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एक कदम स्वच्छता की ओर



Toolkit: Greywater Management

July 2021



Toolkit: Greywater Management

Minister's Message

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Background

In February 2020, the Government of India approved Phase-II of the Swachh Bharat Mission (Grameen) (SBM [G]) with a total outlay of Rs. 1,40,881 crore to focus on the sustainability of ODF status and solid and liquid waste management (SLWM). SBM (G) Phase-II is planned to be a novel model of convergence between different verticals of financing and various schemes of central and state governments. Apart from budgetary allocations from the Department of Drinking Water and Sanitation (DDWS) and the corresponding state share, the remaining funds will be dovetailed from 15th Finance Commission (FC) grants to Rural Local Bodies (RLBs), Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), Corporate Social Responsibility (CSR) funds, and revenue generation models, etc., particularly for SLWM.

SBM (G) Phase-II has been uniquely designed to leverage the capacity of individuals and communities in rural India to create a people's movement and ensure that the ODF status of rural areas is sustained, people continue to practise safe hygienic behaviour and all villages have solid and liquid waste management arrangements.


SBM (G) Phase-II will focus on scalable and commercially viable solutions for making the sanitation economy attractive to private businesses. Treatment of faecal sludge, wastewater, biodegradable and plastic waste, and their commercial sale could turn sanitation and waste management into profitable businesses. States, through districts/blocks, may provide technical training at village levels to the local youth to enhance their employability. Potential exists for the private sector to engage in providing services and undertaking demand generation activities. In addition, this will result in revenue generation opportunities for



community organisations such as self help groups (SHGs), village organisations (VOs), cluster level federations (CLFs), and contribute to the growth of the local economy.

Each gram panchayat (GP) shall develop a village swachhata plan (VSP) for each financial year involving people from all villages, especially women and marginalised people, and ensure that a credible plan is developed to sustain the ODF status, and improve solid and liquid waste management in the villages. The GP shall feed the plan as per gram panchayat development plan (GPDP) planning principles in the designated plan software, as well as into the SBM (G) Integrated Management Information System (IMIS).

GPs shall also be the recipients of funds, subject to conformity with state arrangements, and shall also contribute from their own resources for the financing of community toilets, and solid and liquid waste management infrastructure. The GP shall also ensure the correct site selection for building community toilets in all villages, and especially ensure that areas of the GP with




larger populations of weaker sections of society, including scheduled cast (SC)/ scheduled tribe (ST) populations, may receive priority in this regard.

GPs shall ensure that all tied funds for sanitation are invested and utilised as prescribed in the guidelines issued jointly by DDWS and Ministry of Panchayati Raj. All institutions and committees working within the GP framework must prioritise sanitation within their programmes.

For successful implementation of SBM (G), robust financial planning, timely funding, mobilisation of adequate resources and prudent utilisation of funds are some of the key factors. In this direction, the State Water and Sanitation Mission (SWSM)/District Water and Sanitation Mission (DWSM) will prepare year-wise financial plans by pooling all the available resources for rural sanitation, such as the central fund, state fund, 15th FC grants to RLBs, funds available under MGNREGS and other schemes of central/state governments, Members of Parliament Local Area Development Scheme (MPLADS), Members of Legislative Assembly Local Area Development Scheme (MLALADS), CSR fund, business models/public private partnership (PPP), etc. Central financial assistance for SBM (G) will be released by DDWS from its budgetary allocation and/or extra budgetary resources, considering various factors.

Solid and liquid waste management: SLWM may include many activities. However, funding under SBM (G) is allowed only for the major activities given below:

- (i) Purchase of tricycles/battery vehicles for transportation of waste from households to village-level collection/segregation/storage centres**
- (ii) Organic waste**
 - (a) Construction of community compost pits at village level
 - (b) GOBARdhan projects at district level
- (iii) Plastic waste**
 - (a) Storage facility at village level
 - (b) Plastic waste management unit at block/district level
- (iv) Greywater management**
 - (a) Construction of community soak pits can be taken up in smaller villages (i.e., up to 5,000 population). A greywater management system such as



WSP or any other technology can also be taken up with additional fund support from the 15th FC grants or through convergence with other central/state government schemes

(b) In bigger villages (i.e., above 5,000 population), apart from community soak pits, a greywater management system such as WSP or any other technology can also be taken up

v) Faecal sludge management (FSM)

FSM shall be taken up at the district level for a cluster of villages for single pit and septic tank toilets. Funding for FSM under SBM (G) can be utilised only for trenching, drying beds and Faecal Sludge Management Plus (FSMPs) or any other technology where retrofitting or co-treatment is not possible.

There are separate manuals for all the above elements. This toolkit deals with greywater management (GWM) in rural areas.





CHAPTER 1

An Introduction to Greywater Management

1.1 What is Greywater?

Greywater is the category of wastewater that is not contaminated with faecal or urinal matter. This broad category includes post-use water from most domestic purposes like bathing, washing dishes, laundry, etc. While substantially less harmful than black water (water that has been contaminated by faecal matter), greywater still contains potentially hazardous chemical and biological particles.

1.2 Why Greywater Management?

Greywater management is important to achieve public health outcomes in rural areas. Safely managed greywater can help achieve reduction in vector-borne diseases, and exposure to water-borne and water-washed disease. If greywater is managed properly, it can also reduce freshwater demand burdens to a considerable extent.

Water 'wasted' as a result of various human activities at home, in businesses, or industries is called liquid waste or wastewater. In rural areas, wastewater is broadly classified as domestic (black water and greywater) and commercial (black water and greywater) emanating from small scale industries, hotels, slaughter houses, laundries, etc.

The availability and use of fresh water in rural areas is increasing with the revised norms for supply of 55 litres per capita per day (LPCD) under the Jal Jeevan Mission (JJM). The increased use of freshwater will also entail the challenge of increased generation of greywater. Thus, its effective management is crucial. As unsafe disposal of greywater has a significant adverse impact on human health and the environment, appropriate treatment of greywater at the household and community levels becomes even more necessary.

1.3 Positive Impacts of Proper Greywater Management

Positive Impacts of Effective Greywater Management



Improved public health: Mismanaged greywater provides suitable conditions for the growth of vectors such as mosquitoes, which in turn are responsible for the spread of many endemic diseases like malaria, filariasis, and dengue. Effective greywater management can contribute significantly to reduction in water-borne and water-washed diseases. Together, these lead to improved public health



Water conservation: Every household which consumes fresh water inevitably generates greywater and the quantity of greywater is directly proportional to the quantity of fresh water consumed. It is also a known fact that greywater can be reused or sent back into the ground using simple technologies to recharge groundwater, thus leading to savings on freshwater requirements. It is thus evident that the freshwater crisis and the greywater problem are interconnected, so the solutions to both these problems are also interdependent. It is the dire need of the hour to realise these facts and to act on them. Greywater management can thus, substantially promote water conservation



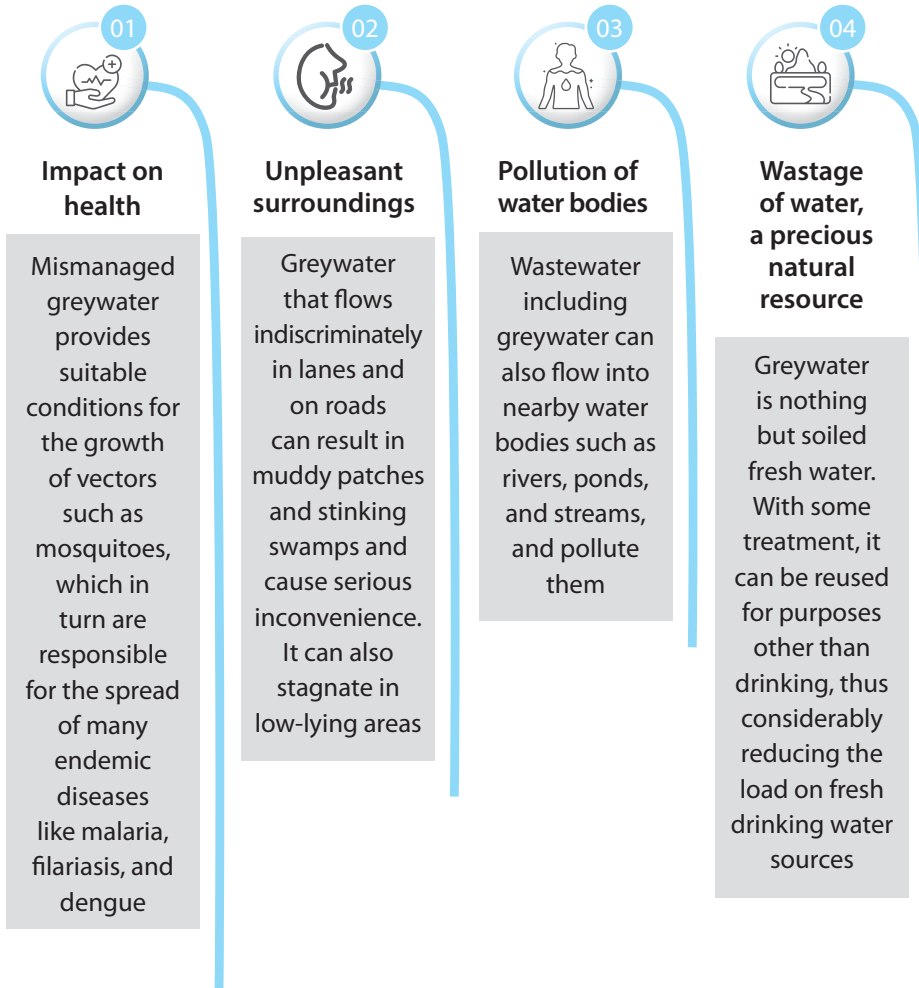
Contribution to nutritional requirements: Greywater can be reused in kitchen gardens at the household level or in plantations on a village scale. Scientific and strategic management of greywater can help to grow fresh fruits and vegetables, and thus can contribute to an enhanced level of family nutrition



