



Water Safety Security Plan: Sheohar Experience



water for people
INDIA

Vivek Sharan
Water For People
C – 2/51, Ground Floor, Safdarjung Development Area,
New Delhi-110 016, India
waterforpeople.org

Contents

Introduction	2
Water For People	2
Integrated Water Resource Management.....	2
National Water Policy.....	4
Water Safety and Security Plans.....	4
Rationale for Water Safety and Security Plans	5
Key Objectives of WSSP	5
Water Safety and Security Plan in Sheohar, Bihar	6
Water For People in Sheohar	6
Implementation Strategy.....	7
Implementation Process in Sheohar	Error! Bookmark not defined.
Training of Trainers	7
Action Planning Process at Block level.....	8
Piloting VWSSP Program in Sheohar	9
Community Participation and Contribution.....	9
Initial Output	10

Introduction

Like many countries in the world today, India is facing a water crisis. Despite good rainfall, the country is not getting enough drinking water. The only source of water is rain, and the surface and groundwater resources are only its interchangeable faces. When it rains, the water flows over the surface, and some of it goes through an infiltration process into aquifers. There, it becomes groundwater, which has a limited storage capacity. In hard rocky terrains, the groundwater retention capacity is 4-5%, whereas in alluvium areas, it can be up to 25-30%.

When the groundwater table is saturated, water starts flowing into the river system, creating the base flow. Surface water can be measured, but groundwater can only be estimated, previously leading people to believe there was ample groundwater where, in fact, there was not. Considering this journey of water, its sustainability became crucial, but security was a difficult concept as the only source of water (i.e., rainfall) cannot be predicted perfectly. The interchangeable face of water needs to be considered when planning for water security, in addition to the fact that water is nature's gift and a common proprietary source.

A Water Safety and Security Plan is a comprehensive risk assessment and management approach for ensuring the safety of drinking water supply. It encompasses all stages for water supply from catchment to consumer. Preparation of a Water Safety and Security Plan for a Gram Panchayat (GP), Village, or Ward ensures sustainability and better management of water resources, thus creating a **water resilient future**.

Water For People

Water For People India initiated its operations in 1996 in the Nadia and North 24 Parganas districts of West Bengal. Consistent with the global vision and mission, we exist to promote the development of high-quality drinking water and sanitation services, accessible to all, and sustained by strong communities, businesses, and governments. Our organizational values are accountability, courage, empowerment, partnership, and transparency.

Aligned with Sustainable Development Goal (SDG) 6, the Everyone Forever model represents Water For People's commitment to end the global water and sanitation crisis by bringing together local institutions, community members, and local entrepreneurs to ensure that Everyone, even the hardest-to-reach populations, has access to safe water and sanitation. Forever means water and sanitation services are sustainable and local districts and communities can maintain them for generations to come.

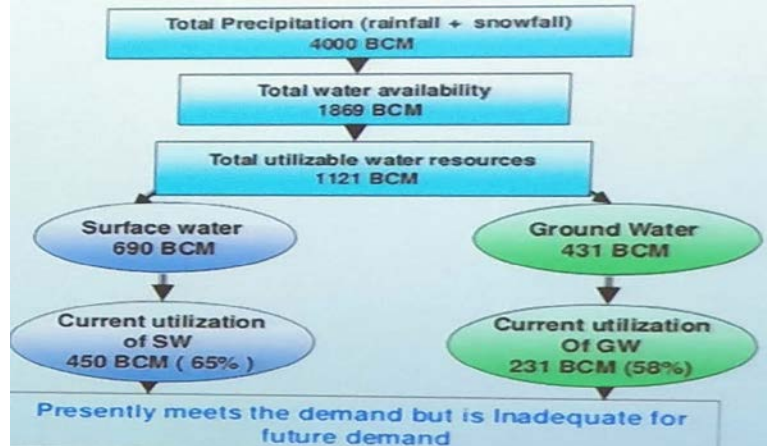
Water For People India programs have been implemented in 27 districts in the states of West Bengal, Bihar, Maharashtra, Tamil Nadu, Odisha, and Assam. In all, nearly 1.2 million people have been reached through access to community drinking water and sanitation, WASH in public institutions, and market-led approaches to sanitation. Water For People India implements programs through locally registered non-government organizations.

