

Samiapalli Piped Water Supply System,

District Ganjam,
Odisha



Until 1992, Samiapalli, a village comprising 76 households, met its water supply requirements using a combination of dug wells and hand pumps. The water supply sources in the village were inadequate and the village faced depleting groundwater tables, bacteriologically contaminated groundwater, defunct hand pumps, and frequent power outages. It faced all the water supply challenges that a typical village faces in this part of Ganjam district in Odisha.

Disputes at the water point intensified during the summers when the dirty dug wells from where people drew water went dry. People were forced to depend on contaminated water from the village ponds, which were

used by livestock as well. Gastro-intestinal diseases were common in the monsoon as well as post-monsoon periods. “The unhealthy practices of defecating in the open and lack of proper hygiene habits were leading to inevitable consequences like diarrhoea, cholera, scabies, measles etc.”¹

The village faced problems on multiple fronts—shelter, education, safe drinking water, sanitation, and most importantly, livelihoods. A survey conducted in 2005 by Gram Vikas², an Odisha-based developmental organisation, indicated that out of the 76 households, 64 reported wage labour (breaking stones, laying roads, and farm labour) as their primary occupation while only four households reported agriculture as their primary occupation³. The village, which lies in the Bhikaripalli gram panchayat is just five

¹ Gram Vikas, 2005, unpublished

² Gram Vikas is a rural development organisation, working with the poor and marginalised communities of Odisha, India, toward sustainable improvements in the quality of life of the rural poor since 1979. The RHEP programme has now been discontinued and the mission of Gram Vikas is realised through MANTRA – Movement and Network for the Transformation of Rural Areas, an integrated habitat development programme, guided by the belief that all people deserve to live in peace, with dignity. Through this approach, Gram Vikas has supplied 701 villages across Odisha, Madhya Pradesh, and Jharkhand with bathing rooms, toilets, and 24-hour piped water supply to every household within the community.

³ There are four artisan households while two households are engaged in business and two in service. The landholding distribution indicated –16 per cent landless households, 53 per cent households own less than one hectare land, 27 per cent own between one to two hectares land and five per cent above two hectares land. Paddy is grown as a monocrop and most families have 40–50 cashew nut trees which bring in an income of around INR 10,000 a year.

kilometres away from Chatrapur, the district headquarters. 95 per cent of the people here belong to the Sauntia scheduled caste and all of them fall in the BPL (below poverty line) category. The remaining five per cent belong to the Goud general caste.

Gram Vikas began working in Samiapalli in 1992 when the community approached it through an Indian Bank official. They had come across a newspaper advertisement regarding the initiation of the Rural Health and Environment Programme (RHEP), a pilot project in the area undertaken by Gram Vikas. The community and Gram Vikas collaborated following an agreement in which the norms of the association were clearly spelt out. A general body meeting was organised at Samiapalli and was attended by men and women of the village. Subsequently, four women self help groups (SHGs) were formed in the village, which currently have two lakh rupees as savings deposits in the bank.

These SHGs were not just about savings and credit but served as forums for disseminating information and building the confidence of the women.

Gram Vikas's initial interaction with women in the village indicated that water availability was an important issue to be addressed. An entry point activity in the village entailed work on housing⁴ in a new five acre plot by the community with the support of Gram Vikas. The community bought the land collectively for INR two lakh and a total of 59 houses were constructed. Each family contributed INR 22,500 i.e., half the cost, while the rest was financed through a loan from the Housing Development and Finance Corporation. During the 1999 super cyclone, the heavy

rains and widespread flooding damaged all the mud homes in the old village. Luckily, the new village with its pucca disaster-proof houses (41sqm each) had been readied just days before the cyclone, so most households could shift into them.

RURAL HEALTH AND ENVIRONMENT PROGRAMME (RHEP)

RHEP, focussing on the water and sanitation needs of the community, enabled the creation of a village-level organisation that is controlled, operated, and managed by the people themselves. RHEP was taken up only in villages where 80 per cent of the households were below the poverty line (BPL). Sanitation infrastructure and supply of piped drinking water all through the year to all houses was only the entry point. The core rallying element was to bring people together, cutting through the barriers of patriarchal systems, caste, politics, and economic differences.

