



DEPARTMENT OF DRINKING WATER AND SANITATION  
MINISTRY OF JAL SHAKTI



# Handbook for Sarpanch & Gram Panchayat Functionaries

Capacity Building of Gram Panchayats









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MINISTRY OF JAL SHAKTI



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A Capacity Building Initiative

Name: \_\_\_\_\_

Name of the village / Gram Panchayat: \_\_\_\_\_

\_\_\_\_\_

Date of interaction: \_\_\_\_\_

Block / district / state : \_\_\_\_\_

\_\_\_\_\_





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# GLOSSARY

<b>BDTC</b>	Biogas Development Training Centre
<b>BIS</b>	Bureau of Indian Standards
<b>CGWB</b>	Central Groundwater Board
<b>CSR</b>	Corporate Social Responsibility
<b>DDWS</b>	Department of Drinking Water and Sanitation
<b>DEWATS</b>	Decentralized Wastewater Treatment System
<b>DSR</b>	Departmental Schedule of Rates
<b>DWSC</b>	District Water and Sanitation Committee
<b>FC</b>	Finance Commission
<b>FGD</b>	Focus Group Discussion
<b>FSM</b>	Fecal Sludge Management
<b>FSTP</b>	Faecal Sludge Treatment Plant
<b>FTK</b>	Field Testing Kit
<b>GoI</b>	Government of India
<b>GP</b>	Gram Panchayat
<b>GPDP</b>	Gram Panchayat Development Plan
<b>GWM</b>	Greywater Management
<b>HP</b>	Horsepower
<b>IEC</b>	Information, Education and Communication
<b>IPC</b>	Interpersonal Communication
<b>JJM</b>	Jal Jeevan Mission
<b>LPCD</b>	Litres Per Capita Per Day
<b>LPG</b>	Liquefied Petroleum Gas
<b>M&amp;R</b>	Maintenance & Repair



<b>MLA</b>	Member of the Legislative Assembly
<b>MoHFW</b>	Ministry of Health and Family Welfare
<b>MRF</b>	Material Recovery Facility
<b>MSME</b>	Micro, Small and Medium Enterprises
<b>MVS</b>	Multi Village Scheme
<b>MWM</b>	Menstrual Waste Management
<b>NABARD</b>	National Bank for Agriculture and Rural Development
<b>NIC</b>	National Informatics Centre
<b>NRDWP</b>	National Rural Drinking Water Programme
<b>NSDC</b>	National Skill Development Corporation
<b>O&amp;M</b>	Operations and Maintenance
<b>OD</b>	Open Defecation
<b>ODF</b>	Open Defecation Free
<b>OHT</b>	Over Head Tank
<b>PESA</b>	The Provisions of the Panchayats (Extension to the Scheduled Areas) Act, 1996
<b>PRA</b>	Participatory Rural Appraisal
<b>PRI</b>	Panchayati Raj Institutions
<b>PWS</b>	Piped Water Supply
<b>Q&amp;Q</b>	Quantity and Quality
<b>RCC</b>	Reinforced Concrete Cement
<b>SBM</b>	Swachh Bharat Mission
<b>SBM(G)</b>	Swachh Bharat Mission (Grameen)
<b>SHG</b>	Self-Help Group
<b>SLWM</b>	Solid and Liquid Waste Management
<b>SSG</b>	Swachh Survekshan Grameen
<b>STP</b>	Sewage Treatment Plant
<b>SVS</b>	Single Village Scheme
<b>TCL</b>	Tropically Chlorinated Lime
<b>UNICEF</b>	United Nations Children’s Fund
<b>VWSC</b>	Village Water and Sanitation Committee
<b>WTP</b>	Water Treatment Plant





# INTRODUCTION

## 1.1 Overview

The sarpanch<sup>1</sup> and gram panchayat are responsible for the overall development of the village and play a key role in providing basic services vital for the health and well-being of rural people, like, drinking water and sanitation.

The gram panchayat is the key local government institution responsible for fulfilment of the community's aspirations with respect to development of the village. In the spirit of the principle of decentralization listed in the Seventy-third Constitutional Amendment Act, 1993, provisions of drinking water and sanitation are included in the 29 functions of Part XI and are entrusted to panchayats. Ensuring availability of safe and secure water and sanitation facilities for all, throughout the year, is primarily the responsibility of the gram panchayat. Hence, it is necessary that the sarpanch, elected representatives and other stakeholders of the gram panchayat, are made well-conversant with their duties and responsibilities for ensuring safe and adequate water and sanitation facilities on a sustained basis.

As learned from the successful implementation of previous programmes, the vision of the sarpanch and his/ her dedicated efforts have a huge impact on the development of the village community. It is envisioned that their effective leadership will help sustain drinking water and sanitation facilities, once they are made aware of their roles and responsibilities and the people's needs. This will further encourage them to undertake community-led action-planning process while remaining accountable towards the people. The programmes of the Department of Drinking Water and Sanitation (DDWS) present an opportunity for sarpanches to explore their leadership qualities, involve every member of the community, and meet water and sanitation demands of their villages in a sustainable manner.

<sup>1</sup> Sarpanch can be alternatively called *pradhan/ mukhiya/adhyaksha* depending on the language of the state.





This handbook is an attempt to help the sarpanch and key functionaries at the gram panchayat level undertake specific actions related to management of water and sanitation facilities in their villages, and thus make them ‘model villages – Sujal and Swachh Gaon.’ The specifications, templates, advisories, as mentioned herein, are for technical assistance and guidance. These may be modified as per local context and availability of resources.

## 1.2 Features of Sujal and Swachh Gaon

The Ministry of Jal Shakti, Department of Drinking Water and Sanitation envisages transforming villages into model villages – Sujal and Swachh Gaon – by providing piped water supply and safe and sustainable sanitation facilities to the rural population. As the country heads towards complete open defecation free (ODF) status, the Government plans to undertake several initiatives to sustain the momentum and gains achieved so far under Swachh Bharat Mission (SBM) and graduate to the next phase of ODF plus. In this phase, the focus will be on ensuring provision of safe and secure drinking water through household connections for all, ODF sustainability (ODF S) and by making arrangements for solid and liquid waste management (SLWM), plastic waste management (PWM) and faecal sludge management (FSM).





This demands dedicated efforts from government agencies, community members and all stakeholders who are responsible for village development. It is envisaged that the journey of a village towards achieving Sujal and Swachh Gaon will have a positive effect on the living conditions of rural people and thus overall development of village communities.

To ensure availability of safe and sustainable water supply services to all through household connections using piped water supply schemes, the GP may:

- ▶ Take responsibility of operations and maintenance (O&M) of water supply schemes with community participation.
- ▶ Encourage adoption of safe sanitation, SLWM, and hygiene practices by the community.
- ▶ Take steps for water conservation including augmentation of water sources.
- ▶ Maintain, upgrade and repair sanitation facilities through community-led actions, including provision of facilities to *Divyang* (persons with disability).
- ▶ Adopt solutions for management (primarily segregation) of all types of waste in the village.
- ▶ Encourage community ownership in managing and maintaining water and sanitation facilities.

### 1.3 Benefits of water and sanitation interventions

- ▶ Improvement in public health and control of waterborne diseases like diarrhoea, typhoid, etc.
- ▶ Economic progress of families due to savings on medical expenditure and no loss of daily wages
- ▶ Overall cleanliness in the village
- ▶ Safe, adequate and sustained drinking water supply for all families
- ▶ Schools, *anganwadis* and health facilities get benefitted
- ▶ Key stakeholders in the village gain appreciation from the community as their role is recognized



## 1.4 Components of Sujal and Swachh Gaon

### A. Safe and secure drinking water supply



- i. Source sustainability
  - Drinking water budgeting
  - Water conservation initiatives
- ii. Water source augmentation measures
  - Rainwater harvesting
  - Reviving traditional water bodies
  - Groundwater recharging
  - Basic treatment and reuse of greywater
- iii. Provision of drinking water supply through functional household tap connections
  - Service level of 55 litre per capita per day (LPCD) water supply
- iv. O&M of water supply scheme
  - Technical, financial and institutional arrangements

### B. Drinking water quality management

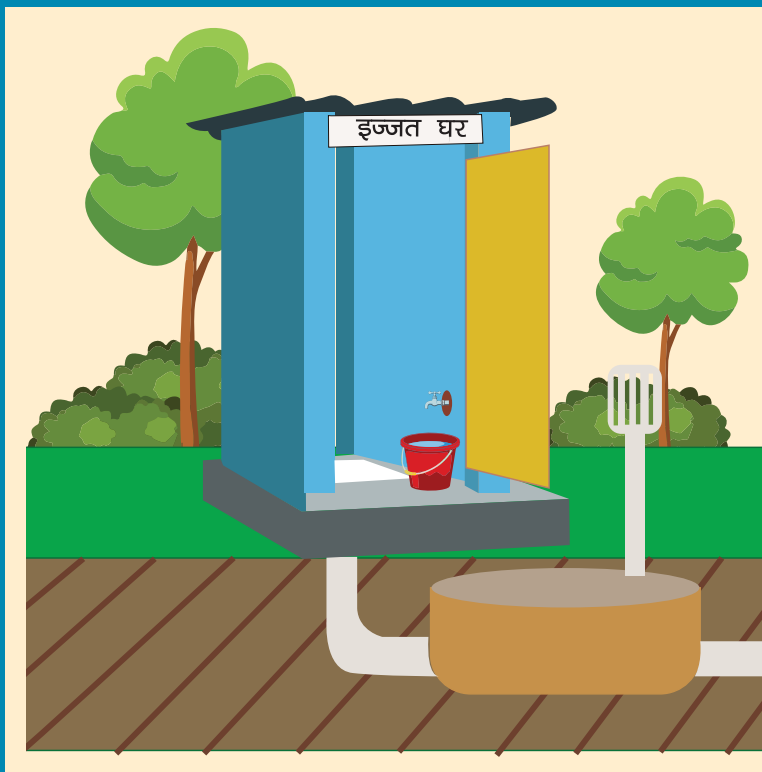
- i. Water quality monitoring and surveillance
  - Water quality assessment
  - Preventive measures
  - Water quality testing



## C. ODF plus

### i. Sustaining ODF S

- Provision of safe toilets
- Technological interventions such as retrofitting
- O&M of individual and community toilets



### ii. Solid and liquid waste management

- Solid waste management – (biodegradable waste )
- Liquid waste (greywater) management
- FSM
- Plastic waste management
- O&M of SLWM facilities by gram panchayat/community



## 1.6 Village-level stakeholders

Stakeholders include GP secretary, GP members, *swachhagrahis*, barefoot technicians, Village Water and Sanitation Committee (VWSC), Accredited Social Health Activists (ASHAs), *Anganwadi Workers (AWWs)*, masons, *Rozgar Sevak (MGNREGS)*, teachers, Auxiliary Nurse Midwives (ANMs), NGOs, etc.

### My responsibility as a sarpanch of gram panchayat

- ▶ Develop inclusive plans to address the water supply and sanitation needs of the households in the villages/GP.
- ▶ Make provision for prioritization of water and sanitation facilities in the Gram Panchayat Development Plan (GPDP) and mobilize resources to fulfil the water and sanitation demands.
- ▶ Encourage the VWSC/village team to participate in training and capacity-building programmes.
- ▶ Strengthen capacity of village-level functionaries, such as *swachhagrahis*/barefoot technicians and review their performances.
- ▶ Coordinate village-level information, education and communication (IEC) activities for all concerned stakeholders.
- ▶ Mobilize community for collective actions in creation and maintenance of water and sanitation facilities:
  - Participate in *shramdaan* (voluntary work).
  - Develop soak pits, composting, biogas plants for SLWM (managing greywater).
  - Practise waste segregation at source and the 4R(s): Reduce, Reuse, Recycle, Recover, for managing solid waste.
  - Encourage use of toilets by every person, every time.
  - Encourage judicious use of water and avoid wastage of water.
  - Adopt safe water storage, handling practices and personal hygiene.
  - Protect water sources, water and sanitation facilities and participate in their O&M.
  - Actively participate in gram sabhas held on issues of water and sanitation facilities.



- ▶ Monitor the status of general cleanliness, protection of water sources, regular use of toilets by everyone and SLWM activities at all times. This can be planned through a regular surveillance mechanism involving the VWSC, *nigrani samitis* and *swachhagrahis*.
- ▶ Review and maintain prescribed account books, and undertake audit procedures for transparency.
- ▶ Ensure facilities in institutions and public places, e.g., markets, bus stands, are operational.



## CHAPTER 2

# JAL JEEVAN MISSION

## 2.1 Introduction

Jal Jeevan Mission aims to provide every rural household, a 'functional household tap connection' within its premises,<sup>2</sup> that can provide adequate safe water for drinking, cooking and other domestic basic needs on a sustainable basis. This basic requirement must meet water quality standards and be readily and conveniently accessible at all times and in all situations.

The Government of India (GoI) launched JJM to fulfill the aspiration and demand for household tap connection. This will significantly improve the quality of life, particularly of that of women and children, and assist in ODF S as water is important to sustain SBM's achievements.

## 2.2 Key components of JJM

There are four key components of JJM as follows:

1. **Functional household tap connection**, within premises, for every rural household with water supply of 55 litres per capita per day (lpcd). All public institutions (schools, *anganwadis*, health centres) to have access to safe and adequate drinking water
2. Mandatory source sustainability measures like borewell recharge structures, rainwater harvesting, etc.
3. Mandatory greywater management measures like soak pits, waste stabilization ponds etc.
4. Mandatory O&M by users/GP

<sup>2</sup> As defined by Census 2011: Premises means building along with the land and/or common places attached to it.



## 2.3 Functional household tap connections

Previously, under NRDWP, primary efforts of the states was to provide piped water supply in the habitations, predominantly through a stand post and/or handpumps through a single village scheme (SVS) or multi village scheme (MVS). SVS, as the name suggests, is a single-village groundwater-based community-managed scheme. MVS is a surfacewater-based scheme that caters to multiple villages and is usually managed by an implementing agency.

SVS will be taken up where there is sufficient groundwater availability and groundwater is free from chemical contamination. Based on data analysis, Central Groundwater Board (CGWB) has identified a list of quantity and quality (Q&Q) blocks which have groundwater with sufficient quantity and desired quality. MVS will be taken up only in those blocks which that are not listed as Q&Q blocks.

Keeping this in view, there are broadly five categories under which household tap connections will be provided

- 1. Last-mile connectivity:** For households that already have access to piped water supply through a stand post, pipelines would be extended to provide household tap connections. Retrofitting of ongoing schemes is also included.
- 2. SVS with safe groundwater source:** Mini SVS scheme (preferably solar powered) with a tubewell/borewell, pumping arrangement, overhead tank (OHT) and distribution network with functional household tap connection in areas with sufficient and quality groundwater. Mandatory source sustainability measure will include point recharge structures for borewells.
- 3. SVS with treated groundwater source:** The only difference from the above category is that the groundwater source needs treatment and hence the SVS infrastructure will include a water treatment plant (WTP).
- 4. MVS:** MVS will have the infrastructure of an intake well, WTP, storage, bulk supply handling facility, OHT and distribution network with functional household tap connection.
- 5. Mini piped water supply (PWS) scheme:** For small/isolated/tribal hamlets, provided that the groundwater source falls under a Q&Q list of blocks, a mini piped water supply scheme will be provided, preferably solar-powered.

Gram panchayats will be involved in the entire process of planning, implementation and monitoring as JJM is a community-owned, community-



managed programme. District administrations will support gram panchayats in identifying the category for providing household tap connections along with technical assistance.

## 2.4 Eligibility criteria for gram panchayats

The following three criteria must be met by a GP to be eligible for JJM.

### 1. Land provision for scheme

- ▶ GP may agree to provide land for the identified category of scheme and submit the GP resolution along with a map indicating the survey number of the land (Identify the land in consultation with the implementing agency).

### 2. Participatory rural appraisal (PRA) activities

- ▶ PRA activities are mandatory for an SVS (PRA activities include social mapping, resource mapping, water budget, seasonality, scheme transect, option selection meeting, etc.).

### 3. O&M related requirements

- ▶ Upfront payment of one year O&M costs
- ▶ Maintenance of all SVS and MVS infrastructure within the GP
- ▶ Identification and training of, and payment to, a water person who would manage and maintain the water systems, collect user fees, apprise the panchayat on any issues

A separate account for O&M charges must be opened and the O&M amount deposited in to this account. The implementing agency will support the GP in calculating the O&M costs.

JJM follows a mission-mode, competitive approach and hence GPs who meet the eligibility criteria at the earliest will be given the scheme at the earliest on a first-come-first-served basis.

## 2.5 Role of gram panchayats in implementing mandatory source sustainability and greywater management components

The main role of gram panchayat would be to increase convergence efforts and use the funds from MGNREGS, Fourteenth Finance Commission and State Finance Commission to enable mandatory:





- ▶ Rooftop rainwater harvesting structures in all public institutions
- ▶ Borewell recharge structures for any borewell that is selected to provide drinking water
- ▶ Community soak pits
- ▶ Drainage channels
- ▶ IEC activities like wall writing/painting, street drama, etc. to promote water conservation behaviours may be adopted

Source sustainability and greywater management are covered in later chapters.

Checklist for sarpanch to deliver JJM		
1	<b>Provide functional household tap connections to every rural household</b> <ul style="list-style-type: none"> <li>▶ Registration of functional household tap connections</li> <li>▶ Carry out PRA activities</li> <li>▶ Convince all households to take tap connections</li> <li>▶ Provide land for identified scheme along with map indicating survey number of land</li> <li>▶ Identify, train &amp; pay 'water person'</li> <li>▶ Upfront payment of one year O&amp;M costs</li> <li>▶ Takeover and registration of JJM assets post JJM-implementation</li> <li>▶ Ensure sufficient quantity &amp; desired quality of drinking water</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
2	<b>Implement mandatory source sustainability (SS) measures</b> <ul style="list-style-type: none"> <li>▶ Complete rooftop rainwater harvesting in all public institutions</li> <li>▶ Ensure point recharge structures for all identified borewells</li> </ul>	<input type="checkbox"/> <input type="checkbox"/>
3	<b>Implement mandatory greywater management measures</b> <ul style="list-style-type: none"> <li>▶ Facilitate construction of Individual &amp; community soak pits</li> <li>▶ Waste stabilization pond</li> <li>▶ Drainage channels</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
4	<b>Identify funding sources</b> <ul style="list-style-type: none"> <li>▶ Convergence through MGNREGS, Fourteenth Finance Commission &amp; State Commission funds to implement mandatory source sustainability &amp; greywater management measures</li> </ul>	<input type="checkbox"/>
5	<b>Facilitate district administration</b> <ul style="list-style-type: none"> <li>▶ Geo-tag all assets related to drinking water supply</li> <li>▶ Connect SBM household names with JJM household tap connection</li> </ul>	<input type="checkbox"/> <input type="checkbox"/>



## CHAPTER 3

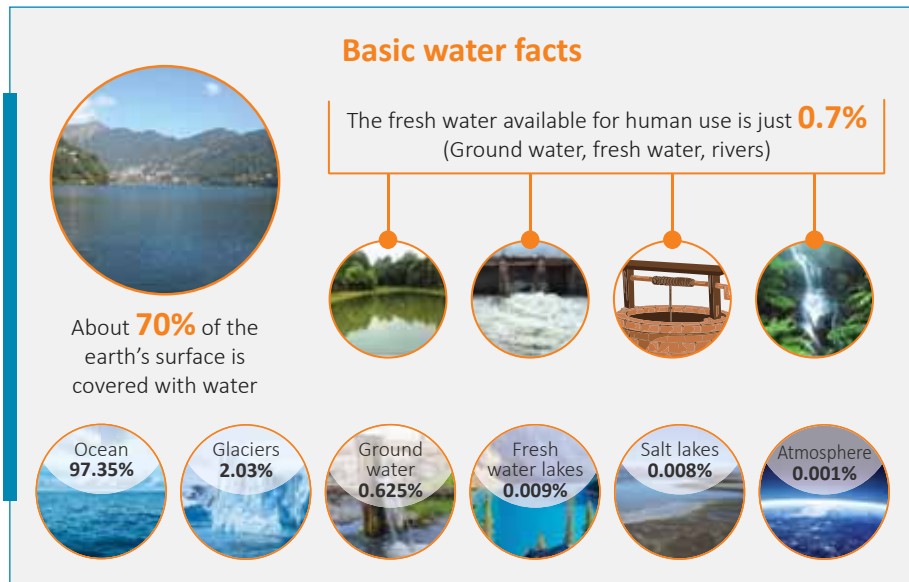
# WATER IS A PRECIOUS RESOURCE

## 3.1 Significance of drinking water

Safe and secure water supply plays a crucial role in public health and well-being of the community. Every household needs water for a number of purposes, like, drinking, cooking, washing of utensils, cleaning of the house, bathing, washing of clothes, personal sanitation, for household animals and watering of plants around the house, etc.