Integrated Water Resource Management

Once an abundant natural resource, water becoming a valuable commodity due to droughts and overuse. As the human population increases, water use increases; yet water is a limited resource. Water resources are sources of water that are useful or potentially useful to humans. There are total of three natural sources of water: rainwater, underground water, and surface water. Rainwater includes other sources such as snow and additional types of precipitation. Surface water is found in lakes, rivers, and reservoirs. Groundwater lies under the surface of the land, where it travels through and fills openings in the rocks. The rocks that

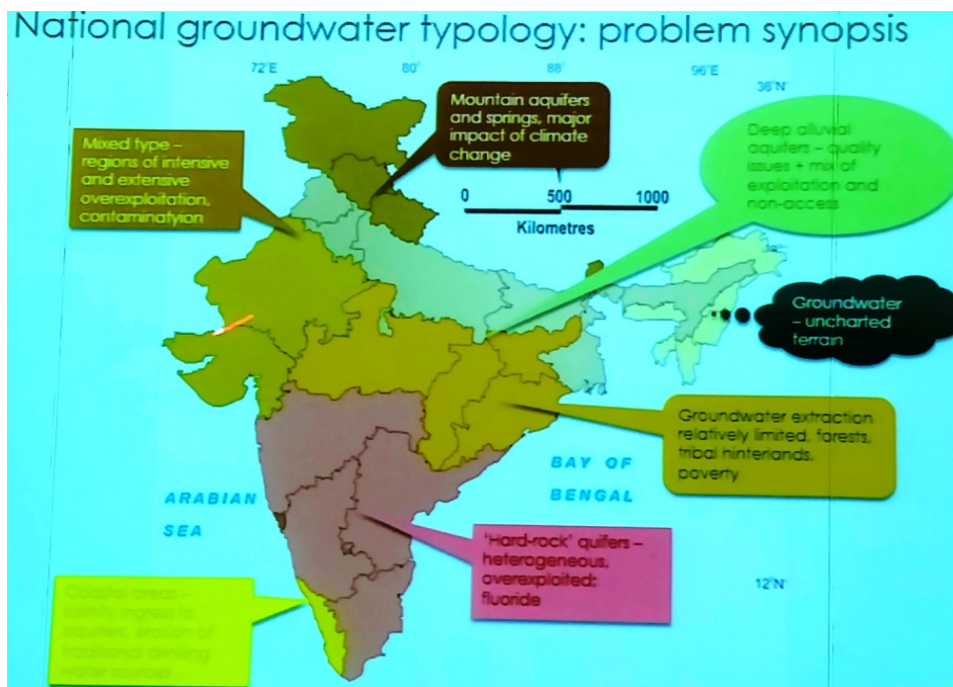
store and transmit groundwater are called aquifers. Very little (i.e. only 2.5%) of all the water on Earth is fresh water and more than 97% is saltwater. This means that only 0.3% of all fresh water on the planet is readily available as surface water in lakes, swamps, rivers, and streams.

Of the available fresh water resources, one-fifth is in remote, inaccessible areas, and the seasonal rainfall that comes in the form of monsoonal deluges and floods cannot easily be used. At present, only about 0.08 percent of all the world's fresh water is exploited by mankind. Water uses include agricultural, industrial, household, recreational, and environmental activities.



Over the years, the water demand in India has increased to a great extent due to greater agricultural water demand, population pressure, urbanization, and higher industrialization. These changes are putting a pressure on water resources. The magnitude and timing of rainfall, and thereby runoff, is altering considerably. The hydrological cycle is changing in many river basins across various climatic regions of India.

Change in climate is also expected to impact soil moisture. The rise in intensity of rainfall or snowfall events is leading to higher potential for floods. At the same time, there are states in India where drought episodes are on the rise. Increasing temperature and reduction in rainfall could lead to reduced net recharge and affect levels of groundwater. The inter-annual variability of monsoon is also likely to increase in the future. To deal with future demands for water, it is necessary to plan for the water resources management in an integrated manner.