In 2008, RHEP was replaced by the Movement and Network for the Transformation of Rural Areas (MANTRA), as a part of which, village communities were facilitated to establish, operate, and manage their own habitats. This included disaster-proof housing, water supply and sanitation systems, and appropriate water recharge mechanisms. The facilities were created with the community's own efforts and resources, with some assistance from external agencies. MANTRA is undertaken with clear social, economic, and environmental sustainability mechanisms. A typical programme cycle is between three and five years, after which Gram Vikas withdraws from the habitation.

⁴ People were residing in thatched houses with mud walls.

INSTITUTIONAL ARRANGEMENT AT VILLAGE LEVEL

Byaghradevi Gram Unnayan Samiti, a village organisation, was set up in the year 1992 and registered as a society. Since RHEP was implemented here, the piped water supply (PWS) scheme in Samiapalli has been successfully operated by the Samiti. An eleven-member executive committee, which comprises three women and eight men, manages the scheme. The general body (one man and one woman from each household) meets every month to resolve vital issues pertaining to operations. Failure to attend a daytime meeting draws in a fine of INR 200 while failure to attend a night-time meeting results in a fine of INR 50. The Samiti also has the authority to decide on issues concerning O&M; including fixing tariff and connection charges, and improving coverage through provision of appropriate concessions to beneficiaries.

Gram Vikas played an active role in facilitating the meetings, and in ensuring that the concerns of the beneficiaries were addressed effectively during these meetings. It continues to have a representative in the society as per the Byaghradevi Gram Unnayan Samiti's by-laws to avoid any sort of misappropriation. But, within a span of seven years, the community began to self-govern. The president of the committee has remained the same over the years while the treasurer and secretary have changed. Participation of 100 per cent of the households in the village was a mandatory precondition of the RHEP programme. At Samiapalli, ten households were not keen to participate and hence 100 per cent consensus could not be reached. These households had a bitter relationship with the rest of the village and owed political

allegiance to an outsider, who instigated them against the project. They did not join the programme citing financial constraints and unwillingness to shift to the new village. The dissenting households now reside in the old village and depend on a dug well and hand pump for their water needs.

However, in the new village, the coverage is 100 per cent and has even extended with the increase in households from 66 in 2002 to a total of 92 in 2019. The community was encouraged to develop the common areas and undertake community income generation activities, such as social forestry, cashew plantation, or pisciculture. Social forestry has been promoted in 14 acres of land and pisciculture in 0.2 acres of land. The cost of social forestry (nursery raising, plantation, and post plantation activities for fuel and fodder trees for over three years) was of the order of INR 9,300 per hectare of which INR 5,000 was from Gram Vikas and INR 4,300 was contributed by the community.

For pisciculture, Gram Vikas arranged bank finance for deepening the pond/tank, strengthening embankments and for meeting the working capital requirements. A collaboration was developed with the Orissa University of Agriculture and Technology's College of Fisheries. The community is responsible for obtaining a long-term lease for the pond/tank maintenance, as well as for watch and ward. Through the co-management of commons, the community is able to put in at least 25 per cent of the income from this into the village fund, which is used to meet the O&M costs of water supply. The committee shows an overall positive financial balance and has managed the surplus revenue in an exemplary manner so far. It was clear from the onset that all the

facilities created were to be the responsibility of the villagers. Systems were built right from the beginning for that.

Equal participation of men and women in the general body of the village committee ensured inclusivity. Women's participation ensured that they could voice their needs and concerns more freely and were part of the decision-making process, resulting in an effective intervention. Over the years, the articulation and confidence of the women has improved. They attend the meetings, yet even now they do not sit on the same mat as the men. The executive committee, too, has just three women among its eleven members. Nevertheless, the programme has helped redefine the gender equations to some extent and has helped women rise into leadership roles.

