Ministry of Construction and Housing and Communal Services of the Republic of Uzbekistan

Ministry of Health of the Republic of Uzbekista

MAKTABGACHA VA MAKTAB TA'LIMI VAZIRLIGI

unicef for every child

Training Manual on Climate Resilient Water, Sanitation and Hygiene (WASH)

in Communities for District Khakimiyats, Mahalla Committees and Village Council of Citizens in the Republic of Karakalpakstan, Uzbekistan

UN Multi-Partner Human Security Trust Fund for the Aral Sea Region in Uzbekistan






This training manual was adapted from UNICEF India “Handbook for Sarpanch & Gram Panchayat Functionaries – Capacity Building of Gram Panchayats” and would like to thank Ministry of Panchayati Raj and UNICEF India office.

Disclaimer

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ALWALEED PHILANTHROPIES

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GLOSSARY

CSR	Corporate Social Responsibility
DDAP	District Development Action Plan
DK	District Khakimiyat
DWSI	District Water Supply Institution
MC	Mahalla Committee
DEWATS	Decentralized Wastewater Treatment System
FGD	Focus Group Discussion
FSM	Fecal Sludge Management
FSTP	Faecal Sludge Treatment Plant
GoU	Government of Uzbekistan
GWM	Greywater Management
HP	Horsepower
IEC	Information, Education and Communication
IPC	Interpersonal Communication
LPCD	Litres Per Capita Per Day
M&R	Maintenance & Repair
MCHCS	Ministry of Construction, Housing and Communal Services
MoH	Ministry of Health
MoPSE	Ministry of Preschool and School Education
MRF	Material Recovery Facility
MWM	Menstrual Waste Management
O&M	Operations and Maintenance
OHT	Over Head Tank
PWS	Piped Water Supply
RCC	Reinforced Concrete Cement
SLWM	Solid and Liquid Waste Management
STP	Sewage Treatment Plant
UNICEF	United Nations Children's Fund
VCC	Village Council of Citizens
WTP	Water Treatment Plant

FOREWORD

Having access to safe water, sanitation, and hygiene (WASH) is absolutely essential for public health, human dignity, and sustainable development. In Uzbekistan, we've seen some impressive strides toward achieving Sustainable Development Goal (SDG) six, which focuses on ensuring everyone has access to reliable water and sanitation services. As of 2022, around 80% of the population enjoys safely managed drinking water, 75% have access to proper sanitation, and 82% have a handwashing facility with soap and water at home[1]. Still, there are gaps, especially in rural and vulnerable communities, where access to these vital WASH services can be quite limited.

The country is increasingly experiencing extreme weather events such as droughts, high temperatures, heavy precipitation, mudflows, and floods. These climate-induced hazards have been responsible for numerous fatalities and have damaged thousands of households and hectares of agricultural land. Such events not only disrupt water supply and sanitation systems but also heighten the risk of waterborne diseases, posing a direct threat to public health[2 3].

To tackle these challenges, the Government of Uzbekistan, alongside UNICEF and other key partners, have been rolling out targeted initiatives aimed at bolstering WASH infrastructure, service delivery, and hygiene promotion. In the Republic of Karakalpakstan, where the Aral Sea crisis has had a devastating impact on public health and the environment, efforts have ramped up to improve climate-resilient water, sanitation, and hygiene services for the communities that need it most.

A key part of this initiative is the WASH in Community Training Manual, created by UNICEF Uzbekistan to assist local authorities, community leaders, and service providers in effectively planning, implementing, and maintaining WASH programs. This manual offers a structured approach to building capacity, ensuring that district khakimiyats, heads of mahalla councils, and village councils are well-equipped with the knowledge and tools necessary to promote climate-resilient and inclusive WASH services in both homes and public institutions.

The training manual is a fantastic resource for tackling important issues in climate risk assessment, water quality management, developing sanitation infrastructure, promoting hygiene, solid and liquid waste management and engaging the community. By nurturing local expertise and encouraging participatory methods, it empowers communities to take charge of their WASH needs, leading to more sustainable outcomes and making informed decision related to operation and maintenance.

While significant progress has been made, continued efforts are necessary to scale up successful interventions and integrate lessons learned into broader development strategies. The experiences gained from WASH programs in the Republic of Karakalpakstan and other regions of Uzbekistan should serve as a foundation for future initiatives aimed at achieving universal access to safe water and sanitation.

On behalf of the Council of Ministers, we reaffirm our commitment to supporting WASH programs and ensuring that knowledge and best practices from initiatives like this training manual are effectively integrated into national and regional development plans. We extend our gratitude to UNICEF, national partners, and donors for their unwavering support in improving WASH services and enhancing community resilience across Uzbekistan.

Mr. Farkhad Ermanov
Chairman of the Council of Ministers of the Republic of Karakalpakstan
Government of Uzbekistan

[1] https://data.worldbank.org/country/uzbekistan?view=chart
[2] World Bank Document
[3] Climate Change Risk Mapping of the Amu Darya river basin, Uzbekistan

FOREWORD

Every child has the right to grow up in a safe and healthy environment. Yet across Uzbekistan, many children—especially those living in rural areas—face daily challenges in accessing clean water, safe toilets, and basic hygiene. Without these essentials, children are more likely to miss school, fall ill from preventable diseases, and struggle to reach their full potential. In Uzbekistan, climate change, including droughts and water scarcity, is placing additional pressure on the country's water and sanitation systems. These pressures hit children hardest. UNICEF Uzbekistan is committed to ensure that every child has access to safe, sustainable WASH (Water, Hygiene, Sanitation) services, no matter where they live. We have been working with the Government of Uzbekistan to ensure WASH systems are not only reliable but also climate-resilient, inclusive, and responsive to children's needs.

That's why we are proud to introduce the "WASH in Community Training Manual". This practical tool supports local leaders—District Khakimiyats, Mahalla Committees, and Village Councils—in building strong, child-friendly WASH services that last. It provides step-by-step guidance to assess infrastructure, close service gaps, and champion best practices in communities. By strengthening local capacities and fostering leadership, the manual helps local leaders take ownership of their WASH services, ensuring that they are inclusive, climate-resilient, and responsive to the needs of all community members.

Adapted from the successful experience of UNICEF India in its implementation of the "Handbook for Sarpanch & Gram Panchayat Functionaries – Capacity Building of Gram Panchayats", this manual is part of a broader effort to exchange knowledge and best practices across borders. We are especially grateful to the Ministry of Panchayati Raj and the UNICEF India office for making this adaptation possible.

In the Republic of Karakalpakstan, with support from the The Multi-Partner Human Security Trust Fund for the Aral Sea Region in Uzbekistan, UNICEF has already helped bring safe drinking water to over 10 rural communities reaching over 20,033 people, including 4,713 school age children. With the launch of our Training of Trainers programme, we aim to go even further—equipping local leaders to sustain these changes and scale up success so every child can grow up healthy, safe, and with dignity.

UNICEF extends sincere thanks to the Government of Uzbekistan and all our partners and donors. Together, we are making a lasting difference for children—one community at a time.

Regina Castillo Regina Castillo Rodriguez
Representative
UNICEF Uzbekistan

CHAPTER 1. **INTRODUCTION**

1.1 Overview

The district khakimiyats, mahalla committees, village council of citizens are responsible for the overall development of the mahallas and communities and play a key role in providing basic services vital for the health and well-being of population in communities, like, drinking water and sanitation.

Access to safe drinking water and sanitation is universally acknowledged as a fundamental to human rights. This principle has been solidified by the United Nations through the International Covenant on Economic, Social, and Cultural Rights, specifically under Article 11(1), which affirms the right to an adequate standard of living.

Today, we bear a critical responsibility: not only to realize universal access to safe drinking water and sanitation, as outlined in Sustainable Development Goal 6 by 2030, but also to ensure a sustainable achievement of this goal. Meeting this commitment necessitates our collective efforts in combating climate change. Climate change amplifies risks to water resources worldwide, threatening the foundations of economies, societies, biodiversity, and ecosystems. The dignity and health of human life are intrinsically linked to reliable drinking water, sanitation, and hygiene (WASH) services, which are now at risk from climate-induced challenges.

According to WHO/UNICEF Joint Monitoring Programme (JMP) for Water Supply, Sanitation and Hygiene (WASH) in Households Uzbekistan national data for 2024, 96,8% of households (98,5% urban areas, 95,4% rural areas) have access to safely managed drinking water. However, only 82,2% of households have access to drinking water in the premises. Access to safely managed sanitation is provided in 93,6% of households (95,6% urban areas, 91,8% rural areas). As per UNICEF MICS data from 2022, 82% of households (89% urban, 75 rural) have access to safely managed drinking water, 75% of households (63% urban, 86% rural) have access to safely managed sanitation facilities, and 82% of households (88% urban, 75% rural) have access to basic hygiene services.

UNICEF has been deeply committed to advancing WASH services worldwide, including in Uzbekistan. UNICEF has been a longstanding partner of the Government of Uzbekistan, supporting WASH initiatives in the country. Through its work, UNICEF has prioritized the needs of children, women, economically disadvantaged populations, and other vulnerable groups who are disproportionately affected by inadequate WASH services. Since 2021, UNICEF supported improvement of Climate Resilient WASH facilities in 25 schools and 36 healthcare facilities in Muynak, Kungrad, Bozataw, Kegeyli, Shimbay and Karaozek districts of the Republic of Karakalpakstan.

This training manual will serve as guidance document for the specialists from the district khakimiyats, mahalla committees and village council of citizens to get overall understanding about climate resilient water, sanitation and hygiene facilities at household level and public buildings (healthcare facilities, schools, etc.), as well as planning, budgeting, implementation, monitoring and evaluation, operations and maintenance activities. Hence, it is necessary that the district khakimiyats, mahalla committees, village council of citizens, elected representatives and other stakeholders of the district authorities, are made well-conversant with their duties and responsibilities for ensuring safe and adequate water and sanitation facilities on a sustained basis. 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 state programmes of the District Water Supply Departments (Joint Stock Company "Uzsuvtaminot") of the Ministry of Construction, Housing and Communal Services and District Khakimiyats present an opportunity for mahalla committees (MCs) and village council of citizens (VCCs) to explore their leadership qualities, involve every member of the community, and meet water and sanitation demands of their communities in a sustainable manner.

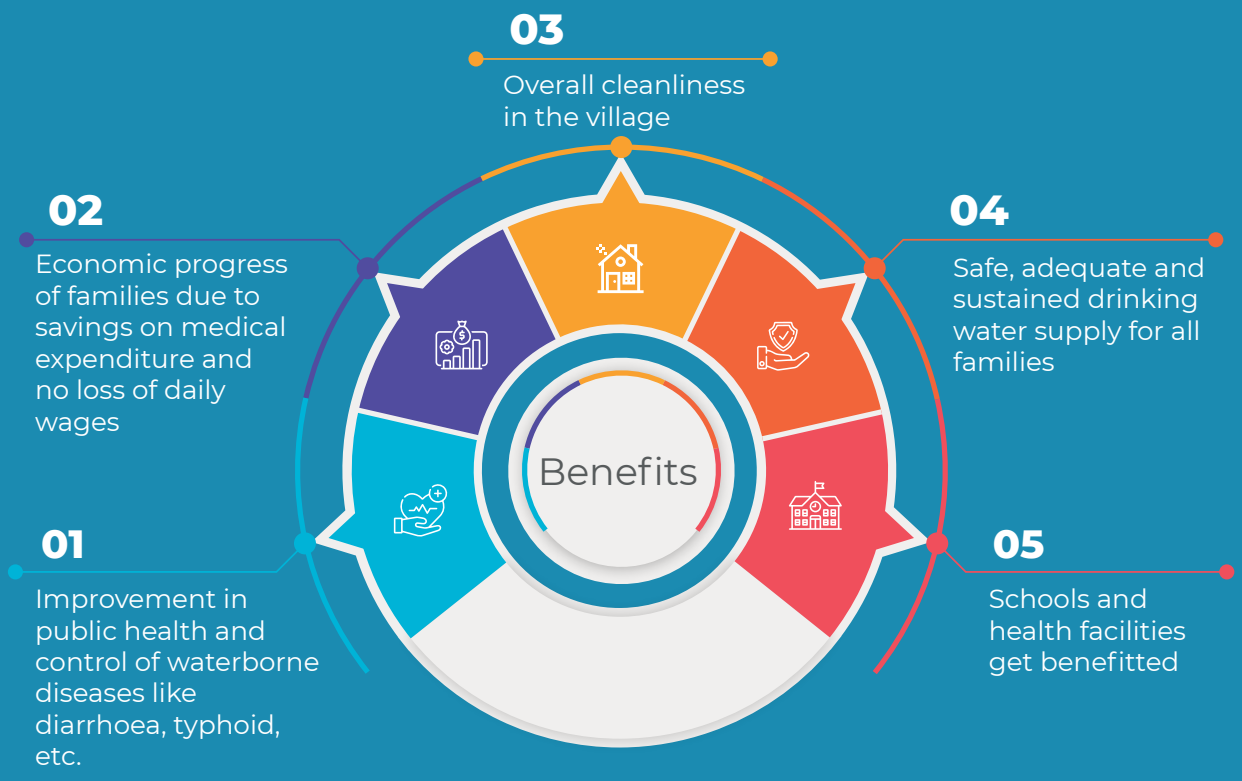
This training manual is an attempt to help the MCs and VCCs and key functionaries at the District Khakimiyats level undertake specific actions related to management of water and sanitation facilities in their mahallas and villages. The specifications, templates, advisories, as mentioned herein, are for technical assistance and guidance. These may be modified as per local context and availability of resources.

To ensure availability of safe and sustainable water supply services to all through household connections using piped water supply schemes, the District Khakimiyats, MCs and VCCs 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 PWDs (persons with disabilities).
- Adopt solutions for management (primarily segregation) of all types of waste in the communities.
- Encourage community ownership in managing and maintaining water and sanitation facilities.

This training manual was adapted from UNICEF India "Handbook for Sarpanch & Gram Panchayat Functionaries – Capacity Building of Gram Panchayats" and would like to thank UNICEF india office.

1.2 Benefits of water and sanitation interventions



Key stakeholders in the communities gain appreciation from the community as their role is recognized.

1.3 District and Community-level stakeholders

Stakeholders include District Deputy Khakims on Construction Issues, District Water Supply and Sewage, Waste Management Department specialists, specialists from District Departments of Committee for Sanitary and Epidemiological Wellbeing and Public Health, MC and VCC chairperson and members, barefoot technicians, District Medical Association and primary healthcare facility managers and specialists, school directors and teachers, NGOs, etc.

My responsibility as a District Deputy Khakim on Construction Issues, MC and VCC chairperson

- Develop inclusive plans to address the water supply and sanitation needs of the households in the mahallas and villages.
- Make provision for prioritization of water and sanitation facilities in the District, Community Development Plan (DCDP) and mobilize resources to fulfil the water and sanitation demands.
- Encourage the Mahalla, VCC team to participate in training and capacity- building programmes.
- Strengthen capacity of District Water Supply Department functionaries, such as water engineers, water treatment facility operators and 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 community mobilization, participation in Open Budget and other resource mobilization initiatives (voluntary work).
  - Develop soak pits, composting, SLWM (managing greywater).
  - Practice 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 MC and VCC meetings 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 inhabitants of mahallas and villages.
- Review and maintain prescribed account books, and undertake audit procedures for transparency.
- Ensure facilities in institutions and public places, e.g., markets, bus stands, healthcare facilities, schools are operational.

CHAPTER 2. **WATER IS A PRECIOUS RESOURCE**

2.1 Significance of drinking water

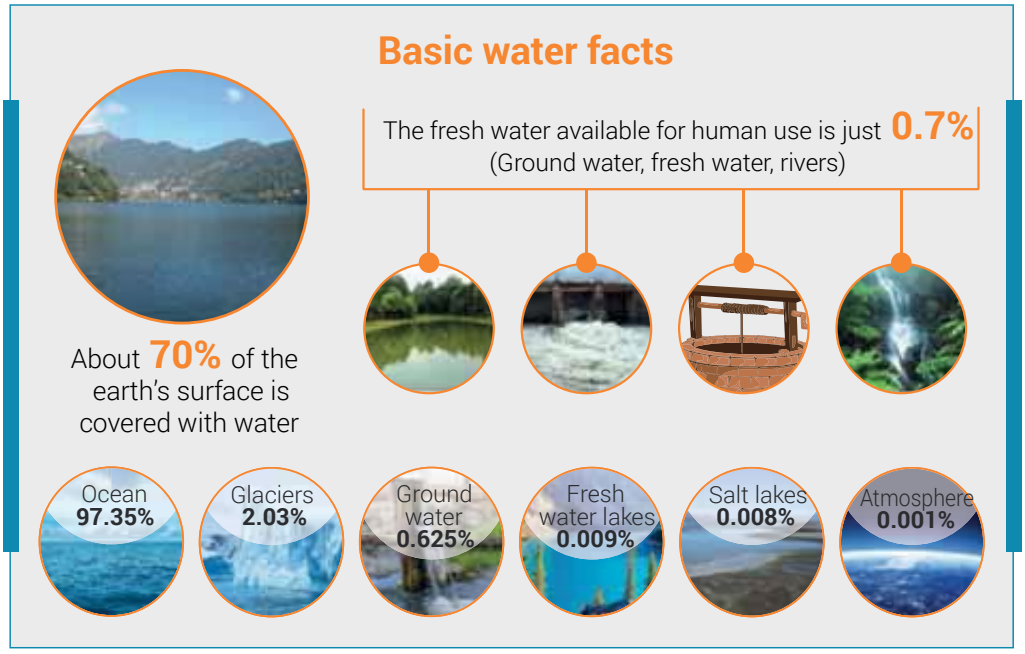
Safe and secure water supply plays a crucial role in public health and well-being of the community. Every household needs water for a number of purposes, like, drinking, cooking, washing of utensils, cleaning of the house, bathing, washing of clothes, personal sanitation, for household animals and watering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

According to Norm # 08 from February 1, 2022, set by JSC "Uzsuvtaminot", for population, using the water without water meter, 4 types of water consumption norms are active in Uzbekistan:

- 50 liters of water per day for citizens consuming water from a street standpipe.
- 200 liters of water per day per person in households connected to the water supply network and to which water is supplied according to the schedule.
- 350 liters of water per day per person in households connected to the water supply network.
- 15 liters of water per day for each square meter of irrigated and watered area.

Global facts about water



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

Important facts about water in Uzbekistan

- Uzbekistan was placed 25th out of 164 in the world's most water-stressed countries ranking published by the World Resources Institute.
- Uzbekistan's total water resources amount to 50-60 km3 per annum, of which only 12.2 km^3 is formed inside the republic, whereas the rest of the water comes from elsewhere – from the Tien Shan and Pamir-Altai mountains, from snowmelt and glaciers melting in summer.
- Water resources distribution: 90% - agriculture, 4,5% - public utilities, 4,3% - Industry and energy, 1,2% - fishery.
- Over the past 50 years, the volume of glaciers has decreased by an average of 30% and this trend continues.

Source: https://cabar.asia/en/uzbekistan-s-water-sector-environmental-and-managerial-issues#_ftn1

2.2 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 350 litres* [*as per the state's policy]
- _____ Total water demand/day

c. 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 District Deputy Khakim on Construction Issues, MC and VCC chairperson

- 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 the district jurisdiction.
- 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 mobilization 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.

Water sources we have

Ground water wells and bore wells **6%**

Surface water in streams, ponds **94%**

Fishery **1,2%**

Water we use for

Agriculture purpose **90%**

Drinking & domestic purpose **4,5%**

Industrial and processing purpose **4,3%**

Winter

Summer

Water availability is different in different seasons

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.

CHAPTER 3. **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.

Source sustainability is provided through two measures

1. Borewell recharge structures
2. Rooftop rainwater harvesting structures

Conventional

- Loose boulder structures (LBS)/ gully plug
- Gabion structures
- Underground bund
- Cement check dam
- Ordinary tank
- Bore well recharging

Unconventional

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

3.1. Borewell recharging

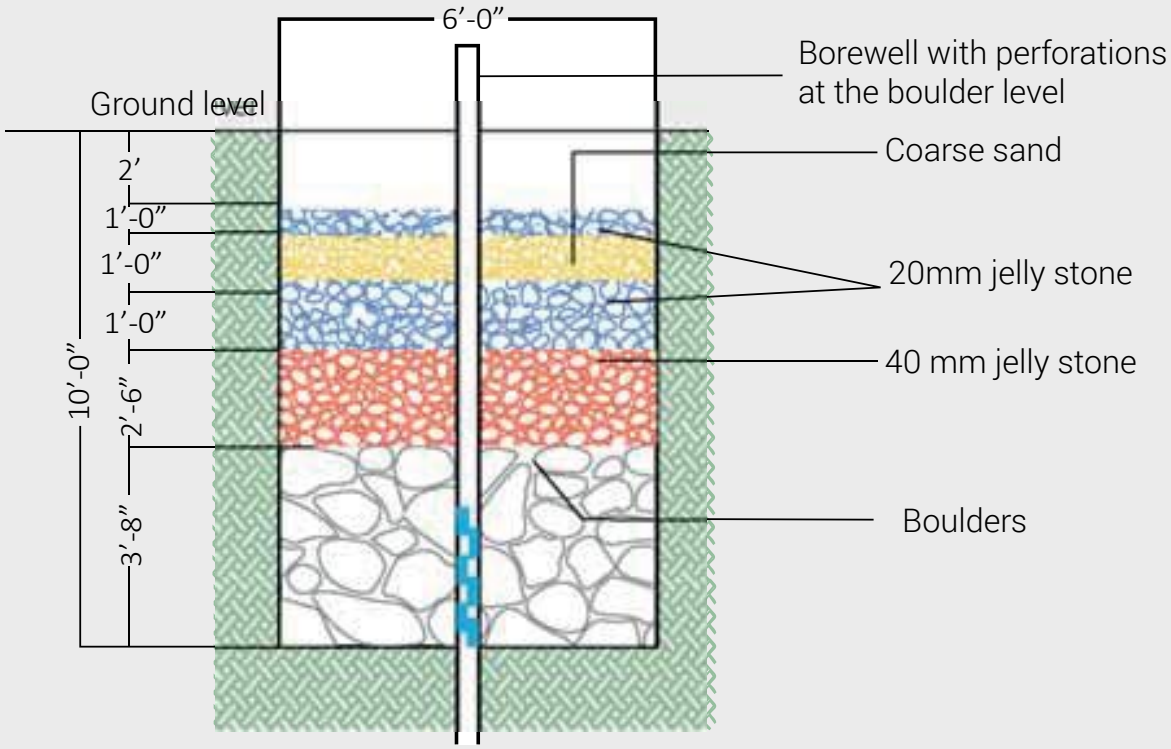
Borewells can be recharged during the raining period with a very efficient and economically viable method. Usually high-yielding bore wells or tube wells are selected for this recharge having good command for run-off rainwater or where water can be diverted easily. The physical condition of the source 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.

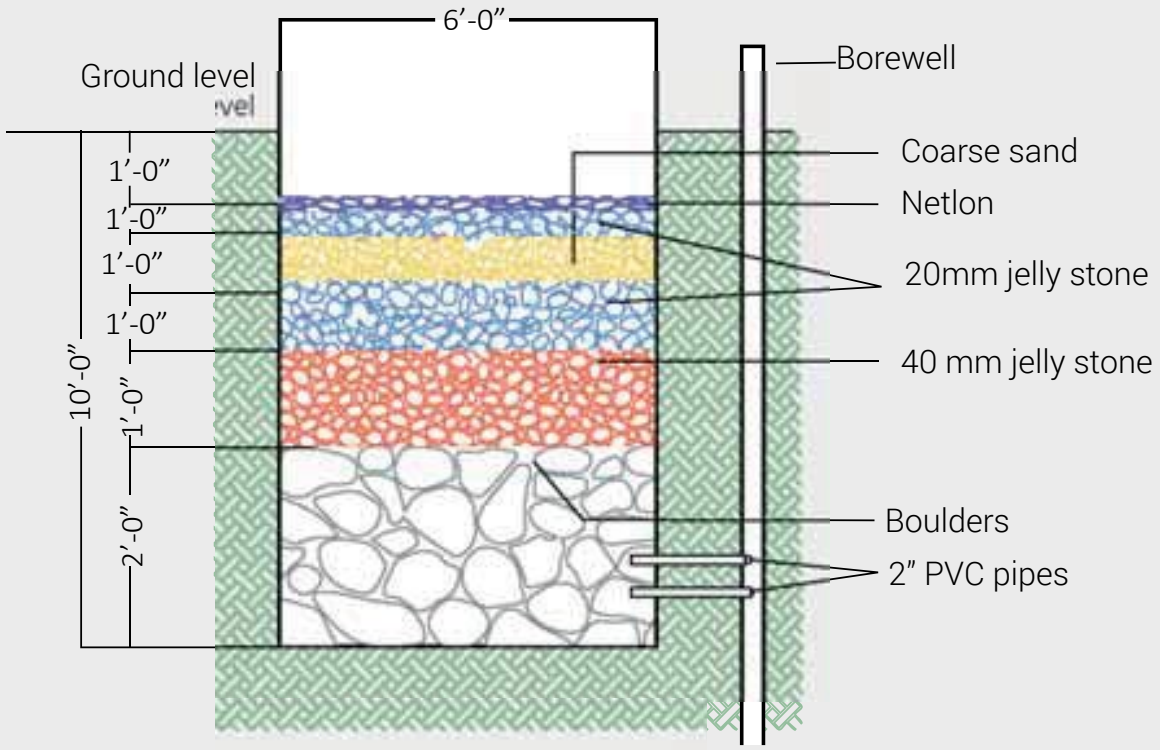
Direct recharge is recommended only for a borewell that has gone dry or is yielding a negligible amount of water. Indirect recharge is recommended for well-functioning borewells.[1]

Direct recharge filter for borewell



1 rainwaterclub.org

Indirect recharge filter for borewell



My responsibility as a District Deputy Khakim on Construction Issues, MC and VCC chairperson

- Identify available schemes and programmes for soil and water conservation and integrate in the local development plans.
- Initiate recharging of groundwater sources using various source.
- 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 community mobilization, where people work voluntarily for water conservation.
- Ensure that all institutional structures, such as, schools, health centres, public buildings, etc., at village level have rooftop rainwater harvesting systems installed..

CHAPTER 4. OPERATION & MAINTENANCE OF WATER SUPPLY SCHEME

4.1. Introduction

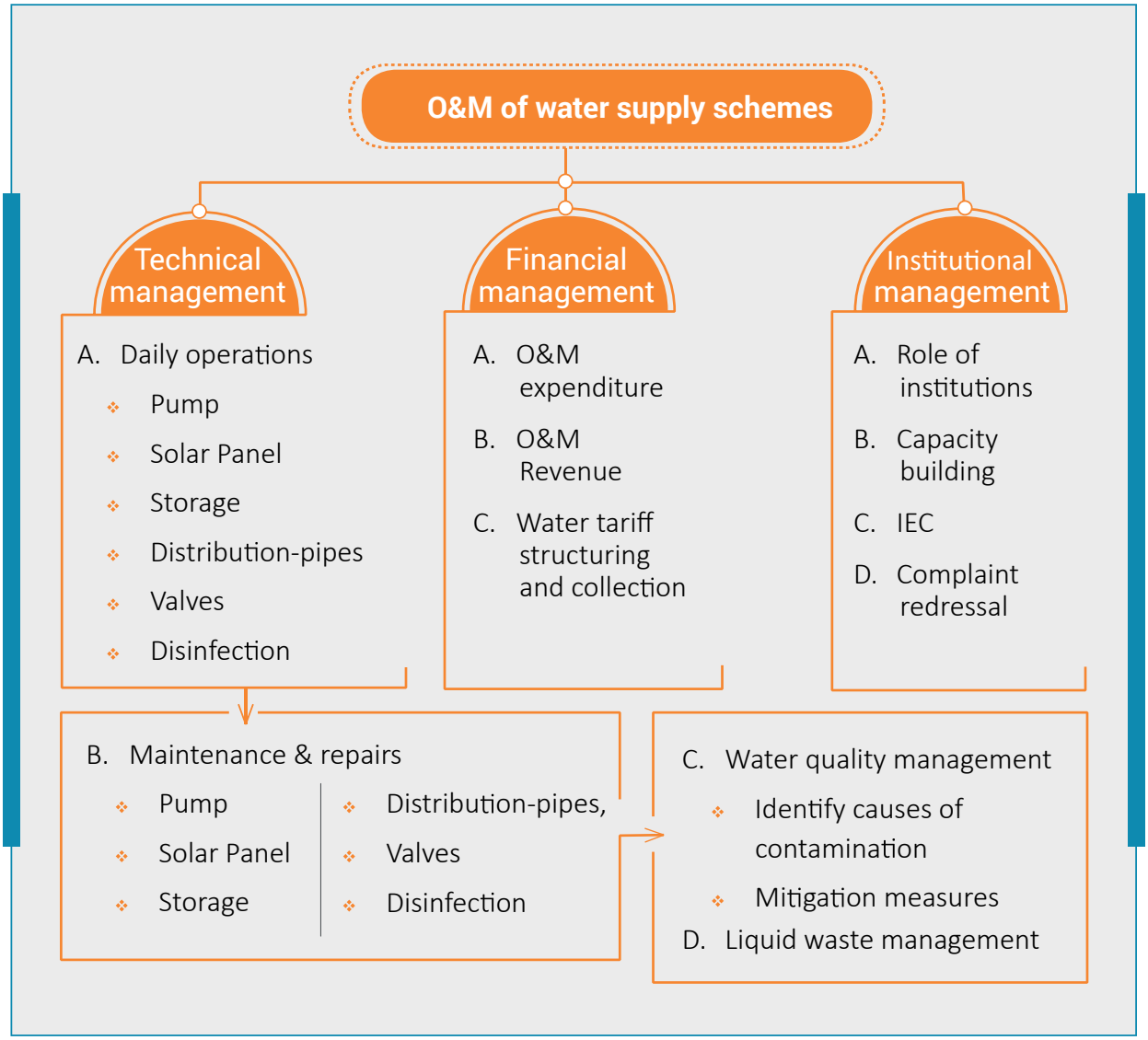
Appropriate operation and maintenance (O&M) management of water supply schemes is essential for designed service delivery of safe water throughout the designed life of the scheme. Lack of proper O&M management adversely affects the service delivery and consumer satisfaction. Inappropriate O&M may lead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

4.2. Components of O&M of water supply facilities

- Technical management
- Financial management
- Institutional management

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



4.2.1. 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 District Water Supply Institution is to provide safe and disinfected water to the mahallas and 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.

4.2.2. Financial management

District Khakimiyats and District Water Supply Institutions 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 district khakimiyat contribution). First the expenditure is calculated, following which the District Khakimiyat 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.

Operations checklist for the Water Supply Scheme*			
Sr. No.	**Details**	**Expenditure details**	**Estimated expenditure**
A.	**Operations expenditure**		
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	Uzbek Sums (UZS). _____
2	Electricity bill Units used × Pumping hours × 0.75 Note: - Depending on pump HP, currently 250,000 Uzbek sums/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	UZS. _____
		b. Annual Expenditure depending upon unit consumption = annual unit consumption × (Rate/Unit)	UZS. _____
		2(a+b)= Total	UZS. _____

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. In case of using reverse osmosis systems, replacement of filters and membranes should be considered.	Annual expenditure on bleaching powder = Total required quantity of powder × Rate/Kg	UZS. _____

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

Operations checklist for the Water Supply Scheme*			
Sr. No.	**Details**	**Expenditure details**	**Estimated expenditure**
4	Water sample testing charges Conveyance charges	a. Bacteriological tests = No. of samples per year × rate/sample	UZS. _____
		b. Chemical tests = No of sample/year × rate/ sample	UZS. _____
5	Water Committee Office (stationary, log books, misc.)	Monthly expenditure × 12 months	UZS. _____
Total of A	Operation cost (1+2+3+4+5)		UZS. _____
B.	**Maintenance & repair (M&R) expenditures**		
7	M&R expenditure for Water Sources	a. Hand pump M&R expenditure = No. of hand pumps × annual maintenance cost	UZS. _____
		b. bore well M&R expenditure = No of bore wells × annual maintenance cost	UZS. _____
		c. Open well M&R expenditure = No of wells × annual maintenance cost	UZS. _____
		7(a+b+c)= total	UZS. _____
8	Reserve fund for any major repairs	Reserve fund = 20 % of Sum of (1 to 7)	UZS. _____
Total of B	Total M&R expenditures	Sum of (6 to 8)	UZS. _____
9	Total operation and M&R expenditure	(A+B)	UZS. _____

CHAPTER 5. ENSURING SAFETY OF DRINKING WATER IN MAHALLAS AND VILLAGES

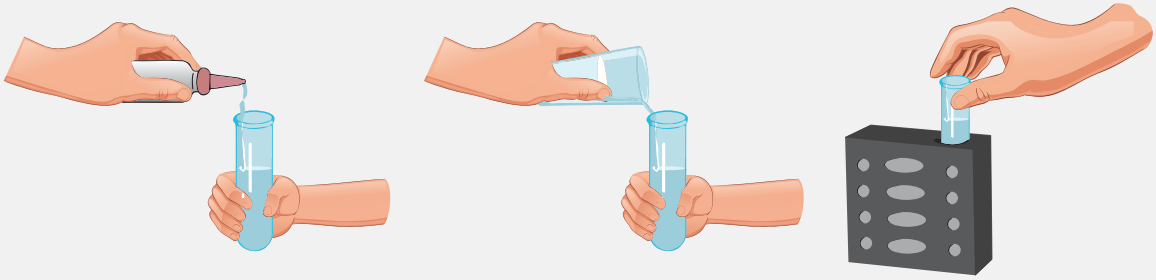
5.1 Chlorination

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.



OT test kit

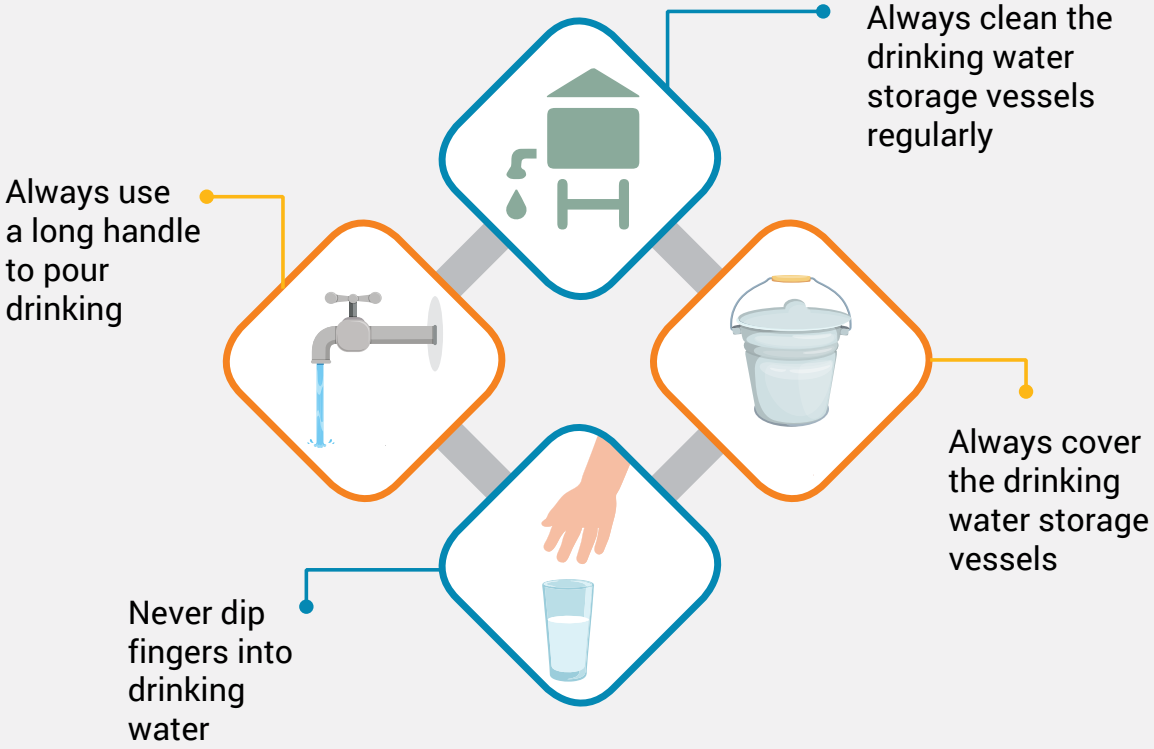
5.2 Maintenance and documentation records of water quality and safety

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

My responsibility as a District Deputy Khakim on Construction Issues, MC and VCC chairperson

- 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.
- 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/ mahallas.

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.

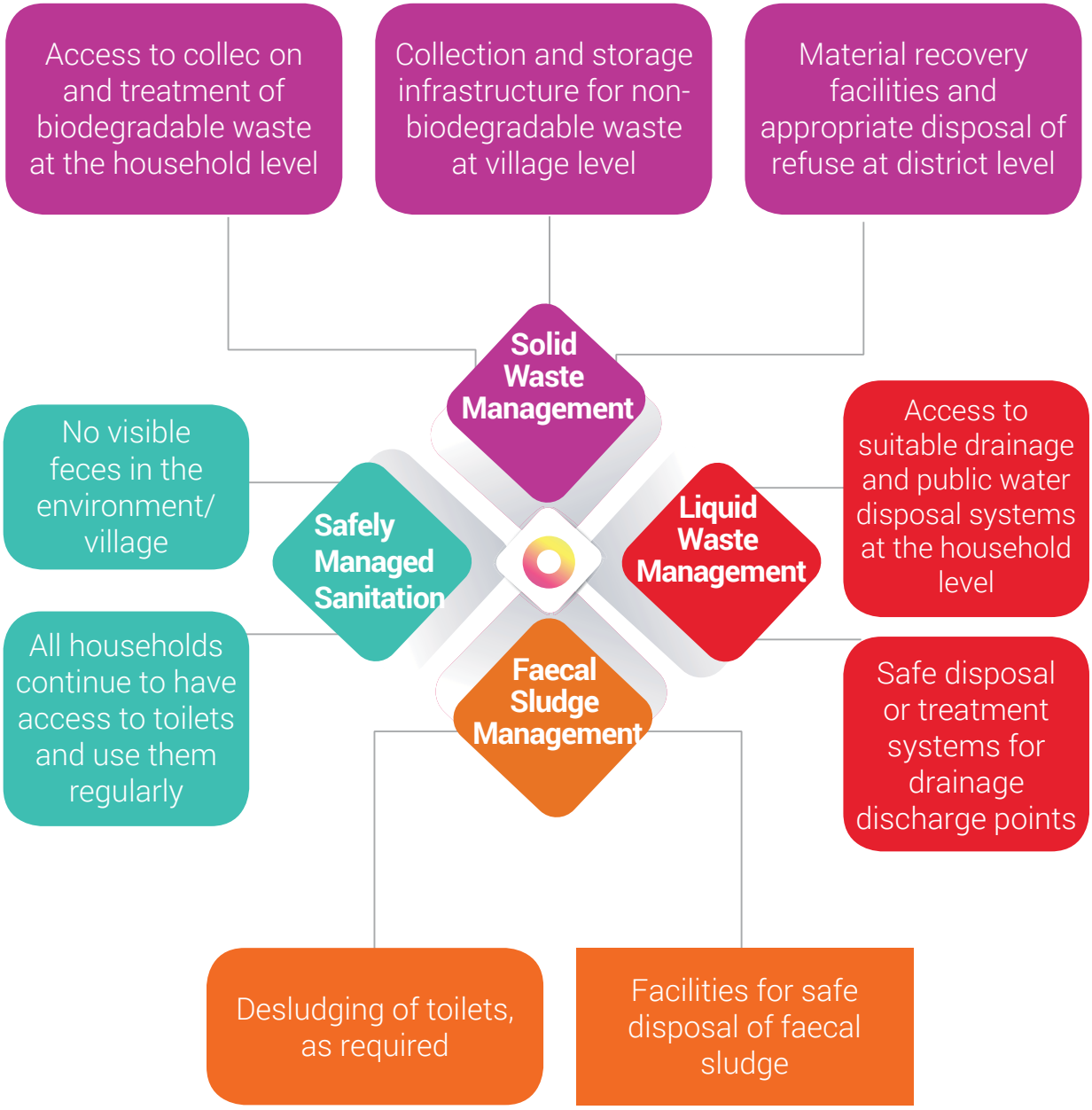
CHAPTER 6. **SANITATION**

A village is considered to have safely managed sanitation system if it sustains its sanitation status and safely manages its solid and liquid waste. Following are the key guiding principles for safely managed sanitation, which need to be considered at the village level.

6.1. Safely Managed Sanitation guiding principles*

1. To achieve the goal of safely managed sanitation system, funds functionaries and functions of other programmes should be used through appropriate convergence mechanisms.

6.2. Key components of Safely Managed Sanitation



CHAPTER 7. SUSTAINING SAFELY MANAGED SANITATION IN MAHALLAS AND VILLAGES

7.1. What to do to keep village and environment clean

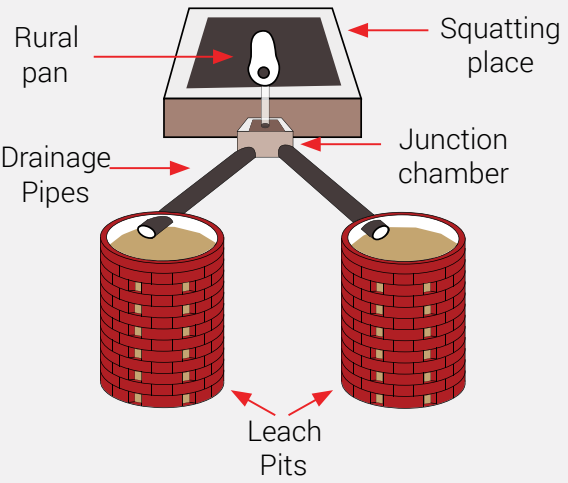
- Regular use of toilet – every time by everyone
- Proper containment and disposal of human excreta
- Disposal of child faeces in toilets only
- Ensuring clean and hygienic surroundings
- Safe disposal and management of solid and liquid waste

7.2. 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)

Don'ts:

- Do not use both the pits at the same time
- Do not use caustic soda or acid for cleaning the pan
- Do not throw sweepings, vegetables, rags, cotton waste and cleaning materials like corn cobs, mud balls, stone pieces etc. in the pan or pits.
- Do not allow rain water, kitchen or bath waste water to enter the leach pits
- Do not throw cigarette buts in the latrine
- Do not desludge the pits before one /one and half year of its being out of use

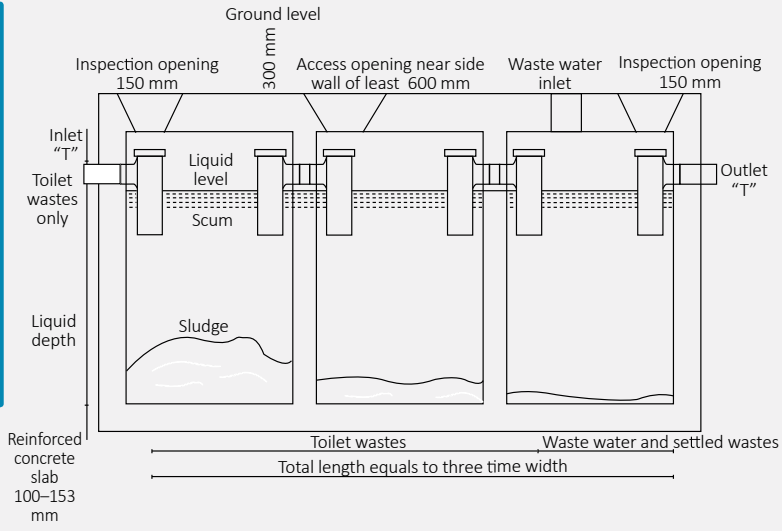
Limitations

- Not recommended for areas with high water table, areas prone to flooding and coastal areas

Septic tank

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

*** Consists of a tank connected to a soak pit**



Note: Soak pit is necessary for septic tank

Caution: Not to be containment structure

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

Don'ts:

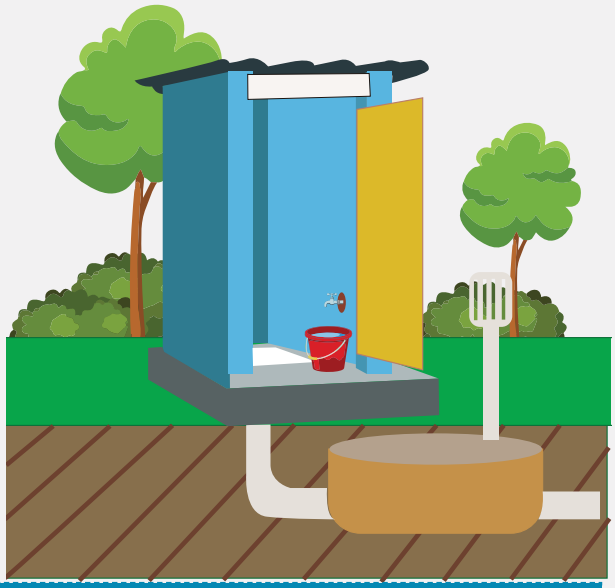
- Don't construct deep tanks
- Don't dispose sanitary napkins, wrappers, baby diapers in the toilet
- Don't overuse cleaning chemicals. This is hard for the bacteria to break down and will kill good bacteria
- Don't plant trees, shrubs near the tank and soak pits
- Don't park vehicles on septic tank
- Don't store the sludge in tank for more than 4-5 years

Limitations:

- Requires more space
- High cost of construction
- Periodic emptying
- More water and no manure output

Bio toilet

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



Limitations:

- Higher cost
- Unavailability of material (bacterial inoculum)

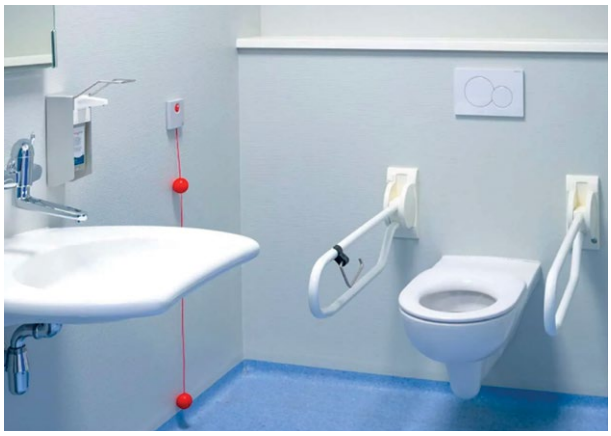
Advantages:

- 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

7.3. Toilet facilities for People with Disabilities

The Government promotes accessible toilets for people with disabilities. 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 people with disabilities.
- 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 state funds and easy availabilty of materials
- Sensitization of people with disabilities users, their families and community members



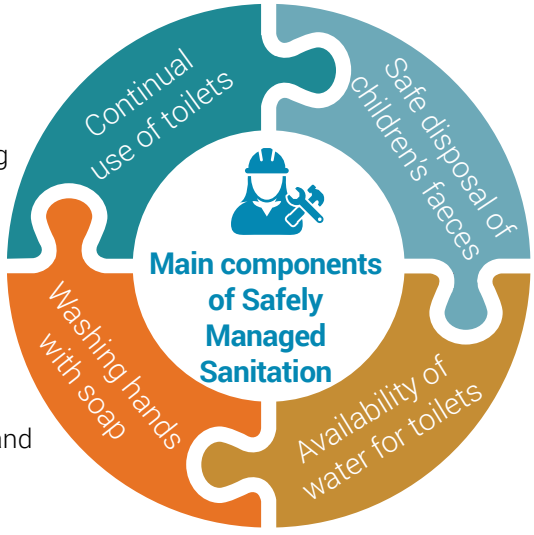
Toilet for People with Disabilities

7.4. Retrofitting of toilets

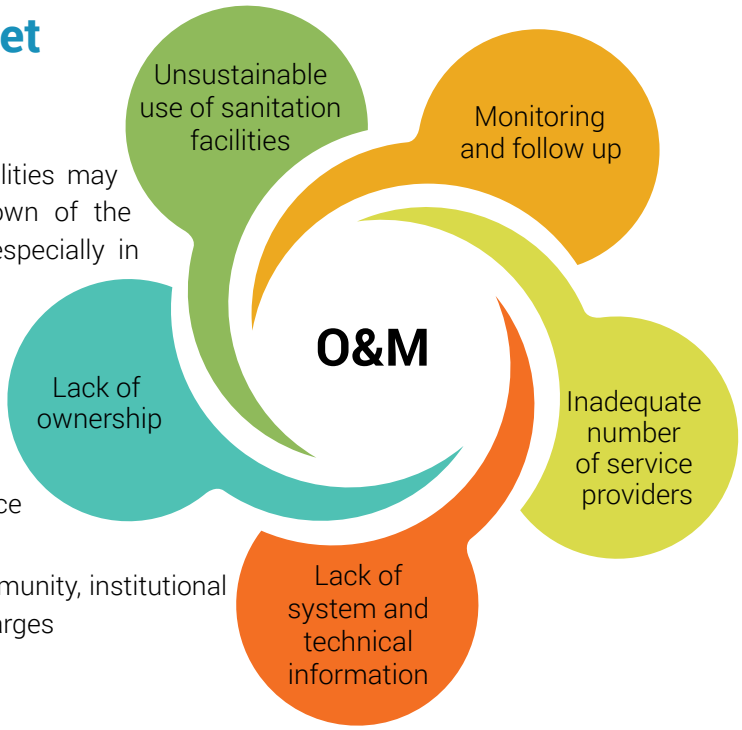
Toilets need to be retrofitted or repaired to fix technical aberrations, if any, to manage safe disposal of excreta and to make them user-friendly so as to ensure sustained use of toilets.

Why toilets need to be retrofitted/repaired/ 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 People with Disabilities.
- Helps in repairing and fixing damaged parts of the toilet.
- Helps in adapting to the local soil type, land topography and climate.



7.5. 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

My responsibility as a District Deputy Khakim on Construction Issues, MC and VCC chairperson

- Ensure that all households in the communities have access to a safe and functioning toilet which is used and maintained properly.
- Ensure that all institutional toilets (schools, 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 in their work.
- Mobilize funds for repair/retrofitting/ improvement and O&M of toilets.
- Conduct IEC activities to ensure that the safety managed sanitation status of the village/mahalla is sustained

Checkpoints

- ☑ Do all households in the district/community have access to toilets and is everyone using the toilets at all times?
- ☑ Do all institutions in the district/community 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 8. SOLID AND LIQUID WASTE MANAGEMENT (SLWM)

8.1. 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.

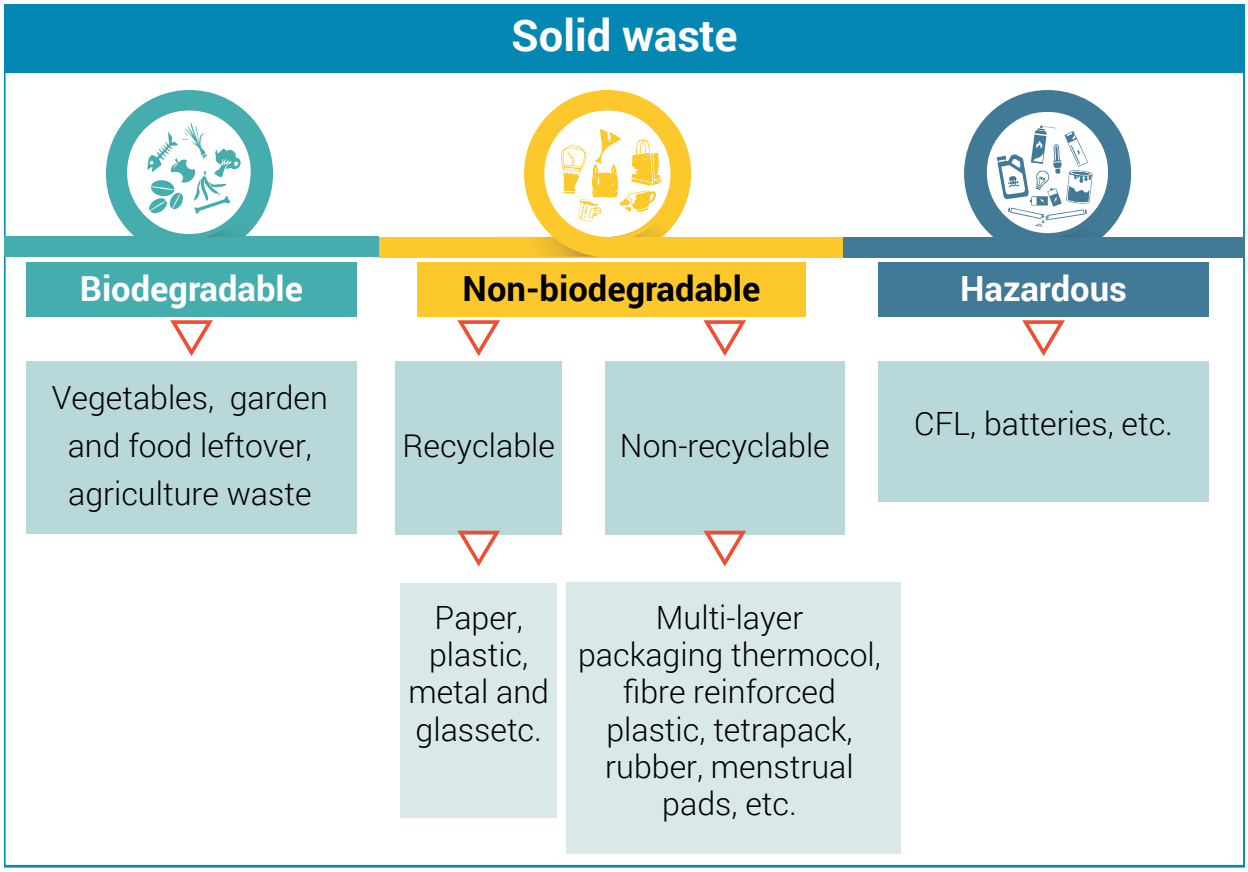
Solid waste

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.

8.2. What are the types of waste generated in mahallas and villages?



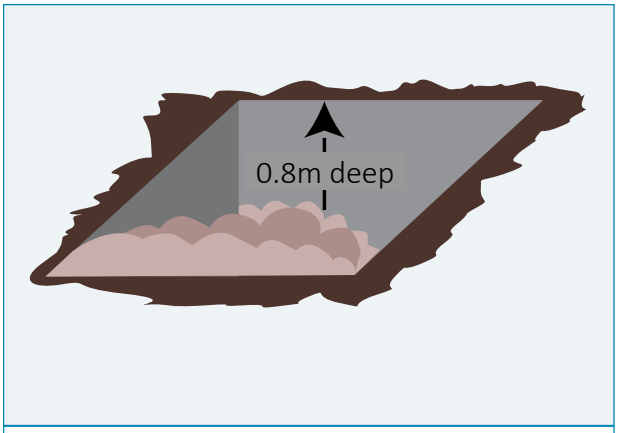
8.3. Biodegradable solid waste management

Rural settings in the Republic of Karakalpakstan and Uzbekistan 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, 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.

8.4. Technologies of biodegradable waste management



Underground lined manure pit garbage

Overground brick lined compost pit

Vermi composting

8.5. 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.

Identify households and bulk waste generators (hostel, market, marriage halls, etc.) and quantify waste generated

Village resolution on biodegradable waste

- Mandatory waste segregation at source

Conveyance plan

- Village may develop conveyance plan to collect waste from households and bulk generator regularly

A. Biodegradable processing plan

- Household with cattle must either feed biodegradable waste to the cattle or mix for composting
- Households without cattle are encouraged to have on-site compost pits
- Village level vermicomposting units may be implemented for remaining households and bulk generators

B. 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

Determine suitable business model

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

My responsibility as a District Deputy Khakim on Construction Issues, MC and VCC chairperson

- Vet projects and verify the background – proposed land, police verification, financial records, etc.
- Encourage strong IEC for community uptake of waste segregation.
- Ensure district khakimyat 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 mahallas.

Checkpoints

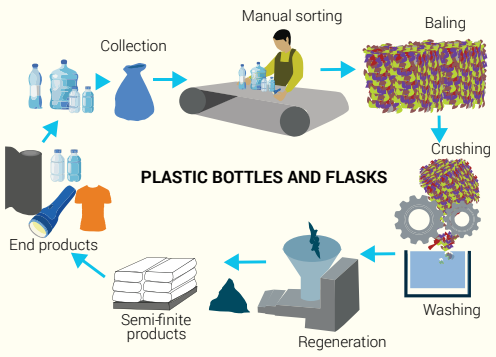
- ☑ Does the district khakimiyat/MC/VCC know the total quantity of waste generated in the district/community?
- ☑ Did the district khakimiyat/MC/VCC analyse the present status of solid and liquid waste management in the community?
- ☑ Has the community been made aware of the different ways of managing waste at household and community levels?
- ☑ Has the district khakimiyat approved the action plan?
- ☑ Has the action plan been integrated in the MC/VCC Development Plan?
- ☑ Are funds available for the action plan?
- ☑ Has the district khakimiyat/MC/VCC been able to implement the SLWM action plan?

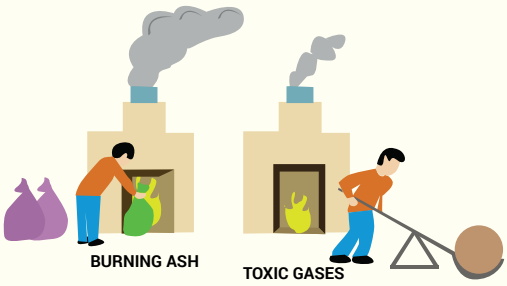
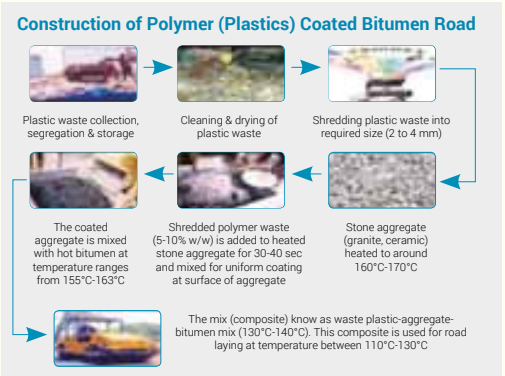
CHAPTER 9. PLASTIC WASTE MANAGEMENT

9.1. 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.

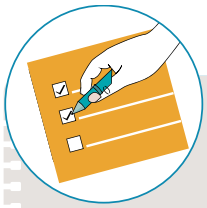
9.2. Methods of processing plastic waste

Description	Process	Advantages/ Disadvantages
Recycling		
▶ Recycling is the combination of several technologies carried out on waste/ discarded plastic ▶ Reduces generation of secondary products ▶ Allows recovery of raw material from waste for a purpose that would otherwise require consumption of new resources	▶ Select suitable waste scrap for recycling / reprocessing ▶ Segregate plastic as per the Government Standards guideline codes ▶ Wash before shredding, agglomerate, extrude and granulate	▶ Reduces the use of oil ▶ Helps to extend the lifespan of remaining fossil fuel reserves
		▶ 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.)

Incineration		
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  	▶ Directly burns waste in the presence of excess air (oxygen) at temperature about 800°C and above ▶ Liberates heat energy, inert gases and ash	▶ Efficient way to reduce waste volume and demand for landfill space ▶ Allows recovery of energy/fuel from heat generation (Note that low quality incinerators do not burn waste completely and so release poisonous gases)
Landfilling		
Landfilling is the means of disposing of waste under the soil cover  	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.	Reduces possibilities for recovery of any secondary raw materials or energy for further use
Polymer blended bitumen roads		
This is a process of road laying using waste plastics  	▶ Cleaned and dried plastic is shredded in to small pieces ▶ Aggregate is heated to 165°C in mini hot mix plant ▶ Shredded plastic is added to the hot mix. The plastic gets softened and coated over the surface of the aggregate, giving an oily look	Avoids leakage of polymer from the bitumen layer, even after laying the road using a waste plastic- bitumen-aggregate mix ▶ Waste plastic polymer-bitumen reduces the bleeding of bitumen during the summer. ▶ Fly ash does not leach from this mixture

My responsibility as a District Deputy Khakim on Construction Issues, MC and VCC chairperson

- Conduct an assessment of plastic waste collection activities in the 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.



Checkpoints

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

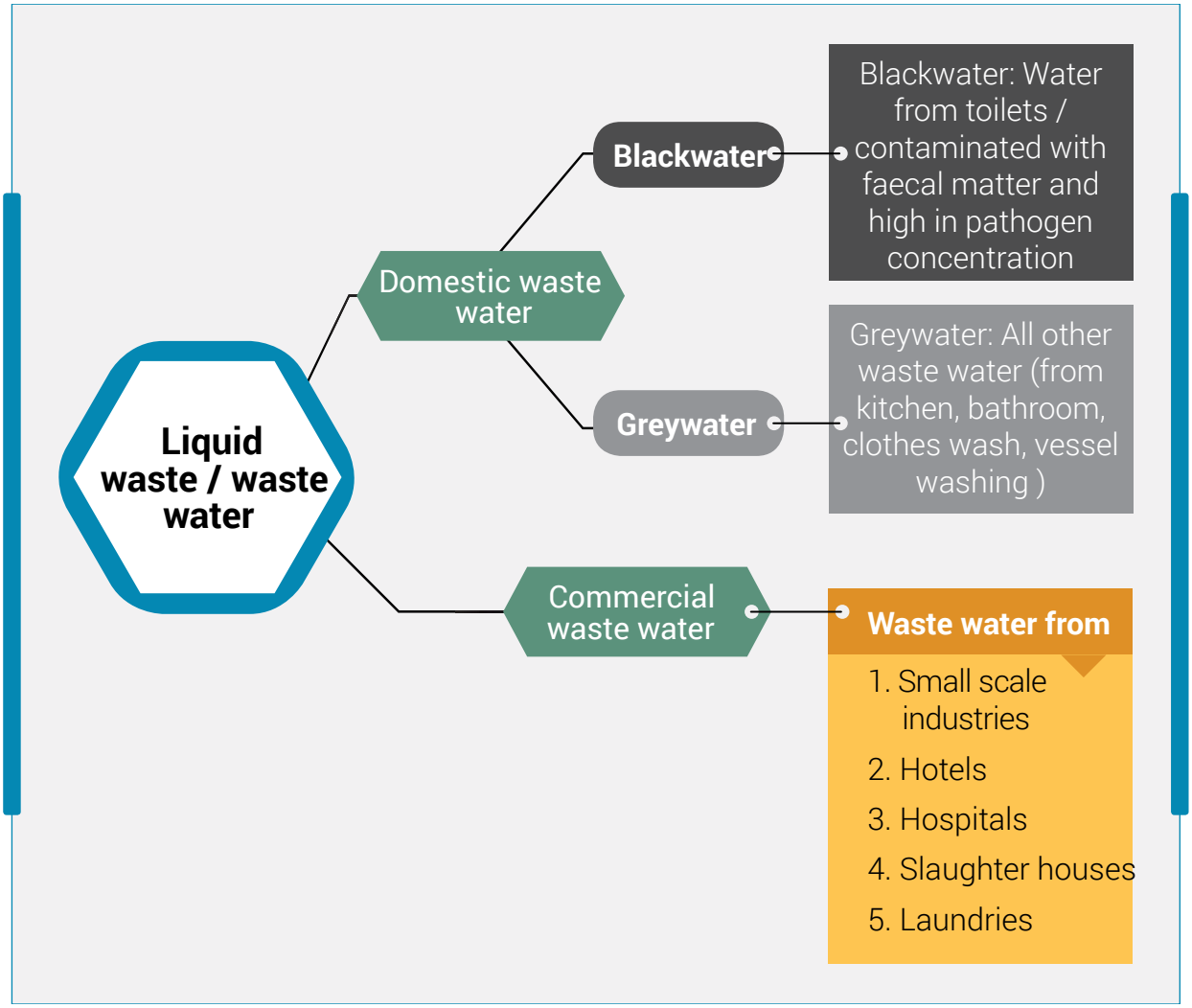
- ☑ **Reduce:** Carry your own cloth or paper bags. Avoid products with lots of plastic packaging, etc.
- ☑ **Reuse:** Reuse plastic jars, bottles or containers for storage
- ☑ **Recycle:** Recycle plastic into storage bottles, toys, buckets and other usable items
- ☑ **Recover:** Use of waste as fuel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

CHAPTER 10. **LIQUID WASTE MANAGEMENT – GREYWATER**

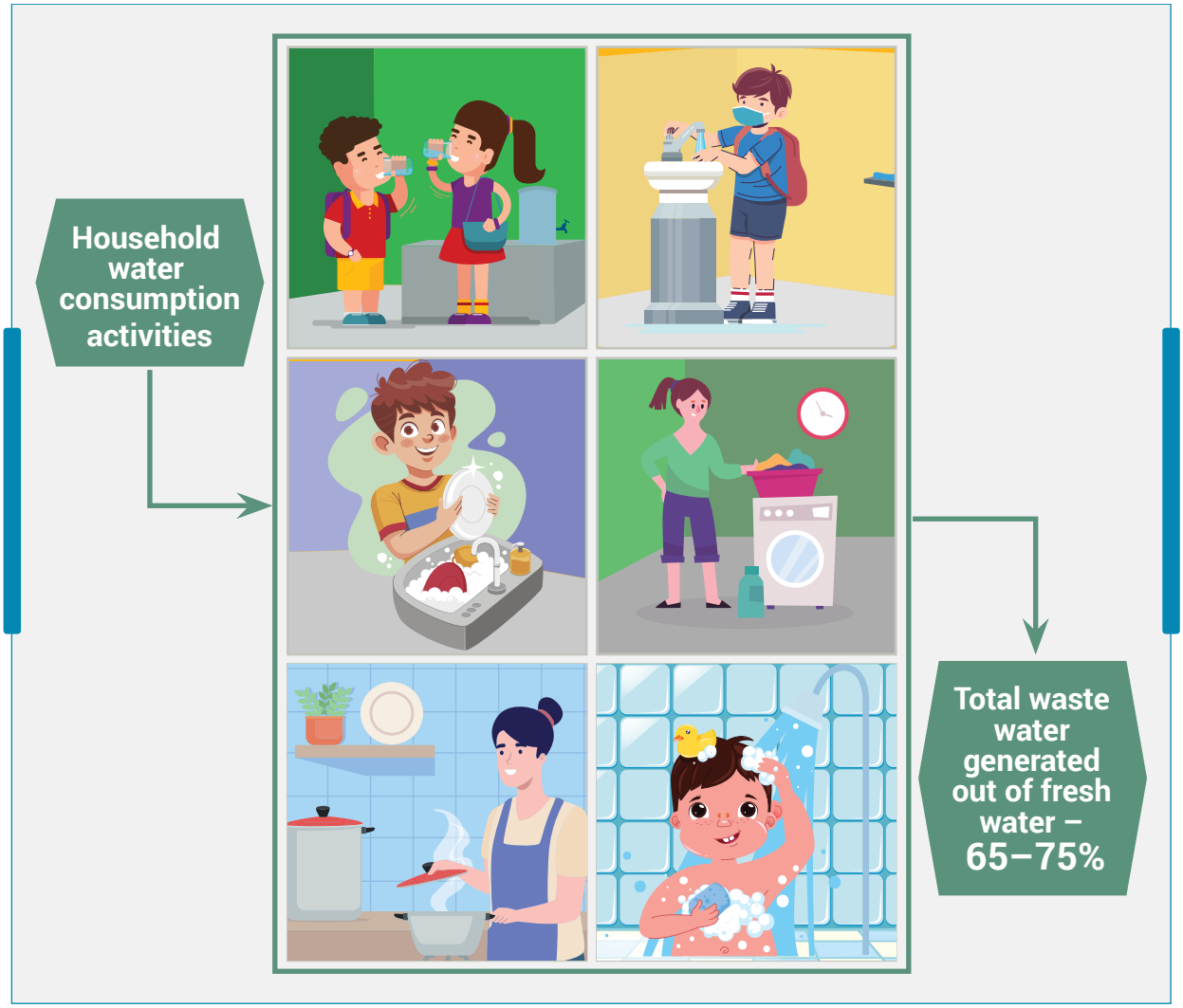
10.1. What is liquid waste?

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."

10.2. Type (nature) of liquid waste



10.3. How much waste water is generated in a household?



10.4. 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)

10.5. 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 District Deputy Khakim on Construction Issues, MC and VCC chairperson

- 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 technicians for continuous follow-up and monitoring.

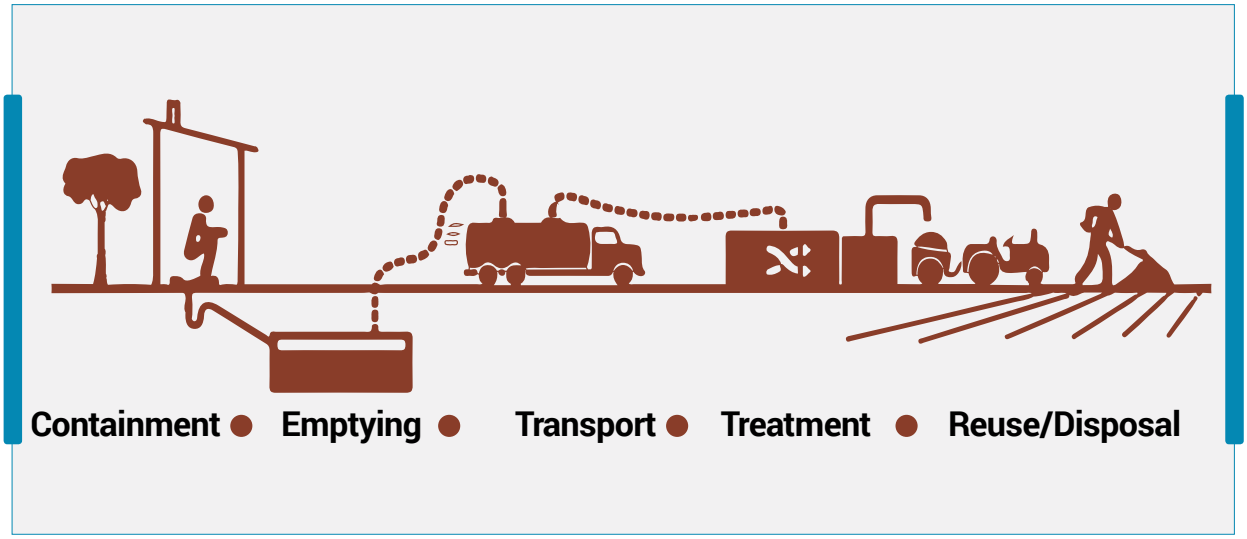
CHAPTER 11. FAECAL SLUDGE MANAGEMENT

11.1. 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.

11.2. 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.



11.3. 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, district waste management departments, 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 community 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 community.

11.4. 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.

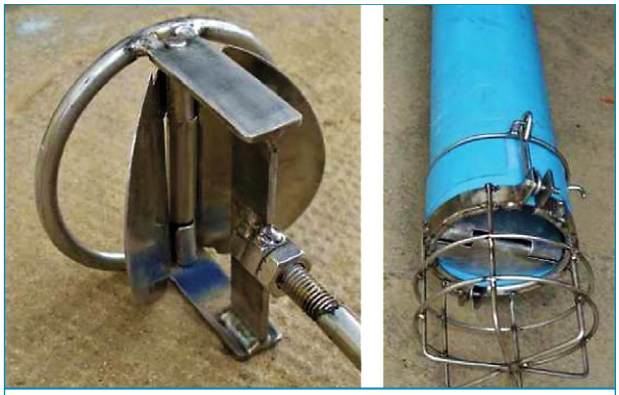
b. For twin leach pit toilets: Once one pit is full, the pit should be kept closed while the other pit is used. The pit is to be kept closed for at least a year. After that, the dried decomposed manure from faecal sludge can be emptied, dried, powdered and stored for use as agricultural fertilizer.

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.

11.5. Technology for FSM

Collection and transportation

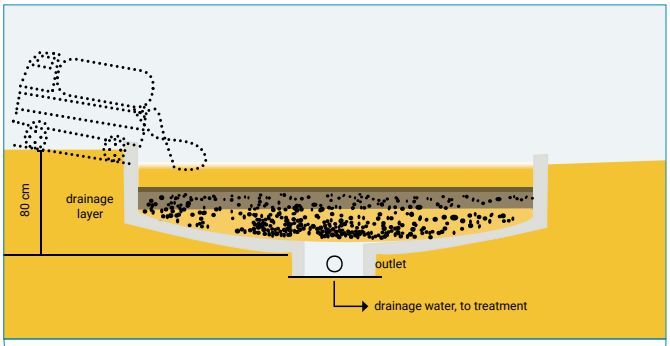
Vacutug or Vacuum tugs



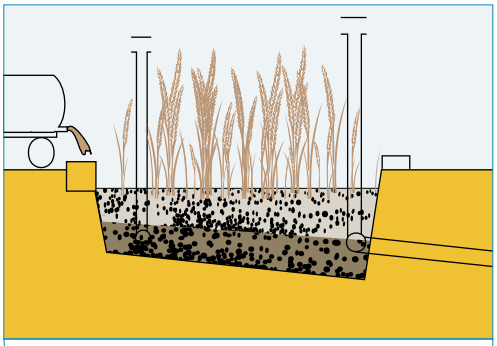
Gulper

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

STEP 5: 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 District Deputy Khakim on Construction Issues, MC and VCC chairperson

- Conduct an assessment of sanitation facilities in households and public buildings, including the FSM status in the MC/VCC villages.
- Promote construction of flush toilets, improved pit latrines, bio toilets with improved FSM structures.
- 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.
- Ensure sanitary norms for handling and disposal of faecal sludge are followed.
- Maintain contact list of entrepreneurs providing FSM and O&M service.

CHAPTER 12. **HAND HYGIENE MANAGEMENT**

12.1. Introduction

Hand hygiene is a key line of defence for many diseases, including diarrhoea and cholera. It follows that to maintain hand hygiene across the board, and get more people into the habit of regularly washing their hands, public handwashing facilities (HWF) with soap and water are essential.

Handwashing with soap and water is one of the most cost effective public health interventions:

- 16%–23% reduction in acute respiratory infection
- 50% reduction in pneumonia
- Substantial reductions in neonatal infections
- Up to 48% reduction in endemic diarrhoea
- Reduces seasonal corona virus up to 36%

For many years, UNICEF and other organisations have been working with governments to install handwashing facilities in a wide range of public places and buildings. Locations include markets, public transport hubs, public and communal toilets, and buildings such as healthcare facilities, schools, restaurants, places of worship, and commercial and public offices.

A comprehensive hygiene behaviour change programme needs to: motivate people to practise good behaviours; put in place inclusive facilities in settings where behaviours need to happen (with visual cues and nudges as reminders); embed good habits and make them a social norm.

Access to handwashing facilities in the households and public buildings are equally important in prevention of diseases.

12.2. Design Principles

The design of the handwashing facility will depend on the context and needs of the area so it is not possible to present a single solution. However the table below sets out key issues for the designer to consider.

Principles for the design of the handwashing facility		
Key features		**Factors to consider**
Attractive, convenient and easy-to-use		
1	Attractive and pleasurable to use	This includes painting the facility in bright colours; use of high-quality materials and fittings; use of decent-quality soap; and adding accessories such as a mirror (a mirror above the handwashing place may encourage people to spend longer washing their hands).
2	Easy-to-use	The tap, soap and water should all be easy and intuitive to use taking into account the targeted users.
3	Accessible to all users.	The height and design of the basin and tap need to be adjusted for children and people with disabilities. For children the height should be 500–700mm and for wheelchair users less than 850mm.4 In practice, this will require either two handwashing facilities set at different heights, or a single unit with two taps and basins. For wheelchair users, older people who might be unsteady on their feet and other people with disabilities that affect their mobility, check that they don't need to lean too far forward to reach the tap/soap/basin or push too hard to access the soap or turn the tap on. The area around the basin should be flat with a non-slip surface.
4	Sufficient taps	The maximum number of users during peak demand should be taken into account when deciding how many taps are needed. One handwashing facility with many taps or multiple separate units may be required to prevent queues (people's willingness to queue for handwashing will be much less than for a waterpoint or communal toilet for example).
5	Appropriate size/ shape	Where space is limited (typically inside buildings) the handwashing facility design may need to be adapted accordingly, ensuring it accommodates diverse users – mainly people using wheelchairs, caregivers supporting them and children. Consultation with a wide range of users when developing designs/ prototypes is important.
Facilitates effective hand hygiene		
6	Reliable water supply	Unless there is a reliable 24/7 piped water connection available, a local water storage container will be required. This could be part of the handwashing facility, or in the case of a building a central storage tank may be sited on a roof or an elevated stand to supply multiple handwashing facilities.
7	Allowing both hands to be washed at the same time and rubbed together, but avoiding unnecessary waste of water	A high flow rate is not required for effective handwashing,9 so selection of taps with a low flow rate can reduce water consumption (though the flow rate will vary with water pressure). Some taps are also self-closing to avoid wastage. Depending on funds, the taps should require minimal touching for opening and closing in order to reduce pathogen transmission.

8	Soap available at all times	There are various options with advantages and disadvantages to consider: • Liquid soap is generally preferred. However, it is expensive so may be a desirable item to steal, and may require frequent refilling (to avoid this we recommend selecting larger containers than normal household dispensers). Also, consider installing the soap in a lockable container. • Soapy water can be made-up as a low-cost alternative, and is equally effective for good hand hygiene,10 but may be seen as less attractive by users. • Bar soap may be the easiest option, but is highly likely to go missing in a public facility. This risk can be reduced by fitting the soap on a string. For efficiency, in a school setting for example, a big bar of soap can be cut into multiple pieces and placed next to each tap, rather than having to open many bars of soap. Alcohol-based hand rubs are equally effective if they are available. They can be used as an alternative to soap and water when soap and water are not practical/available.
9	Avoid splashing and provide good drainage	The basin should be large enough to avoid splashing. The waste pipe should be large enough to avoid getting blocked with dirt and scum (32mm or 40mm pipe should be sufficient) and have quality fittings to prevent leaks. Connection to a soak-pit or drain will depend on the location and existing drainage system if available.
10	Hand drying	In most cases, air-drying is likely to be the most practical option. However, shaking wet hands does pose a risk of re-contamination in some settings, such as healthcare facilities, so a means of drying will be required – such as disposable paper towels.

In addition to the above, a hygiene behaviour change campaign needs to be conducted to motivate people to thoroughly wash both hands regularly and in relevant settings. Behaviour change campaigns should be surprising, attractive, rewarding, emotional and motivating for people.

Any promotional activities should use 'do no harm' principles, such as maintaining physical distancing if diseases like COVID-19 are spreading, and use non-contact methods for promotion, such as digital media, to avoid any chance of cross-contamination.

Any public communication/promotional session should use the standard behaviour-change package. People should be exposed to a campaign message many times to reinforce the behaviour change. Behaviour change sessions should also emphasise that hygiene is the responsibility of everyone, not (as is often the case) just women.

12.3. Management, Operation and Maintenance

It is critical that all handwashing facilities are kept fully operational and clean. Poorly maintained or unclean facilities will deter people from washing their hands, and can become an epicentre for transmitting diseases.

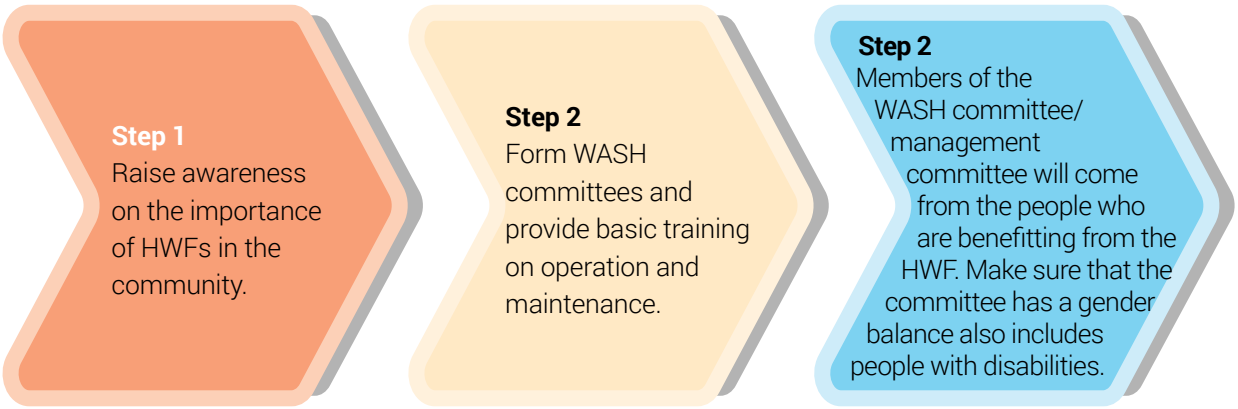
Service providers should co-develop the operation and maintenance (O&M) plan in coordination with user groups and the body responsible for managing the facilities.

Proper training on maintaining the facilities for the long term should be given to user groups, communities, management committees, WASH committees and healthcare workers.

Management

The management of HWFs is often the responsibility of the governing body of relevant institutions or public buildings. In schools, for example, the school administration would typically assume the management upon completion of works (assuming funds to do this have been provided by an external organisation). In public places, including religious places, bus terminals and marketplaces, local government is typically responsible, or the management of organisations contracted to take care of the HWF. Management committees formed from local communities and users can also take on responsibility.

The management model used by the various host facilities or institutions vary. In some there are already existing management committees such as a school management committee, HCFs management committee, bus management committee, religious places management committee etc. Where there is no committee, use the following steps to identify and involve the community:



This guide proposes daily and weekly activities for the committees, to include:

- Supervising the construction of HWFs.
- Ensuring that the HWFs are kept clean and are in use all the time.
- Producing a cleaning rota and ensuring it is followed.
- Maintaining a budget for operation and maintenance and keeping spares of soap and supplies (such as taps) that frequently get damaged.
- Regular monitoring of HWFs to ensure they are always maintained, keeping them free from leaks and vandalism.
- Replacing worn-out components and maintaining records of spares.
- Periodically assessing HWFs using checklists to ensure sustainability of the installed facilities and seeking professional support in cases of routine repairs and a major breakdown.
- Keeping a record of finances.

Operation

The day-to-day running of the HWF in different institutions is mainly the responsibility of a designated person or people. In HCFs these are the cleaners, in schools a teacher is often nominated to supervise pupils who clean daily, in public markets there tends to be dedicated staff, and in local government institutions, a member of staff will typically be responsible for the HWF.

Maintenance

This means activities required to sustain HWFs in proper working condition (including preventive, corrective and crisis maintenance). The designated person should have basic maintenance training in case of breakages. Regular preventative maintenance checks need to be conducted by a technician, who should investigate the condition of water tanks, water supply pipes, taps and drainage. It is recommended that this regular maintenance is carried out every three-to-six months depending on how many people are using the HWFs.

CHAPTER 13. 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 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

Unsafe ↓	**General practices** ▶ Throwing unwrapped waste or waste wrapped in plastic/ paper into fields, rooftops, water bodies, etc. ▶ Throwing in latrines/toilets ▶ Open burning ▶ Shallow burial (burial in shallow pits)
Safe ↓	▶ Throwing waste wrapped in paper/plastic bag into separate dustbins ▶ Deep burial for de composting ▶ 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) ▶ Municipal waste management/burning in biomedical waste incinerators (seen more in urban areas)

My responsibility as a District Deputy Khakim on Construction Issues, MC and VCC chairperson

- 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 MC/VCCs has to converge resources from various available sources including existing government schemes and programmes and ensure optimal use of the available funds.

Integration with Central and State Government schemes

The MC/VCC, along with district khakimiyats, is responsible for developing the District/MC/VCC Development Plans 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 / MC/VCC level.

My responsibility as a District Deputy Khakim on Construction Issues, MC and VCC chairperson

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, health centres, MC/VCC buildings, etc.
b. Augmentation of water sources
c. O&M of community assets created

B. Converge with various financial resources from the District Khakimiyat Development Programmes resource envelope such as:

a. District Khakimiyat/MC/VCC's own funds including water tariff, drainage fees, sanitation taxes, etc.
b. State Regional Budget funds
c. State District Budget funds
d. State-specific funds for water and sanitation and its O&M
e. Schemes of related central/state line departments, such as the Ministry of Construction, Housing and Communal Services, Water Supply Institutions, school education, etc.,
f. Corporate social responsibility funds
g. Community contributions
h. Funds received through awards, loans, if any
i. Any other untied funds devolved to MC/VCC

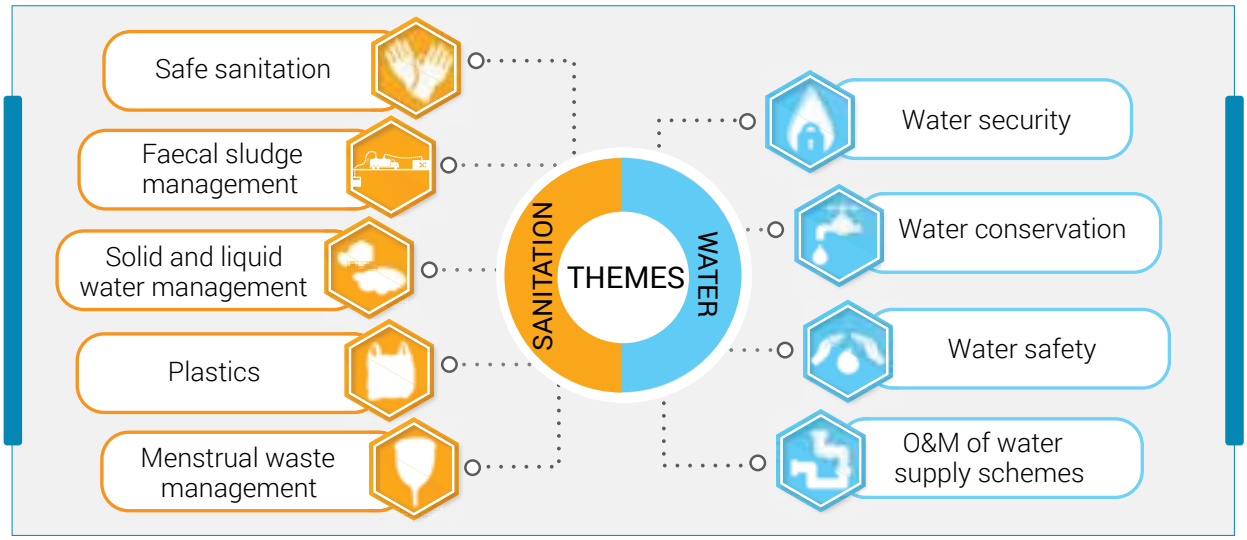
CHAPTER 15. INFORMATION, EDUCATION AND COMMUNICATION

15.1. Introduction

To achieve the goal of safe sustainable water and sanitation facilities for all in rural settings of the Republic of Karakalpakstan and Uzbekistan, 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 messages which MC/VCCs can use

Water			
Water security	**Water safety**	**Water conservation**	**O&M of water supply scheme**
▶ Importance of safe and adequate water for better health ▶ Importance of sustaining water resources ▶ Cleanliness of water bodies/ no waste disposal in water bodies ▶ Maintain cleanliness around the source and in catchment area ▶ Water scheme details and their relevance ▶ Promote household connections ▶ Promote paying of water bills and inform about cost of safe water	▶ What is safe water ▶ Health benefits of safe water ▶ Safe storage and handling of water at household level ▶ Regular testing of water sources	▶ Importance of water as a precious resource and its judicious use ▶ Avoid misuse and wastage of water ▶ Revive traditional methods of water conservation	▶ MC/VCC community contribution for O&M ▶ Value and pay for water for long-term durability of the water supply scheme ▶ Ownership of schemes by protecting infrastructure from damages and theft

Sanitation				
Sanitation and hygiene practices	**SLWM**	**Plastics**	**Menstrual waste management**	**FSM**
Toilet use by all at all times All children from age 3 onwards must learn how to use a toilet for defecation with guidance from a caregiver at critical times – after defecation, before food Maintain and keep toilets clean and functional repair toilets if there are technical aberrations Inform about availability of alternate financing for sanitation	Reuse of greywater	Say no to plastics Avoid products with a lot of plastic packaging 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	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 Ensure that the process of disposal and destruction of used menstrual materials is done with minimal human contact and with minimal environmental pollution	Desludging of septic tanks

My responsibility as a District Deputy Khakim on Construction Issues, MC and VCC chairperson

A MC/VCC 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 awareness raising workshops, competitions, rallies, bringing high visibility to water and sanitation issues.
- Reach every section of the community, to motivate and mobilize for mobilization and other voluntary activities. Gain their participation in planning, implementing and management processes.

B. Build a skilled team of influencers and mobilizers

- 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 MC/VCC members/ ward members; village-level frontline workers: healthcare workers, teachers, religious leaders, volunteers; NGOs/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 effectively implement communication interventions with regular community meetings and home visits.
- Ensure IEC activities are implemented as planned and on time.