Water resources management (WRM) is the activity of planning, developing, distributing, and optimizing use of water resources under defined water polices and regulations. It aims to minimize the environmental impact of water use on the natural environment. Ideally, water resources management planning considers all the competing demands for water and seeks to allocate water on an equitable basis to satisfy all uses and demands. As with other resource management, this is rarely possible in practice.

According to the Global Water Partnership, integrated water resources management (IWRM) is "a process which promotes the coordinated development and management of water, land and related resources, to maximize the resultant economic and social welfare in an equitable manner without compromising the environmental safety."¹ It encompasses the development of water bodies for future uses, protection of available water bodies from pollution and over exploitation, and prevention of disputes related to water uses. Extensive hydrological information is necessary to develop water resources and protect them. Water management helps determine future irrigation expectations.

A Water Safety and Security Plan is one of the integral parts of an IWRM strategy which is related to **water scarcity, water quality, and crisis management**. Water Safety and Security Plans should be developed in consultation with stakeholders to ensure the sustainable and equitable development and management of a water resource.

National Water Policy

The National Water Policy (NWP), approved in 2012 by the National Water Resources Council, was adopted by the Government of India during India Water Week 2013. Regarding climate change, the NWP laid special emphasis on preparedness at the micro level. According to the policy, "special emphasis should be given towards mitigation at micro level by enhancing the capabilities of community to adopt climate resilient technological options" (Para 4.1)².

Measures dealing with adverse effects of climate change will have better chance of success if people and functionaries at the grassroots level are also aware of them and are associated with the preparatory measures to mitigate them. This is especially true in rural areas, which are dependent on agriculture and allied activities, making them more vulnerable because of their greater dependence on climate parameters.

There is a growing literature on dimensions of climate change and its probable effects in different parts of the world including India. There is virtually no literature on perceptions of adverse effects of climate change on grassroot livelihood. There are also no preparatory measures that can be taken at the local level for mitigation of these effects.

In India, state water policies are required to be aligned with the NWP (2012). In 2013, the flagship National Rural Drinking Water Program (NRDWP) brought a paradigm shift as compared to its predecessors in terms of the reforms, and for the first time, Village Water Safety and Security became part of national water policy.

Water Safety and Security Plans

Water For People has initiated Water Safety and Security Plans (WSSP) in selected GPs from all five blocks of Sheohar District in Bihar, to ensure viable water supplies in the future. Water For People's WSSP approach is a move away from top-down, supply-led solutions dominated by the adoption of technology, toward bottom-up initiatives that build from existing mechanisms

¹ <https://www.gwp.org/en/GWP-CEE/about/why/what-is-iwrm/>

² http://www.mowr.gov.in/sites/default/files/NWP2012Eng6495132651_1.pdf

for participation and organizations of stakeholders around water management, and also appreciation of local ideas and demand management.

The goal of WSSP is to understand and improve the sustainability of current and future potable water sources in the districts where Water For People works. We coordinate between stakeholders to best manage surface and groundwater resources, including grey water, at the local level to improve access and quality of water for users, while also considering competing commercial, agricultural, and environmental needs. This process will eventually lead to the implementation of a water resource management plan specific to each Everyone Forever district where Water For People works.

Rationale for Water Safety and Security Plans

While demand for water and surface water dependability are increasing, groundwater is decreasing. The latest minor irrigation census figures (available on the government portal) confirm a decrease in the per capita availability of water as compared to the last decade. According to a June 2018 report from the Minister for Water Resources, by 2050, the nation will reach a water scarce zone. India is suffering from “the worst water crisis” in its history, with about 60 crore people facing high to extreme water stress and about 2 lakh people dying every year due to inadequate access to safe water. The report notes, “By 2030, the country’s water demand is projected to be twice the available supply, implying severe water scarcity for hundreds of millions of people and an eventual 6 per cent loss in the country’s GDP.”³. According to the report, 21 cities, including Delhi, Bengaluru, Chennai, and Hyderabad will run out of groundwater by 2020, affecting 100 million people. If matters are to continue, there will be a 6% loss in the country’s Gross Domestic Product (GDP) by 2050.