The committee maintains an excellent functional relationship with the gram panchayat (Bhikaripalli). With Biswanath Pradhan as the president, the committee has managed to have an excellent and stable leadership, right from the planning stage in 1990s to the current year in 2019. It has exhibited a good amount of professionalism as is evident from its initiatives in developing systems and procedures. The expertise displayed by the committee in managing the piped water supply system gained the trust of the gram panchayat. The same committee was later recognised as the Village Water and Sanitation Committee (VWSC), as mandated under the Panchayati Raj Act. The committee has proper by-laws based on which it carries out its functions. A clear-cut mechanism for operations and maintenance of the system has been put into place. The committee oversees the collection and use of funds, monitoring of the construction,



and maintenance of the piped water supply system and sanitation structures.

The latter predates the piped water supply work; immediately after the corpus was collected, people began the foundation and brickwork for the toilets and bathrooms. Local youth were trained by master masons from Gram Vikas to undertake the construction work. Toilets and bathrooms were constructed over three metres away from the house, in deference to their cultural beliefs.

PIPED WATER SUPPLY SYSTEM: TECHNOLOGY

Water supply to the households at present is through a groundwater-based piped water supply system which is equipped with an electric submersible pump of 2HP (horse power). When the system was set up in 1992, it initially drew water from two dug wells that



Households who use the drinking water for purposes such as small scale irrigation are fined by the Operator on behalf of the Committee. All fines go to the O&M fund.

had 5HP and 3HP submersible pumps each. Soon, the village got a three-phase electrical connection. When the water from the dug wells became insufficient, a borewell (190ft deep) was installed by the gram panchayat after the committee approached it in 2013. The system has an overhead tank capacity of 33,000 litres and water is provided through PVC pipelines instead of GI pipelines as they are not suited for the area.

In the 1990s, as a part of RHEP, every household in the village constructed a kitchen, toilet, and bathroom for itself, with 24-hour piped water supply. The system was such that the sewage from the toilets was directed to the soak pits, while the greywater from bathrooms went down the drainage system or into the kitchen garden.

The overhead tank capacity is designed such that 35 litres of water per person can be pumped twice everyday into the storage tanks and distributed to households twice a

day. Each household has been provided with three taps. For the last 27 years, the system has been providing piped water 24x7 except during power outages. A water meter has not been installed, but there are plans to install one to encourage households to conserve water.

COST SHARING AND FINANCIAL SUSTAINABILITY

The project ensures sharing of costs, and for that a corpus fund was created in each village, where Gram Vikas worked, with a contribution of INR 1,000 from all households. The corpus was placed in a fixed deposit and the interest earned on it is used for extension of facilities to new families. Its initial fund grew from INR 1,00,000 to over INR 5,30,000 in 2019. The corpus fund and the interest accrued from it have been kept intact and a separate committee fund is used for day-to-day expenses.

The monthly tariff collection of INR 30 per household is used strictly for O&M purposes. The community plans to raise the monthly user charge per household from INR 30 to INR 50, but a consensus is yet to be reached. This fund is used to pay the electricity bill, repairs and maintenance of the pumps/ system, and salary (INR 2,300 a month) of the operator (Lakshman Pradhan). This, combined with the cost of electricity and minor repairs, comes to around INR 3,500 a month. The income from the social forestry/ cashew plantation/leasing of village pond for pisciculture is used to meet these costs as the fund falls short of the required amount. Overall, the O&M charges plus the income from the commons generates an amount of approximately INR 50,000 annually. The annual expenses on electricity and minor repairs work out to INR 42,000 (3,500x12). Therefore, there is a profit is INR 8,000 annually.

RHEP norms state that the financially better off households could contribute more towards the corpus fund than the poorer households, but in Samiapalli, all households paid an equal amount of INR 1,000. For construction of the piped water

supply system, Gram Vikas contributed the: (a) full cost of cement, brick, aggregate, and steel for the overhead tank, main pipeline, motor pump; (b) partial cost of digging the well; and (c) skilled labour for laying the main pipeline and all construction related to the piped water scheme. The people's contribution was towards: (a) stone for the foundation, (b) unskilled labour for laying the foundation, constructing the overhead tank, laying of the water distribution system, and (c) the cost of the pipes to transport water from the main pipeline to individual houses into toilets, bathrooms and kitchens. The people's contribution created a sense of ownership for the assets, thus ensuring usage and maintenance. Gram Vikas provided skill building, training, and education and also created the financial and institutional mechanisms to ensure that the system works over time. For the piped water supply system, Gram Vikas provided a capital expenditure (CapEx) contribution of about 80 per cent.