Increase in green cover: Greywater, when effectively managed, can promote green cover in the form of individual kitchen gardens or village-level gardens/plantations, which collectively have a positive impact on the environment

1.4 Negative Impacts of Improper Greywater Management

Risks Posed by Poor Management of Greywater



SCHOOL



CHAPTER 2

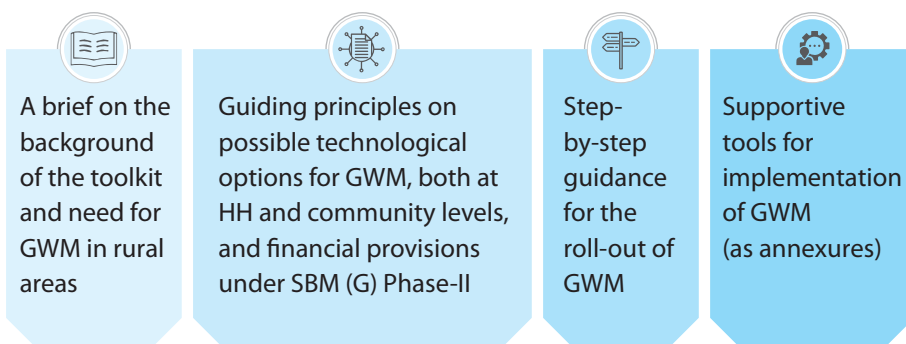
About the Toolkit

2.1 Purpose and Target Audience of the Toolkit

The main purpose of this toolkit is to provide step-by-step guidance to district/block/GP-level functionaries in planning, implementing and monitoring activities related to greywater management. This toolkit sets out all connected sub-activities, responsibilities, and key specifications, where required. It also provides a few indicative tools for officials to use during the implementation of greywater management activities.

2.2 Structure of the Toolkit

This toolkit is divided into four sections:





CHAPTER 3

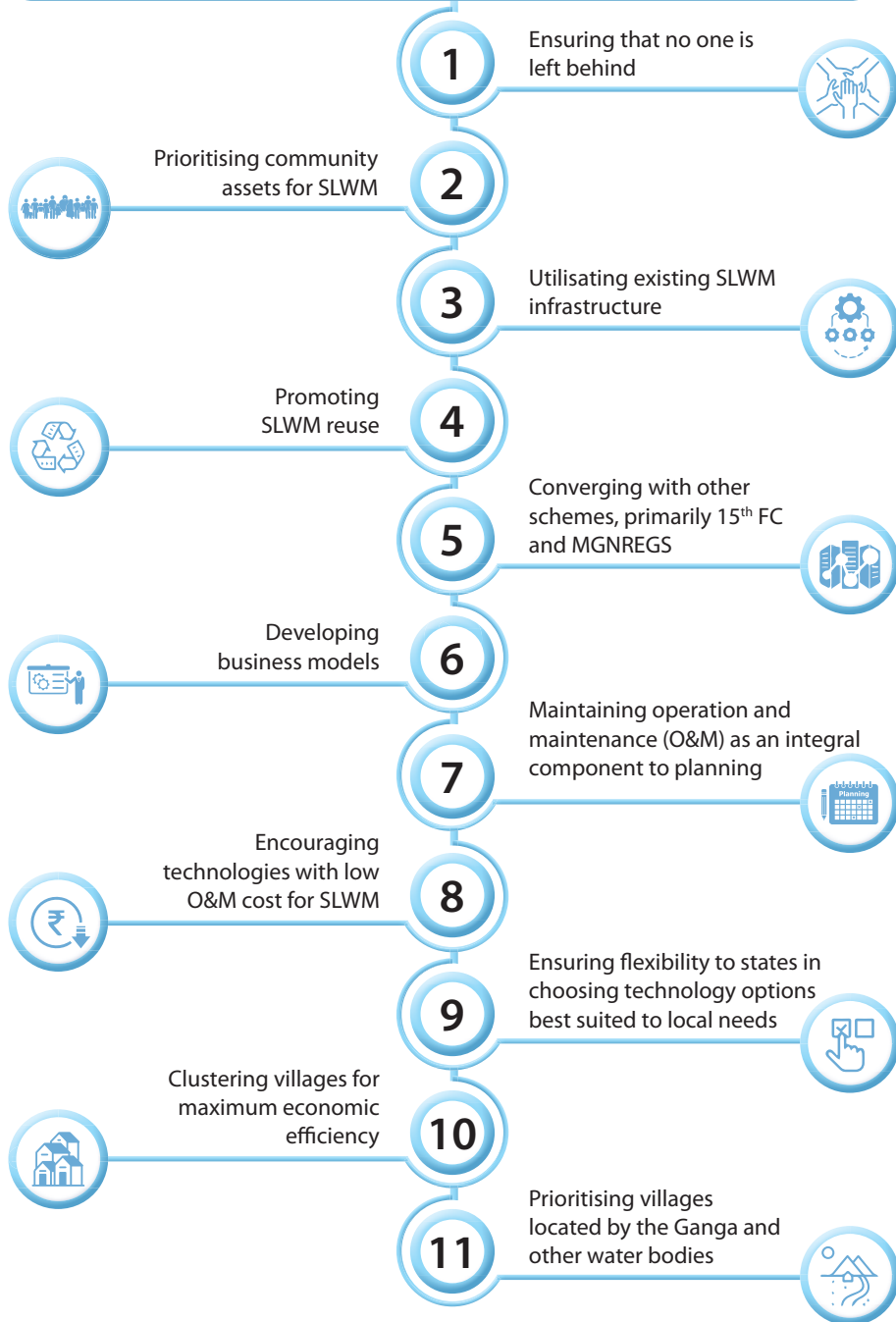
Guiding Principles of SLWM: SBM (G) Phase-II

The central government released the guidelines for Swachh Bharat Mission (Grameen) Phase-II in February, 2020. According to the guidelines, effective management of liquid waste by at least 80 per cent of households is one of the key objectives of this phase.



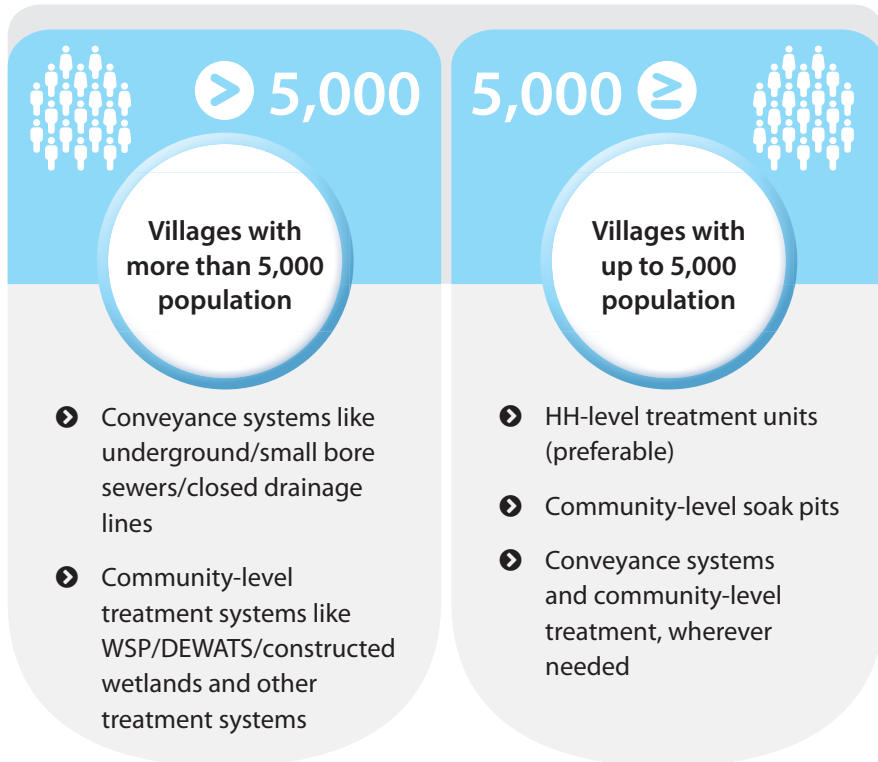
Villages should consider the following points before preparing the plan for greywater management and its implementation:

Guiding Principles for SLWM including Greywater Management



3.1 Greywater Treatment

Figure 1: Treatment Options for Greywater



3.1.1 Greywater Treatment in Villages with more than 5,000 Population

As per the SBM (G) Phase-II guidelines, treatment options like WSP/DEWATS/constructed wetlands, etc., and conveyance systems should be preferred. These villages should plan for:

- Conveyance systems like underground/small bore sewers/closed drainage lines
- Treatment systems like WSP/DEWATS/constructed wetlands, etc.