Moreover, critical groundwater resources, which accounted for 40% of India’s water supply, are being depleted at “unsustainable” rates, and up to 70% of India’s water supply is “contaminated,” the report says. Therefore, integrated solutions, management, capacity building, and development are needed for the sustainability and quality of water.

Key Objectives of WSSP

A Water Safety and Security Plan is a comprehensive risk assessment and management approach for ensuring the safety of drinking water supply that encompasses all stages for water supply from catchment to consumer. The WSSP includes the following components:

- Define the supply system and form a team of people responsible for each part of the supply chain from source-to-mouth
- Consider all potential hazards and establish factors that constitute a significant risk to drinking water quality and whether they are controlled and adequate
- Infrastructural measures for conserving available water resource that can be planned through community participation
- Prepare an Action Plan based on the inadequacy of controls and implement any aspects which can be put in place immediately
- Identify the monitoring of each control, who is responsible, and at what frequency (what, who, and when)

3

https://economictimes.indiatimes.com/articleshow/64585347.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

Water Safety and Security Plan in Sheohar, Bihar

Water For People in Sheohar

Sheohar is one of the 38 districts in the State of Bihar and was carved out of the Sitamarhi District on 6 October 1994 under the Government of Bihar's Notification No. 286.⁴ The district lies in the extreme northern region of Bihar, and is one of the six districts of Tirhut Division.⁵ The district is bound by Sitamarhi District in the east and north, by Purbi Champaran District in the west, and by Muzaffarpur District in the south. It is the smallest district in the State of Bihar, both in terms of total population size (745,461 people in 2016, 96% in rural areas and 47% women⁶) and total area (349 km², 0.47% of the total area of Bihar). Given this, it is one of the least prioritized districts for development. The district is comprised of one subdivision (Sheohar), five blocks, 53 GPs, 208 villages, and 762 wards.⁷ As per the 2011 Census, 4.3% of the total population lives in urban areas while 95.7% lives in the rural areas. The Average Sex Ratio of Sheohar District is 893 (i.e., for every 1,000 males there are 893 females). The population of children of age 0-6 years in Sheohar District is 128,698 (20% of the total population). There are 66,728 male children and 61,970 female children between the age 0-6 years. The Child Sex Ratio of Sheohar is 929, which is greater than Average Sex Ratio. The total literacy rate of Sheohar District is 53.78%. The male literacy rate is 61.31%, and the female literacy rate is 45.26%



Map of Sheohar District within Bihar State

Water For People's Everyone Forever model in Sheohar seeks to further the new policies on the national WASH agenda, namely Jal Shakti Abhiyan that prioritizes water security and conservation, Jal Jeevan Mission that aims to deliver piped water connection to all rural households by 2024, and post Swachh Bharat Mission activities that focus on solid and liquid waste management and sustaining open defecation free (ODF) status. Water For People is also supporting community behavior change activities through engaging local artists to perform multi-disciplinary shows, street plays, film shows, and messaging. We also work with the farmers' club to enhance their economic condition by supporting training on advanced farming techniques and facilitating government linkages. This encourages increased demand for toilets with their enhanced income.

By our concerted effort in association with government, Sheohar District is about to get ODF status (though officially declared ODF in Oct 2019). The project has also strengthened the capacity of local service authorities, including GPs and its sub-committees, such as Village Water and Sanitation Committee (VWSCs), Village Health Sanitation and Nutrition Committees (VHSNCs) and Ward Implementation and Management Committees (WIMCs).

To support IWRM initiatives in Bihar, Water For People is supporting the development of Village Water Safety Security Plans (VWSSP) in five Gram Panchayats of five Blocks of Sheohar

⁴ http://www.censusindia.gov.in/2011census/dchb/1003_PART_B_DCHB_SHEOHAR.pdf?

⁵ Sheohar District is located between 26°18' and 26°36' North latitude and 85°10' and 85°24" East longitude.

⁶ <http://pmksy.gov.in/mis/Uploads/2017/20170207121231240-1.pdf>

⁷ The five blocks are: Dumri Katsari, Piprahi, Purnahiya, Sheohar, and Tariyani Chowk.