Issues of ownership of the land on which source and pipelines were laid were dealt with before starting the project.

Components of RHEP	Gram Vikas contribution	People's contribution	Government contribution	Total
Toilets and bathing rooms ⁵	1,45,000	1,38,700	26,500	3,10,200
Water supply system	5,16,600	43,520	0	5,60,120
Community hall	94,487	29,530	0	1,24,017
Total	7,56,087	2,11,750	26,500	9,94,337

Source: Gram Vikas

⁵ Good quality toilets with twin-pit pour-flush toilet is developed.

CAPACITY BUILDING

The project involved training the community in maintenance and management of the piped water supply system, accounting, and hygiene education. Thereafter, the community took full responsibility for the management and O&M of all systems. The operator was also trained in plumbing, electrical work, and pump maintenance.

The people's capacities were built through training sessions, workshops, and practical support arranged by Gram Vikas. At the onset of the programme, all executive committee members went through leadership development programmes, gender sensitisation, health training, training in dealing with Panchayati Raj Institutions (PRIs), conducting meetings, managing the construction, and training in record keeping (accounts).

Management by the community has had definite spin-offs in strengthened leadership skills, transparency in transactions, conflict management, raised confidence of the community, and improved ability to leverage government resources for village development. Women now have kitchen gardens using wastewater from the bathroom.

MONITORING SYSTEM

There is an effective monitoring system in place to ensure proper usage of the facilities. An effective penalty system exists for violation of norms, whether related to resources such as water e.g. its irrational use, or even social issues like alcoholism. A fine of up to INR 500 is imposed and water connection is cut off when people were found wasting it.

The physical and chemical quality of water is tested for levels of arsenic, fluoride, chloride, hydrogen sulphide, iron, nitrates, sulphate, e-coli etc. before a source is finalised. Additionally, the water quality is being monitored from 2019 onwards to check for bacteriological contamination (e-coli), turbidity, and nitrate presence etc. Currently, the community is being trained to build a protocol for quarterly monitoring.

The water level of the source is not monitored on a regular basis, nor have measures been taken to recharge it as the topography and laterite soil make percolation difficult. There is a draft bill in Odisha for regulation, development, and management of groundwater, dating back to 2011, which regulates the digging of borewells in the vicinity of the source. As of now, users of groundwater do not have to seek prior permission to construct new wells and the only regulation is indirect through permission for an electricity connection. Water is supplied for a total of eight hours a day—three hours in the morning and five in the evening. This frequency is regulated by the committee.

The system faced a disruption when the transformer burnt out once. Apart from that, power outages during the monsoons disrupt the system.

IMPACT

Samiapalli has come a long way in the last 27 years in terms of implementation of RHEP. Now, all houses of Samiapalli have neatly arranged sanitary blocks with piped water and well-ordered drainage lines. Every household in the village has piped water supply. With access to clean water and safe sanitation, incidences of skin diseases, colds, and cough have decreased. Women no longer feel uncomfortable during menstruation and can clean themselves properly. They also have more time for productive income-generation activities now. Financial mechanisms have been put in place and transparency

in accounts has been adopted to ensure sustainability of the service. People have a sense of ownership over the system, and are willing to pay for its expansion and ongoing O&M. Institutional mechanisms ensured that people implement, operate, and extend the system effectively.

A major challenge was to build the capacities of the under-represented and excluded sections of the village community. Not just that, it also took time to demand accountability from committee members, and lessen the control of traditional leaders who continue to influence decision-making. Loosening of traditional patriarchal attitudes has taken place in the village but there is still a long way to go.