from diseases. This happens even as the village imposes fine on those who do not contribute labour for digging the well.

The table below summarises how the Gram Vikas – HRDP projects for water and sanitation keep up the MANTRA core values.

MANTRA CORE VALUES	HIGHLIGHTS FROM PROJECT VILLAGES
All or None	• Cross subsidy for vulnerable households • All social groups, poor and rich, have access to sanitation and water facilities • *Anganwadis* and government schools within the village get water from the scheme
Take Responsibility	• Village owns VWSC/VDC • VWSC initiates steps to monitor water quantity • Trained team available for repairs • Source sustainability measures in place • VWSC addresses future water and sanitation needs • Ensures resources for operation and maintenance
Equitable Participation	• Membership of SC-ST in committees • 50% women membership in VWSC/VDC • Women attending village meetings
Share Cost	• Land, materials, cash, and labour contributions from the community
Financial Sustainability	• Collects user fee • VWSCs get financial support from village committee for major repairs • Linkage with SBM, plans to establish linkage with local government to meet future demands • Transparency in accounts • Up-keeping of records • VWSC initiates income generation activities • Highway side park planned for Similisahi village

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