District. VWSSPs are one of the integral parts of the IWRM strategy which is related to water security and crisis management. Preparing a WSSP for a village ensures sustainability and better management of water sources. This will help in ensuring the quality and quantity of water for the present generation, as well as availability of water for future generations.

Implementation Strategy

Water For People's strategy to develop VWSSPs includes the following key steps:

- Engage with the GP and the mandated committees such as WIMCs and VWSCs (service providers) to develop VWSSPs.
- Pilot test the preparation and implementation of VWSSPs in select five GPs.
- Build capacities of the GPs, their sub-committees, and government officials at the sub-district and district level on VWSSPs.
- Block Resource Centers are mandated to support the GPs and sub-committees for preparing VWSSPs, implement water and sanitation activities, and manage, monitor, and maintain facilities.
- Interventions at the block and district level focus on capacity building of government functionaries on water safety and security to perform the mandated function of assisting the sub-committees of the GPs in community management of water supply.

Training of Trainers

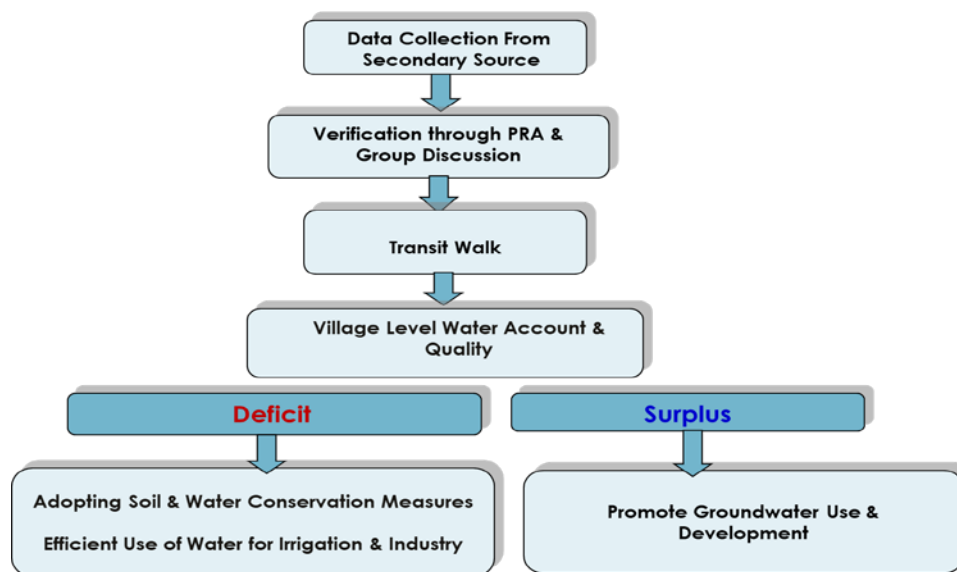
Despite provisions in national water policy, few village water safety and security initiatives or guidance were rolled out. Water For People India took this opportunity to capacitate its human capital through a five-day comprehensive Training of Trainers (ToT) Program from 19th to 23rd July 2019 in Patna, Bihar. The training was a timely intervention for the Water For People India team to introduce the concept, methodology, and process of VWSSP in the catchment areas of West Bengal, Bihar, and Maharashtra and strengthen the local institutions for preparation and implementation of VWSSPs. The purpose of the training was to create a pool of master trainers on WSSPs who would then train and help the village prepare a VWSSP with the goal of providing continuous safe water with sustainable sources to all community members.



Water For People is creating a pool of human resources through the WSSP training program at GP, Block, and Panchayat levels for supporting the planning of VWSS. The training consisted of the following activities:

- **Technical aspects of water and Participatory Rural Appraisal (PRA).** Participants discussed water quality and quantity, water resources management, and the requirement of doing a VWSSP.
- **Transit walk, including social mapping, natural resource mapping, history of GP, seasonality mapping, water supply situation, and water quality test (H2S kit).** Various mapping activities were completed to assess the availability and depletion of resources in historical context.
- **Action plan preparation by villagers on water budgeting, water supply, operation and management, water quality, availability and use of toilets, and wastewater management.** After the first-hand experience of water resource availability and depletion, the community members prepared the action plan for sustainability and ensuring quality of water resources in their area.