Water sources include rain, streams, rivers, lakes, ponds, open wells, bore wells, tube wells, etc. These play a very vital role.

### Global facts about water



**Source:** Drinking water in Panchayats by Ministry of Panchayati Raj (Active Panchayat Book II)



### Important facts about water in India

- India has 4 per cent of the world's water resources and nearly 18 per cent of the world's population.
- Around 33 crore people were affected by drought in 2016.

Source: <http://in.one.un.org>

## 3.2 How to ensure adequate and sustainable drinking water sources in the village

### a. Identify whether the village has surplus or deficit drinking water

A drinking water budget is a tool to calculate the demand and supply gap of drinking water every year. This helps to plan and take adequate measures for source sustainability.

### b. How to calculate drinking water demand

- \_\_\_\_\_ Total population of the village X 55 litres\* [\*as per the state's policy]
- \_\_\_\_\_ Total water demand/day



### c. Example of a drinking water budget for a population of 100 (quantity in 1000 litres)\*

Sr. No	Type of source	Location & population	Monsoon (120 days)			Winter (120 days)			Summer (120 days)		
			Water demand	Water availability	Gap	Water demand	Water availability	Gap	Water demand	Water availability	Gap
1.	Well	XXX (40)	192	240	00	192	192	00	192	120	72
2.	Hand pump	XX (10)	48	60	00	48	48	00	48	30	18
3.	Water Supply Scheme	XXX (50)	240	300	00	240	240	00	240	150	90
4.	Other										

\* This is an indicative template and may be modified as per local context and need.

**Note:** The above water budget is calculated with 40 LPCD for demonstration purpose

### d. How to address the deficit of drinking water

In cases where discharge is greater than recharge, there may be a deficit of drinking water. This deficit may be addressed by:

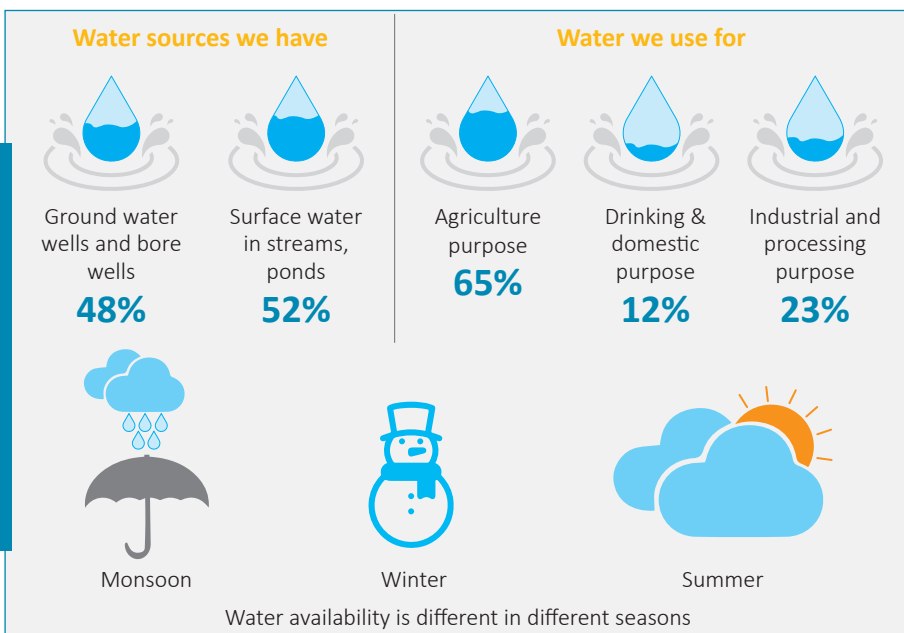
- ▶ Ensuring proper maintenance of source and water supply system to control wastage of water
- ▶ Encouraging the community to adopt water saving habits
- ▶ Regulating drinking water supply by consensus
- ▶ Acting on source sustainability by undertaking water-recharging structures
- ▶ Monitoring the amount of increase or decrease in groundwater levels over time by observing the water levels in the nearby wells

## My responsibility as a sarpanch of a gram panchayat

- ▶ Assess water availability in all existing sources, such as, wells, reservoirs, tanks, rivers, streams, springs, hand pumps, bore wells and sources of water supply schemes, etc., within GP jurisdiction.



- ▶ Assess the gap between demand and supply by using the drinking water budget as a tool for calculation.
- ▶ Address deficit of drinking water by implementing measures to increase water availability and control water use.
  - Reserve adequate water for drinking purposes and then allow use of water for commercial, industrial and irrigation purposes.
  - Adopt water saving habits and regulate water supply by educating community and promoting self-regulation.
  - Recharge the groundwater sources using various source strengthening methods of rainwater harvesting.
- ▶ Encourage the community to get involved in *shramdaan* for source strengthening measures.
- ▶ Identify schemes available for soil and water conservation for fund mobilization.
- ▶ Provide additional support to poor and marginalized persons and households which have persons with disabilities, female-headed households, etc.
- ▶ Ensure that the surface water bodies in the village are not contaminated due to poor sanitation and drainage.



### Do you know?

- ▶ Rain is the only source of fresh water and it is finite.
- ▶ Every drop of rainwater should be counted and used appropriately.
- ▶ Need for drinking water should be given priority over other usages.
- ▶ Efficient use of water can be achieved through creating awareness generation, self-regulation and use of technology.



**Source:** Drinking water in Panchayats by Ministry of Panchayati Raj (Active Panchayat Book)





## SOURCE SUSTAINABILITY

Groundwater is a finite and replenishable resource and the status of groundwater cannot be taken for granted. A source can be considered sustainable when it delivers designed quantity of safe water in all seasons for the designed life of the scheme. With increase in demand of water supply, source sustainability measures become of utmost importance. There is a need to ensure sustainability between extraction and replenishment of groundwater.

JJM has a mandatory component of source sustainability through two measures

1. Borewell recharge structures
2. Rooftop rainwater harvesting structures

**Conventional**

- ▶ *Nadi/johad*
- ▶ Loose boulder structures (LBS)/ gully plug
- ▶ Gabion structures
- ▶ Earthen *nala* bund
- ▶ Underground bund
- ▶ Cement check dam
- ▶ Village tank
- ▶ Bore well recharging

**Unconventional**

- ▶ Fracture seal cementation
- ▶ Jacket well
- ▶ Stream blasting
- ▶ Hydro fracturing
- ▶ Rooftop rainwater harvesting



## 4.1 Borewell recharging

Borewells can be recharged during the monsoon with a very efficient and economically viable method. Usually high-yielding bore wells or tube wells are selected for this recharge having good command for run-off rainwater or where water can be diverted easily. The physical condition of the source should be good. No polluting body should exist near the source. The direct injection recharges the deeper aquifer immediately. The replenishing water is used to increase the quantity of groundwater that is recharged.

### Design and execution

Depending upon the area available, a pit is excavated near the bore well up to the hard rock or impervious rock. The pit is filled with small boulders, pebbles and sand. Rainfall run-off is diverted towards this pit in a controlled manner so that the pit is not flooded and does not overflow.

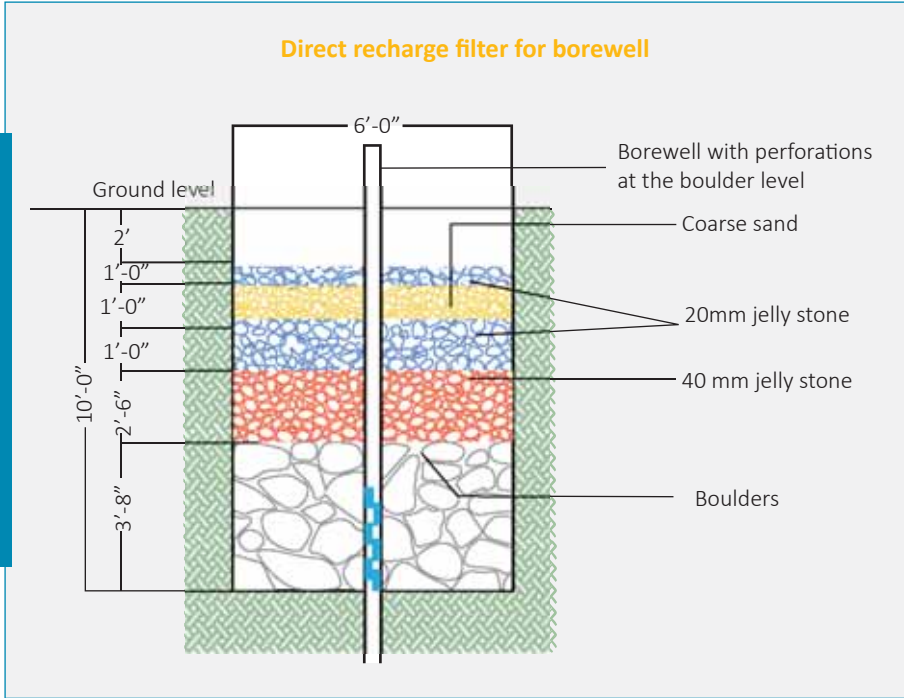
Direct recharge is recommended only for a borewell that has gone dry or is yielding a negligible amount of water. Indirect recharge is recommended for well-functioning borewells.<sup>3</sup>

<sup>3</sup> rainwaterclub.org

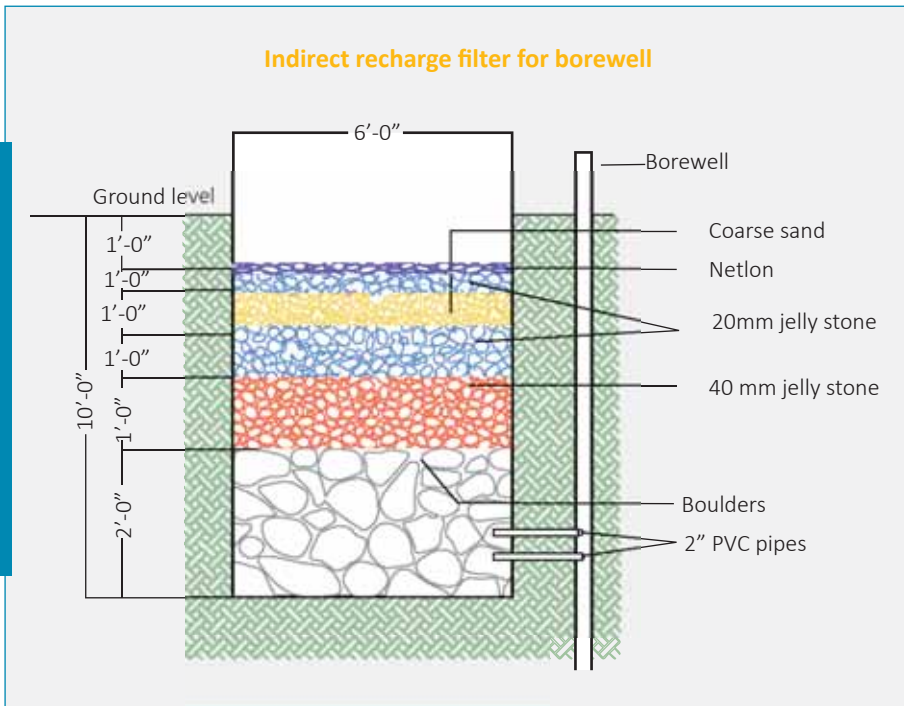




### Direct recharge filter for borewell



### Indirect recharge filter for borewell







## 4.2 Rooftop rainwater harvesting

- ▶ Rainwater harvesting has two components: recharge and storage.
- ▶ Rainwater is collected from the roof of the house/building /structure.
- ▶ The collected water can be stored in a tank or be made to percolate into the ground and thereby, recharge the level of groundwater.
- ▶ Recharge of harvested rainwater is less expensive and is a very effective method to augment the groundwater level of the area.
- ▶ The gram panchayat may install rooftop rainwater harvesting systems for all institutions in their jurisdiction that have feasible structures. It may also encourage all individual households having these structures to take up rooftop rainwater harvesting.
- ▶ Recommended are the dos and don'ts while opting for rooftop rainwater harvesting:

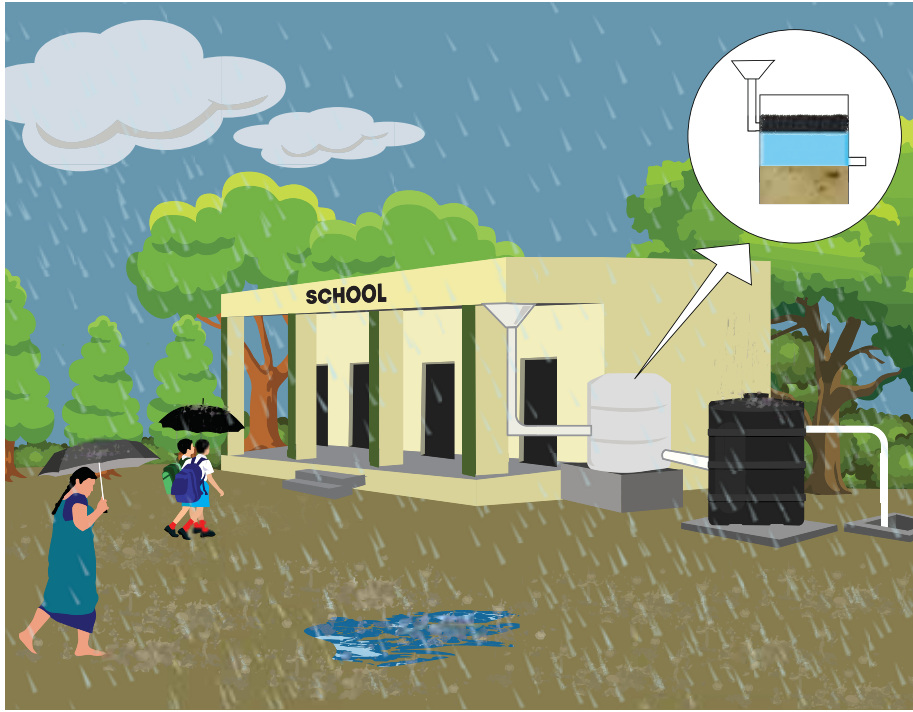


 <b>Dos</b>	 <b>Don'ts</b>
<ul style="list-style-type: none"> <li>i. Clean rooftop before the monsoon</li> <li>ii. Adopt suitable filtration method, material to filter rainwater and undertake regular maintenance.</li> <li>iii. Ensure use of good quality material for repair and plumbing work</li> <li>iv. Undertake regular and proper maintenance and painting of masonry tanks</li> <li>v. Clean storage tanks before every monsoon season</li> <li>vi. Install sunlight protective lids with proper manhole on the storage tanks</li> <li>vii. Monitor stored water against any chemical or bacterial contamination</li> <li>viii. Flush out water from the first rainfall</li> <li>ix. Connect rooftop rainwater harvesting systems to a groundwater recharge system to adjust overflow of water</li> </ul>	<ul style="list-style-type: none"> <li>i. Use structures having asbestos sheet roofs</li> <li>ii. Dump leftover materials on the catchment roofs.</li> <li>iii. Undertake direct or manual lifting of stored water</li> <li>iv. Allow entry of direct rainwater from the roof to store or recharge without filtration</li> <li>v. Collect first rainfall of the monsoon, directly or indirectly, for recharging</li> </ul>

### 4.3 Community participation and *shramdaan*

- ▶ Contribution in terms of *shramdaan* and donations in-kind by the community is a traditional act which is still deep rooted in the villages.
- ▶ Community movement through *shramdaan* for water conservation helps to instill a sense of responsibility in all sections of the community — men, women and children.
- ▶ People can realize the power of unity and undertake simple activities for rainwater harvesting and water conservation without depending on external sources.





## 4.4 How to mobilize the community for *shramdaan*

The sarpanch and gram panchayat have to play a key role in leading the community, inspiring them to take collective actions and coordinate the process of source strengthening through various methods, such as:

- ▶ Awareness camps to sensitize the community
- ▶ House visits, corner meetings, mobilization of youth and women groups
- ▶ Film shows, local cultural and spiritual programmes
- ▶ Performance competitions among villages
- ▶ Involvement of the officers of concerned departments in community interactions
- ▶ Sharing of information about the incentives:
  - Advantages of the work in terms of increased water availability for drinking and livelihoods
  - Incentives to better-performing villages
- ▶ Development of community-led action plans for water conservation



## My responsibility as a sarpanch of a gram panchayat

- ▶ Identify available schemes and programmes for soil and water conservation and integrate in the GPDP.
- ▶ Initiate recharging of groundwater sources using various source strengthening methods of rainwater harvesting.
- ▶ Take help from concerned departments in using appropriate technology to increase availability of water from sources.
- ▶ Encourage the community to:
  - Use water as precious resource – save, conserve and harvest every drop of water.
  - Get involved in *shramdaan*, where people work voluntarily for water conservation.
- ▶ Ensure that all institutional structures, such as, schools, *anganwadis*, health centres, gram panchayat buildings, etc., at village level have rooftop rainwater harvesting systems installed.
- ▶ Encourage individual households having feasible structures to install rooftop rainwater harvesting.



- ◆ Water conservation measures for source sustainability should be integrated in the planning process.
- ◆ Identify various schemes such as, Central/State line departments, like MGNREGS, the Provisions of the Panchayats (Extension to the Scheduled Areas ) Act, 1996 (PESA), IWMP, Finance Commission funds, etc., available for soil and water conservation.



The community in Mandli village, Barmer, Rajasthan, came together and contributed for work in strengthening their village's water reservoir and increasing its storage capacity. This helped them solve their drinking water crisis. Jal Sabha, the committee formed, is taking care of O&M.