SBM (G) Phase-II guidelines recommend treatment of greywater at the place nearest to the point of generation. The districts, blocks and GPs should, therefore, promote household-level treatment units like soak pits, leach pits, kitchen gardens for greywater management. Such decentralised systems involve low capital cost, low operation and maintenance cost and are also easy for members of households to maintain. Such systems do not require centralised spaces.

3.1.2 Greywater Treatment in Villages up to 5,000 Population

In smaller GPs/villages, more decentralised and household-centric approaches like individual soak pits/leach pits/magic pits/kitchen garden are more feasible and preferred. In such villages, household-level treatment units will be set up as far as possible. In cases where such household-level units are not possible, group-level/community-level units will be prescribed.

With additional funds granted under the 15th FC and through convergence with other state funds, states, districts and GPs shall have the flexibility to take up conveyance and treatment systems for smaller villages as well, depending on the agro-climatic factors. For larger villages having a population of less than 5,000, community-level soak pits may be planned based on the terrain, groundwater level and population density.

3.2 Funding



For successful implementation of SBM (G), robust financial planning, timely funding, mobilisation of adequate resources and prudent utilisation of funds are extremely important. The possible funding resources for greywater management activities are given in Table 1.

Table 1: Financial Provisions for Greywater Management According to SBM (G) Phase-II

Components		Financial assistance	
		Village size	Financial support
GWM activities	Village-level GWM activities	Up to 5,000 population	GWM: Up to Rs. 280 per capita
		Above 5,000 population	GWM: Up to Rs. 660 per capita
	District-level GWM activities		Note: 1. 30 per cent of this amount will be borne by the GPs from their 15 th FC grants; 2. Each village can utilise a total of Rs. 1 lakh based on their requirements for both solid waste and GWM
IEC and capacity building		Up to 5 per cent of the total funding for programmatic components (up to 3 per cent to be used at state/district levels and up to 2 per cent at central level)	
Flexi funds		States can use flexi funds as per Ministry of Finance guidelines issued in this regard from time to time for innovations/technology options at the state level to meet the local needs and requirements within the overall objective of the scheme	

3.2.1 Business Models/CSR Projects

Commercially viable solutions for greywater management can make the sanitation economy attractive to private businesses. In addition, this will result in revenue generation opportunities for community organisations. Interventions based on remunerative models and on the principles of cost-sharing, cost recovery and revenue generation need to be promoted.

Incentive and funding mechanism

Swachhagrahis will be given an incentive for each activity against successful completion of any allocated activities after due verification of the photographs of the activity along with the capturing of the date, time, geographical co-ordinates and total duration of the activity.



CHAPTER 4

Greywater Management: Implementation in Rural Areas

4.1 Decision Support Matrix Technology Options for Greywater Management



Villages should consider the following decision support matrix to identify interventions that would be needed for implementation of greywater management in their villages.

Figure 2: Greywater Management Technologies

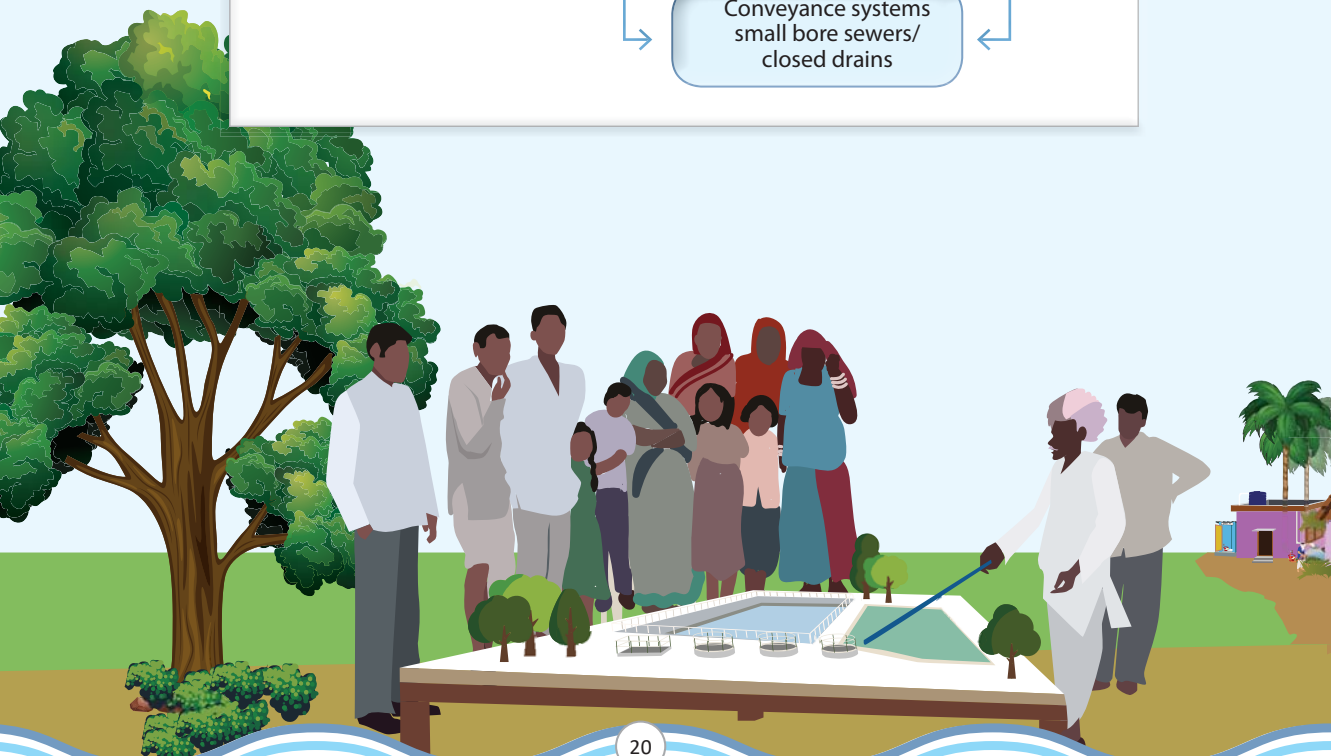
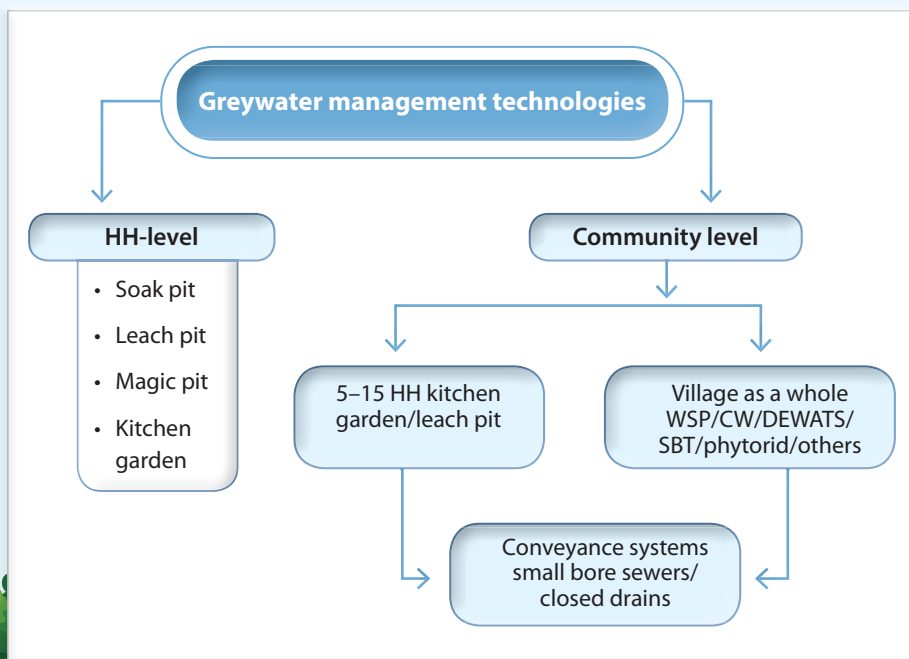


Figure 3: Technology Options for Permanent High Water Table/Water Logged Areas

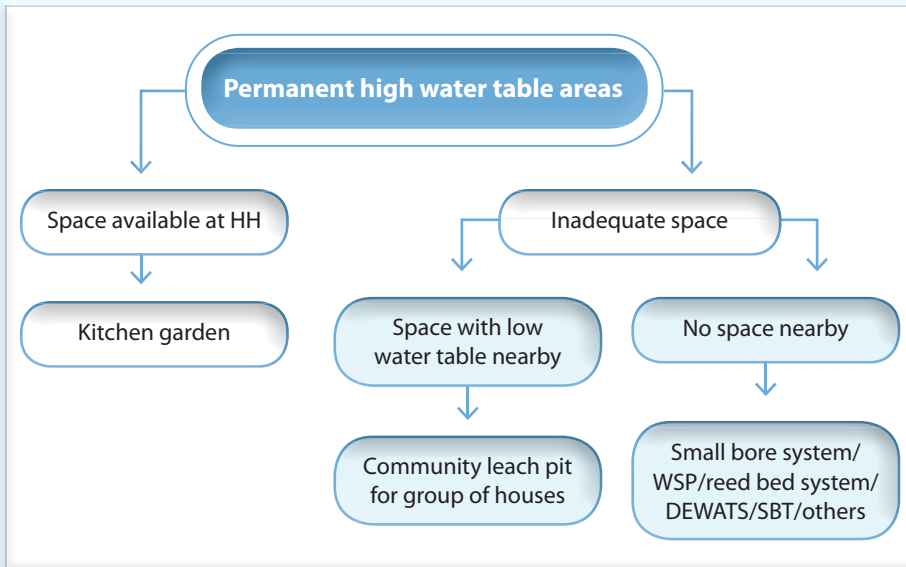


Figure 4: Technology Options for Hard Strata Areas

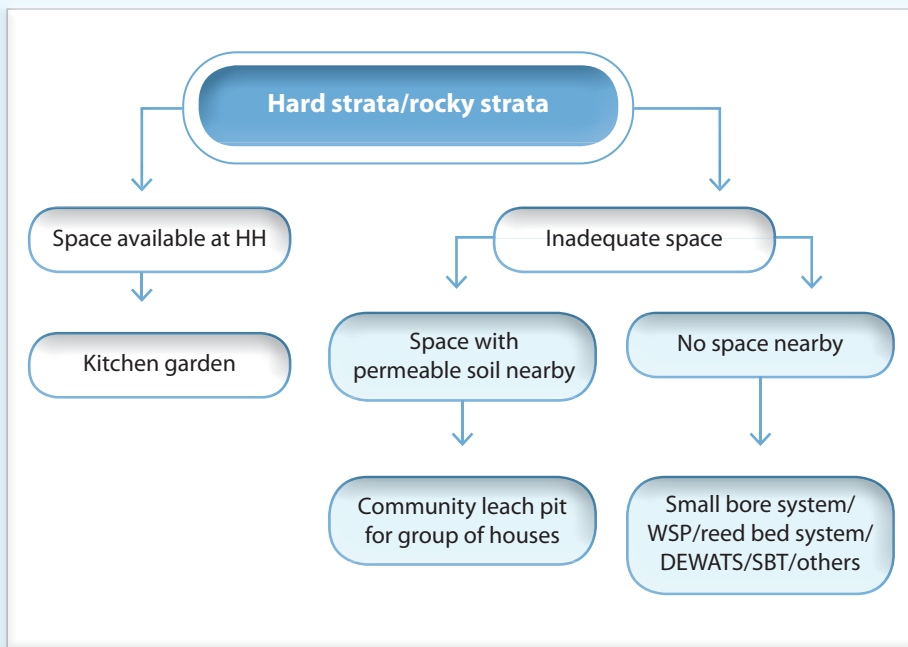
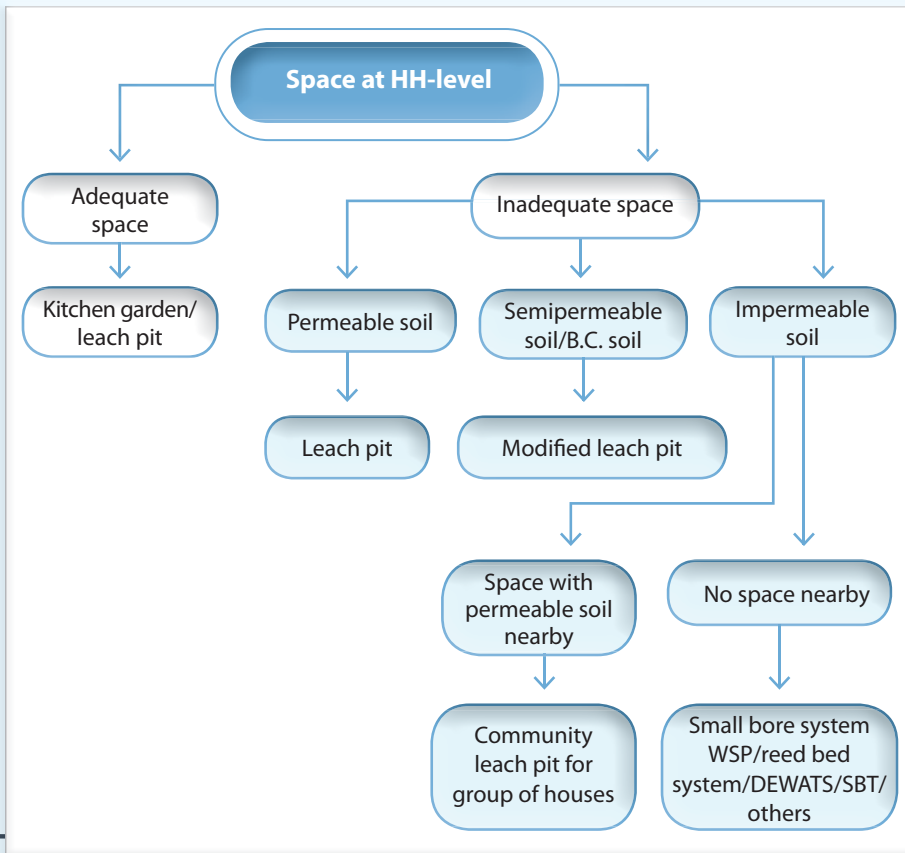


Figure 5: Technology Options for Other Areas



Details of each of the above technologies are provided in the technical manual on greywater management.



Each village should develop a village-level plan for greywater management

The Village Action/Swachhata Plan (VAP/VSP) should cover the following aspects of greywater management:

- Existing number of households connected to household-level treatment units
- Details of existing conveyance systems, if any
- Number and details of community-level greywater treatment units
- Number of households that need to be connected to household-level treatment units
- Number of households that need to be connected to community-level treatment units
- Quality of the greywater generated so that community treatment facilities may be planned
- Availability of land for development of community treatment facilities
- Requirements for conveyance systems
- Estimated amount of greywater generated
- Details of greywater reuse and recharge, if any
- Funds received for greywater management and expenditure

Table 2: Checklist for GP-level implementation for Greywater Management

A Situation analysis		
1	Whether all HHs are connected to HH/community-level greywater treatment units?	(Yes/No)
2	If no, what is the number of HHs that are not connected to HH/community-level greywater treatment units?	_____
3	How many HHs have HH-level greywater treatment units?	Soak pits _____ Leach pits _____ Magic pits _____ Kitchen gardens _____
4	How many community-level greywater treatment units are there in the GP?	
6	Type of conveyance system in the GP	
7	Length of the conveyance system	_____ meters
8	Length of drainage lines that are silted	_____ meters
9	Length of drainage lines that need repairs	_____ meters
10	Amount of greywater reused	_____ litres
11	Details of greywater reuse	
	Sr. No	Purpose
		Quantity of greywater reused
		_____ litres
		_____ litres
		_____ litres
B Planning for GWM		
1	Number of HHs that need to be connected to HH-level greywater treatment units	

2	Number of HHs that need to be connected to community-level greywater treatment units					
3	Length of additional conveyance lines required					
6	Please provide details about greywater treatment units required					
	Sr. No.	Location of the proposed treatment unit	Treatment technology proposed	Number of HHs proposed to be connected to the unit	Treatment capacity of the unit (litres/day)	Amount of greywater proposed to be treated per day (litres)
	Location of the proposed treatment unit					
	Treatment technology proposed					
	Number of HHs proposed to be connected to the unit					
	Treatment capacity of the unit (litres/day)					
	Amount of greywater proposed to be treated per day (litres)					
11	Financial details					
	Amount of funds received for GWM in financial year _____				Rs. _____	
	Amount of funds spent on GWM in financial year _____				Rs. _____	
	Amount of GWM funds unspent in financial year _____				Rs. _____	

4.1.1 Block-level Plan for Greywater Management

The block-level plan for greywater management should include the following:

- Number of GPs where greywater management has been initiated
- Compilation of the status of greywater management in all GPs of the block
- Detailed plan preparation for IEC activities to be conducted
- Detailed plan preparation capacity building exercise to be conducted with various stakeholders
- Financial plan based on the plans prepared



Indicative business models

- Creation, operation and maintenance of waste stabilization ponds to be outsourced to private operators
- Outsourcing operation and maintenance of greywater management system to private operators
- Involvement of SHGs/VOs, etc., wherever feasible
- Local entrepreneurs, SHGs, youth groups, etc. can be encouraged to take up various activities pertaining to management of greywater and marketing of its by-products



CHAPTER 5

Major Functions and Functionaries

The SBM (G) Phase-II programme promotes treatment of greywater at the place nearest to the point of generation and prescribe easy-to-use technology interventions with low operation and maintenance costs. Therefore, the actions for greywater management need to be carried out at the GP level. However, district officials play the crucial role of providing technical support for planning and implementation of interventions, choice and selection of technology, implementation of IEC activities, capacity building of stakeholders, monitoring effective implementation of greywater management activities, and so on.



5.1 Major Functions at District Level

The proposed district-level role for implementation of greywater management is mainly around providing support to GPs for planning, implementation and operation and maintenance of greywater management assets and systems. These are presented in figure 6.

Figure 6: Role of Districts in Greywater Management



The following table presents the role of districts in various phases.

Table 3: Role of Districts in Each Phase of Greywater Management

No	Key function	Key stakeholders at district level	Role of district
1.	Support in planning at GP level	District Swachh Bharat Mission Cell: District Coordinator of SBM (G), Assistant Coordinator (Tech.), Consultants, IEC Specialist, HRD and Capacity Building Specialist, M&E cum MIS Specialist, SWM Specialist, LWM Specialist; District Engineers; members of line departments, relevant district-level institutions, committees, etc.	<ul style="list-style-type: none"> ▶ Support GPs in preparation of village action/swachhata plans in consultations with Sarpanch/Mukhiya and Panch ▶ Prepare a GP implementation schedule and timetable ▶ Build capacity of concerned stakeholders for facilitation of the planning process at GP level ▶ Conduct IEC activities regarding need and importance of GWM and proposed activities under SBM (G) Phase-II at GP level ▶ Organise district-level meeting of concerned stakeholders for finalisation of targets and actions ▶ Finalise the financial plan for the proposed actions ▶ Document the VAP/VSP and its approval ▶ Hold coordination meetings with other departments
2.	Implementation		<p>Treat greywater:</p> <ul style="list-style-type: none"> ▶ Roll out the implementation plan at the GP level ▶ Assist GPs in choosing the best technology as per their situation ▶ Communicate with blocks regarding the block-level steps ▶ Provide technical support/capacity building to the GPs on construction and implementation

No	Key function	Key stakeholders at district level	Role of district
			<ul style="list-style-type: none"> ▶ Hold regular reviews to ensure that all HHs are connected to GWM facilities and greywater is not being discharged in the open ▶ Conduct inter- and intra-district/state exposure visit for village functionaries
3.	O&M		<p>Reduce use of freshwater:</p> <ul style="list-style-type: none"> ▶ Issue instructions to GPs regarding steps to be taken ▶ Conduct awareness campaigns and activities for importance of water and the use of fresh water ▶ Build capacity of local functionaries <p>Reuse and recharge greywater:</p> <ul style="list-style-type: none"> ▶ Conduct IEC activities for spreading awareness about the importance of and need for reuse and recharge of greywater ▶ Establish linkages for industrial / institutional/irrigational reuse of greywater ▶ Build capacity of the GP and block functionaries ▶ Regularly review and monitor the amount of water reused/recharged and possible measures for optimised reuse ▶ Guide the GPs, if required

No	Key function	Key stakeholders at district level	Role of district
4.	IEC for GWM		<ul style="list-style-type: none"> ▶ Include IEC/communication plan in the district action plan ▶ Implement IEC activities for GWM as per the plan ▶ Provide funds required for implementing the IEC plan to blocks, GPs and/or agencies involved, under the IEC component ▶ Monitor IEC implementation in all GPs
5.	Capacity building (CB)		<ul style="list-style-type: none"> ▶ Prepare a capacity building calendar ▶ Identify and empanel resource persons/agencies ▶ Implement the training calendar as per schedule ▶ Monitor capacity building activities
6.	Monitoring		<ul style="list-style-type: none"> ▶ Support GPs for undertaking proper O&M of the treatment units through various working models developed at various GPs in the country ▶ Maintain records at various levels ▶ Monitor various GWM-related activities in the district ▶ Monitor the wastewater quantity and quality for better sustenance ▶ Identify problem areas/issues regarding GWM ▶ Make necessary changes in the GWM systems/practices to ensure proper functioning

5.2 Roles of Block Officials, GPs and Households in Management of Greywater

Table 4: Role of Households in Greywater Management

Level	Key stakeholders	Roles in management of greywater
Blocks	Block Coordinator and SLWM Coordinator of Block Water and Sanitation Committee	<ul style="list-style-type: none"> ▶ Hold a meeting with all GPs in the block and orient them on GWM provisions and principles ▶ Promote parallel implementation in all villages ▶ Identify villages/GPs that would need convergent action and support them plan together ▶ Undertake IEC activities at village and block levels ▶ Prepare block-level plans to support GPs in undertaking GWM ▶ Promote application of reduce, reuse and recharge of greywater ▶ Monitor the status and progress of activities for GWM
GPs/HHs		<ul style="list-style-type: none"> ▶ Judiciously use fresh water so that minimum quantity of greywater is generated ▶ Set up HH-level treatment units wherever feasible ▶ Maintain O&M of the HH-level treatment units ▶ Ensure discharge of HH greywater into conveyance system if applicable ▶ Support reuse of greywater for various purposes ▶ Organise greywater recharge wherever feasible

Table 5: Major Liquid Waste Management Activities that can be Financed Using 15th Finance Commission Tied Funds for Sanitation

Description of activities	Assets created
GWM system	Waste stabilization pond – 3-pond system
	Waste stabilization pond – 5-pond system
	Constructed wetland
	Decentralized wastewater treatment systems (DEWATS)
	Phytorid
	Duckweed pond
O&M of GWM system	
Construction of drainage channel for management of liquid waste	Drainage channel
Construction of small-bore pipe conveyance system	Small-bore pipe system
Construction of silt, oil and grease chamber for pre-treatment of greywater before channelizing into community GWM system	Silt, oil and grease chamber
Construction of soak pits at individual HH-level for on-site GWM	Individual soak pit
Construction of common soak pits for a group of HHs for on-site treatment of GWM	Community soak pit
O&M of community soak pits	
Repair of drainage channels	
Drainage arrangements for transportation of wastewater from a group of villages to a common treatment unit	Drainage channel in multiple villages
Construction of waste settlement ponds for a group of villages	Waste settlement pond
O&M of multi village wastewater arrangements	



The Village Action/Swachhata Plan should cover the following aspects of greywater management:

- Existing number of households connected to household-level treatment units
- Details of existing conveyance systems, if any
- Number and details of community-level greywater treatment units
- Number of households that need to be connected to household-level treatment units
- Number of households that need to be connected to community-level treatment units
- Quality of the greywater generated to plan community treatment facilities
- Availability of land for development of community treatment facilities
- Requirements for conveyance systems
- Estimated amount of greywater generated
- Details of greywater reuse and recharge, if any
- Funds received for greywater management and expenditure





CHAPTER 6

Information, Education and Communication

6.1 Introduction

IEC will continue to be at the core of programme implementation.

6.1.1 Information, Education and Communication

The community engagement approaches ingrained in IEC concepts will be critical for nudging households and communities towards desired behaviour change related to effective greywater management. Since household-level treatment of greywater forms a critical component of greywater management, generating awareness within households and communities along with encouraging their active participation in harnessing this resource is necessary, and includes judicious consumption of fresh water and avoiding water wastage. It is essential to seek people's commitment and to mobilise key stakeholders at all stages of greywater management – from the point of generation to disposal, treatment and reuse. This will also include raising awareness regarding proper operation and maintenance of individual and community assets created.



IEC activities are not to be treated as 'stand-alone' activities of the SBM (G) Phase-II. The Swachh Bharat Mission is primarily concerned with IEC and positive behaviour change relating to the adoption of safe and sustainable usage and sanitation practices.

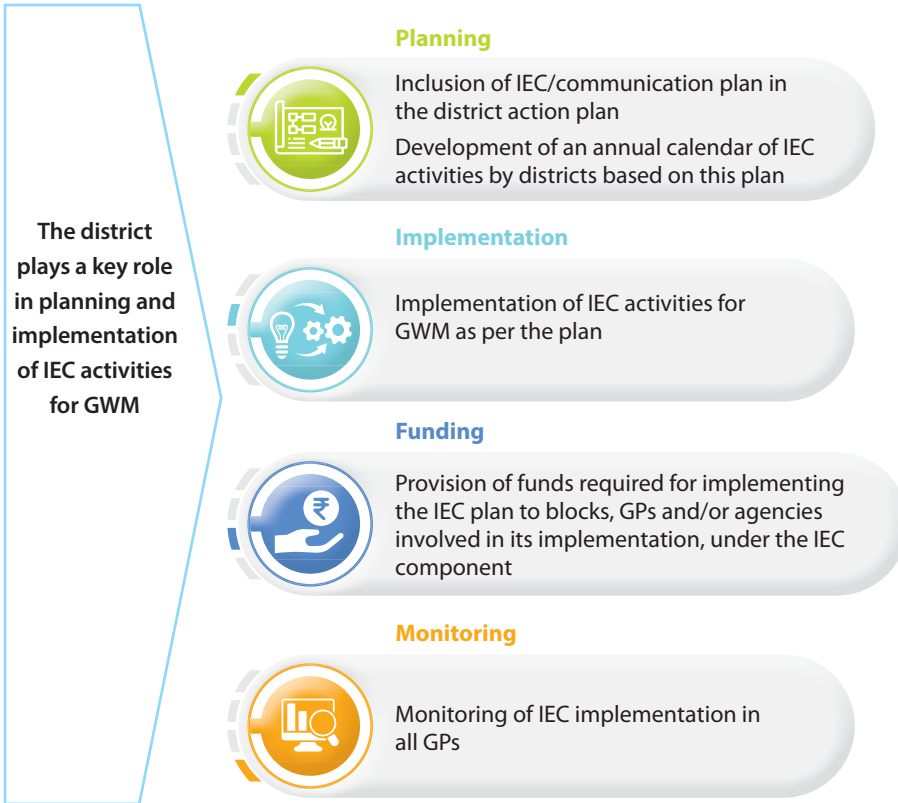


6.2 Key Behaviours to be Promoted for Families and Communities with Regard to Greywater Management

- Judicious use of freshwater to reduce generation of greywater
- On-site greywater treatment wherever possible
- Regular operation and maintenance of greywater treatment plants/liquid waste management assets
- Discharge of household greywater into conveyance system where applicable
- Support for reuse of greywater for various purposes
- Use of treated greywater for the purpose of groundwater recharge

As part of this process, it is essential to recognise the behavioural challenges that exist in driving uptake of greywater management among communities. Some barriers to the adoption of greywater management practices include limited knowledge around the practices and benefits of greywater management, low awareness on the linkages between incorrect disposal of greywater and human health, and insufficient knowledge around the environmental impacts of indiscriminate greywater disposal. In addition, there are gaps in the efficacy and skills among both populations and administrators on how to establish greywater management practices, and insufficient information about how to access greywater management services and wastewater conveyance systems. Overall, at the community level, there are no norms and systems in place for the disposal of greywater, or for monitoring how greywater is currently disposed of. At the institutional level, the ability to drive behaviour change is impacted by insufficient availability of information around the options and technologies related to greywater management, as well as the low availability of skilled human resources. To address this situation, an IEC/BCC strategy design matrix has been included in this toolkit as Annexure 2.

Figure 7: Role of Districts in IEC



6.3 Indicative IEC Messages

- ▶ Save water/Conserve water/Water is precious
- ▶ Reuse greywater after proper treatment
- ▶ Go green with greywater: Use greywater to water your plants
- ▶ Be “Greywater Smart”, treat your greywater through appropriate technology option
- ▶ Adopt twin-pit toilet technology
- ▶ Do not mix greywater and black water to avoid health hazards associated with contamination
- ▶ Don't contaminate water bodies with grey/black water

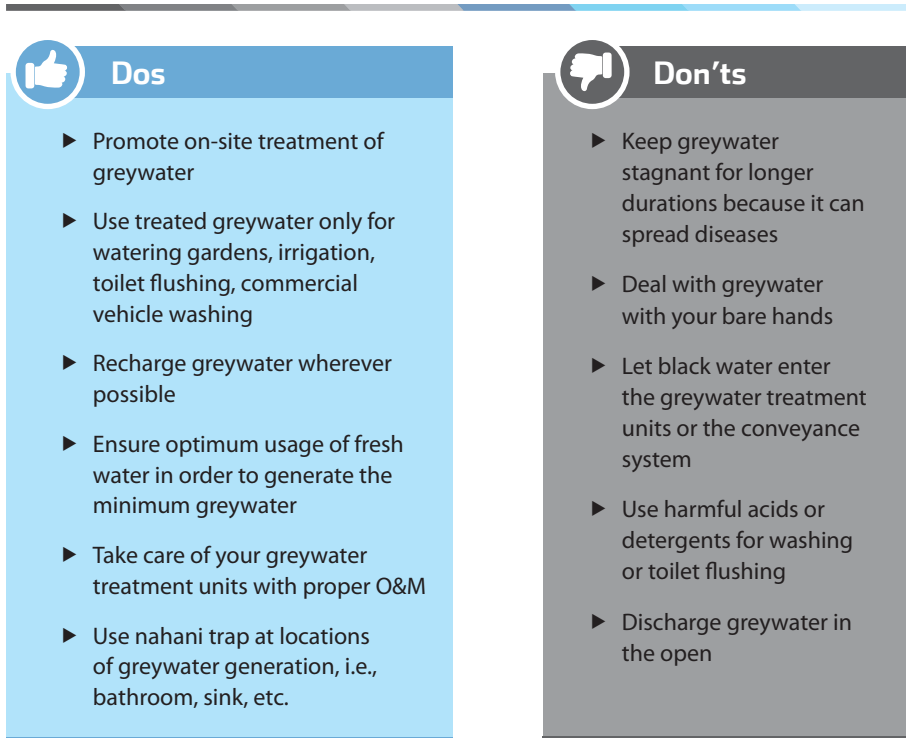
Figure 8: IEC Message in Hindi Promoting Soak Pits



6.4 Guidance for Developing IEC Plans and Links to Materials

Templates have been made available to help develop IEC plans, which can be collated at the district level (see Annexure 3).

Figure: 9: Dos and Don'ts of Greywater Management





CHAPTER 7

Capacity Building

7.1 Introduction

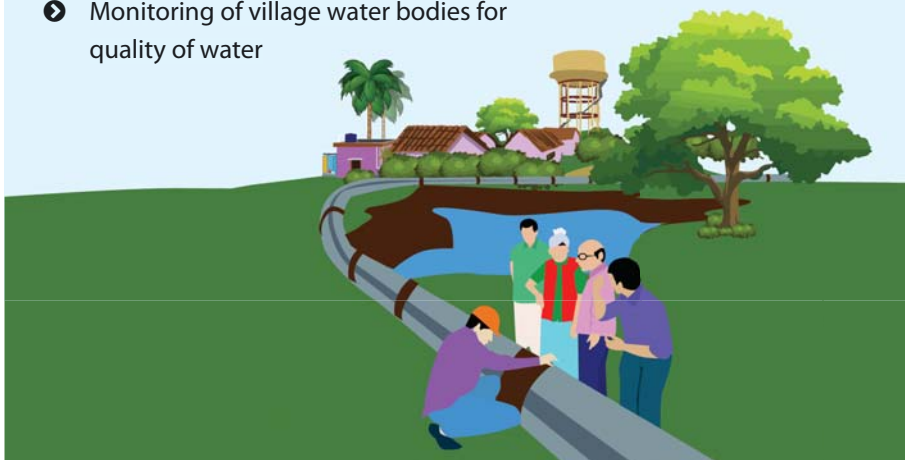
Building the capacities of key stakeholders is necessary to effectively plan, implement and monitor ODF plus activities under SBM (G) Phase-II. The key stakeholders need to be trained on different core elements of greywater management, including behavioural change communication along with planning, implementation and monitoring of IEC/BCC activities, construction activities, quality supervision, operation and maintenance, retrofitting, etc.

Capacity building is a cross-cutting component of greywater management, which means that capacity building activities of key stakeholders should be performed regularly as per need. Apart from the district/block and PRI officials, the role of engineers, consultants and accountants at the district and block level; Sarpanch/Mukhiya/Pradhan, Village Secretary, GP members, VWSC members and Swachhagrahis – the frontline human resource who will be taking forward the greywater management initiatives – as well as technicians such as masons, plumbers, etc. at the GP level is also crucial. Swachhagrahis are key agents for bringing about behaviour change in the community, as demonstrated by their successful mobilisation in Phase I of SBM (G). Therefore, it is important that the incentivisation structure for Swachhagrahis be finalised for each component of ODF plus, as per SBM Phase-II guidelines.

7.2 Topics for Capacity Building of Stakeholders

District/block-level officials

- Importance of water
- Need and impact of greywater management
- Population-wise household-level/community-level treatment options
- Technology options for conveyance of greywater
- Technology options for greywater treatment – their applicability, pros and cons, technical specifications and designs, and possible modifications/improvisations
- Reuse and recharge of greywater
- Allocation of funds and disbursement
- IEC activities and their mode of implementation
- O&M of greywater management structures
- Monitoring of greywater management activities
- Monitoring of village water bodies for quality of water



GP-level functionalities

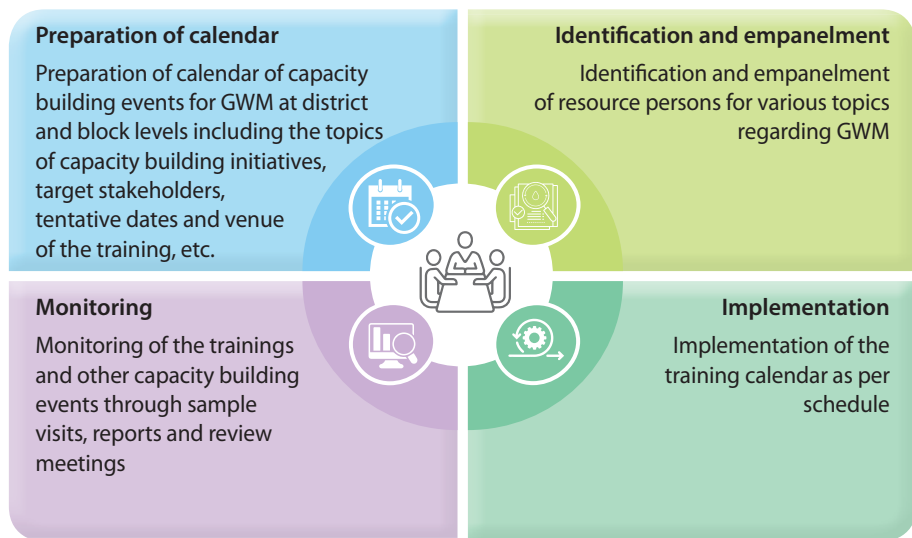
- Importance of water
- Concept and sources of greywater
- Need and impacts of greywater management
- Simple ways to stop greywater conversion into black water
- Technology options for greywater management
- Need for reduction in use of freshwater to control generation of greywater
- Need for and ways of reuse and recharge of greywater
- IEC activities for greywater management
- O&M of greywater management structures
- Mapping of greywater management activities in GPDP
- Convergence of funds and activities at GP level, including FFC funds
- Monitoring of greywater management activities



7.3 Steps for Capacity Building of Stakeholders

The schematic below provides the steps that should be taken at the district level, to deliver trainings on greywater management to various stakeholders. It outlines the need to create a timeline of greywater management capacity building events that will take place at the district and block levels, to identify resource persons for these events, and for monitoring of the capacity building activities. A capacity building planning template is attached as Annexure 4

Figure 10: Steps for Capacity Building of Stakeholders







CHAPTER 8

Operation and Maintenance

8.1 Introduction

The operation and maintenance of greywater treatment units is a multi-faceted responsibility. It includes in its coverage the conveyance systems, the community-level treatment units, grievance redressal mechanisms and record maintenance protocol. The construction contract for any treatment facility should include operation and maintenance for five years as a mandatory condition.

The responsibilities for Operation and maintenance of various components of greywater management are presented in the table below:

Table 6: Operation and Maintenance Responsibility for Various Greywater Management Components

Sr No	Components of GWM	O&M responsibility
1	HH-level treatment units	HHs through their own funds
2	Group-level treatment units and conveyance systems	HHs concerned collectively
3	Community/GP-level treatment units	GPs through 15th FC funds, MGNREGS, business models/CSR
4	Community/GP-level conveyance systems	GPs through 15th FC funds, MGNREGS, business models/CSR

The operation and maintenance needs for various systems for greywater management are elaborated in the following sections.



8.2 Operation and Maintenance of Community-level Treatment Units

For operation and maintenance of greywater treatment units, the followings tasks need to be carried out:

At the household level

- Installation of screens into the drains coming out of the households
- Regular cleaning and removal of inorganic/unwanted materials from drains at the household level
- Maintenance of cleanliness and hygienic condition on the premises
- Removal of grit, dirt, plastic, paper, etc. from the drains where the household drain is connected to the drain outside the house

At the community level

- Installation of screens, etc. for removal of inorganic/unwanted materials like plastic, grit, paper, etc. as per the schedules
- Operation of treatment units as per the schedule prescribed by the technology provider
- Maintenance of conducive conditions in each unit as described by the technology provider
- Routine cleaning of the filter beds, aeration tanks, sludge holding tanks, etc., as applicable
- Operation of disinfection unit, optimisation of chemical dosage required as per the quality of incoming liquid
- Servicing and overhauling of all the electro-mechanical devices (pumps, motor, blowers, light fittings, control panel, etc.) as per the schedule
- Checking the efficiencies of all electro mechanical devices and relaying information to the authorities about any major repairs/replacements required
- Checking of all the civil structures for leakages, and adoption of corrective actions, if required

- Raking of screens in the screening chamber and disposal of screenings in an environmentally responsible manner, if applicable
- Replacement/replenishing of bio-media/culture as required
- Painting of the interior and exterior of the units as per the schedule
- Routine testing of effluent parameters like Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), pH, Total Suspended Solids (TSS), Total Nitrogen (T-N) and Total Phosphorus (T-P), etc. prior to discharge and adoption of corrective measures in case permissible values are exceeded
- Contacting of agencies/local farmers for use of treated effluent for non-potable purposes like irrigation

8.3 Operation and Maintenance of Conveyance Systems

The operation and maintenance of conveyance systems includes:

- Cleaning/de-siltation of all the drainage lines, chambers, manholes, etc. as per the schedule
- Carrying out of minor repairs of the drainage lines like replacing broken sections, leakages in the lines and chambers, manhole covers, etc.
- Adoption of corrective measures at locations where frequent blockages are observed, if applicable. (e.g., installation of a screen upstream of sections, any other possible intervention)
- Major repair/replacement if required
- Checking of the connections from toilets (black water), if any, and relaying of information to the authorities accordingly regarding the need for further action such as the initiation of disconnection from the network
- Periodic checking of whether the house drains are connected to an inspection chamber with a screen prior to connection to the public drains

A list of repair service providers is required to be maintained at the unit to ensure timely repairs and maintenance of the system.

8.4 Grievance Redressal Mechanism

Mechanisms need to be set up through which the consumers can raise their complaints or grievances regarding greywater management services. The complaint or grievance resolution time frame needs to be drafted. The following options can be considered by the district for grievance redressal:

- Maintenance of a register at GP/block/district offices wherein complaints may be registered
- Establishment of a helpline number where the consumers can register their complaints
- Use of online platforms like creation of social media groups, setting up of dedicated email addresses, establishment of portals, etc. where complaints can be registered



8.5 Record Maintenance

At the GP level, the Sarpanch/Gram Pradhan/Village Secretary and the Swachhagrahi will be responsible for maintaining the records, whereas at the district level, the liquid waste management (LWM) consultant, along with the data entry operator, will be responsible for maintaining the records. The following records need to be maintained and updated periodically:

📌 GP-level records

- ▶ Number of households with household-level treatment units
- ▶ Number of households connected to community-level treatment units
- ▶ Nature of conveyance systems
- ▶ Amount of greywater treated at the community-level units
- ▶ Volume of water reused for non-potable purposes along with the details of the farmer
- ▶ Farmer/agency using treated water
- ▶ Details of maintenance activities undertaken for the collection network
- ▶ Incoming and outgoing water quality parameters
- ▶ Log of complaints received and redressal measures taken
- ▶ Funds received for greywater management and expenditure, etc.

📌 District-level records

- ▶ IEC activities (number of IEC activities conducted, number of beneficiaries, number of villages covered, etc.)
- ▶ Capacity building activities (number of capacity building activities conducted, type of activities, number of beneficiaries, number of villages covered, etc.)
- ▶ Financial records
- ▶ Records of complaints and their redressal, etc.



CHAPTER 9

Monitoring

9.1 Introduction

Effective monitoring of outputs and outcomes will be a critical matter for focus in relation to ODF sustainability and villages with effective solid and liquid waste management arrangements. Monitoring helps to measure the overall implementation quality, progress and output of greywater management activities in the district. District officials are responsible for regularly monitoring these activities.

9.2 What is to be Monitored at GP Level?

- Village greywater action plan prepared
- Number of households covered in the action plan
- Number of households with greywater treatment units
- Number of households connected to the community-level greywater treatment unit
- Volume of water reused for non-potable purposes
- Absence of stagnant water in the village



9.3 What is to be Monitored at Block/ District Level?

- Implementation of capacity building activities as per the plan
- Fund disbursement and its uses
- Number of GPs with household-level greywater management units
- Number of GPs with community-level treatment arrangements
- Number of GPs connected to household-level and community-level treatment units
- Number of blocks with greywater management
- Maintenance activities undertaken for conveyance systems and treatment units
- Effective convergence of government schemes
- Efforts towards private partnerships and revenue generation models
- Implementation of IEC activities as per the plan

9.4 Key Indicators of Monitoring Greywater Management Activities

For key indicators of monitoring greywater management activities, please refer to Annexure 1.



Annexures



Annexure 1

Key Indicators for Monitoring Greywater Management Activities

No	Component	Key monitoring indicators
1	Overall GWM	<ul style="list-style-type: none">▶ Number of GPs with GWM arrangements▶ Absence of stagnant water in public places▶ Number of blocks fully covered by GWM arrangements▶ Details of the GWM arrangements
2	Reduce generation of greywater	<ul style="list-style-type: none">▶ Awareness campaigns and activities for reducing the use of fresh water
3	Greywater treatment	<ul style="list-style-type: none">▶ Number of HHs, institutions and public places with GWM facilities▶ Application of HH-level treatment wherever possible▶ Use of appropriate technology for GWM▶ Details of O&M of the treatment units
4	Reuse and recharge of greywater	<ul style="list-style-type: none">▶ Amount of treated greywater reused and recharged▶ Number and status of IEC activities conducted for reuse and recharge
5	Funding	<ul style="list-style-type: none">▶ Fund disbursement under SBM (G) Phase-II▶ Use of funds disbursed under SBM (G) Phase-II▶ Effective convergence of government schemes▶ Activities for private partnerships▶ Efforts for revenue generation models▶ Amount of by-products generated, product-wise amounts sold, details of revenue generated

No	Component	Key monitoring indicators
6.	IEC and community mobilisation	<ul style="list-style-type: none"> ▶ Number of IEC activities conducted ▶ Number of beneficiaries ▶ Number of villages covered
7.	Capacity building	<ul style="list-style-type: none"> ▶ Number of capacity building activities conducted ▶ Type of activities conducted ▶ Number of beneficiaries ▶ Number of villages covered
8.	O&M	<ul style="list-style-type: none"> ▶ Number of complaints registered ▶ Number of complaints addressed ▶ Maintenance of proper records

Annexure 2

IEC/BCC Strategy Design Matrix

Based on the identified roles and responsibilities of the key stakeholders at district and sub-district levels, a suggested IEC/BCC matrix has been developed to support districts in planning and implementing IEC/BCC activities.

Level	Key stakeholders	Key expected behaviours	Key communication objectives	Topics of key messages	Communication channels	Communication aid/ IEC tools required
DISTRICTS	District coordinator and SLWM coordinator of District Water and Sanitation Committee	<ul style="list-style-type: none"> ▶ Promotion of principles of 'reduce', 'reuse' and 'recharge' in relation to greywater ▶ Monitoring of the status and progress of activities for GWM 	<ul style="list-style-type: none"> ▶ Increase awareness around the benefits and options of GWM ▶ Build planning and implementation capacities aimed at HH and community-level behaviour change around GWM 	<ul style="list-style-type: none"> ▶ Promotion of principles of 'reduce', 'reuse' and 'recharge' in relation to greywater ▶ Monitoring of the status and progress of activities for GWM 	<ul style="list-style-type: none"> ▶ One-to-one meetings and orientation workshops with key stakeholders ▶ Field exposure visits 	<ul style="list-style-type: none"> ▶ Evidence-based advocacy package in local languages <ul style="list-style-type: none"> ● Factsheets ● Video films ● Audio programmes ▶ Capacity building workshops and conventions ▶ Adaptation of IEC materials developed at the state level ▶ Monitoring of checklists for IEC/BCC activities

Level	Key stakeholders	Key expected behaviours	Key communication objectives	Topics of key messages	Communication channels	Communication aid/ IEC tools required
BLOCKS	Block coordinator and SLWM coordinator of Block Water and Sanitation Committee	<ul style="list-style-type: none"> ▶ Preparation of block-level IEC/ BCC plans for GWM ▶ Promotion of principles of 'reduce', 'reuse' and 'recharge' in relation to greywater ▶ Monitoring of the status and progress of activities for GWM 	<ul style="list-style-type: none"> ▶ Increase awareness around benefits and options for GWM ▶ Build capacities to plan for and drive community-level behaviour change related to GWM 	<ul style="list-style-type: none"> ▶ Preparation of block-level IEC/ BCC plans for GWM ▶ Promotion of principles of 'reduce', 'reuse' and 'recharge' in relation to greywater ▶ Monitoring of the status and progress of activities for GWM 	<ul style="list-style-type: none"> ▶ One-to-one meetings with the block development officers, technical teams, panchayat functionaries ▶ Sensitisation workshops ▶ Exposure visits 	<ul style="list-style-type: none"> ▶ Information package in local language <ul style="list-style-type: none"> ● Factsheets ● Video films ● Audio programmes ▶ Other printed material such as leaflets and posters ▶ Capacity building workshops
GPs	Sarpanch/ Pradhan, village secretary, GP members, Village Water and Sanitation Committee, Swachhagrahis, etc.	<ul style="list-style-type: none"> ▶ Preparation of GP-level plans for GWM ▶ Promotion of principles of 'reduce', 'reuse' and 'recharge' in relation to greywater 	<ul style="list-style-type: none"> ▶ Build awareness among local decision makers on the benefits and options of GWM ▶ Increase awareness around negative local impacts of incorrect greywater disposal 	<ul style="list-style-type: none"> ▶ Preparation of GP-level plans for GWM ▶ Promotion of principles of 'reduce', 'reuse' and 'recharge' in relation to greywater 	<ul style="list-style-type: none"> ▶ One-to-one meetings/IPC with social distancing ▶ Sensitisation workshops 	<ul style="list-style-type: none"> ▶ Information package in local language <ul style="list-style-type: none"> ● Factsheets ● Video films ● Audio programmes

Level	Key stakeholders	Key expected behaviours	Key communication objectives	Topics of key messages	Communication channels	Communication aid/ IEC tools required
GPs		<ul style="list-style-type: none"> Finalisation of technology for group/ community-level treatments Setting up of group/ community-level treatment units Setting up of conveyance system wherever necessary O&M of the treatment units and conveyance systems 	<ul style="list-style-type: none"> Mobilise communities to adopt positive GWM practices Build capacities to plan for and drive community-level behaviour change around GWM 	<ul style="list-style-type: none"> Finalisation of technology for group/ community-level treatments Setting up of group/ community-level treatment units Setting up of conveyance system wherever necessary O&M of the treatment units and conveyance systems 	<ul style="list-style-type: none"> Exposure visits Mid media Messaging through mobile vans Exhibition and demonstration 	<ul style="list-style-type: none"> Printed material such as leaflets and posters Content for messages to be depicted through folk theatre and songs Logistics for exhibition and demonstration Capacity building workshops
	HHs	<ul style="list-style-type: none"> Judicious use of fresh water for generating minimum quantity of greywater 	<ul style="list-style-type: none"> Increase community and HH knowledge around benefits of GWM, and negative impacts of incorrect greywater disposal 	<ul style="list-style-type: none"> Judicious use of fresh water for generating minimum quantity of greywater 	<ul style="list-style-type: none"> Mass media and mid media 	<ul style="list-style-type: none"> Information package in local languages

Level	Key stakeholders	Key expected behaviours	Key communication objectives	Topics of key messages	Communication channels	Communication aid/ IEC tools required
SHH		<ul style="list-style-type: none"> ▶ Setting up of HH-level treatment units wherever feasible ▶ O&M of the HH-level treatment units ▶ Discharge of HH greywater into conveyance system if applicable ▶ Support for reuse of greywater for various purposes ▶ Greywater recharge wherever feasible 		<ul style="list-style-type: none"> ▶ Setting up of HH-level treatment units wherever feasible ▶ O&M of the HH-level treatment units ▶ Discharge of HH greywater into conveyance system if applicable ▶ Support for reuse of greywater for various purposes ▶ Greywater recharge wherever feasible 	<ul style="list-style-type: none"> ▶ IPC with social distancing ▶ Group meetings with social distancing 	<ul style="list-style-type: none"> ● Factsheets ● Video films ● Audio programmes ▶ Other printed material such as leaflets and posters ▶ Content for messages to be depicted through folk theatre and songs ▶ Capacity building of Swachhagrahis/ other frontline workers on key aspects of GWM

Annexure 3

IEC/BCC Activity Planning Template

Implementing stakeholder	Type of activity	Audience/ Population	Activities/ planned	Unit	No. planned	Support materials/ tools required by the stakeholder			Manpower costs (payment to HR etc.)	Other costs (logistics, communication, TA/DA, resource persons,)	Timeline	Total budget
						Item	No.	Cost A				
								B	C			A+B+C

Annexure 4

Capacity Building Planning Template

Stakeholder (List priority stakeholders identified – at different levels)	Activity the stakeholder will be involved in	Proposed training intervention with stakeholder	Current capacity of stakeholder (in technical water and communication skills)	Institutions available to conduct the training	Level of training and venue (state/ district/ GP)	No. of trainings planned	Timeline	No. of persons trained	Budget (includes amount for stakeholder *no. of days engaged + other costs for logistics, TA/ DA, resources, etc.)
Community motivators	Social and community mobilisation IPC	Training (motivator training)	Not well informed on key technical information Not skilled enough in IPC	✗	State/ district	✗	✗	✗	✗

Acronyms

BOD	Biochemical Oxygen Demand	MIS	Management Information System
CGWB	Central Ground Water Board	MoHUA	Ministry of Housing and Urban Affairs
COD	Chemical Oxygen Demand	MPLAD	Members of Parliament Local Area Development
CPCB	Central Pollution Control Board	MLALAD	Member of Legislative Assembly Local Area Development
CPHEEO	Central Public Health and Environmental Engineering Organisation	O&M	Operation and Maintenance
CSR	Corporate Social Responsibility	ODF	Open Defecation Free
DEWATS	Decentralized Wastewater Treatment System	PHED	Public Health Engineering Department
DM	District Magistrate	PRI	Panchayati Raj Institutions
DPR	Detailed Project Report	SBCC	Social Behaviour Change Communication
DSBM (G)	District Swachh Bharat Mission (Grameen)	SBM (G)	Swachh Bharat Mission (Grameen)
DTMU	District Training Management Unit	SHG	Self Help Group
GP	Gram Panchayat	SLWM	Solid and Liquid Waste Management
GR	Government Resolution	SOP	Standard Operating Procedure
GWM	Greywater Management	STP	Sewage Treatment Plant
HH	Household	TDS	Total Dissolved Solids
HRD	Human Resource Development	T-N	Total Nitrogen
IEC	Information, Education Communication	T-P	Total Phosphorus
IPC	Inter Personal Communication	TSS	Total Suspended Solids
JJM	Jal Jeevan Mission	VAP	Village Action Plan
LPCD	Litres Per Capita per Day	VO	Village Organizations
LWM	Liquid Waste Management	VWSC	Village Water and Sanitation Committee
M&E	Monitoring and Evaluation	WSP	Waste Stabilization Pond
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme		

Glossary

1. **Black water** – Wastewater generated from bathing and toilets, which is contaminated by urinal and/or faecal matter.
2. **Biochemical oxygen demand (BOD)** – The amount of oxygen consumed by bacteria and other microorganisms while they decompose organic matter under aerobic conditions (i.e., where oxygen is present)
3. **Chemical oxygen demand (COD)** – The amount of oxygen consumed to chemically oxidise organic water contaminants to inorganic end products
4. **Greywater** – Wastewater generated from bathing, showers, hand basins and kitchen sinks, which is not contaminated by urinal and/or faecal matter
5. **Greywater management** – Effective collection, transportation, treatment, reuse/recycling of greywater, which can be adopted at either household-level or village level.
6. **Wastewater** – Water ‘wasted’ as a result of various human activities at home, in businesses, or industries is called liquid waste or wastewater. Wastewater is a mix of liquid waste that has come in contact with human waste such as human excreta, urine and the associated sludge (known as black water), and wastewater generated through bathing and kitchen and other activities, except toilets (known as greywater).

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एक कदम स्वच्छता की ओर