During the trainings, Water For People engaged District and Block government officials, Mukhiya (Village heads), Ward members, and WIMC members of the GP to discuss water availability at GP, Village, and household levels. The focus was on the groundwater recharge through soak pits, water trenches, rehabilitation of ponds, and construction of recharge shafts. During the training, the team of Panchayati Raj Institution (PRI) members, WIMC members, and Water For People and partner staff used PRA tools to prepare water budgets and understand the water needs of the GP in consultation with the community.



Action Planning Process at Block level

After completion of the training-cum-planning process, an action plan was prepared by the community members with the facilitation of Water For People for the GPs. The community members included key challenges related to water management, as well as the activities, responsible people, and budget to mitigate them. All the planned activities were consolidated in one sheet called the "Action Plan" and submitted to the *Mukhiya*. The Action Plan was included in the GP Development Plan (GPDP) and submitted to the Block Office for government support. Some of the activities included in the Action Plan include:

- Construction of soak pit
- Construction of drainage
- Repair of the community water point
- Renovation of pond

Piloting VWSSP Program in Sheohar

In Sheohar District, we have piloted the VWSSP in five GPs, taking one GP each from each block, to orient the community and government officials. Every block is touched to spread the idea of VWSSP across the whole district. The following table contains demographic information of the GPs piloting the VWSSP.

SI No	Block	Gram Panchayat	Total Villages	Total Wards	Population
1	Purnahiya	Basant Jagjiwan	4	15	11102
2	Piprahi	Parsauni Baij	4	13	12562
3	Sheohar	Harnahi	6	16	13807
4	Dumri Katsari	Mahammadpur Katsari	7	15	12552
5	Tariyani	Salempur	4	15	17665

Water Safety and Security Action Plan of One GP

जल की गुणवत्ता एवं स्वच्छता कार्ययोजना							
ग्रामपंचायत- बसंत जगजीवन			प्रखण्ड- पुरनहिया	जिला- शिवहर		कार्ययोजना निर्माण की तारीख - 23/10/2019	
क्र.सं.	समस्या	संभव उपाय	कौन करेगा	कब तक करेगा	सम्भावित खर्च	संसाधन व्यवस्था	निगरानी की जिम्मेदारी
अ. पानी गुणवत्ता की निगरानी							
1	जल गुणवत्ता का निगरानी नहीं होता है	प्रशिक्षण एवं सामाजिक कार्यक्रम के माध्यम से WIMC के सदस्य एवं पंचायतीरज के सदस्य को क्षमतावृद्धि करना	वाटर फॉर पीपल एवं PHED	फरवरी 2020 तक	12000	वाटर फॉर पीपल एवं पी.एच.ई.डी.	मुखिया, श्रीराम फाउंडेशन सेवा संस्थान एवं वाटर फॉर पीपल
2	नियमित क्लोरोनेसन नहीं होता है	क्लोरोनेसन प्रक्रिया नियमित रूप से करना है	समुदाय, WIMC एवं पंचायतीरज के सदस्य	हमेशा के लिए	1000	WIMC एवं PRI मेम्बर	मुखिया, श्रीराम फाउंडेशन सेवा संस्थान
ब. पानी की जांच							
1	नियमित रूप से जैविक एवं रासायनिक प्रदूषण का जांच नहीं होता है	प्रशिक्षण एवं जांच समीची को उपलब्ध करवाना	PHED	मार्च 2020 तक	30000	PHED	मुखिया पंचायतीरज के सदस्य, श्रीराम फाउंडेशन सेवा संस्थान
क. व्यक्तिगत तथा सार्वजनिक स्वच्छता							
1	कचरा प्रबंधन व्यवस्था की कमी	1. ग्रामीणों को कचरा प्रबंधन के बारे में प्रशिक्षण देना है 2. जरूरी समीची को प्रदान करना 3. नुककड़ नाटक के माध्यम से	वाटर फॉर पीपल एवं ग्राम पंचायत	जनवरी 2020 तक	७०००	वाटर फॉर पीपल एवं ग्राम पंचायत	मुखिया, श्रीराम फाउंडेशन सेवा संस्थान एवं वाटर फॉर पीपल
ड. शिक्षालय संबंधी जलपूर्ति एवं स्वच्छता							
1	5 विद्यालय में चापाकल का सोखता गड़दा नहीं है	10 विद्यालय में चापाकल का सोखता गड़दा बनवाना है	पंचायतीरज के सदस्य	फरवरी 2020 तक	10x8500=85000	WIMC, मनरेगा, पी.आर.आई. मेम्बर	मुखिया, श्रीराम फाउंडेशन सेवा संस्थान
इ. अन्य							
हस्ताक्षर प्रोजेक्ट समन्वयक			हस्ताक्षर मुखिया मुखिया				