You can read more about the above referred case from the link:  
[http://www.undp.org/content/dam/india/docs/good\\_practices\\_in\\_water\\_security\\_ideas\\_for\\_praxis.pdf](http://www.undp.org/content/dam/india/docs/good_practices_in_water_security_ideas_for_praxis.pdf)



**Source:** Handbook for trainers and Gram Panchayat by MoPR





# OPERATION & MAINTENANCE OF WATER SUPPLY SCHEME

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## 5.1 Introduction

---

Appropriate operation and maintenance (O&M) management of water supply schemes is essential for designed service delivery of safe water throughout the designed life of the scheme. Lack of proper O&M management adversely affects the service delivery and consumer satisfaction. Inappropriate O&M may lead to the following adverse effects:

- ▶ People may lose faith in the government water supply system.
- ▶ Water supply may be irregular, inadequate or of inferior quality.
- ▶ People may become reluctant to pay water bills/ water cess.
- ▶ Tariff recovery may not be as planned.
- ▶ Non-availability of adequate funds for O&M may lead to deterioration of service delivery, subsequently resulting in dysfunctional systems.
- ▶ Inadequate service delivery may lead to adverse health impacts and morbidity.
- ▶ People, mainly women, may be compelled to fetch drinking water from distant sources.

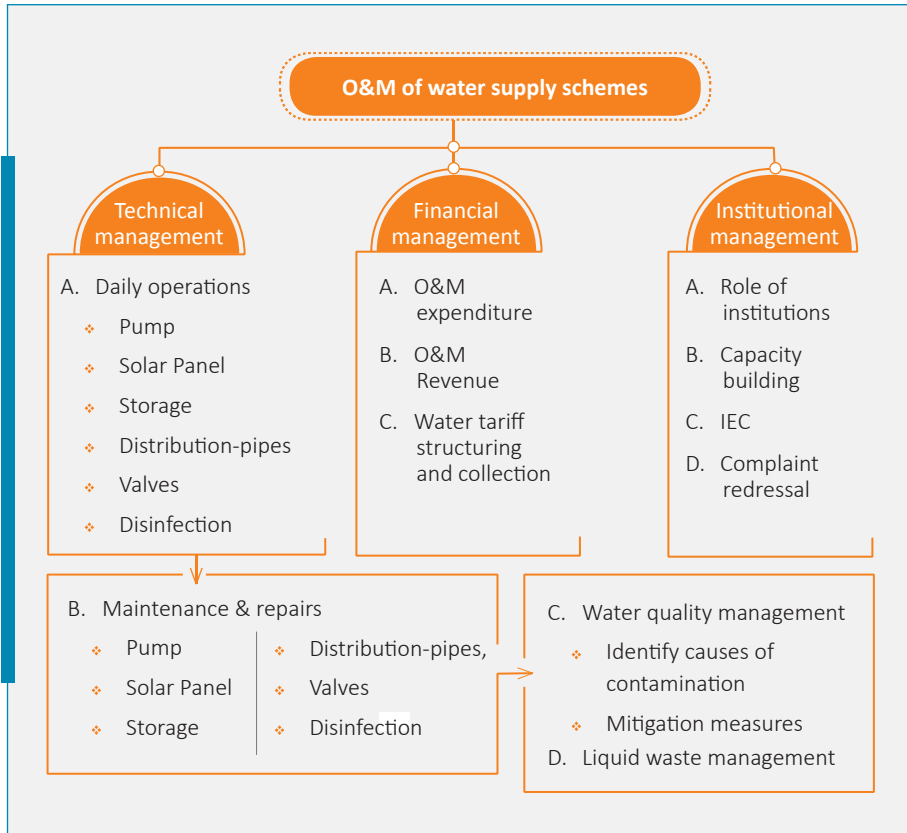
## 5.2 Components of O&M of water supply facilities

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- ▶ Technical management
- ▶ Financial management
- ▶ Institutional management

The above three aspects are interlinked and 'community participation' is the fulcrum.





### 5.2.1 Technical management

**A.** Daily operation comprises operation of pumps, storage and distribution system including pipelines and valves, tap stands, disinfection and solar panels in case of solar pumps

**B.** Purpose of maintenance is to:

- ◆ Ensure that all civil works (wells/stand posts, switch rooms, etc.), machinery and equipment (pumps, valves, switches, etc.) are in optimal running condition.
- ◆ Preventive maintenance to avoid operational failure/problems through timely repairs, etc.

**C.** Bacteriological tests must be performed at least once in 6 months and chemical contamination tests once in a year. It is the responsibility of the VWSC/ GP to provide safe and disinfected water to the village community.





**D.** Following key actions may be taken up for liquid waste management, especially greywater management:

- ▶ Public awareness events, including trainings, demos, workshops, etc.
- ▶ Proper drainage arrangements at public stand posts and house connections either through kitchen gardens or soak pits
- ▶ Taps on the stand posts, household connections and taps to remain closed when not in use to prevent wastage of water
- ▶ Proper drainage and disposal arrangement to be an essential criterion for sanctioning of a house connection
- ▶ Wastewater connected to main gutters / surface drains and regular cleaning of surface drains
- ▶ Maintenance and repair work of existing surface drains and construction of new surface drains through various public schemes



Operations checklist for the Water Supply Scheme*		
Sr. No.	Component	Daily operations checklist
1	Source	Check for water level
		Check for occasional turbidity (In rainy season)
		Construct the graph of depletion water levels cumulative in the month before and after periodic pumping
		Check for sample testing in laboratory. (Bacteriological – six monthly; Chemical – yearly)
2	Pump	Operate pump as per pumping hours
		Check the filling time of tank
		Check visual leakages
		Check running sound
		Check voltage
3	Solar pump	Check water level in the bore well, supply well
		Check condition of cable
		Check water level in the tank
		Check for the dry run sensor
4	Solar panel	Monitor voltage readings
		Check panel direction
		Check dust on panel
5	Pipe line	Check for visual leakages
6	Valves	Operate valves as per schedule
		Check for smooth working
		Check for leakages
		Outlet valve to be closed in non- supply hours
7	Storage tank	Administer chlorine dose
		Check water level sensor
		Check outlet valve
		Check float operations
8	Tap stand	Check for taps in position and in closed position to avoid wastages
		Check for leakages
		Check pressure and discharge
		Check waste water

\* This is an indicative template and may be modified as per local context and need.



## 5.2.2 Financial management

VWSC and GP along with the community have to prepare the budget for their water supply scheme. This is a simple documentation of expenditure items and sources of revenue (mainly through community and GP contribution). First the expenditure is calculated, following which the GP contribution is decided. The balance amount can be obtained from the user charges or water tariff.

Following is the reference template that may be used to calculate water tariff.

Template to calculate water tariff*			
Sr. No.	Details	Expenditure details	Estimated expenditure
<b>A.</b>	<b>Operations expenditure</b>		
1	Water staff expenditure Note:- Depending upon scope and size of water services, area to be served, the number of staff may be worked out	No. of staff × Monthly salary × 12 months	Rs. _____
2	Electricity bill Units used × Pumping hours × 0.75 Note:- Depending on pump HP, currently 25Rs/Hp/ month may be adopted as a basis. This rate shall be updated every year by respective District O&M Cell.	a. Annual fixed expenditure depending upon pump HP = Pump HP × (Rate/ Hp/Month) × 12 months	Rs. _____
		b. Annual Expenditure depending upon unit consumption = annual unit consumption × (Rate/Unit)	Rs. _____
		2(a+b)= Total	Rs. _____
3	Chemicals: Bleaching powder Note:- Depending on daily water use, calculate based on: 5g of bleaching powder for 1000 litre water. Total expenditure of bleaching may be calculated based on regular dosing, usage in tank cleaning, water channels, WTP structures and other cleaning.	Annual expenditure on bleaching powder = Total required quantity of powder × Rate/Kg	Rs. _____

\* This is an indicative template and may be modified as per local context and need.



Template to calculate water tariff*			
Sr. No.	Details	Expenditure details	Estimated expenditure
4	Water sample testing charges Conveyance charges	a. Bacteriological tests = No. of samples per year × rate/sample	Rs. _____
		b. Chemical tests = No of sample/year × rate/sample	Rs. _____
5	Water Committee Office (stationary, log books, misc.)	Monthly expenditure × 12 months	Rs. _____
Total of A	Operation cost (1+2+3+4+5)		Rs. _____
<b>B.</b>	<b>Maintenance &amp; repair (M&amp;R) expenditures</b>		
6	Routine M&R (for pipe line leakage repairing, valve repairing, pump motor repairing, tap repairing, colouring, miscellaneous expenditure) In case of multiple schemes	M&R = capital cost of water supply scheme × 1.5 %	Rs. _____
7	M&R expenditure for Water Sources Note:- According to Departmental Schedule of Rates (DSR)/ government rates: expenditure for source maintenance is- Rs. 1000/- for hand pump , Rs. 5000/- for bore well and Rs. 1000/ for open wells However, factor the rates as per actual rates in respective locations/ villages.	a. Hand pump M&R expenditure = No. of hand pumps × annual maintenance cost	Rs. _____
		b. bore well M&R expenditure = No of bore wells × annual maintenance cost	Rs. _____
		c. Open well M&R expenditure = No of wells × annual maintenance cost	Rs. _____
		7(a+b+c)= total	Rs. _____
8	Reserve fund for any major repairs	Reserve fund = 20 % of Sum of (1 to 7)	Rs. _____



Template to calculate water tariff*			
Sr. No.	Details	Expenditure details	Estimated expenditure
Total of B	Total M&R expenditures	Sum of (6 to 8)	Rs. _____
9	Total operation and M&R expenditure	(A+B)	Rs. _____
<b>C.</b>	<b>Income</b>		<b>Estimated Income</b>
10	GP contribution	To be decided by GP	Rs. _____
11	Contribution to be collected from users	Total expenditure (row 9) – GP contribution (row 10)	Rs. _____
12	Assuming, 90% as billing efficiency, And 80% recovery of water tariff from the billed amount	Water tariff collection = (Community contribution as per row 11) × (1/0.9) × (1/0.8)	Rs. _____
13	Water tariff rate:	Total water tariff collection as per row- 12 / number of consumers	Rs. _____

### 5.2.3 Institutional management

For efficient O&M and implementation of the scheme, the capacity of VWSC/GP and village water person may be strengthened. The following tools may also be used for monitoring the implementation.

#### Complaint register:

VWSC/GP may maintain a complaint register in which the date-wise details of the complaint are recorded and which is seen daily. If there is a specific complaint, then VWSC/ GP may bring this to the notice of the water person for timely redressal. Oral complaints, if any, may also be recorded in the complaint register.



**Sample of a typical complaint register\***

Complaint date/time	Complainer and location	Details of complaint	Entry by the water person	Details of complaint redressal (date / time)
27/01/18 13:00 hrs	Gopal Deshmukh near Maruti Mandir	Less water supply since 3 days	Sd: xxx  Signature 28/01/18	Attended house of Shri Gopal Deshmukh. Found line chocked. Line washed, flushed and water supply restored. No complaint now.  Sd: Date: 28/01/18

\* This is an indicative template and may be modified as per local context and need.

**Role of VWSC/GP regarding complaints:** To ensure that all complaints from the village community are attended properly, the ward representatives may follow-up.

### Successful O&M by the community in Naini-Poundar (Uttarakhand)

The user water supply and sanitation committee (UWSSC) formed at the gram panchayat level collects water tariff, takes care of daily water supply and routine maintenance, protect the pipeline network and also redresses grievances.

**Source:** <http://swajal.uk.gov.in>

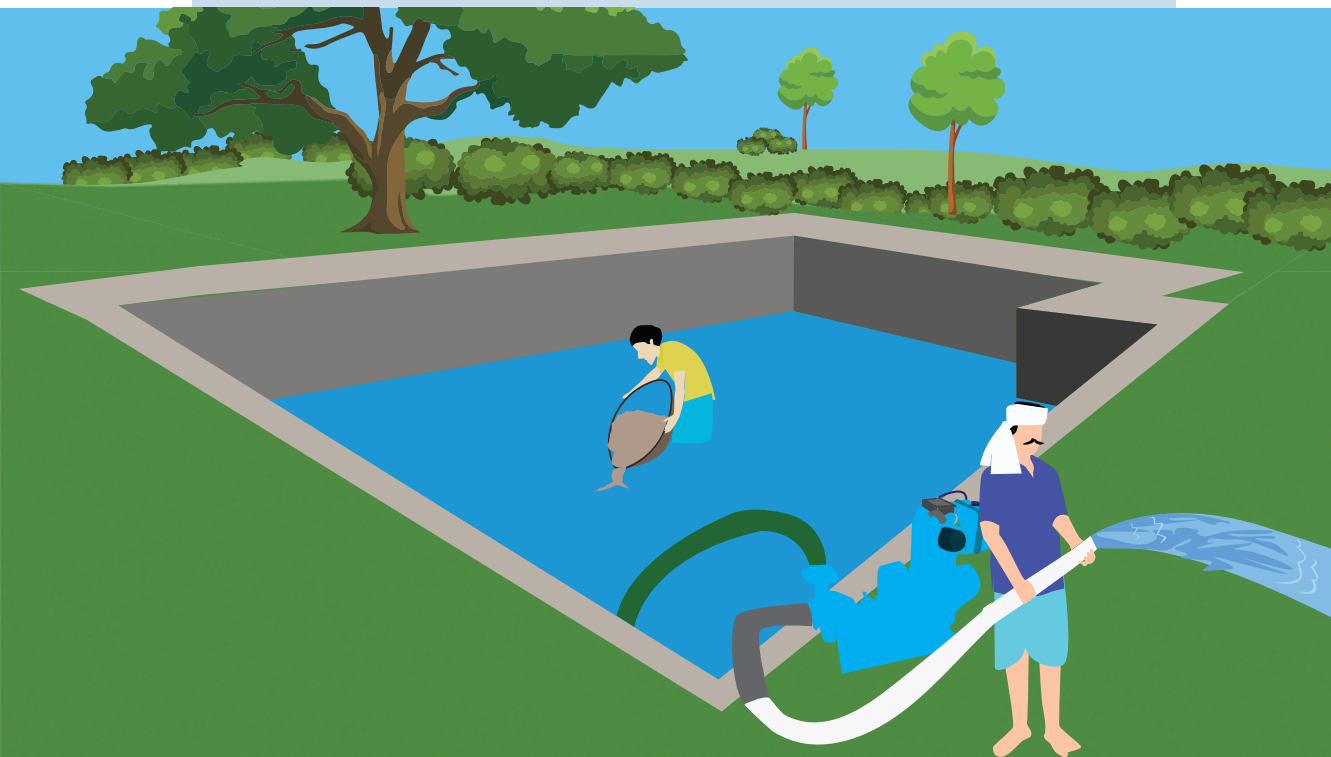


## ENSURING SAFETY OF DRINKING WATER IN GRAM PANCHAYAT

### 6.1. Sanitary survey

- ▶ The gram panchayat/VWSC may carry out a village sanitary survey of drinking water and supply schemes at fixed intervals: typically before the monsoon season, in the month of April and after the monsoon, i.e., in the month of October.
- ▶ The purpose of the survey is to identify possible reasons for water contamination, if any, and mitigation measures.
- ▶ All gram panchayat/VWSC members, ward members, village water person, men, women and youth may participate in the survey.

**Source:** Managing Safe and Secured Water Supply Handbook for Sarpanch (MDWS & UNICEF), September 2010.



## A. To be observed and recorded during the survey\*

### a. At the source

- ▶ Cleanliness around the water source and in the catchment area
- ▶ Causes of likely pollution of percolation tank/village tank on the upstream side
- ▶ Gaps in toilet construction around the water source. For example, the distance between a leach pit and water source should not be less than 10 metres, especially for those leach pits built in high-water table or flood-prone areas
- ▶ Toilets and accumulated water built around the source at households and institutions, like schools, pre-schools and health facilities
- ▶ Dumping/improper disposal of wastewater/faecal sludge/solid waste in or around the water source

### b. At the supply network/in the village

- ▶ Accumulated water
- ▶ Supply network and pipelines passing through gutters
- ▶ Defective connections
- ▶ Location of inadequate water pressure
- ▶ Surrounding of stand post(s)
- ▶ Status of soak pits near stand post(s)
- ▶ Water storage and handling habits of villagers
- ▶ Status of sanitation in schools, *anganwadis* and other public places



\* The illustrative list may be modified as per local context and needs





## 6.2. Field testing kit (FTK)

Water testing at regular intervals helps to ensure the quality of water supplied in the village. Chemical tests may be conducted at least once a year and bacteriological tests at least twice a year, typically before and after the monsoon. A field testing kit (FTK) can act as a local-level laboratory to conduct these tests.



A kit for assessing water quality at the field level developed by Tamil Nadu Water Supply and Drainage Board

- ▶ Gram panchayat to have an FTK and a trained village water person for using it
- ▶ The trained person can perform chemical tests for checking pH, alkalinity, hardness, chloride, TDS, fluoride, iron, ammonia, nitrate, phosphate, turbidity, residual chlorine levels using the FTK
- ▶ If the parameters mentioned for these tests are not within the permissible limits, the sarpanch needs to contact the concerned block/district-level PHED/RWS department engineer-in-charge for remedial action and corrective measures

## 6.3. Chlorination

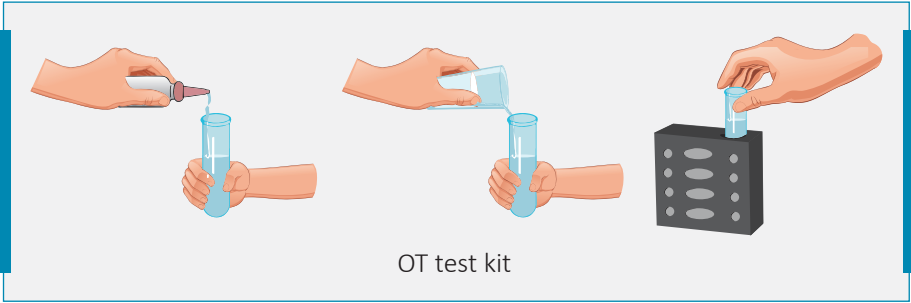
The simplest and easiest way to disinfect water is through chlorination.

### Do you know?

1. Bleaching powder may be purchased as per requirement but should not be stocked for more than three months OR after its expiry date.
2. It is important to store bleaching powder in a cool and dry space with an airtight lid on the container to maintain the percentage of chlorine.
3. It takes half an hour for chlorine to act on the bacteria and kill them, so chlorination should be done at least one hour before the water supply starts.
4. It is necessary to coordinate with block and district authorities for conducting mandatory tests for avoiding chemical and bacteriological contamination.



5. It is necessary to replace cartridges in timely manner in case of online chlorination system and follow instructions given in the product manual.
  6. Residual chlorine should be monitored at periodic intervals.
- Source:** Managing Safe and Secured Water Supply Handbook for Sarpanch (MDWS & UNICEF), September 2010.



### 6.4. Maintenance and documentation records of water quality and safety

Records	Frequency of report generation
OT and field tests – consolidated report	Monthly
Sanitation survey report	Twice in a year (before and after monsoon) and whenever required
Chemical contamination reports	Twice in a year (before and after monsoon) and whenever required
Bacterial contamination reports	During the monsoon
Report on quantity of bleaching powder (dose) used in case of contamination	Whenever contamination is reported

### My responsibility as a sarpanch of a gram panchayat

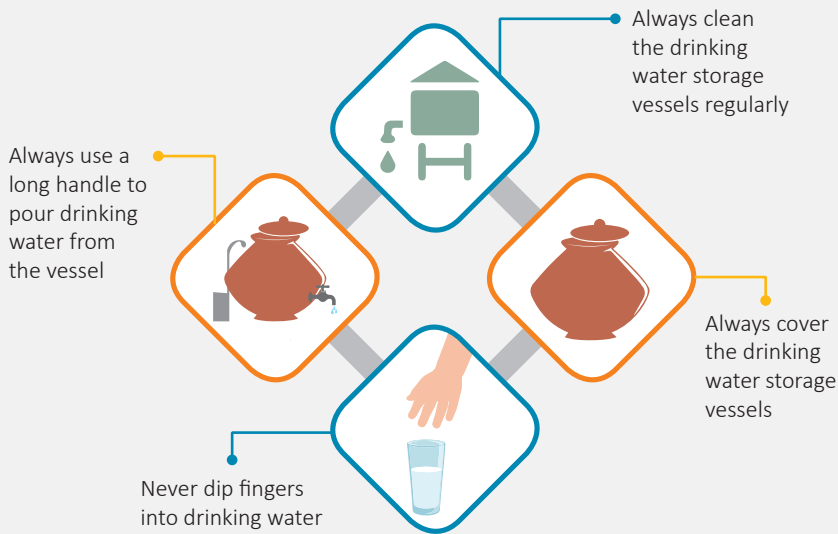
- ▶ Carry out a sanitary survey periodically for identification of possible reasons for water contamination, if applicable, and protect sources from contamination.
- ▶ Ensure that safe distance is maintained between drinking water sources and toilets.



- ▶ Monitor daily chlorination levels.
- ▶ Ensure availability of FTK and trained technicians at the gram panchayat level.
- ▶ Review records of on-site inspections and regular water testing and strive to find solutions in case of contamination.
- ▶ Create awareness for adopting good practices regarding water storage, etc.
- ▶ Promote toilet usage by all members of the household every time and ensure appropriate greywater management in the villages/GP.



### Safe storage and use of drinking water



- ▶ Consumption of non-potable water can cause various health hazards, like, cholera, dysentery, typhoid, gastroenteritis, jaundice, etc.
- ▶ Disinfection of water should be done properly and on a regular basis.
- ▶ In case of chemical contamination found after testing in a lab, the concerned authorities should be contacted immediately and the community should be informed.



## CHAPTER 7

## OPEN DEFECTION FREE PLUS

A village is considered open defecation free plus (ODF plus) if it sustains its ODF status and safely manages its solid and liquid waste. Following are the key guiding principles for ODF plus which need to be considered at the village level.

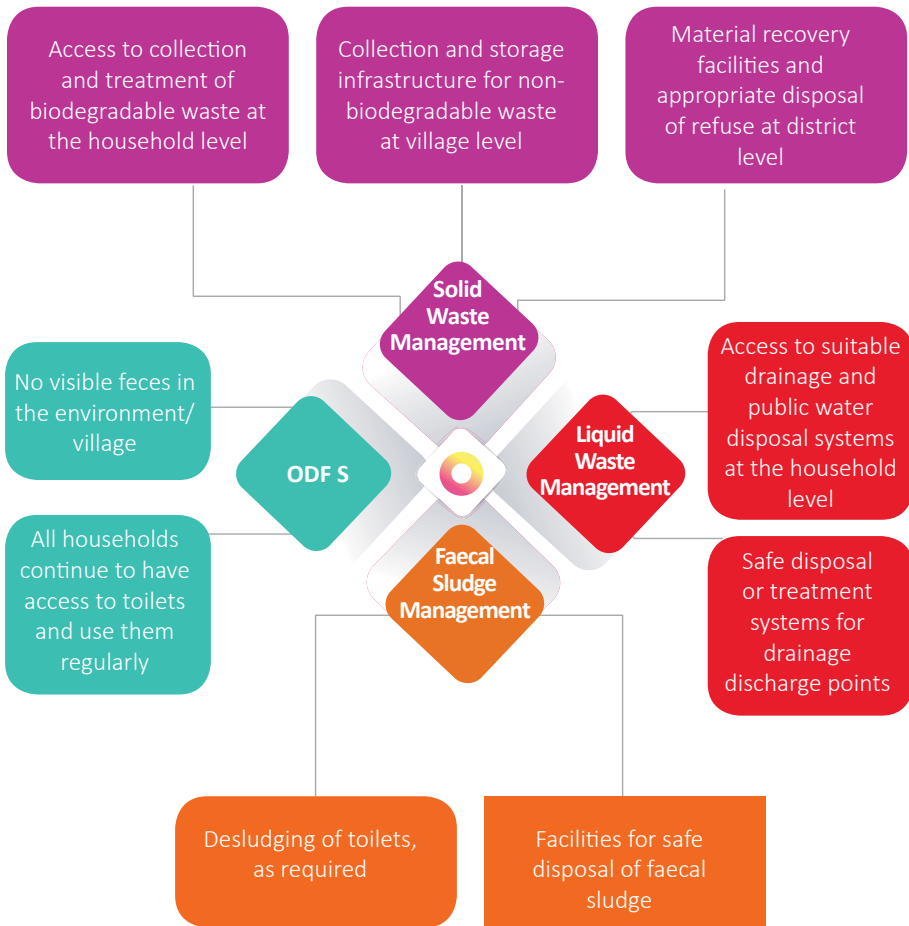
### 7.1 ODF plus guiding principles\*

1. Individual assets should be encouraged and prioritized and financial provision should be made for developing community assets. This will help to achieve comprehensive management of solid and liquid waste at village level.
2. Use/rejuvenation/upgradation of existing infrastructure should be ensured rather than creating new infrastructure at village level.
3. To achieve the goal of ODF plus, funds functionaries and functions of other programmes should be used through appropriate convergence mechanisms.
4. Activities related to reduce, reuse and recycle elements should be promoted.
5. Technologies with the least O&M cost should be selected and encouraged.
6. Technologies best suited to the hydrogeology and topography of the areas should be chosen.
7. Villages should be clustered as per suitable criteria such as transport distance, time, etc. for cluster level resource centres to achieve economies of scale.
8. For villages more than 2,000 population, storage sheds for non-biodegradable waste, drains for conveyance of waste water and waste stabilization ponds or other large scale treatment technologies should be constructed.

\* For guidance only; may be selected/added as per local needs and context



## 7.2 Key components of ODF plus



## CHAPTER 8

# SUSTAINING OPEN DEFECCATION FREE STATUS (ODF S)

## 8.1 Sanitation and gram panchayat

India is rapidly progressing towards attaining 'open defecation free (ODF)' status. To continue the gains made so far and to ensure that the ODF status remains sustainable, continued engagement and support of Panchayati Raj Institutions (PRIs) especially the gram panchayats and other grass root workers such as swacchagrahis is of paramount importance. The following pages enunciate the broad framework for ODF S.



Source: Sanitation in Gram Panchayat; Sarpanch booklet (MDWS & UNICEF)



## 8.2 What to do to keep village and environment clean

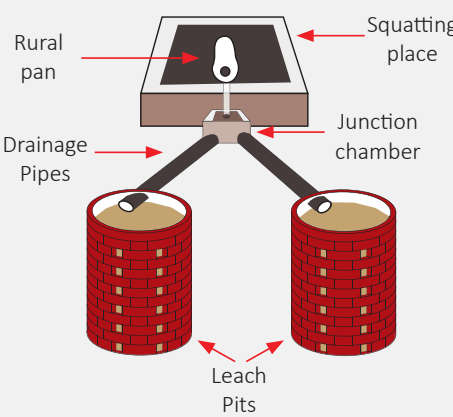
- ▶ Regular use of toilet – every time by everyone
- ▶ Proper containment and disposal of human excreta
- ▶ Disposal of child faeces in toilets only
- ▶ Ensuring clean and hygienic surroundings
- ▶ Safe disposal and management of solid and liquid waste

## 8.3 Features of safe toilet

- i. Flies and animals cannot access excreta
- ii. No handling of fresh excreta by humans
- iii. No odours or unsightly conditions
- iv. Surface soil, ground and surface water should be free from faecal contamination

### Pour flush twin leach pit toilet

**\* Safe decomposition of faecal matter in the pits**



**Advantages:**

- ▶ Lower cost
- ▶ Less space requirement
- ▶ Comparatively less water requirement
- ▶ Easy emptying of pit and production of usable manure

**Caution:** Vent pipe should not be used for this type of toilet

(Continued)

(Continued)

Don'ts:	Limitations:
<ul style="list-style-type: none"> <li>▶ Do not use both the pits at the same time</li> <li>▶ Do not use caustic soda or acid for cleaning the pan</li> <li>▶ Do not throw sweepings, vegetables, rags, cotton waste and cleaning materials like corn cobs, mud balls, stone pieces etc. in the pan or pits.</li> <li>▶ Do not allow rain water, kitchen or bath waste water to enter the leach pits</li> <li>▶ Do not throw cigarette butts in the latrine</li> <li>▶ Do not desludge the pits before one /one and half year of its being out of use</li> </ul>	<ul style="list-style-type: none"> <li>▶ Not recommended for areas with high water table, areas prone to flooding and coastal areas</li> </ul>

## Septic tank

\* Makes use of natural processes to treat the sewage it stores

\* Consists of a tank connected to a soak pit

**Advantages:**

- ▶ Long lasting/durable
- ▶ Simple operation and low maintenance
- ▶ Considerable reduction of suspended solids & BOD from sewage
- ▶ About 60% reduction in volume and about 30% reduction in weight due to sludge digestion
- ▶ Suitable for isolated community

**Note:** Soak pit is necessary for septic tank

**Caution:** Not to be containment structure

(Continued)



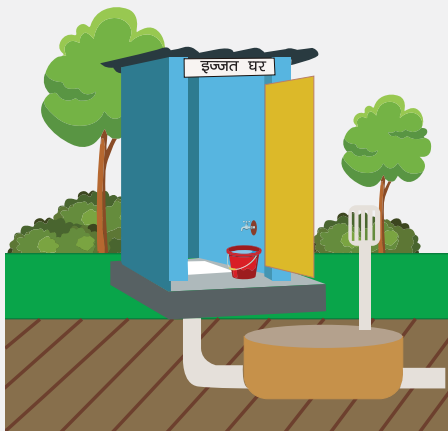


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Don'ts:	Limitations:
<ul style="list-style-type: none"> <li>▶ Don't construct deep tanks</li> <li>▶ Don't dispose sanitary napkins, wrappers, baby diapers in the toilet</li> <li>▶ Don't overuse cleaning chemicals. This is hard for the bacteria to break down and will kill good bacteria</li> <li>▶ Don't plant trees, shrubs near the tank and soak pits</li> <li>▶ Don't park vehicles on septic tank</li> <li>▶ Don't store the sludge in tank for more than 4-5 years</li> </ul>	<ul style="list-style-type: none"> <li>▶ Requires more space</li> <li>▶ High cost of construction</li> <li>▶ Periodic emptying</li> <li>▶ More water and no manure output</li> </ul>

## Bio toilet

\* Makes use of natural processes to treat the sewage it stores



### Limitations:

- ▶ Higher cost
- ▶ Unavailability of material (bacterial inoculum)

### Advantages:

- ▶ Converts faecal waste into methane and water which can be discharged
- ▶ Zero maintenance system
- ▶ Suitable in areas with high altitude and low temperature, areas with high water table, flood prone areas, areas with rocky terrain and remote areas



## 8.4 Toilet facilities for *Divyang*

The Ministry promotes accessible toilets for *Divyang*. Depending upon the type of disability, type of toilet facility and needs of the user, the toilet may require some additional modifications. Important points to be considered are:

- ▶ Accessible toilet facilities to be designed as per needs of the *Divyang*
- ▶ Safety and privacy to be taken care of in deciding the design and location
- ▶ Toilet to be accessible during all weather conditions, especially in heavy rains or flooding
- ▶ Support may be provided through gram panchayat funds and easy availability of materials
- ▶ Sensitization of *divyang* users, their families and community members



**Toilet for *Divyang***



**Grab bar for *Divyang***



**Ramps and rails for *Divyang***

## 8.5 Retrofitting of toilets

Toilets need to be retrofitted or repaired to fix technical aberrations, if any, to manage safe disposal of excreta and to make them user-friendly so as to ensure sustained use of toilets.

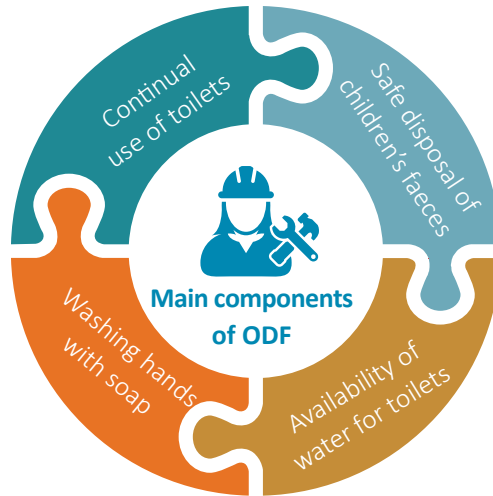
### Why toilets need to be retrofitted/repared/ newly constructed

- ▶ Helps in resolving typical technical aberrations regarding junction, connecting pipes, vents, chamber, pits that are too deep or shallow, cemented bottom of



pit, distance between pits, pit close to water source, adding soak pits, converting single pits to twin pits, etc.

- ▶ Provides barrier-free access to *Divyang*.
- ▶ Helps in repairing and fixing damaged parts of the toilet.
- ▶ Helps in adapting to the local soil type, land topography and climate.

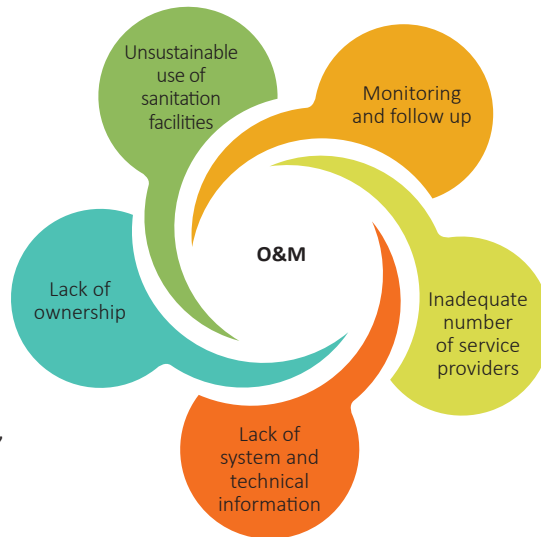


## 8.6 Maintenance of toilet facilities

Inadequate maintenance of sanitation facilities may lead to temporary or permanent breakdown of the facility and hamper its sustainable use, especially in case of community and institutional toilets.

This issue may be addressed through:

- ▶ Community awareness and IEC activities on above issues, including stigma around pit emptying
- ▶ Appointment of a caretaker or service provider
- ▶ Annual budget for maintenance of community, institutional and shared toilets, or levying of user charges



Integrated Women Sanitation Complex in Paraniputhur Panchayat in Kanchipuram district, Tamil Nadu, is managed by user groups of 39 families.



**Toilet for children**



**Washing area**

The complex has eight toilets, three bathing rooms, one western closet toilet for *Divyang* and pregnant women, two latrines for small children and one room for a motor. An amount of Rs. 60 per month is collected from each family for daily maintenance. Electricity charges are paid by the panchayat and the woman caretaker is paid Rs. 1,000 for cleaning and maintaining the complex and premises.

## Resources for construction, retrofitting, repairing and maintaining toilet facilities at household and institutional levels.

- a. Department of Drinking Water and Sanitation
- b. State Government funds specifically for O&M
- c. Untied funds from:
  - i. Finance Commission (FC): up to 10 per cent of total allocation to gram panchayat
  - ii. Own resources: tax, fees, charges, penalties, royalty from minor forest produce collection and minerals for gram panchayats in PESA, etc.
  - iii. External resources: Corporate social responsibility (CSR), FC and others
  - iv. Rogi Kalyan Samiti funds of MoHFW: These can be used in meeting needs of water and sanitation and solid waste management in health facilities



## My responsibility as a sarpanch of a gram panchayat

- ▶ Ensure that all households in the panchayat have access to a safe and functioning toilet which is used and maintained properly.
- ▶ Ensure that all institutional toilets (schools, *anganwadis*, primary health centres, etc.) are safe, functional and maintained properly.
- ▶ Make provisions to ensure that new homes and institutions have toilets.
- ▶ Motivate households to retrofit and repair toilets to correct technical aberrations.
- ▶ Work out a system for periodical emptying of the pit, manage faecal sludge and maintain FSM facilities.
- ▶ Support monitoring committees such as *nigrani samitis* in their work.
- ▶ Mobilize funds for repair/retrofitting/improvement and O&M of toilets.
- ▶ Conduct IEC activities to ensure that the ODF status of the village/GP is sustained.



### Checkpoints

- Do all households in the gram panchayat have access to toilets and is everyone using the toilets at all times?
- Do all institutions in the panchayat have access to adequate toilets that are maintained properly?
- Do all public places have access to adequate toilets that are maintained properly?
- Do all persons with disabilities have accessible household toilet facilities?
- Do all sanitation facilities get adequate water on a sustainable basis?
- Has everyone from the community adopted safe hygiene practices?



## CHAPTER 9

# SOLID AND LIQUID WASTE MANAGEMENT (SLWM)

## 9.1. Why waste management?

Environmental sanitation is important to improve the quality of life of the rural population. Appropriate management of solid waste and liquid waste, generated locally, helps in improving the overall cleanliness, health conditions, sanitation and hygiene. Though the solid and liquid waste generated in rural areas is predominantly organic and biodegradable, it has become a major challenge in terms of environment cleanliness and of late emerging as a threat to public health.

The waste generated, if not treated and managed scientifically, adversely affects public health and the environment.

### What is waste?

#### Waste

Waste is any item beyond use in its current form and is discarded as unwanted. It can be solid or liquid with respective management methods.

#### Solid waste

Organic and inorganic materials produced from households, commercial and industrial establishments that have no value to the owner are defined as garbage or solid wastes. Any waste other than human excreta, urine and waste water is called solid waste.

#### Liquid waste

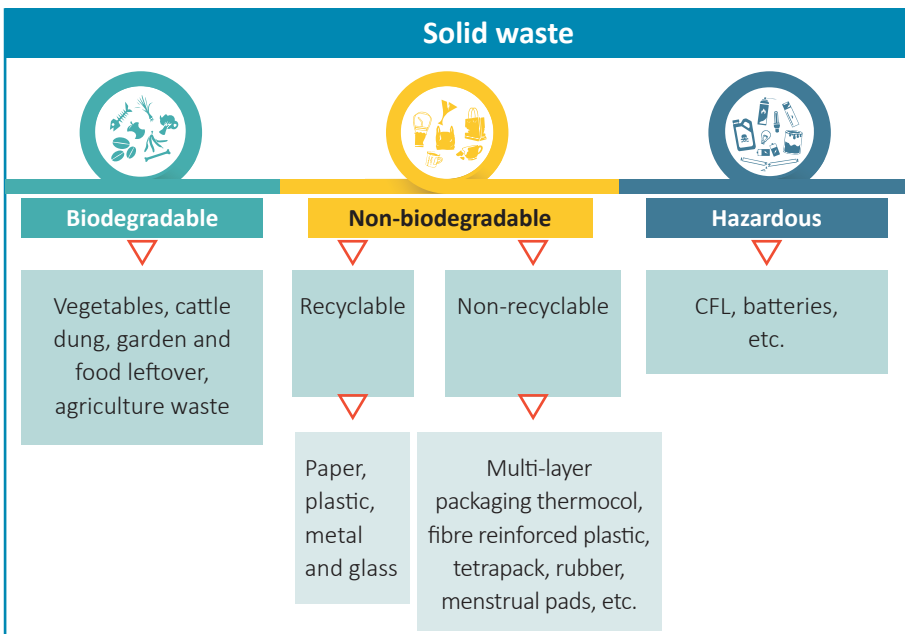
Used and unwanted water is called waste water or liquid waste.



## 9.2 Why should gram panchayat make arrangements for waste management?

1. The Swachh Bharat Mission (SBM) campaigns have led most Indian villages to become ODF. The next big step is to move towards sustaining the achievements made so far and focusing on solid and liquid waste management, which is ODF plus.
2. Rural sanitation is one of the areas earmarked for local bodies under the Eleventh Schedule of the Constitution and the same is elaborated in the Constitution (Seventy-third Amendment) Act, 1992.
3. Gram panchayats have the power to decide what kind of a waste management system will be technically sound, economically non-intimidating and socially acceptable.
4. As local government institutions, gram panchayats should endeavour to provide all their residents with a clean and liveable environment.

## 9.3 What are the types of waste generated in a gram panchayat?



## 9.4 Biodegradable solid waste management

Rural India generates enormous quantities of biowaste comprising kitchen leftovers, animal waste, crop residue, discarded fruits and vegetables. Presently, a very large proportion of this gets disposed in unsafe and value destroying ways that include burning crop residues, throwing animal waste into local water bodies, etc. This leads to adverse environmental health and economic impacts including wide-ranging air pollution due to crop burning.

### Biodegradable compost as fertilizer

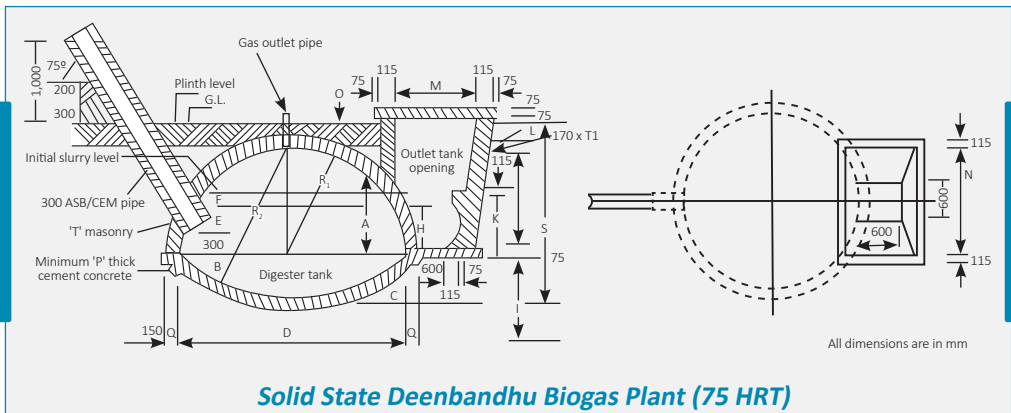
- ▶ Compost is a good soil conditioner which enriches soil, helps to retain moisture and suppress plant diseases and pests.
- ▶ It reduces the need for chemical fertilizers.
- ▶ It encourages the production of beneficial bacteria and fungi that breakdown organic matter to create humus, a rich nutrient-filled material.

## 9.5 GOBAR-DHAN (Galvanizing Organic Bio Agro Resources Dhan)

GOBAR-DHAN Scheme under the SLWM Component of SBM (G) is to ensure cleanliness in villages by converting biowaste including animal waste, kitchen leftovers, crop residue and market waste into biogas and compost to improve the lives of villagers. This will provide economic and resource benefits to farmers and households.



### Biogas plant\*



\* Business model is indicative and may be modified as per local context and need.





## Four models\*

The following four models are recommended for implementation under the scheme and shall be eligible for incentive.

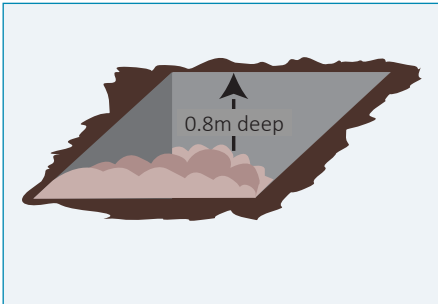
Model A	Model B	Model C	Model D
<b>Gram panchayat</b>	<b>SHG federation</b>	<b>Bulk waste generator/ entrepreneur</b>	<b>Any eligible enterprise</b>
Support by technical agency ▶ Lease land/GP land ▶ Mandatory collection of waste from project villages	Support by technical agency ▶ Own/lease/ GP land ▶ Mandatory collection of waste from project villages	Engaging a technical agency if no experience ▶ Own land/ lease land ▶ Mandatory collection of waste from project villages	Own/lease land ▶ Waste from project villages or other
▶ Supplies to the village at cost/ commercial sale/ buy-back	▶ Supplies to village at cost/ commercial sale/ buy-back	▶ Self-consumption/ supplies to village at cost/ commercial sale/ buy-back	▶ Sells output to fuel companies
<b>Incentive:</b>			
▶ 100% plant cost or as per SBM(G) SLWM slab (indicated below), whichever is less. Plant serving GPs with total funds available: - 150 households – 3.5 lakh - 300 households – 6 lakh - 500 households – 7.5 lakh - > 500 households – 10 lakh	▶ 75% plant cost or as per SBM(G) SLWM slab (indicated below), whichever is less. Plant serving GPs with total funds available: - 150 households – 3.5 lakh - 300 households – 6 lakh - 500 households – 7.5 lakh - > 500 households – 10 lakh ▶ 25% of incentive paid in advance, at the time of DWSC approval ▶ Balance paid one month after plant is operational	▶ 50% plant cost or as per SBM(G) SLWM slab, whichever is less. ▶ Plant serving GPs with total funds available: - 150 households – 2.8 lakh - 300 households – 4.8 lakh - 500 households – 6 lakh - > 500 households – 8 lakh ▶ Back-ended incentive	▶ No financial incentive ▶ States facilitated purchase or buy-back through PSUs ▶ No role of Gol

\* This is an indicative template and may be modified as per local context and need.



<ul style="list-style-type: none"> <li>▶ 25% of incentive paid in advance, at the time of DWSC approval</li> <li>▶ Balance paid one month after plant is operational</li> <li>▶ 20% of total incentive released usable for payment to technical agency as turnkey fee</li> </ul>	<ul style="list-style-type: none"> <li>▶ 20% of total incentive released usable for payment to technical agency as turnkey fee</li> </ul>	<ul style="list-style-type: none"> <li>▶ 20% of total incentive released usable for payment to technical agency as turnkey fee</li> </ul>	
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## 9.6 Technologies of biodegradable waste management



**Underground lined manure pit garbage**



**Overground brick lined compost pit**



**Vermi composting**

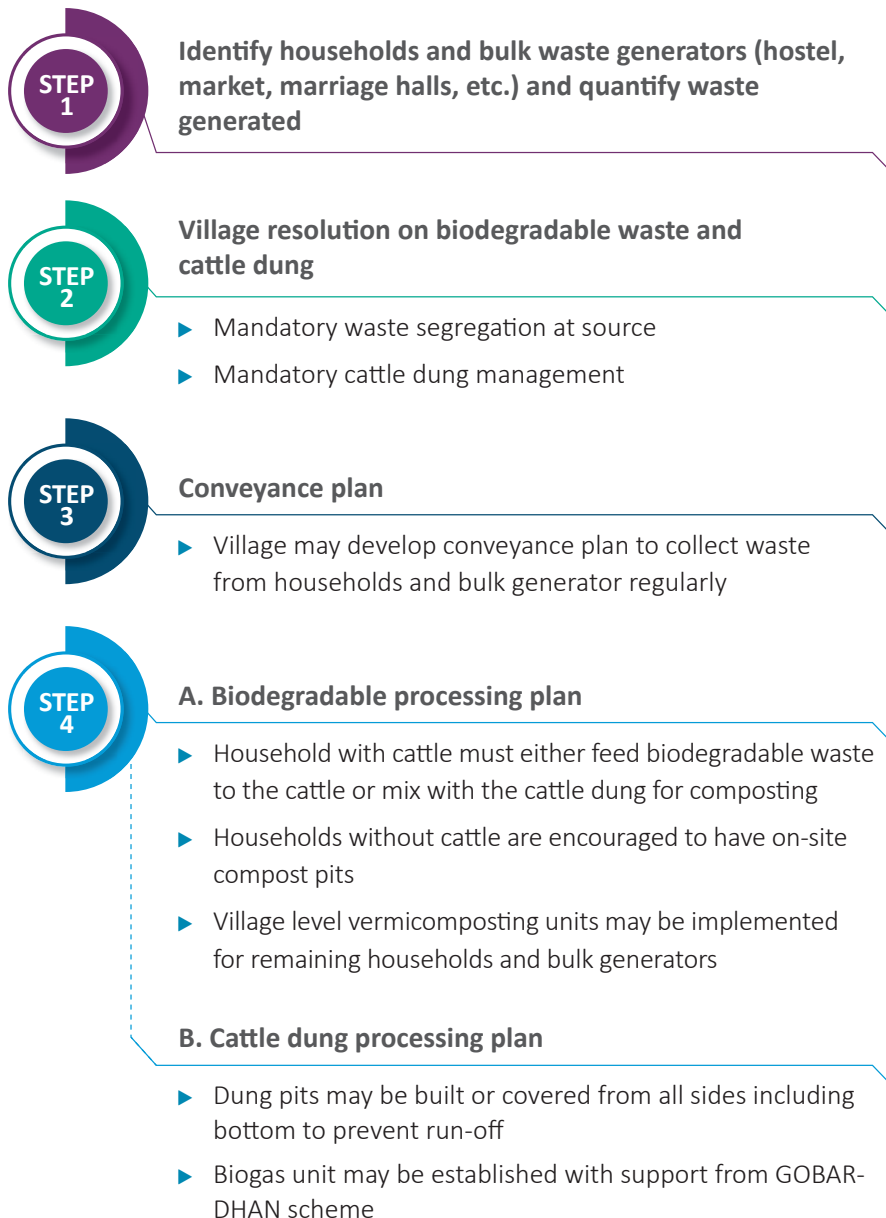


**Biogas**



## 9.7 How to manage biodegradable waste at village level

On priority, solid waste should be managed at the household level for zero or minimum waste generation at the community level. In cases where it is difficult to manage at the household level, it needs to be transported to community bins or treatment plants. Solid waste management includes the following key steps.



**STEP 5**

**Determine suitable business model**

**C. Non-biodegradable processing plan**

- ▶ Create a storage place and store non- biodegradable and hazardous waste in separate closed bags/bins
- ▶ Stored waste will be collected by the nearest material recovery facility periodically

**A. Identify revenue sources**

- ▶ Waste collection fee
- ▶ Sale of compost
- ▶ Village funds

**B. Identify operational costs**

- ▶ Collection cost
- ▶ O&M cost of compost pits and storage of non-biodegradable waste
- ▶ Other management costs

**C. Decide business model**

- ▶ Fee structures for above poverty line (APL)/ below poverty line (BPL) families
- ▶ Management of solid waste by village itself or outsourced

<p><b>Quick facts:</b>  <b>Lambra Kangri</b>  <b>630 families</b>  <b>2,610 population</b>  <b>1,833 memberships</b></p>	<p><b>Biogas plant</b>                  Capacity: 100 m<sup>3</sup>                  Households providing dung: 33                  Animals generating dung: 200                  Daily dung collection: 2500 kg                  Average consumption of gas by one family: 1.5 m<sup>3</sup> – 2 m<sup>3</sup>                  Operating gas connections: 44                  Gas utilization: 6 hrs/household</p>
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## My responsibility as a sarpanch of a gram panchayat

- ▶ Vet projects and verify the background – proposed land, police verification, financial records, etc.
- ▶ Encourage strong IEC for community uptake of waste segregation.
- ▶ Ensure gram sabha resolution to adopt the project based on the proposal submitted by the agency/organization.
- ▶ Create awareness on segregation of waste at the source of generation.
- ▶ Ensure convergence of schemes, programmes, funding for the execution of the SLWM projects.
- ▶ Ensure effective and continuous monitoring of the schemes implemented in villages and gram panchayat.



### Checkpoints

- Does the panchayat know the total quantity of waste generated in the GP?
- Did the gram panchayat analyse the present status of solid and liquid waste management in the community?
- Has the community been made aware of the different ways of managing waste at household and community levels?
- Has the gram sabha approved the action plan?
- Has the action plan been integrated in the GPDP?
- Are funds available for the action plan?
- Has the gram panchayat been able to implement the SLWM action plan?
- Have the line departments and technical experts been consulted?



## Case study: Biogas plant in Hoshiarpur



Lambra Kangri is a village in Hoshiarpur, Punjab, with a population of 2,610, having average rainfall conditions and high water table. The 'Lambra Kangri Multipurpose Co-operative Service Society' operates a biogas plant based on a modified Janta Model.

### Biogas plant technology

All plant components are underground and the area above the plant is being developed as a park. The plant has a capacity of 100m<sup>3</sup> and has been functional since 2 years.\* The plant runs on 2,500 kg waste (household solid waste/animal waste/slaughter waste/agro waste) generated from 33 households and 200 cattle/hens/pigs, etc. The plant is operated with technical guidance for installation and operation from Biogas Development Training Centre (BDTC), Punjab Agricultural University, Ludhiana.

### Process/ operational procedure

The society collects waste from four villages every morning, which is segregated into three categories – domestic organic waste, recyclable waste and cow dung/ animal waste. Cow dung collected from 33 households is used as feed for the biogas plant. Households are paid Rs. 8/100kg of cow dung. The collected dung is mixed with water and diverted into the digester at the plant site. To maintain the optimum temperature in the digester during winters, poultry waste is used in the digester along with cow dung.



## Gas distribution system and cost

- ▶ Biogas is supplied to 44 households through a piped network. Users are charged at a rate of Rs. 270/35.5m<sup>3</sup> of gas. The cost of biogas supplied ranges from Rs. 6 to Rs. 10 per unit based on consumption. Greater the consumption of biogas by a family, lesser is the cost accrued on them.
- ▶ Biogas is also provided to one of the schools in the area to support the Midday Meal programme without any user charges.
- ▶ The capital cost of a plant is 33 lakh for biogas plant, park development, distribution network, metering and collection system. An additional amount of Rs. 11,000–12,000 is paid to the employees.

### Innovative measures:

Right pricing of waste collection, gas distribution and slurry management has led to the financial success of the project. Recording systems like mobile app and gas metering system for monitoring waste collection and biogas utilization respectively ensure transparency. Incentive structure based on the quantity of gas consumed is also a major aspect in changing people's behaviour towards choosing biogas as a cooking fuel over LPG. Cost benefit has added to the success of the plant.

*\*As of July 2019*



## CHAPTER 10

# PLASTIC WASTE MANAGEMENT

## 10.1 Introduction

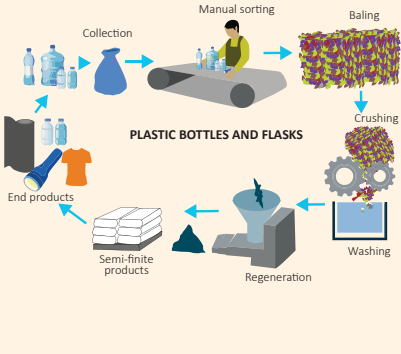
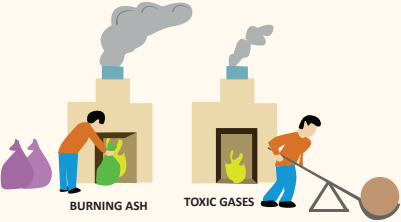
In spite of lack of reliable data on the volume and mix of plastic waste in rural areas, it is becoming increasingly clear that plastics pose significant environmental and health challenges in rural communities. The open burning of plastics results in emission of carcinogenic gases. Lack of segregation of plastics waste, absence of organized systems of collection and efficient aggregation, poor economic value of low-grade (thin) and single-use plastics and the livelihoods associated with plastics' production have been the key challenges.

## 10.2 Methods of processing plastic waste


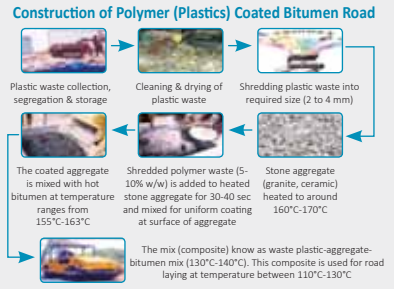

Description	Process	Advantages/ Disadvantages
<b>Recycling</b>		
<ul style="list-style-type: none"> <li>▶ Recycling is the combination of several technologies carried out on waste/discarded plastic</li> <li>▶ Reduces generation of secondary products</li> <li>▶ Allows recovery of raw material from waste for a purpose that would otherwise require consumption of new resources</li> </ul>	<ul style="list-style-type: none"> <li>▶ Select suitable waste scrap for recycling / reprocessing</li> <li>▶ Segregate plastic as per the Bureau of Indian Standards (BIS) guideline codes</li> <li>▶ Wash before shredding, agglomerate, extrude and granulate</li> </ul>	<ul style="list-style-type: none"> <li>▶ Reduces the use of oil</li> <li>▶ Helps to extend the lifespan of remaining fossil fuel reserves</li> </ul>





Description	Process	Advantages/ Disadvantages
 <p><b>PLASTIC BOTTLES AND FLASKS</b></p>		<ul style="list-style-type: none"> <li>▶ Requires less energy than making fresh plastic (Plastic breaks down slowly in a landfill and less slowly in oceans, but in either case they still take a long time up to 1,000 years in some cases.)</li> </ul>
<b>Incineration</b>		
<p>The most effective way to reduce the volume of solid waste is to burn it in a properly designed (fully contained) and operating condition. The complete process is called incineration</p> 	<ul style="list-style-type: none"> <li>▶ Directly burns waste in the presence of excess air (oxygen) at temperature about 800°C and above</li> <li>▶ Liberates heat energy, inert gases and ash</li> </ul>	<ul style="list-style-type: none"> <li>▶ Efficient way to reduce waste volume and demand for landfill space</li> <li>▶ Allows recovery of energy/fuel from heat generation (Note that low quality incinerators do not burn waste completely and so release poisonous gases)</li> </ul>



Description	Process	Advantages/ Disadvantages
<b>Landfilling</b>		
<p>Landfilling is the means of disposing of waste under the soil cover</p> 	<p>Plastics degrade in a landfill, through the process of physical or chemical change in plastic polymer due to several environmental factors, viz., sunlight, moisture, temperature, biological activity, etc.</p>	<p>Reduces possibilities for recovery of any secondary raw materials or energy for further use</p>
<b>Polymer blended bitumen roads</b>		
<p>This is a process of road laying using waste plastics</p>  	<ul style="list-style-type: none"> <li>▶ Cleaned and dried plastic is shredded in to small pieces</li> <li>▶ Aggregate is heated to 165°C in mini hot mix plant</li> <li>▶ Shredded plastic is added to the hot mix. The plastic gets softened and coated over the surface of the aggregate, giving an oily look</li> </ul>	<p>Avoids leakage of polymer from the bitumen layer, even after laying the road using a waste plastic-bitumen-aggregate mix</p> <ul style="list-style-type: none"> <li>▶ Waste plastic polymer-bitumen reduces the bleeding of bitumen during the summer.</li> <li>▶ Fly ash does not leach from this mixture</li> </ul>



## 10.3 How to manage plastic waste at the district/ block level

The following steps may be carried out in conjunction with the district.

### Step 1: Clustering of villages

- ▶ Cluster villages for a minimum population of one lakh or 1 ton of waste per day.
- ▶ Identify an appropriate site in the cluster to develop material recovery facility (MRF) and a sanitary landfill for reuse (non-recyclable and inert).

### Step 2: Conveyance and processing plan

- ▶ Develop a conveyance plan to periodically collect waste from the storage point in each village.
- ▶ Factor in parameters such as road access, distance, type of vehicle, quantity of waste will determine conveyance plan.
- ▶ Build a MRF of appropriate size and with all required equipment at block and district levels.
- ▶ Implement a standard operating procedure for the MRF to ensure quality of recyclables.
- ▶ Empanel vendors and periodically sell recyclable wastes.
- ▶ Send inert and non-recyclable wastes for appropriate disposal to cement factories or other such thermal units, district biomedical waste incinerators or sanitary landfills.

### Step 3 Determine a suitable business model

#### Identify revenue sources:

- ▶ Sell recyclable products
- ▶ District funds

#### Identify operation costs:

- ▶ Include collection cost O&M costs of MRF and sanitary landfill
- ▶ Other management costs



## My responsibility as a sarpanch of a gram panchayat

- ▶ Conduct an assessment of plastic waste collection activities in the GP/ villages.
- ▶ Create community awareness for plastic waste and its impact on health and environment in the villages.
- ▶ Ensure plastic waste collection at source and segregation.
- ▶ Ensure safety and dignity of persons involved in the process of collection and segregation with the use of proper equipment such as gloves, etc.
- ▶ Ensure provision for plastic waste collection, and its safe transportation to an MRF in action plans regarding arrangements.



**Plastic use can be controlled by applying 4Rs of waste management.**

### Checkpoints

- Reduce:** Carry your own cloth or paper bags. Avoid products with lots of plastic packaging, etc.
- Reuse:** Reuse plastic jars, bottles or containers for storage
- Recycle:** Recycle plastic into storage bottles, toys, buckets and other usable items
- Recover:** Use of waste as fuel substitute



## Case study: Plastic waste management in Dhansura taluka



In July 2011, a special drive was launched to convert Dhansura taluka, Sabarkantha district, Gujarat, into a 'plastic-free' taluka with the cooperation of block and village panchayats. A workshop and IEC activities were organized to orient and sensitize all key stakeholders of 33 GPs of the block on the issues related to plastic waste and its impact on the environment and human life. A resolution was passed in the gram sabha to end the dumping of litter, including plastic waste, in public places and along roads, urging citizens to instead collect plastic at the household level and sell it to authorized local scrap vendors at the rate of Rs. 3 per kg. Local traders were identified by each GP and approved to buy plastic waste at a rate of Rs. 3 per kg from villagers. The resale price that such vendors would obtain from a taluka scrap vendor would be Rs. 4 per kg. As a result, in Dhansura taluka, every GP is more or less free from plastic waste and looks very clean. This campaign created public awareness about the adverse impact of plastic waste on humans and animals. All households were made aware of a safe disposal of plastic waste and how it generates small income.

**Average 1 ton of recycled plastic saves 16.3 barrels of petrol.  
Recycling of 1 ton plastic waste save 5,774 kilowatt hours of electricity.**

Source: <https://mdws.gov.in/pathway-success-compendium-best-practices-rural-sanitation-india>



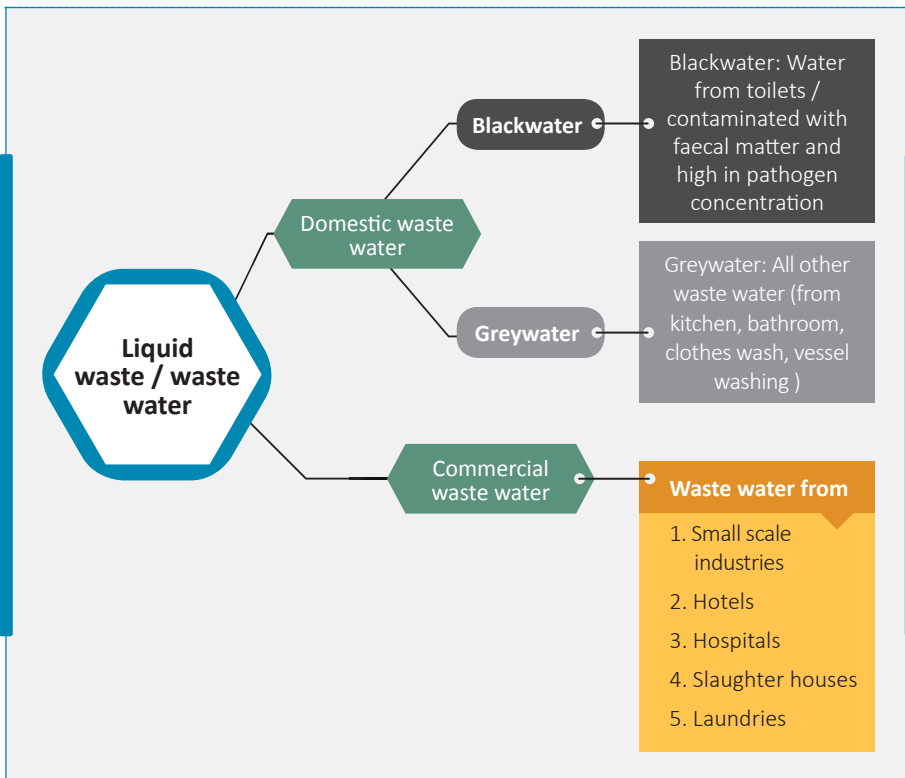
## CHAPTER 11

# LIQUID WASTE MANAGEMENT – GREYWATER

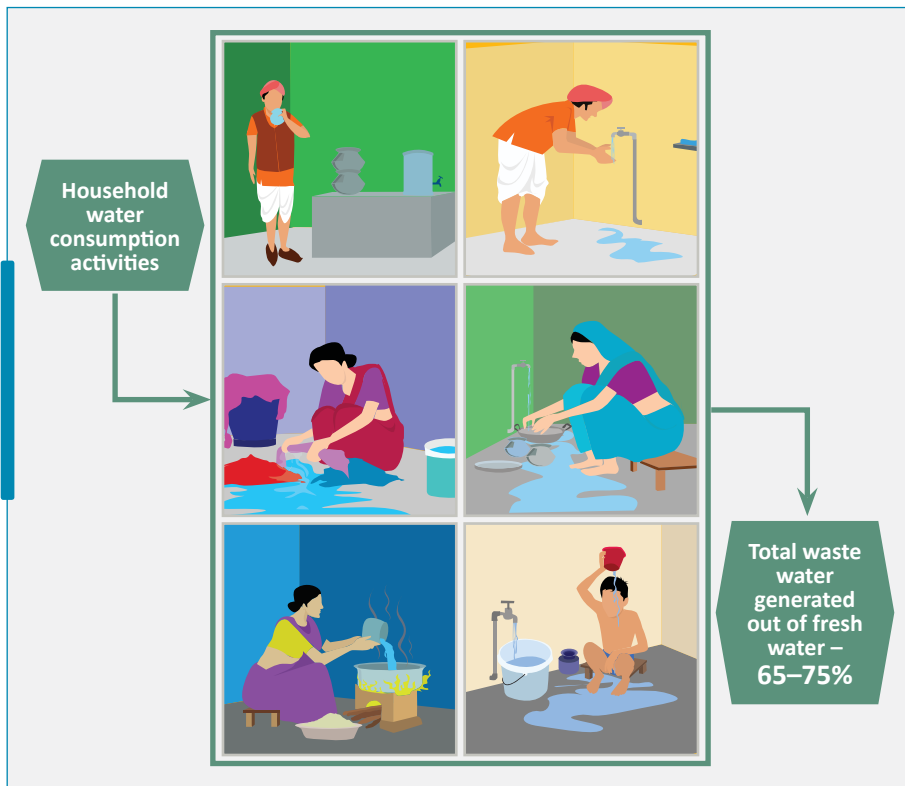
## 11.1 What is liquid waste?

Water ‘wasted’ as a result of various human activities at home, in businesses or in industries is called liquid waste. In other words, “used and unwanted water generated during household or commercial activities is called liquid waste.”

## 11.2 Type (nature) of liquid waste



## 11.3 How much waste water is generated in a household?



Source: Grey Water Management in Rural India, Solid and Liquid Waste Management, Ministry of Drinking Water

## 11.4 Basic principles of greywater management

### 1. 3 Rs:

- ▶ Reduce: Judicious use of fresh water, which will result in generation of minimum quantity of greywater
- ▶ Reuse: Reuse of greywater for purposes such as kitchen garden, vehicle washing, toilet flushing, etc.
- ▶ Recharge: Recharge of groundwater with greywater by adopting technologies such as soak pits, leach pits, etc.

### 2. Separation of blackwater (if any) and greywater

### 3. Reuse of greywater to the maximum possible extent

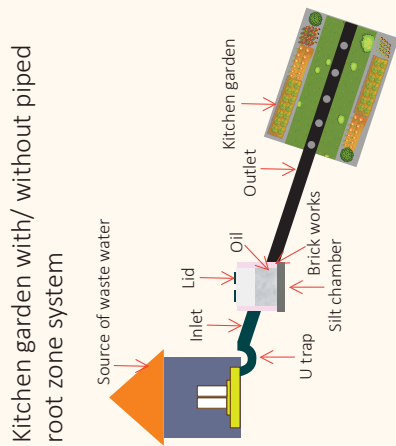
### 4. Treatment of greywater at the nearest possible point from the point of generation (adoption of decentralized systems)



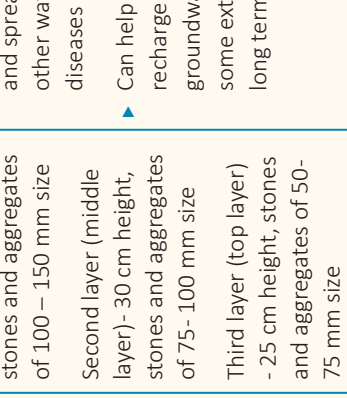
## 11.5 Household level & community level management options for greywater

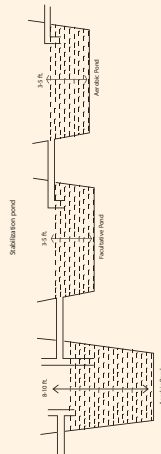
### Technological options for greywater management

Technology	Description	Design consideration	Advantages	Limitations
<b>Household level</b> Kitchen garden with/ without piped root zone system	<ul style="list-style-type: none"> <li>▶ With this methodology, treated greywater can be utilized to grow vegetables, flowers or fruits in the courtyard of a house</li> <li>▶ Applicable to houses with adequate courtyard</li> <li>▶ House owner may install the system with the help of a trained mason</li> </ul>	The design of a kitchen garden may be different for every house depending upon available space, quantity of greywater and plant species intended to be grown. The waste water must pass through a <i>nhani</i> trap or a 'P' trap to remove impurities and should be covered with a suitable screen to screen out solids from the waste water. Additional provision of a silt chamber is also recommended to remove organic and inert matter.	<ul style="list-style-type: none"> <li>▶ Simple, cost-effective and environmental friendly technology</li> <li>▶ Nourishes growing plants through nutrients contained in the waste water</li> <li>▶ Prevents water stagnation and vector breeding</li> <li>▶ Negligible O&amp;M costs x</li> <li>▶ Avoids stagnation of sillage as water percolates in to the soil</li> </ul>	<ul style="list-style-type: none"> <li>▶ Use of strong detergent may be harmful to the plants grown in the kitchen garden</li> <li>▶ Only suitable for management of small quantities of waste water</li> <li>▶ Efficiency depends on type of soil. (E.g., Black cotton soil absorbs less water and therefore soak pit will work with minimum efficiency in such type of soil)</li> </ul>

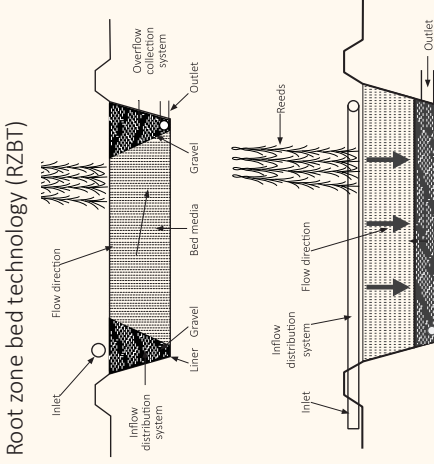




Technology	Description	Design consideration	Advantages	Limitations
<p>Soak pit</p>  <p>Scale: 1:20 All dimensions are in mm</p>	<p>Soak pit technology is used to manage sullage by allowing percolation of water in to the soil</p>	<p>First layer (bottom layer) – 30 cm height, stones and aggregates of 100 – 150 mm size</p> <p>Second layer (middle layer) - 30 cm height, stones and aggregates of 75- 100 mm size</p> <p>Third layer (top layer) - 25 cm height, stones and aggregates of 50- 75 mm size</p> <p>While filling the aggregates in the third and topmost layer of 25 cm thickness, a perforated earthen pot of 6-8” diameter is kept in the centre of the pit. In the next 15 cm of height of the pit gunny bags, sand and soil are filled to cover the pit. This layer is</p>	<ul style="list-style-type: none"> <li>Prevents breeding of mosquitoes and spread of other waterborne diseases</li> <li>Can help to recharge groundwater to some extent in the long term</li> </ul>	<ul style="list-style-type: none"> <li>Treated water not available for reuse due to percolation</li> </ul>

Technology	Description	Design consideration	Advantages	Limitations
		filled in such a manner that the opening of the earthen pot remains exposed above the ground. This earthen pot is filled with dry grass and other filtration material.		
<b>Community level</b>				
Stabilization pond	 <p>Stabilization pond technology is used for removal of silt and solids in the waste water (sullage/greywater) by allowing the stabilization of sullage to enhance reuse and recycling of treated water</p>	<p>Three ponds are constructed. The first pond in this series is an anaerobic pond and has a depth of 8-10 feet. Waste water from the gutters is initially collected in this pond and is kept here for 2–5 days.</p> <p>The second pond is a facultative pond with depth ranging from 3–5 feet. Waste water from first pond is carried to second pond and is kept here for 10–15 days.</p>	<ul style="list-style-type: none"> <li>▶ Minimizing fresh water demand for agriculture and irrigation as the stabilization pond can be used for agriculture and irrigation</li> </ul>	<ul style="list-style-type: none"> <li>▶ Requires large land area</li> <li>▶ Construction with Ferro cement needed in areas with deep black cotton soil strata which increases the construction cost</li> </ul>



Technology	Description	Design consideration	Advantages	Limitations
<p><b>Root zone bed technology (RZBT)</b></p> 	<p>RZBT system i.e., planted filterbeds consisting of sand/gravel/soil usage effectively treats domestic and industrial effluents in a natural way</p> <p>Can be established and maintained by the gram panchayat/Self-help group with the support of a technical person</p>	<p>Root zone bed technology systems are biological treatments that work by the combined actions of bacteria and plants. They require advance treatment through a septic tank and the waste water that comes out is pumped to the root bed by means of a system pressurized</p>	<ul style="list-style-type: none"> <li>▶ Simpler installation requirements</li> <li>▶ Can tolerate fluctuations in flow</li> <li>▶ Prevents mosquitoes and odours</li> <li>▶ Negligible maintenance cost as less energy and manpower required for O&amp;M</li> </ul>	<ul style="list-style-type: none"> <li>▶ Appropriate technical support required by the GP</li> <li>▶ Less water is available for recycling as waste water is consumed by the plants</li> <li>▶ Cleaning of filter beds and availability of labour required at the village level</li> </ul>



Technology	Description	Design consideration	Advantages	Limitations
<p>Decentralized waste water treatment system (DEWATS)</p> 	<p>DEWATS technology typically consist of a settler, anaerobic baffled septic tank and filter bed of gravel, sand, plantation-beds and a pond. The open pond or the polishing tank stores the remedied water and keeps it available for reuse. Requires 5–6 skilled and unskilled labourers supervised by an engineer for construction including for the RCC work. It is a locally organized and people-driven system.</p>	<p>tubes, where the water undergoes a treatment process that is mainly carried out by aerobic microorganisms.</p> <p>DEWATS is a technology package. In general, DEWATS consists of a settler, anaerobic baffle tanks, filter beds of gravel and sand and an open pond. The open pond or the polishing tank recreates a living environment for the waste water to clean itself naturally.</p>	<ul style="list-style-type: none"> <li>▶ Less space requirement than that needed for stabilization pond</li> <li>▶ Cost-efficient as only locally available material required</li> <li>▶ Minimal O&amp;M required-Provides treated water for use in irrigation, gardening, etc.</li> <li>▶ Allows energy recovery (like biogas which can be used as fuel for cooking, lighting)</li> <li>▶ Nutrient-rich sludge can be used as a natural fertilizer, soil conditioner</li> <li>▶ Prevents groundwater pollution from long, leaking underground sewer systems</li> </ul>	<p>Requires more land Requires proper maintenance</p>

## 11.6 How to manage greywater

### STEP 1 : Identify sources and quantities of greywater generated in the village

- ▶ Categorize waste generation points according to household, common public water points, water stagnating areas, and drainage discharge points to quantify greywater generated.

### STEP 2: Understand local conditions

- ▶ Understand the terrain, groundwater level, flood occurrences, soil permeability, septic tank overflow into drains, treated water reuse potential, funds and skills available for O&M.

### STEP 3: Greywater management plan

- ▶ Develop a plan with appropriate mix of household and community soak pits and greywater management systems such as waste stabilization ponds, reed beds, DEWATS and others.
- ▶ Design appropriate conveyance (drains, short pipes) system for each disposal or management system as per the plan above.
- ▶ Design all systems with technical support from district engineers and start implementation.

## My responsibility as a sarpanch of a gram panchayat

- ▶ Create awareness among the community regarding mismanagement of greywater-associated health issues.
- ▶ Find funding sources for proper and scientific waste water management.
- ▶ Create awareness and train masons for soak pit construction.
- ▶ Monitor and follow-up continuously for upkeep of the assets created for waste water treatment.
- ▶ Converge programmes and schemes for better utilization of funds, manpower and coordination of various departments.
- ▶ Train *swachhagrahis* for continuous follow-up and monitoring.



## Case study: Community soak pit model for groundwater recharging in rural areas of Tirunelveli district, Tamil Nadu



This is the first liquid waste management model implemented in the rural area of Tirunelveli district, Tamil Nadu. The Andipatti village panchayat in Keelapavoor block, which has around 200 households and generates around 15,000 litres greywater per day, was chosen for the pilot. Here water was drained directly into the barren lands of the villages, creating many health and physical issues.

The community soak pit model is a cost-effective and easily implementable and eco-friendly solution for the GP.

For this, 59 MGNREGS workers were employed in earth work for 21 days. The overall estimation for this unit is around Rs. 85,000 which is derived from MGNREGS funds. After the proper earth work the filter medium of 40 mm metal was filled. The concrete rings were made using molds which were placed in the centre of the pit. The 20 mm metal and gravel were filled in the outside of the rings and also the filter medium was filled inside the rings. Greywater from the village is screened through the metal filter twice where the plastic and other big solid particles get settled. Water is let in to the pit where it gets filtered through the solid filter medium and then goes underground.



Sustainability & replicability: This model has been functioning for six month\* in this village. In the beginning the village folk were fearful of reusing greywater and so opposed They project. However, after seeing the obvious positive effects of the system, they are happy and have accepted this method of greywater reuse.

\*As of July 2019



## CHAPTER 12

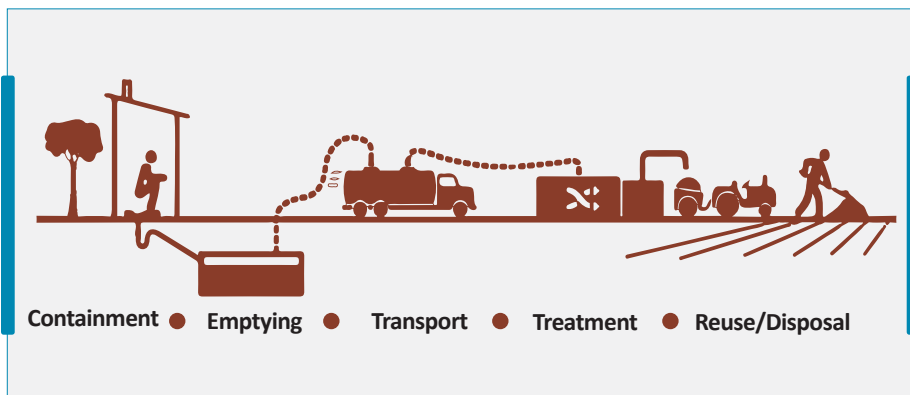
## FAECAL SLUDGE MANAGEMENT

### 12.1 What is faecal sludge management?

Faecal sludge management (FSM) is the proper management, collection, transport and treatment of faecal sludge or the faecal matter from single pit latrines, septic tanks or other on-site sanitation systems.

### 12.2 Why should faecal sludge be managed?

- ▶ Single pits and septic tanks do not treat the sludge within.
- ▶ Households do not know the when or how of desludging.
- ▶ When a single pit is full the toilet may be blocked, leading to open defecation (OD).
- ▶ Overflows from filled-up septic tanks and indiscriminate disposal of faecal sludge cause spread of diseases and environmental pollution.





## 12.3 Suggestive measures for FSM

A number of actors are involved in managing faecal sludge in rural areas. These include households, service providers for emptying pits and septic tanks, service providers for transport of faecal sludge to treatment sites, service providers for treatment and disposal, GP, block and district government officials etc.

### FSM should cover the following aspects:

- i. Safe containment of faecal sludge: Toilets must be built and maintained in a way that the pits or septic tanks can contain faecal matter safely. Toilets not meeting these requirements should be repaired.
- ii. Safe and quality services: Quality standards for all steps like emptying of pits or septic tanks, transport of faecal sludge, treatment, disposal and reuse must be standard and scientific. Service providers should follow these standards, so that there is no pollution of the environment, soil or water.
- iii. Health, safety and dignity of persons involved in emptying pits: Pits or septic tanks may be emptied in a way that the persons emptying them do not face any health or safety risks and are provided with safety equipment and personal protection gear.
- iv. Equity for users: All households in the panchayat must be able to access the FSM services. Poor and marginalized households who cannot afford these services may need extra support and handholding from the panchayat.

## 12.4 What are the diverse ways to manage faecal sludge?

- a. For single leach pit toilets and septic tanks: Once the pit/tank is full, it will need the faecal sludge to be mechanically emptied, safely transported and safely disposed off.
- b. For twin leach pit toilets: Once one pit is full, the pit should be kept closed while the other pit is used. The pit is to be kept closed for at least a year. After that, the dried decomposed manure from faecal sludge can be emptied, dried, powdered and stored for use as agricultural fertilizer.

The summer season is recommended for emptying the sludge. It normally takes 6–7 years to fill a common standard pit if used by 5–6 members daily.



## 12.5 Technology for FSM

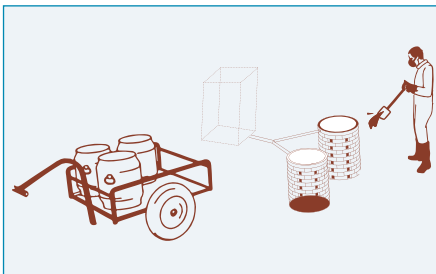
### Collection and transportation



**Vacutug or Vacuum tugs**



**Gulper**

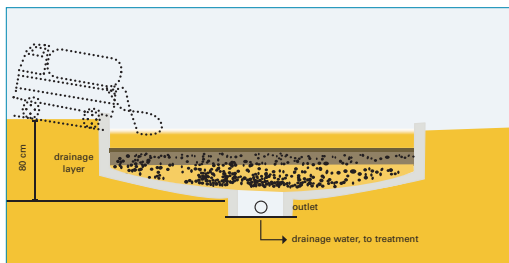


**MAPET**

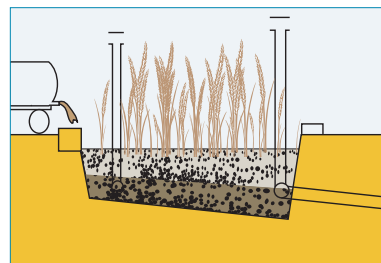


**Vacuum tanker**

### Technologies for treatment



**Unplanted drying bed**



**Planted drying bed**



**Deep row entrenchment**

#### Reuse:

Composted sludge from these treatment processes, being a nutrient-rich soil conditioner, can be directly reused in agriculture.



## Steps for effective FSM

### STEP 1: Know pits and tanks in the villages/GP

- ▶ Know the number of single pits, septic tanks
- ▶ Know the typical size of the pits and tanks in the area
- ▶ Septic tanks must be desludged every 3–5 years
- ▶ Pit can be desludged when full – approximately every 5–6 years

### STEP 2: Retrofit (on-site) containment systems

- ▶ All single pits
- ▶ Convert to twin pit or vermi-filter toilet or toilet linked biogas plant
- ▶ Septic tanks without soak pit
- ▶ Add soak pit and then move to FSM

### STEP 3: Regulate desludging operators

- ▶ Identify all operators in the area
- ▶ Build capacities and certify them
- ▶ Licence their operations and introduce regulation

### STEP 4: Plan faecal sludge treatment

OPTION 1: Dispose at the nearest STP/FSTP	OPTION 2: Plan a new rural FSTP
Within a 10–15 km radius	Identify suitable land
Obtain permission to dispose at plant	Determine a cluster of villages to be served by the new rural FSTP, based on distance road access
Ascertain spare capacity of plant	Implement a trench for licensed operators to dispose of sludge temporarily
Identify a cluster of villages from where sludge can be disposed at this plant	Plan for FSTP of appropriate capacity
Get all licensed operators for those villages to dispose sludge at the plant	Consult a technical agency /expert
If successful, go to Step 5	



**STEP 5 : Determine your business model\*****Identify revenue sources:**

- ▶ Desludging fee
- ▶ Fee for disposing sludge at treatment plant by a private truck operator
- ▶ Sale of treatment plant products such as manure, bioslurry, etc.
- ▶ User fee, taxes, grants
- ▶ Other sources – e.g., hoardings with advertisements at treatment plant

**Determine operational costs:**

- ▶ Desludging costs
- ▶ O&M of treatment plants
- ▶ Costs of management

**Decide business model**

- ▶ Fee structure for APL/BPL families
- ▶ User pay per service versus monthly fee to GP

**STEP 6 : Implement FSM****Implement desludging:**

- ▶ Devise plan for scheduled desludging  
E.g., through a tender, assign an entire village to a licensed operator for desludging every fourth year – recommended for disposal at existing STP  
E.g., desludge a fixed number of households in a cluster every week to cover the cluster in four years – recommended for disposal at a dedicated FSTP
- ▶ Monitor license conditions, customer grievance and disposal of sludge

**Implement treatment plant:**

- ▶ Identify capital
- ▶ Obtain permits
- ▶ Float a tender for plant construction
- ▶ Build the plant
- ▶ Outsource O&M to a local entrepreneur or CBO
- ▶ Monitor untreated sludge disposal at the plant

\* This is an indicative template and may be modified as per local context and need.



## My responsibility as a sarpanch of a gram panchayat

- ▶ Conduct an assessment of FSM activities in the GP villages.
- ▶ Promote conversion of single pit to twin pit toilet.
- ▶ Create community awareness for FSM and promote its impact on health and environment in the villages.
- ▶ Ensure zero manual scavenging or manual emptying of pits in village. Safety and dignity of persons involved in emptying of pits or desludging of septic tanks must be ensured.
- ▶ Ensure arrangements for mechanical pit emptying, safe transporting and safe disposal in case of single pit and septic tank are provisioned in action plans.
- ▶ Ensure rules and laws for handling and disposal of faecal sludge are followed.
- ▶ Maintain contact list of entrepreneurs providing FSM and O&M service.



## Case study: The Devanahalli story on FSM

*Around 90 per cent of the households (5,800 households) are equipped with individual toilets in Devanahalli through a comprehensive FSM system conceived by the Devanahalli Municipal Authority under the Government of Karnataka. The plant at Devanahalli has the capacity to provide FSM to approximately 30,000 people. It is a simple and low-cost O&M plant that uses the technology of gravity-based biological treatment. The plant was commissioned with a capital cost of Rs. 90 lakhs and has an operating cost of Rs. 24 lakhs per year. The lifecycle cost of the plant is as low as Rs. 1,500 per capita. The treatment module comprises six stages that include screening, sludge–liquid separation, sludge stabilization, dewatering, disinfection and liquid treatment.*



# MENSTRUAL WASTE MANAGEMENT (MWM)

## 13.1 What is menstrual waste?

Menstrual waste comprises menstrual absorbents soiled with blood and human tissue remnants. Menstrual adsorbents include cloth, sanitary napkins and other materials used to absorb menstrual blood. Solid Waste Management Rules (2016) consider menstrual waste as sanitary waste under solid waste management.

Unsafe practices include throwing used cloth/menstrual waste material in open areas such as ponds, rivers or fields, shallow burial or open burning or throwing into toilets which results in blocking of the toilet are also considered as unsafe practices.

## 13.2. What is menstrual waste management

Menstrual waste management (MWM) refers to the scientific and safe disposal of used menstrual absorbents with privacy and dignity to prevent harmful effects on the environment.



Infrastructure with adequate water, cleaning agents and systems must be provided for MWM.

The process of disposal and destruction of used menstrual materials must be done with minimal human contact and with minimal environmental pollution.

It is important to provide safe menstrual waste disposal options and ensure that girls and women know how to use them. General practice must evolve from being unsafe to safe, as unsafe disposal is unacceptable.



**Table: Overview of general disposal practices**

<b>Unsafe</b> 	<b>General practices</b> <ul style="list-style-type: none"> <li>▶ Throwing unwrapped waste or waste wrapped in plastic/paper into fields, rooftops, water bodies, etc.</li> <li>▶ Throwing in latrines/toilets</li> <li>▶ Open burning</li> <li>▶ Shallow burial (burial in shallow pits)</li> </ul>
<b>Safe</b> 	<ul style="list-style-type: none"> <li>▶ Throwing waste wrapped in paper/plastic bag into separate dustbins</li> <li>▶ Deep burial for de composting</li> <li>▶ Burning in small-scale incinerators at the community or school level in incinerators that meet quality standards set by the government (seen more in rural areas)</li> <li>▶ Municipal waste management/burning in biomedical waste incinerators (seen more in urban areas)</li> </ul>

### Case study: Menstrual waste management in Karnataka

With the primary aim of promoting menstrual hygiene management and reducing menstrual waste, Govt. of Karnataka launched the 'Shuchi' programme in 2013–2014. Under the programme, sanitary pads are provided to girls:

- ▶ Studying in classes 6–10, in all government and aided schools, residential schools
- ▶ Students of classes 11 and 12, in government colleges
- ▶ Residents of hostels run by Department of Social Welfare
- ▶ Out-of-school adolescent girls, through *anganwadi* centres

'Shuchi' requires districts to monitor the awareness creation on use and disposal of sanitary pads. So far, several discrete and small scale programmes have been established through *anganwadi* supervisors, NGOs.

Shuchi pads are 80 per cent biodegradable, made from cotton and wood pulp. Within 6 months 80 per cent of the pad disintegrates but 20 per cent plastic is still a menace.





## My responsibility as a sarpanch of a gram panchayat

- ▶ Use IEC materials and facilitation on MWM to communicate and train women and girls.
- ▶ Provide women-friendly water and sanitation infrastructure, disposal system and hygienic materials, especially in schools, institutions, public places, etc.
- ▶ Monitor interventions and set up a system of supervision.
- ▶ Strive to provide women and adolescent girls with appropriate facilities, such as separate toilets at schools and health facilities; access to a dustbin within/near the toilets; and access to safe menstrual absorbents.
- ▶ Link with other services and government departments, such as health, nutrition, education, to ensure the provision of safe menstrual hygiene products, information and waste management solutions.



## CHAPTER 14

# FUNDS MANAGEMENT FOR WATER AND SANITATION FACILITIES IN A VILLAGE

## 14.1 Convergence

To carry out responsibilities related to the provision and maintenance of water and sanitation facilities, the GP has to converge resources from various available sources including existing government schemes and programmes and ensure optimal use of the available funds. For example, funds available with GPs can be used to hire *safai karamcharis* (sanitation workers) for schools.

### Integration with Central and State Government schemes

The sarpanch, along with gram panchayat and gram sabha, is responsible for developing the GDP to meet the needs and aspirations of the communities. It provides the resource envelope of various financial resources including own funds, various central/state government scheme funds, finance commission funds. Similarly, other sectoral schemes can be tapped into by formulating an action plan at the district / GP level.



## 14.2 Swachh credit

Sustaining sanitation facilities is crucial for achieving the goal of Swachh Bharat. Along with behaviour change, financial support is also necessary for sustainable use of sanitation facilities and for this, significant local investments will be needed.



### Sanitation

- ▶ Upgradation / retrofitting of toilets
- ▶ Renovation or construction of toilets
- ▶ SLWM infrastructure
- ▶ Piped water connections
- ▶ Local water quality initiatives



### Water

- ▶ Capital and maintenance costs for last-mile water supply schemes
- ▶ Creation and maintenance of rainwater harvesting
- ▶ Creation of groundwater recharge infrastructure
- ▶ Development of localized water treatment solutions
- ▶ Rainwater harvesting structures

## 14.3 Key provisions under Swachh Credit

- ▶ Commercial banks may provide easy credit in the form of “soft-loans” to individuals and communities (preferably through SHGs or GPs) for specific water and sanitation initiatives.
- ▶ Interest subvention of 2 per cent may be considered for soft loans made towards the water and sanitation sector. DDWS will attempt to include this in its budgetary outlay.
- ▶ Credit guarantee schemes may be provided for MSME loans in water and sanitation through institutions like NABARD and SIDBI.



## My responsibility as a sarpanch of a gram panchayat

- A. Place water and sanitation facilities in the priority list to ensure:
  - a. Access to water and sanitation facilities in household and institutions, such as, schools, *anganwadis*, health centres, GP buildings, etc.
  - b. Augmentation of water sources
  - c. O&M of community assets created
- B. Converge with various financial resources from the GDPD resource envelope such as:
  - a. GP's own funds including water tariff, drainage fees, sanitation taxes, etc.
  - b. Central Finance Commission funds
  - c. State Finance Commission funds
  - d. Jal Jeevan Mission and SBM (G) funds
  - e. Swachhata Action Plan provisions in school, separate from health facilities
  - f. State-specific funds for water and sanitation and its O&M
  - g. Schemes of related central/state line departments, such as MGNREGS, PESA, IWMP, GOBAR-DHAN, NRHM, school education, district mineral funds, etc.,
  - h. Member of Parliament and Member of the Legislative Assembly Local Area Development (MPLAD and MLALAD) funds
  - i. Corporate social responsibility funds
  - j. Community contributions or levies
  - k. Funds received through awards, loans, if any
  - l. Any other untied funds devolved to GP



## Case study: Financing for water and sanitation in Maharashtra

Water and sanitation financing is an initiative implemented collaboratively by UNICEF and water.org on a pilot basis in 17 blocks across six districts in Maharashtra: Thane, Solapur, Wardha, Nandurbar, Jalna and Yavatmal, The objective of this pilot project is to develop a sustainable and rapidly scalable financing model to support and sustain water and sanitation facilities. In order to offer financing to low-income households for toilets and other sanitation needs, it currently aligns institutions such as State Rural Livelihood Mission (MSRLM), MAVIM as well as district and block-level SHG microfinance and alternative banking institutions. The programme is being implemented effectively in many villages. At present, six water and sanitation products are promoted through this initiative: rainwater harvesting, water filters, household toilet upgradation, household water connections, household bathrooms and household toilets. The total demand recorded in the project area in the period of seven months, from July 2018 to January 2019, is 13,543 applications, while the total amount disbursed for the completed works is Rs. 1,61,27,700.

Source: Water.org

**“ I am a member of Jeevdayini SHG in Savroli and a recipient of a loan from Roshani VO. I am happy that MAVIM, MSRLM and water.org helped us get this loan well on time. We have used it for repairing, plastering, colouring and flooring of our toilet. The toilet is usable again. Regular toilet usage is contributing to health and well-being for me and my family. ”**



– Ms. Anita Pawar, SHG member and a resident of Savroli, Shahapur block, Thane



## CHAPTER 15

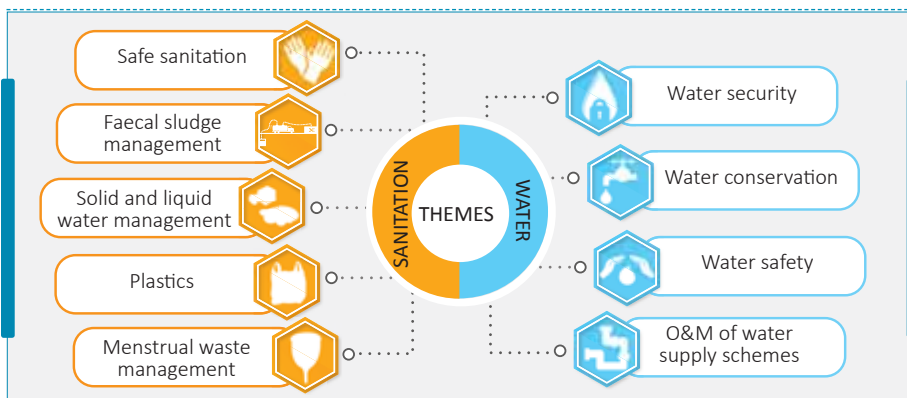
# INFORMATION, EDUCATION AND COMMUNICATION

## 15.1 Introduction

To achieve the goal of safe sustainable water and sanitation facilities for all in rural India, it is critical to influence key behaviours and encourage the participation of families and communities. This will inculcate a sense of ownership with regard to water and sanitation facilities. However, behaviour change is a complex process and is determined by multiple social, cultural, economic and environmental factors. To bring about change it is important to understand the barriers that stop people from adopting new behaviours; the triggers that would get people to start/adopt new behaviours; and the ways that will motivate people to maintain their new behaviours.

IEC supports in enriching knowledge and skills of individuals and communities to understand the benefits of hygiene practices and empowers them to manage, maintain and sustain their drinking water sources and clean environment. IEC interventions also help in influencing and mobilizing communities to adopt hygiene practices and engage in planning, implementation, operation, maintenance and management of water and sanitation in their villages.

## 15.2 Key themes for messaging by PRI/sarpanch



## 15.3 Key messages which sarpanches can use

Water			
Water security	Water safety	Water conservation	O&M of water supply scheme
<ul style="list-style-type: none"> <li>▶ Importance of safe and adequate water for better health</li> <li>▶ Importance of sustaining water resources</li> <li>▶ Cleanliness of water bodies/ no waste disposal in water bodies</li> <li>▶ Maintain cleanliness around the source and in catchment area</li> <li>▶ Water scheme details and their relevance</li> <li>▶ Promote <i>shramdaan</i></li> <li>▶ Promote household connections</li> <li>▶ Promote paying of water tax and inform about cost of safe water</li> </ul>	<ul style="list-style-type: none"> <li>▶ What is safe water</li> <li>▶ Health benefits of safe water</li> <li>▶ Safe storage and handling of water at household level</li> <li>▶ Regular testing of water sources</li> </ul>	<ul style="list-style-type: none"> <li>▶ Importance of water as a precious resource and its judicious use</li> <li>▶ Avoid misuse and wastage of water</li> <li>▶ Rainwater harvesting / harvest every drop</li> <li>▶ Revive traditional methods of water conservation</li> </ul>	<ul style="list-style-type: none"> <li>▶ GP/ community contribution for O&amp;M</li> <li>▶ Value and pay for water for long-term durability of the water supply scheme</li> <li>▶ Ownership of schemes by protecting infrastructure from damages and theft</li> </ul>

Sanitation				
Sanitation and hygiene practices	SLWM	Plastics	Menstrual waste management	FSM
<ul style="list-style-type: none"> <li>▶ Toilet use by all at all times</li> <li>▶ All children from age 3 onwards must learn how to use a toilet for defecation with guidance from a caregiver</li> <li>▶ Child feces to be disposed safely in a toilet</li> <li>▶ Handwashing with soap at critical times – after defecation, before food</li> <li>▶ Maintain and keep toilets clean and functional</li> <li>▶ Retrofit and repair toilets if there are technical aberrations</li> <li>▶ Inform about availability of alternate financing for sanitation</li> </ul>	<ul style="list-style-type: none"> <li>▶ Different ways of managing organic and inorganic solid waste</li> <li>▶ Proper disposal of waste water</li> <li>▶ Reuse of greywater</li> </ul>	<ul style="list-style-type: none"> <li>▶ Say no to plastics</li> <li>▶ Reduce: Carry your own cloth or paper bags. Avoid products with a lot of plastic packaging</li> <li>▶ Reuse: Reuse plastic jars, bottles or containers for storage.</li> <li>▶ Recycle: Recycle plastic into storage bottles, toys, buckets and other usable items</li> <li>▶ Recover: Use of waste as fuel substitute</li> </ul>	<ul style="list-style-type: none"> <li>▶ Do not throw used cloth/ menstrual waste material in open areas, like ponds, rivers, fields, shallow burial; Do not practise open burning or throwing into toilets which results in blocking of the toilet</li> <li>▶ Ensure that the process of disposal and destruction of used menstrual materials is done with minimal human contact and with minimal environmental pollution</li> </ul>	<ul style="list-style-type: none"> <li>▶ Break taboos around pit emptying</li> <li>▶ Set up a system for periodic emptying of pits</li> <li>▶ Desludging of septic tanks</li> <li>▶ Safe FSM</li> </ul>





## Nigrani and follow-up triggering

*Nigrani* activity is a very crucial IEC intervention for sustaining behaviour change on ODF S and ODF plus. PRIs/sarpanches can mobilize trained *swachhagrahis* and volunteers from the community for conducting early morning visits to common OD spots in the village and to follow up after the triggering with a reinforcement of the message.

## Role of *swachhagrahis* in IEC context for ODF plus programme and JJM

*Swachhagrahis* continue to be the frontline human resource for taking forward IEC interventions in GPs to sustain behaviour on safe sanitation and hygiene. *Swachhagrahis* may be used for facilitating discussion on sustaining ODF S and promoting ODF plus activities. A mechanism to paying an honorarium to the *swachhagrahis* may be laid down as per the SBMG Guidelines, using IEC funds. They may be paid as per the laid guidelines for this purpose.

## Swachh Survekshan Grameen (SSG) & JJM

The role of PRIs and gram sarpanches is very crucial in SSG for improving the score in the swachhata survey. Through their visionary leadership and planning, sarpanches may mobilize and motivate community members/*swachhagrahis*/key stakeholders through IEC interventions (listed earlier). Similar interventions would also be helpful for implementing activities under JJM or other campaigns from time to time.

## My responsibility as a sarpanch of a gram panchayat

A sarpanch plays a critical role championing issues of water and sanitation and being the role model for the community. The key role is that of an advocate, motivator, influencer and enabler supporting people in understanding core water sanitation and hygiene issues and acting upon them.

### A. Community engagement

- ▶ Trigger and mobilize communities on water and sanitation issues.
- ▶ Have regular interactions and meetings with families and community on water and sanitation.
- ▶ Mobilize teachers and school children to conduct water sanitation theme events in schools.



- ▶ Organize water and sanitation thematic gram sabhas and VHNDs, rallies, melas, bringing high visibility to water and sanitation issues.
- ▶ Reach every section of the community, to motivate and mobilize for *shramdaan* and other voluntary activities. Gain their participation in planning, implementing and management processes.

### **B. Build a skilled team of influencers and mobilizers in addition to *swachhagrahis***

- ▶ Create a team from within the community to act as community messengers. They may communicate effectively, initiate dialogue on the issues and influence the decision-making processes at village level. They can be GP members/ ward members; *swachhagrahis/jal doots*; village-level frontline workers: AWWs, ASHA, *gram sevaks*, volunteers; SHGs/CBOs/institutions; youth.
- ▶ Facilitate their capacity-building in community mobilization, interpersonal communication and conducting of IEC activities.

### **C. Create an enabling environment for planning and implementation of IEC activities**

- ▶ Facilitate development of village-level IEC plans that get integrated with the action plans of water and sanitation.
- ▶ Ensure village IEC plan has allocation of resources.
- ▶ Coordinate and facilitate logistics for organization of IEC events in the village as per plan.
- ▶ Ensure availability of IEC resources such as pamphlets, leaflets, posters flex boards, IPC tools, etc.
- ▶ Coordinate with district administration for facilitating IEC activities.
- ▶ Felicitate village level water and sanitation champions at community events and functions.

### **D. Monitoring**

- ▶ Ensure village-level teams attend capacity-building programmes.
- ▶ Ensure front-line workers/*swachhagrahis* effectively implement communication interventions with regular community meetings and home visits.
- ▶ Ensure IEC activities are implemented as planned and on time.



## Case study: Using IEC to promote ODF plus and ODF S


To ensure continued reminders and nudges for toilet use by all and solid waste management go out to the community, a massive IEC campaign on ODF plus and ODF S was launched by DDWS, Ministry of Jal Shakti. The two-month campaign started on 1 June 2019, focussing on awareness creation through four simple messages: two on sustaining usage of toilets and one each on safe disposal of child feces and solid waste management. Messages have been painted on the walls of the villages and at available public spaces to reiterate the message of swachhata using SBM (G) IEC budget. Apart from the messages on wall paintings, a board declaring the village ODF status is to be put up in each ODF village to instill a feeling of pride among the villagers and inspire them to keep the village clean. The expectation is that at the end of the campaign every village in the country will have these paintings. Several states have started implementation.






## CHAPTER 16

## ACTION PLAN PREPARATION FOR SUJAL AND SWACHH GAON




The Gram Panchayat will prepare a village level action plan for implementation of ODF+ and Jal Jeevan Mission. For this, it will organize a 2/3 day planning process at village level. The Sarpanch will form a facilitator team consisting of GP members, village secretary, Swachhagrahis, other frontline workers, youth/SHG members, villagers, etc. Block level officials will support the facilitator team during the planning process. Following table presents the tools of the planning process, objectives and specific role of Sarpanch in implementation of the tools.

No	Tool	Objectives of the tool	Role of Sarpanch in implementing the tool
1.	Primary Meeting 	<ul style="list-style-type: none"> <li>▶ To bring clarity about the objective of the planning process.</li> <li>▶ To make villagers aware about the process to be carried out.</li> <li>▶ To inform about the role of villagers and facilitator team during the planning process.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Ensure presence of facilitator team, villagers and key village level stakeholders</li> <li>▶ Motivate the villagers for their active participation</li> </ul>





No	Tool	Objectives of the tool	Role of Sarpanch in implementing the tool
2.	<p>Social mapping</p> 	<ul style="list-style-type: none"> <li>▶ To map the village structure, water and sanitation infrastructure</li> <li>▶ To understand the status and issues of water supply and sanitation in the village.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Provide inputs for finalizing village boundaries, habitations and infrastructure on the map</li> <li>▶ Ensure that critical water supply and sanitation related issues are discussed during the mapping process</li> </ul>
3.	<p>Assessment of water supply facilities</p> 	<ul style="list-style-type: none"> <li>▶ To understand present status of drinking water sources and issues associated with it.</li> <li>▶ To understand present status of piped water supply scheme (if available) and issues in its regular O&amp;M.</li> <li>▶ To identify solutions for better service delivery</li> </ul>	<ul style="list-style-type: none"> <li>▶ Ensure participation of frontline workers, village secretary, VWSC members, water person during transect walk</li> <li>▶ Check if all components of water supply are covered in the assessment</li> <li>▶ Provide inputs for finalization of solutions for better service delivery</li> </ul>
4.	<p>Water quality assessment</p> 	<ul style="list-style-type: none"> <li>▶ To understand the process of village level water quality monitoring and surveillance</li> <li>▶ To identify issues and solutions in safe supply of drinking water.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Ensure participation of frontline workers, village secretary, VWSC members, water person during the assessment</li> <li>▶ Make sure that component wise (source, pipeline, storage tank, tap connection, etc.) WQ issues are discussed during the assessment</li> <li>▶ Provide inputs for finalization of solutions for better service delivery</li> </ul>




No	Tool	Objectives of the tool	Role of Sarpanch in implementing the tool
5.	Seasonality mapping 	<ul style="list-style-type: none"> <li>▶ To gather season wise information about availability and quality of water, health trends, tariff collection mechanism, etc.</li> <li>▶ To understand reasons of water supply and sanitation related issues in a particular season.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Provide inputs during the discussions on season wise status, issues and scope for water supply and sanitation in the village.</li> </ul>
6.	Resource mapping and water budgeting 	<ul style="list-style-type: none"> <li>▶ To map available resources in the village including rivers, forests, geographic strata, etc.</li> <li>▶ To identify the scope for water recharge and storage measures, water supply sources, etc.</li> <li>▶ To prepare water budget for drinking water requirement.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Provide inputs for mapping the available resources in the village</li> <li>▶ Ensure that locations for water recharge and storage measures, water supply sources, etc. are appropriately mapped</li> <li>▶ Provide support during drinking water budget preparation</li> </ul>
7.	Household level assessment of water and sanitation facilities 	<ul style="list-style-type: none"> <li>▶ To assess the status of water supply and sanitation facilities available in every household</li> <li>▶ To consolidate data on status and issues of household level water supply and sanitation</li> </ul>	<ul style="list-style-type: none"> <li>▶ Support in finalizing ward wise facilitator teams</li> <li>▶ Support in finalizing the route for household level assessment.</li> <li>▶ Ensure that facilitator teams cover all households</li> </ul>



No	Tool	Objectives of the tool	Role of Sarpanch in implementing the tool
8.	<p>Assessment of institutional water and sanitation facilities</p> 	<ul style="list-style-type: none"> <li>▶ To assess the status of water and sanitation facilities available at institutional level</li> <li>▶ To understand issues in sustainable use of water and sanitation facilities in the institutions and to identify relevant solutions</li> </ul>	<ul style="list-style-type: none"> <li>▶ Make sure that all institutions in the village are covered in the assessment</li> <li>▶ Inform SMC, and heads of each institution about the process and ensure their presence during the assessment</li> <li>▶ Provide inputs in identification of issues and solutions</li> </ul>
9.	<p>Sanitation Walk</p> 	<ul style="list-style-type: none"> <li>▶ To understand the status of SLWM facilities available in the village and issues associated with it.</li> <li>▶ To finalize measures for effective management of solid liquid resource at individual and community level.</li> </ul>	<ul style="list-style-type: none"> <li>▶ Finalize the route for sanitation walk</li> <li>▶ Provide inputs in identification of solutions for appropriate SLWM</li> </ul>



No	Tool	Objectives of the tool	Role of Sarpanch in implementing the tool
10.	Documentation, FGD and village meeting/ gram sabha 	<ul style="list-style-type: none"> <li>▶ To document the action plan for ODF+ and Jal Jeevan Mission</li> <li>▶ To get the action plan approved village meeting/ gram sabha</li> </ul>	<ul style="list-style-type: none"> <li>▶ Make sure that the critical issues and relevant solutions identified through the above tools are incorporated in the action plan</li> <li>▶ Ensure that specific responsibilities for the actions are listed in the plan</li> <li>▶ Make preparations for the village meeting/ gram sabha, along with the village secretary</li> <li>▶ Take lead in facilitation of village meeting/ gram sabha for plan approval</li> </ul>

**Note:**

1. Make sure that maximum villagers participate in the above mentioned tools
2. Organize IEC activities during the planning process to make people aware about the sustainable use of water and sanitation facilities and their role in maintaining and sustaining these facilities.





## 18.2 Indicative format of action plan

**\*Please tick (✓) in remark/status column if the proposed activity is already complete.**

### Village Action plan for Sujal and Swachh Gaon

1.	Details of Gram Panchayat	Name: State :	Block:	District:
2.	Details of Sarpanch	Name:	Contact No. (WhatsApp No.):	
3.	Details of village Secretary	Name:	Contact No. (WhatsApp No.):	
4.	Details of Swachhagrahi	Name:	Contact No. (WhatsApp No.) :	
		Name:	Contact No. (WhatsApp No.)	

### 1. Action Plan for Sujal Gaon

No.	Activity	Implementation Responsibility	Duration	Resources required	Monitoring responsibility	Remark/ Status *
<b>A. Preparatory activities</b>						
A1	Formation / strengthening of VWSC, Nigrani Samiti & appointment of Swachhagrahi					
<b>B. Source Sustainability</b>						
B1.	Finalization of rain water harvesting and recharge interventions for sustainability of drinking water sources with funding sources					



No.	Activity	Implementation Responsibility	Duration	Resources required	Monitoring responsibility	Remark/ Status *
<b>C. Provision of Household connections</b>						
C1	Application with necessary resolutions for selection under JJM					
C2	Preparation of DPR for PWS with household connection for uncovered households					
C3	Implementation of proposed DPR for new PWS with household connections					
<b>D. Operation and maintenance of water supply facilities</b>						
D1.	Preparation of O&M budget of the GP and define drinking water tariff					
D2.	Identify and engage individuals and agencies for regular maintenance, repairs and servicing of components as per issues emerged during planning process					



No.	Activity	Implementation Responsibility	Duration	Resources required	Monitoring responsibility	Remark/ Status *
<b>E. Water Quality Monitoring and Surveillance</b>						
E1.	Finalize actions and responsibilities for: <ul style="list-style-type: none"> <li>▶ Source protection</li> <li>▶ Disinfection of water</li> <li>▶ Water quality testing</li> <li>▶ Record keeping</li> </ul>					
E2.	IEC activity for awareness generation about water quality and safe practices					

**Note:** Involve engineer from block/sub division level to finalize action plan for Sujal Gaon

## 2. Action Plan for Swachh Gaon

No.	Activity	Implementation Responsibility	Duration	Resources required	Monitoring responsibility	Remark/ Status *
<b>A. ODF (S)</b>						
A1.	Household level toilets <ul style="list-style-type: none"> <li>▶ Repairs of dysfunctional toilets</li> <li>▶ Retrofitting of toilets</li> <li>▶ IPC with families not using toilets</li> <li>▶ Identify and engage individuals and institutions for O&amp;M services</li> </ul>					
A2.	Institutional level toilets <ul style="list-style-type: none"> <li>▶ Repairs of dysfunctional toilets</li> <li>▶ Identify and engage individuals and institutions for O&amp;M services</li> <li>▶ IEC for use of toilets</li> </ul>					



No.	Activity	Implementation Responsibility	Duration	Resources required	Monitoring responsibility	Remark/ Status *
A3.	Make provision for new toilets or adapt existing toilets for easy access by Divyang at household and community level					
<b>B. Solid and Liquid Waste Management</b>						
B1.	Preparation of conveyance and processing plan for Solid Waste Management including technology <ul style="list-style-type: none"> <li>▶ Compost pit units</li> <li>▶ Biogas units (Gobardhan)</li> <li>▶ Vermin compost pit</li> <li>▶ Identification of vendors for plastic waste management</li> </ul>					
	Preparation of plan(DPR) for Grey Water Management including technology <ul style="list-style-type: none"> <li>▶ Soak pits</li> <li>▶ DEWATS</li> <li>▶ Stabilization pond</li> <li>▶ Root zone bed technology</li> </ul> Any other suitable technology					



No.	Activity	Implementation Responsibility	Duration	Resources required	Monitoring responsibility	Remark/ Status *
	Identification of technology and service provider for  Faecal sludge management and its implementation					

### 3. Action plan for IEC & Capacity strengthening for Sujal and Swachh Gaon

No.	Activity	Implementation Responsibility	Duration	Resources required	Monitoring responsibility	Remark/ Status *
<b>C1. IEC for Sujal and Swachh Gaon</b>						
	▶ Finalization of IEC messages/ tools/ target audience					
	▶ Finalization of communication champions					
	▶ Resource mobilization and implementation of IEC activities ▶ Organization of massive IEC campaign (1+4 )- (i) Wall paintings for Toilet use by all, toilet usage to keep diseases away, safe disposal of child faeces, compost pit; (ii) display board at entrance of village					



No.	Activity	Implementation Responsibility	Duration	Resources required	Monitoring responsibility	Remark/ Status *
	<ul style="list-style-type: none"> <li>▶ IPC for household water supply connection, water tariff collection, retrofitting and use of toilets</li> </ul>					
<b>C2. Capacity strengthening for Sujal and Swachh Gaon</b>						
	<p>Coordinate for capacity strengthening of village stakeholders-</p> <ul style="list-style-type: none"> <li>▶ Training of communication champions on implementation of IEC/ IPC tools</li> <li>▶ Training of VWSC members on roles and responsibilities regarding Sujal and Swachh Gaon</li> <li>▶ Training of barefoot technicians / water persons for O&amp;M of water supply facilities and water quality</li> <li>▶ Training of Swachhagrahis on roles and responsibilities regarding Sujal and Swachh Gaon</li> </ul>					

Note: The village level IEC activities will align with the district IEC plan



## My responsibility as a sarpanch of gram panchayat

- ▶ Organize meetings, invite all concerned stakeholders and ensure their participation.
- ▶ Select and support appropriate facilitators for village-level processes.
- ▶ Coordinate training of facilitators with block representatives.
- ▶ Organize training, as necessary.
- ▶ Ensure that every step of planning process is effectively followed.
- ▶ Ensure inclusion of activities, as planned, in the GPDP.
- ▶ Mobilize resources for the plan.





## Priorities For Gram Panchayats To Become 'Sujal And Swachh'

- 1** Inform the Gram Sabha about the water and sanitation programmes and **pass a resolution** to make the village 'sujal and swachh'.
- 2** **Conduct rapid assessments** of every village's current water and sanitation status and find the gaps to address
- 3** **Select appropriate sites** for water and source sustainability interventions and **create solid and liquid waste management systems**
- 4** **Develop a village action plan** that actively involves the community to address the gaps
- 5** Ensure that the Village Water and Sanitation Committee and Nigrani Samiti are **active and know their responsibilities**
- 6** Swachhagrahis should **know their responsibilities** for keeping the village 'sujal and swachh' and the key ODF messages to promote in the communities
- 7** **Roll out IEC campaigns on water and sanitation** with the help of the Committee, Nigrani Samiti and Swachhagrahis
- 8** Sensitize the community on the **importance of contributing funds** for operating and maintaining water and sanitation services
- 9** **Create management systems** for operating and maintaining the services on a regular basis
- 10** **Establish a validation check** to see if all services are in place, after which all of the villages will be 'sujal and swachh'



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DEPARTMENT OF DRINKING WATER AND SANITATION  
MINISTRY OF JAL SHAKTI



एक कदम स्वच्छता की ओर