Community Participation and Contribution

Proper environmental sanitation and hygienic behaviour at the community and household level are the key determinants of safe water. Similarly, community ownership and their ability and willingness to pay for and maintain systems is vital for sustainability. Preparation of the VWSSPs is an important instrument for sustainability of WASH initiatives. Community participation and development of local leadership are the key factors for water conservation and its sustainable management in villages.

Community participation is required at all stages of developing and implementing the VWSSP. The robust engagement of community and GP members through regular review and monitoring and ground reality assessment will ensure safe drinking water security for households. GP members, through WIMCs, VWSCs, and Water User Committees, are mobilizing and orienting the local community to make decisions, approve the plan, and implement the plan. Key points of engaging community members throughout the VWSSP development process include:

- Transect walk/pre-assessment - A visit to the village/GP was organized to create public awareness about the overall program, enable maximum participation of people in the

program, orient the trainees to the village, and understand the resources and on-the-ground reality of the water and sanitation situation.

- Existing scenario of the GP - PRA was used to collect information, create awareness, and inspire people about a water management system for the village. PRA tools, including social mapping, natural resource mapping, history of GP, seasonality mapping, water supply situation, and water quality test (H2S kit) were implemented to encourage discussion among villagers. Records of these works are maintained, including a map/chart of tools, main problems, and proposed treatment, and are used to prepare the Action Plan.
- Existing resource analysis – All the natural resources available in the village/GP were depicted and analyzed with the help of the community. The analysis provides insights on water availability and use in various activities like agriculture, industry, business, etc. This process informs water budget preparation.
- Community involvement – Community members of the area were involved throughout the planning process. All the tools and maps were implemented by members in the field, and plans were prepared with their help utilizing their indigenous wisdom.
- Gram Sabha – To authorize the plan, the Mukhiya pass it to the Gram Sabha (the general body meeting of all the voters in the GP) and included in the GP Development Plan (GPDP).
- Creation of a local fund – Community members contribute to a local fund for the management of wastewater.
- Monitoring – All water assets belong to the community. After understanding water safety and security, the community members monitor their assets during and after VWSSP implementation for the best possible use. This helps in water conservation through soak-pits and drainage system construction in the Wards and GPs.
- Operation and maintenance – Community members support operation and maintenance of existing resources and regular monitoring by personal observation and regular meetings of PRI members.
- Leveraging government funds - Ward members or Mukhiya liaison with the Block Office and Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) program officer to leverage government funds for water conservation infrastructure creation.
- Quarterly review – PRI and community members host a quarterly meeting to review the VWSSP and plan implementation.

Initial Output

In September 2019, community members of one of the pilot GPs, Basant Jagjivan of Purnahiya Block, contributed INR 2250 for wastewater management (i.e. constructing wastewater disposal cum recharge soak pit) and initiated the construction of one soak pit. Around 150 people were reached with this initiative.

“The concept of water security has wide intuitive appeal as it expresses the main goal of water management, which is to improve the quality of life for Everyone Forever.”

Subsequently, with the facilitation of Water For People and initiation of Ward and community members, 644 soak pits and 3,595 feet of drainage cum recharge channels have been constructed with the support from the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS).