



Rural Drinking Water and Sanitation Department

Karnataka State Rural Sanitation Policy, Strategy and Model Bylaws





“Sanitation is more important than political independence”

- Mahatma Gandhi

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LIST OF ABBREVIATIONS

ABR	Anaerobic Baffle Reactor
AF	Anaerobic Filter
AIP	Annual Implementation Plan
APL	Above Poverty Line
ASHA	Accredited Social Health Activist
ASP	Aerated Static Pile
ASP	Activated Sludge Process
BCC	Behaviour Change Communication
BPL	Below Poverty Line
CapEx	Capital Expenditure
CBO	Community Based Organisation
CEO	Chief Executive Officer
CF	Carbon Filter
CPHEEO	Central Public Health and Environmental Engineering Organisation
CSO	Chief Security officer
CSR	Corporate Social Responsibility
CW	Constructed Wetland
DC	Deputy Commissioner
DEWATS	Decentralised Wastewater Treatment System
DPR	Detailed Project Report
DWSM	District Water and Sanitation Mission
EO	Executive Officer
EPR	Extended Producer Responsibility
FS	Faecal Sludge
FSM	Faecal Sludge Management
FSSM	Faecal Sludge and Septage Management
FSTP	Faecal Sludge Treatment Plant
GFP	Government Furnished Property
GP	Gram Panchayat

GPS	Global Positioning System
HDPE	High Density Polyethylene
HH	Household
HRD	Human Resource Development
IEC	Information Education and Communication
IHHL	Individual Household Latrines
IMIS	Integrated Management Information System
KLD	Kilolitre per Day
KRC	Key Resource Centre
KSNDMC	Karnataka State Natural Disaster Monitoring Centre
KSPCB	Karnataka State Pollution Control Board
MBBR	Moving Bed Biofilm Reactor
MBGL	Metre below ground level
MBR	Membrane Bio Reactor
MDWS	Ministry of Drinking Water and Sanitation
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MHM	Menstrual Hygiene Management
MIS	Management Information System
MLALAD	Member of Legislative Assembly Local Area Development
MPLAD	Member of Parliament Local Area Development
NABARD	National Bank for Agriculture and Rural Development
NGO	Non-Governmental Organisation
NRLM	National Rural Livelihood Mission
NSS	National Service Scheme
O&M	Operation and Management
ODF	Open Defecation Free
OpEx	Operating Expenditures
PDB	Planted Drying Bed
PDO	Panchayat Development Officer
PMAY	Prime Minister Awas Yojana

PPE	Personal Protective Equipment
PRA	Participatory Rural Appraisals
PRI	Panchayati Raj Institutions
PVC	Poly Vinyl Chloride
PWM	Plastic Waste Management
RALU	Rapid Action Learning Units
RDF	Refuse-derived Fuel
RDPR	Rural Development and Panchayat Raj
RDW&SD	Rural Drinking Water & Sanitation Department
RLWM	Rural Liquid Waste Management
SBM	Swachh Bharat Mission
SBM(G)	Swachh Bharat Mission Gramin
SC	Scheduled Caste
SF	Sand Filter
SHG	Self-Help Group
SLSSC	State Level Scheme Sanctioning Committee
SLWM	Solid and Liquid Waste Management
SO	Support Organisation
SPMRM	Shyama Prasad Mukherji Rurban Mission
ST	Scheduled Tribe
STP	Sewage Treatment Plant
SWM	Solid Waste Management
TP	Town Panchayat
UDB	Unplanted Drying Bed
UGD	Underground Drainage
ULB	Urban Local Bodies
VHSNC	Village Health Sanitation and Nutrition Committee
VWSC	Village Water and Sanitation Committee
WASH	Water, Sanitation and Hygiene
WSP	Waste Stabilization Ponds
ZP	Zilla Panchayat

KARNATAKA STATE RURAL SANITATION POLICY



I. INTRODUCTION

- 1.1. The practice of open defecation, poor personal hygiene practices and lack of proper treatment of solid and liquid wastes has had a detrimental impact on public health, child mortality, gender equity, environment and economy in rural areas. Specifically, with respect to health, incorrect disposal of solid and liquid waste has resulted in the growth of water borne diseases such as diarrhoea, malaria, dengue, cholera and typhoid. It is estimated that 88% of the total disease burden in rural areas is due to a lack of clean water, sanitation and improper solid and liquid waste management¹. The health and social impacts are higher on vulnerable and marginalised communities, including children especially those under the age of five, young girls and women.
- 1.2. With the above context, Swachh Bharat Mission was launched on October 02, 2014 to attain the goal of universal sanitation coverage and achieve Swachh Bharat by October 02, 2019, the 150th birth anniversary of Mahatma Gandhi. The Swachh Bharat Mission has two sub-missions, Swachh Bharat Mission (Gramin) (“SBM(G)”) administered by the Ministry of Drinking Water & Sanitation (MDWS) and the Swachh Bharat Mission (Urban) administered by the Ministry of Housing & Urban Affairs (MoHUA). SBM(G) has the following main objectives:
 - (i) Bring about an improvement in the general quality of life in the rural areas, by promoting cleanliness, hygiene and eliminating open defecation.
 - (ii) Accelerate sanitation coverage in rural areas to achieve the vision of Swachh Bharat by October 02, 2019.
 - (iii) Motivate communities and Panchayat Raj Institutions to adopt sustainable sanitation practices and facilities through awareness creation and health education.
 - (iv) Encourage cost effective and appropriate technologies for ecologically safe and sustainable sanitation.
 - (v) Develop, wherever required, community managed sanitation systems focusing on scientific solid and liquid waste management systems for overall cleanliness in the rural areas.
 - (vi) Create significant positive impact on gender and promote social inclusion by improving sanitation especially in marginalized communities.
- 1.3. Thereafter in 2016, the Ministry of Environment, Forest and Climate Change published the Solid waste Management Rules, 2016 (“SWM Rules”) and the Plastic Waste Management Rules, 2016 (“PWM Rules”) which laid out specific duties and obligations of the state with respect to management of solid waste including plastic waste generated in rural areas. In addition, as per the 73rd amendment of the Constitution of India and Karnataka Gram Swaraj and Panchayat Raj Act, 1993 (“Karnataka Panchayat Raj Act”), water and sanitation are primary responsibilities of the Gram Panchayat (“GP”) in rural areas. Therefore, the SBM (G) guidelines along with the Karnataka Panchayat Raj Act, SWM Rules and PWM Rules form the regulatory framework for provision of sanitation and solid and liquid waste management in rural areas.

II. PROGRESS IN KARNATAKA

- 2.1. There are 30 Zilla Panchayats, 176 Taluk Panchayats and 6002 GPs in the State of Karnataka. As a first step, the State of Karnataka has focussed on making the GPs open defecation free (ODF). During the baseline survey conducted in 2012-13, there were 45,42,655 households which had no access to toilets. In November 2018, Karnataka state was declared ODF with the construction of the required 45,42,655 toilets. As per the SBM(G) guidelines, after ODF declaration, ODF plus activities such as cleanliness of water sources and public water bodies, decentralised solid and liquid waste management, drains, maintenance of school and Anganwadi toilets, hand-washing and personal hygiene, awareness and training on pit emptying and faecal sludge management etc. should be undertaken. In light of the fact that the state of Karnataka has been declared 100% ODF, it proposes to move towards ODF plus activities where the focus is on total sanitation with inclusion of safe disposal of faecal sludge, personal hygiene practices, treatment of wastewater and scientific solid waste management such that full benefit of sanitation can be enjoyed by the villages.

¹Source Book on Solid and Liquid Waste Management in Rural Areas, Ministry of Drinking Water and Sanitation, Swachh Bharat Mission (Gramin), April 2015 at pp 1.

- 2.2. Under SBM (G) guidelines, states are required to develop an implementation framework to enable execution of the guidelines bearing in mind state specific challenges, requirements and dynamics. As a part of this implementation framework and pursuant to the requirements of SWM Rules and PWM Rules, the state of Karnataka proposes to adopt this state policy for sanitation and waste management in rural areas ("**Karnataka State Rural Sanitation Policy**") which include guiding principles and approach, long term vision, goals and timelines to achieve the goals. In addition to the policy, the state of Karnataka also proposes to prepare and adopt a state strategy for implementing this Karnataka State Rural Sanitation Policy. The state strategy will among others, include guidance on technologies for retrofitting of toilets, solid and liquid waste management, financial resource planning, roles and responsibilities of the different functionaries, information education and communication (IEC) and behaviour change communication (BCC), capacity building, monitoring and evaluation of waste management system.. Furthermore, the model bye-laws to be adopted by the Gram Panchayats will act as the enforcement mechanism for the principles contained in this policy and the state strategy. Therefore, the Karnataka State Rural Sanitation Policy along with the state strategy and model bye-laws will act as a decision-making framework to bring about a significant improvement in the sanitation and waste management infrastructure and processes across the rural areas of the state.
- 2.3. While the primary responsibility of providing sanitation and waste management will remain with the GP at a decentralised level, the government of Karnataka along with appropriate governmental authorities will play a facilitating role in the form of framing policies and regulations, providing viability gap funding, training, technical assistance and other capacity building support to the GPs.
- 2.4. It is clarified that hazardous waste, bio-medical waste, e-waste, construction and demolition waste and industrial waste (solid and liquid components) are not covered by the Karnataka State Rural Sanitation Policy because they are governed by different regulations and administered by authorities that do not fall within the Rural Development & Panchayath Raj Department. In the event the management of such types of waste falls within the purview of the Gram Panchayats due to changes in applicable laws, this Karnataka State Rural Sanitation Policy will be expanded to include the above waste streams.

III. VISION, AIMS AND OBJECTIVES

3.1. Vision

To provide safe, affordable, sustainable, inclusive sanitation and waste management services to every individual in rural Karnataka leading to improved public health, cleaner environment and enhanced recovery of resources.

3.1. Aims and Objectives relating to Solid Waste Management

- (i) Segregation at source and processing of 100% of biodegradable waste should be achieved in 20% of the total number of GPs by March 2020, in 50% of the total number of GPs by March 2021 and 100% of all GPs in the state of Karnataka by March 2022.
- (ii) 100% of the non-biodegradable waste will be reused, recycled or processed with focus on minimising transportation to landfill in 20% of the total number of GPs by March 2020, in 50% of the GPs by March-2021 and in 100% of the GPs by March-2022.
- (iii) Effective implementation of ban on plastic materials issued by Forest, Ecology and Environment Department, Government of Karnataka, in all rural areas within the state.
- (iv) To ensure that no waste is dumped or burnt in open spaces such that the natural environment of the rural areas is protected.
- (v) Convergence of dry waste management between rural and urban areas at taluk or district level by March 2022.
- (vi) To inculcate the 4R approach (i.e. reduce, reuse, recycle and recover) towards waste through intensive information

education and communication (IEC) and behaviour change communication (BCC) activities.

- (vii) Reduction in adverse effects of improper solid waste management on environment and health of local populations with improved levels of sanitation in rural areas.

3.2. Aims and Objectives for Sanitation and Liquid Waste Management

- (i) The practice of open defecation shall be eliminated through access to toilets and sustained usage of the facilities through community participation and awareness. This will be achieved by maintaining 100% ODF status in rural Karnataka through construction of new toilets for every new house and/or community toilets with appropriate containment.
- (ii) Improvement in public health and health of sanitation workers through promotion of safe personal and public hygiene practices (including provision of personal protective equipment) and strict adherence to Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013.
- (iii) To ensure that there is no exposure of human faeces to the environment by providing safe containment, collection, transportation, treatment and disposal. In this regard, the state of Karnataka shall ensure conversion of all the single-pit toilets to twin-pit or any other acceptable safe mode of containment by 2025. In addition, 100% containment and treatment of faecal sludge and grey water in
 - (a) 5% of the GPs will be completed by 2021,
 - (b) 20% of the GPs will be completed by 2022,
 - (c) 35% of the GPs will be completed by 2023,
 - (d) 70% of the GPs by 2024 and
 - (e) 100% of the GPs by 2025.
- (iv) To ensure that there is no contamination of land and water resources by wastewater by providing appropriate and low-cost, minimal maintenance treatment facilities.

IV. GUIDING PRINCIPLES FOR THE STATE POLICY

The State of Karnataka will approach sanitation and solid and liquid waste management in rural areas with the following guiding principles:

- 4.1. All residents shall have access to functional individual or community toilets where such toilets shall have water supply and scientifically designed and accessible containment systems.
- 4.2. Safe hand wash, personal hygiene and environmental sanitation shall be practiced by the entire community.
- 4.3. There shall be emphasis on reduction in generation of waste, maximisation of recovery of resources from waste and reduction in the amount of waste being disposed off without processing or treatment.
- 4.4. There will be incremental increase in the provision of solid and liquid waste management services every year with the eventual goal of financial sustainability of such systems.
- 4.5. Collaboration and equitable involvement of all social and economic groups such as elected representatives, community-based groups, health workers, village leaders, Anganwadi and ASHA workers, informal waste pickers, youth groups, marginalised communities, in sanitation and waste management systems.
- 4.6. Collaboration with different government departments and agencies for implementation, operation, funding, monitoring and capacity building of rural sanitation and waste management systems. This includes convergence of appropriate schemes applicable to sanitation in rural areas.
- 4.7. Enhancement of capacities of the departments, officials and Panchayat Raj Institutions involved in sanitation and waste management.

- 4.8. Overall improvement in health of local populations across social and economic groups (especially marginalised and vulnerable groups such as the rural poor, women, Dalits and Adivasis), cleanliness and environment of the rural areas.
- 4.9. Recognition of the contribution made by sanitation workers and the informal sector towards maintenance of sanitation, management of municipal solid waste and recovery of resources.
- 4.10. Sustained and intensive IEC and BCC activities shall be carried out to ensure safe sanitation and waste management practices.
- 4.11. Menstrual hygiene shall be advocated by providing awareness and access to affordable and sustainable sanitary products.

Setting up of robust monitoring and evaluation systems to oversee, course correct and sustain good sanitation and waste management systems in the state.

V. OVERALL APPROACH TOWARDS WASTE MANAGEMENT

- 5.1. With respect to management of different types of solid and liquid wastes, the below mentioned approach shall be followed:
 - (i) While almost 80-85% of the wastewater by volume is greywater, in terms of impact of non-treatment, blackwater is more detrimental to health and environment. Therefore, containment, collection, transportation, treatment and disposal of blackwater will be undertaken by the GPs with support from the state.
 - (ii) With regard to solid waste, the focus of the GPs should be primarily on collection and processing of non-biodegradable (dry) waste given that it poses a bigger concern than biodegradable /wet waste in most villages where biodegradable/wet waste could be composted and/or fed to livestock by the waste generator themselves.
- 5.2. The management of solid and liquid wastes in rural areas shall be based on the following approach:
 - (i) The primary responsibility of sanitation and waste management infrastructure and service on a decentralised basis will remain with the Gram Panchayats.
 - (ii) Domestic waste generators shall have the primary responsibility of minimizing their wastes (liquid and solid) and treating it on-site to the extent possible.
 - (iii) With regard to waste treatment/processing solutions, the state of Karnataka shall adopt the following approach:
 - (a) To the extent possible, decentralized solutions should be preferred over centralized ones.
 - (b) Easy to operate technologies with low operational and maintenance cost shall be chosen.
 - (c) Treatment options with better reuse/recycling potential will be selected.
 - (iv) It is critical that waste management systems are self-sustainable over a period of time. The GPs will be mandatorily required to earmark at least 25% of the entire budgets for sanitation and solid and liquid waste management systems. Further, in light with the established principle of “polluter pays”, all waste generators should be charged user fees for waste management services on an equitable basis which can be used towards operational expenditures of the SLWM systems.

The planning for waste management shall be on the basis of prevalent local conditions such as density of population, geo-climatic conditions etc. and capacities to implement and operate the solution.

²Wastewater not containing human excreta, such as household wastewater generated during bathing, cooking and washing activities from the kitchen, bathrooms and include wastewater from commercial establishments and activities such agriculture, dairy and animal rearing.

³Wastewater coming from the latrines including human faeces and flush/wash water, either at household level or in commercial establishments, anganwadis, schools, institutions



Pledge taking at Swachatha Sankeerna unit

KARNATAKA STATE RURAL SANITATION STRATEGY



“An ideal Indian village will be so constructed as to lend itself to perfect sanitation... The very first problem the village worker will solve is its sanitation”

- Mahatma Gandhi

i. INTRODUCTION

- 1.1 Proper and adequate sanitation facilities are a fundamental part of ensuring safe and healthy environment in rural areas. Safe sanitation facilities and practices at every level – individual and community, are essential in minimising negative impacts on health, environment and economy. In this context, Swachh Bharat Mission (Gramin) was launched on October 02, 2014 by the Ministry of Drinking Water and Sanitation, to bring about an improvement in the general quality of life in the rural areas by promoting cleanliness, hygiene, community managed solid and liquid waste management systems, eliminating open defecation (ODF), and motivating Panchayati Raj Institutions (PRI) to adopt sustainable sanitation practices with a special focus on marginalised communities.
- 1.2 The Swachh Bharat Mission (Gramin) reinvigorated the state machinery to focus on sanitation in rural areas and the state of Karnataka was declared ODF in 2018. This goal of “Swachh Karnataka” was achieved through ‘Jan Andolan’ i.e. active participation of the community, elected representatives, PRIs, various government departments, educational institutions, students, religious institutions, development partners, community based and other voluntary organisations. Now the vision of Swachh Karnataka goes beyond construction of toilets and the state is moving towards sustainability of safe sanitation practices and management of solid and liquid wastes generated in rural areas. The state of Karnataka recognises that economic and social development of rural areas cannot be complete without ensuring safe and healthy environment to its residents.
- 1.3 In 2016, the Ministry of Environment, Forest and Climate Change published the Solid waste Management Rules, 2016 (“SWM Rules”) and the Plastic Waste Management Rules, 2016 (“PWM Rules”) which laid out specific duties and obligations of the state with respect to management of solid waste including plastic waste generated in rural areas. In addition, as per the 73rd amendment of the Constitution of India and Karnataka Gram Swaraj and Panchayat Raj Act, 1993 (“Karnataka Panchayat Raj Act”), water and sanitation are primary responsibilities of the Gram Panchayat (“GP”) in rural areas. On the basis of this regulatory framework, the state of Karnataka will create its implementation framework for sustainability of the ODF status, adoption of safe sanitation practices and holistic management of solid and liquid wastes generated in rural areas.
- 1.4 The State of Karnataka has already formulated a state policy containing the vision, aims and approach of the state for sanitation and waste management in rural areas (“Karnataka State Rural Sanitation Policy”). As a next step, it now proposes to adopt the state strategy as an implementation document with an aim to aid the state and GPs to set up sanitation, solid and liquid management systems in rural areas. The state strategy for sanitation and waste management (“Karnataka State Rural Sanitation Strategy”) in the following paragraphs includes guidance on technologies for retrofitting of toilets/containment systems, solid and liquid waste management, financial resource planning, capacity building, roles and responsibilities of the different functionaries, information education and communication (IEC) and behaviour change communication (BCC), monitoring and evaluation criteria among others.
- 1.5 It is clarified that hazardous waste, bio-medical waste, e-waste, construction and demolition waste and industrial waste (solid and liquid components) are not covered by the Karnataka State Rural Sanitation Strategy and Karnataka State Rural Sanitation Policy because they are governed by different regulations and administered by authorities that do not fall within the Rural Development & Panchayath Raj Department. In the event the management of such types of waste falls within the purview of the Gram Panchayats due to changes in applicable laws, this Karnataka State Rural Sanitation Strategy will be expanded to include the above waste streams.

ii. ADMINISTRATIVE STRUCTURE

The following administrative structure will be followed with respect to the responsibility for implementation of sanitation and waste management systems in rural areas in the state of Karnataka:

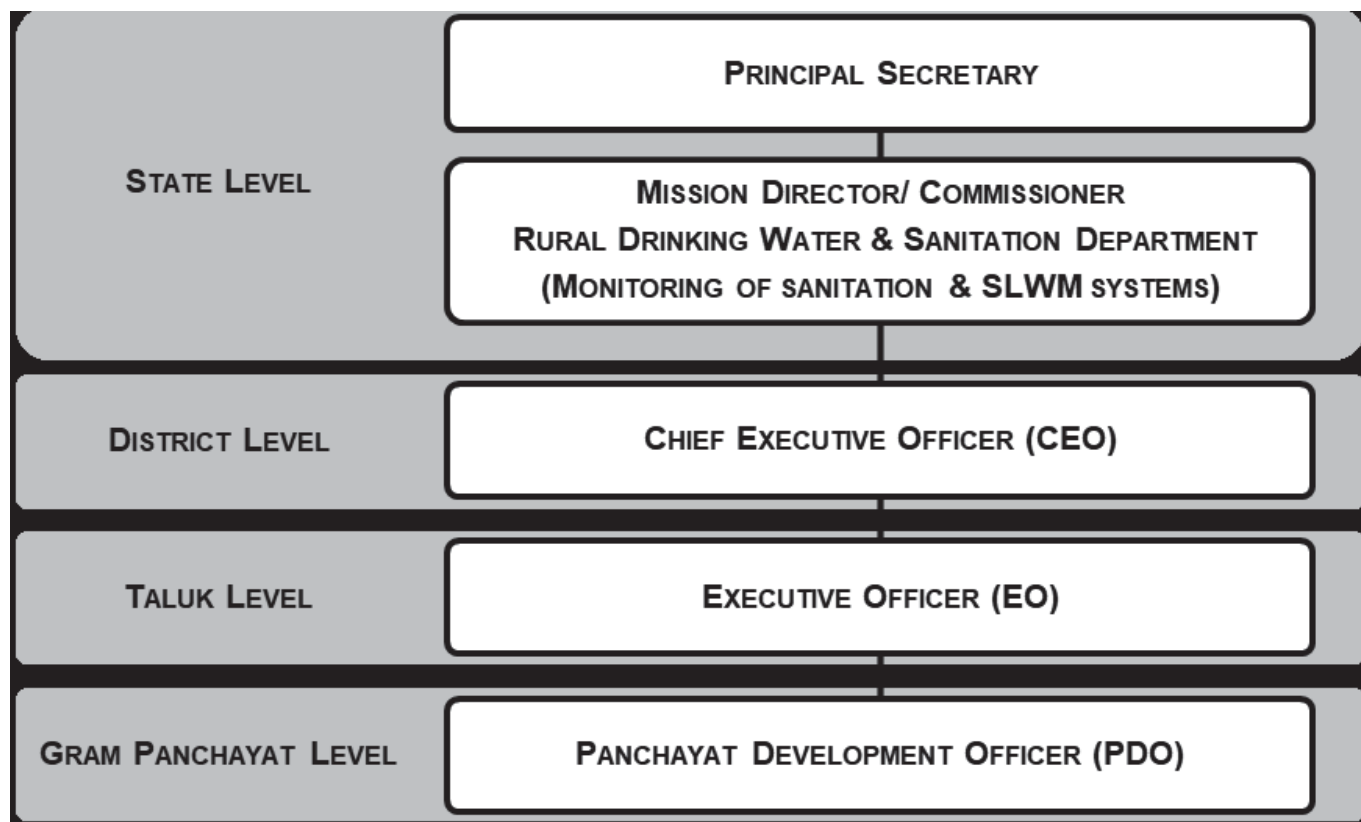


Figure 1 : Administrative structure

A coordination committee at the district level headed by the District Collector/Deputy Commissioner and co-chaired by the CEO will be look into matters requiring convergence of urban and rural authorities for waste management. In addition, the state can also form committees for implementation of sanitation activities and management of solid and liquid wastes generated in Gram Panchayats at state, district and taluk levels if it deems necessary.

iii. TOILET CONSTRUCTION: PRESENT STATUS & TECHNOLOGICAL OPTIONS

3.1. Guidelines and technological options for toilet construction

- (i) The guidelines of Ministry of Drinking Water and Sanitation (“MDWS”) state that a household sanitary latrine shall comprise of¹:
 - (a) An adequately designed sub-structure which safely confines human faeces and eliminates the need for direct handling by humans before it is decomposed;
 - (b) A super structure with water facilities; and
 - (c) A hand wash unit.
- (ii) The various options for toilet technologies along with design details including specifications of components, size, location, type of materials, applicability, modifications, advantages and disadvantages of different individual household latrines (“IHHL”) and community toilets are provided in Handbook on Technological Options for On-site Sanitation in Rural Areas² released by MDWS in June 2016.
- (iii) For additional IHHLs that have to be constructed because they were left out of the baseline survey or for new constructions, the state of Karnataka shall provide incentives as prescribed in the SBM (Gramin) guidelines to all

¹Guidelines for Swachh Bharat Mission (Gramin), Ministry of Drinking Water and Sanitation, October 2017

BPL households and APL households belonging to SC/STs, small and marginal farmers, landless labourers with homestead, physically handicapped and women-headed households and other marginalised communities.

3.2. Present practices and retrofitting solutions

- (I) More than 90% of the IHHLs constructed in the state of Karnataka are of the single pit pour flush types. There are multiple reasons for the construction of single pit in place of other suitable containment systems; primary among them being lack of awareness about the right technology, inadequate funds available with the beneficiary and lack of space. A small percentage of toilets use the septic tank, but many of those have not been constructed as per the correct designs.
- (ii) Major flaws that are observed in the existing designs of the IHHLs are:
 - (a) Improper selection of site including proximity to drinking/non-drinking water sources
 - (b) Single pit instead of twin pits
 - (c) Inadequate distance between the pits in a twin pit system
 - (d) Excessively deep or large pits
 - (e) Two interconnected pits and/or vent pipe attached
 - (f) No honeycombing and/or cement finish from inside
- (iii) In order for sustained usage and maintenance of the toilets, they must be of good quality and acceptable to the beneficiary. Therefore, with respect to the faulty toilets and sustainability of ODF status, the state of Karnataka shall ensure that the following steps are taken:
 - (i) Conduct house to house survey and technical assessment to identify faulty designs.
 - (ii) Categorise the faulty toilets based on design and identified faults.
 - (iii) Earmark budgets and source of funds for the retrofitting and other correctional measures for faulty toilets, as well as regular desludging of all containments.
 - (iv) Prepare a plan of action and assign responsibilities for correctional activities.
 - (v) Carry out focused IEC/BCC activities to correct the above-mentioned flaws from the toilet designs and to ensure community participation.
 - (vi) Provide technical training in retrofitting to the staff who will be involved in retrofitting and other correctional measures.
 - (vii) Perform concurrent quality monitoring of toilets.

The details of how the existing faults can be addressed and the possible retrofitting methods are provided in Annexure I.

iv. MANAGEMENT OF SOLID WASTE IN RURAL AREAS

In pursuance of the goal of Swachh Karnataka and as its next focus area, the state of Karnataka will concentrate on management of solid waste generated in rural areas. The management of solid waste will be based on the 4R approach (reduce, reuse, recycle and recover) with the aim to reduce the amount of waste being disposed, while maximising recovery of resources and resource conservation. The manner of adoption of this approach and the principles set out in Karnataka State Rural Sanitation Policy is explained in the following paragraphs:

⁴A five-member household will need a 12-15 litre green bin for wet waste and 24 inch*36 inch appropriate grade of HDPE bag for a week's dry waste. The reasons for suggesting HDPE bag for dry waste include:

- (i) HDPE bag for dry waste avoids confusion with two similar bins for the generator,
- (ii) HDPE bags are cheaper than bins and are easier to handle for the waste collection staff,
- (iii) HDPE bags hold greater volume of dry waste (which is important in case of weekly collection of dry waste),
- (iv) Wet waste cannot be disposed in the HDPE bag without it leaking and therefore, acts as a deterrent for mixing of waste streams.

4.1. Segregation and Collection of Solid Waste

- (i) Segregation of waste at source is the most critical step of a solid waste management plan. The solid waste will be required to be segregated into biodegradable and non-biodegradable waste. Domestic hazardous wastes including sanitary waste should also be stored separately for collection by the GP. The illustrative examples of each category of waste for the purpose of segregation are set out in Annexure II.
- (ii) To enable segregation, the GP may consider distributing one bin for wet waste, one bin for domestic hazardous wastes and sanitary waste and one bin and/or HDPE bag for dry waste⁴.
- (iii) Door to door primary collection shall be carried out by the GP through its staff and they could be supported and/or facilitated by community based organisations (including self help groups and waste picker organisations) using appropriate vehicles. The focus would be primarily on collection of dry waste given that it poses a bigger concern than wet waste in most villages where wet waste could be composted and/or fed to livestock. Regular collection of only dry waste would also automatically result in segregation of waste at the source.
- (iv) In cases where wet waste cannot be managed at all at a household level (such as in peri-urban areas) it should be collected and transported to the wet waste management unit. The frequency and manner of door-to-door collection (i.e. manually through pushcarts or through motorised vehicles) should be determined by the density of population, waste characteristics, width of the streets, manpower and funds available with the GP. The suggested normative standards for manpower, vehicles and equipment for door-to-door collection are set out in Annexure III.
- (v) In peri-urban villages, where finding space for onsite waste processing is difficult, wet, dry and domestic hazardous wastes (including sanitary waste) may need to be collected at suitable periodicity. If the GP does not have the resources to do regular collection of wet waste, it should first focus on collection of dry waste on a weekly basis for the reasons stated above. The flow of waste in a typical rural GP and peri-urban GP level is set out in Annexure IV. The collection and processing of solid waste should be based on payment of user charges determined by the GP which is further detailed in paragraph 6.3(ii) relating to own sources of revenue.
- (vi) The GPs need to classify waste generators that generate more than 50 kgs of waste per day as “bulk waste generators” and impose certain additional obligations on them with regard to solid waste management. These could include transporting the waste generated by them in a segregated manner to the waste management unit of the GP, onsite processing of wet waste, payment of higher user fees (which is in proportion with the amount of waste generated by such entities) etc. The GP can consider these mechanisms depending on local conditions such as number of bulk waste generators, availability of space for onsite processing, availability of vehicles for hire, capacities of collection vehicles of the GP among others.
- (vii) GPs must also register all meat and slaughterhouse vendors so that it can assess the number of collection vehicles required and frequency of collection of slaughterhouse waste. Every occupier of any premises who generates poultry, fish and slaughter waste as a result of any commercial activity, should store such waste separately in a closed and hygienic condition and such waste should not be mixed with any other category of solid waste. The GP should designate specific days in a week and vehicles for collection of slaughterhouse waste and the relevant occupier should ensure that such waste is ready for collection on the designated days and times. The GP should ensure that slaughterhouse waste is not mixed with any other stream of waste during collection and transportation and is transported directly to the relevant processing centres or for proper disposal.

4.2. Processing and Disposal of Solid Waste

GP level

The processing of solid waste would be done at three levels i.e. at GP, taluk/hobli and district levels as set out below:

- (i) Processing of biodegradable waste: Composting is extremely viable in rural areas because the solid waste generated in villages is predominantly biodegradable. While biomethanation is also a viable processing technology

for biodegradable waste, it requires greater capital investment and more skilled manpower for operations and maintenance. In addition, the process is most efficient when the biogas generated is used for cooking purposes. Therefore, GPs and/or the state must carry out feasibility studies before setting up biomethanation units. Both of these processing technologies can be adopted at a household or community (village/Gram Panchayat) level. There are different types of composting technologies that are available to the GPs and they should select the appropriate technique depending on the quantities of waste, level of segregation, climatic conditions, geography, area available, infrastructure, financial costs and manpower requirement that are further described in Annexure V.

- (ii) **Storage, sale and/or transportation of non-biodegradable waste:** Processing of dry waste is not advisable at village or GP level due to lack of its economic viability. Therefore, with respect to non-biodegradable waste, the handling should be limited to aggregation and if possible, sale of recyclable non-biodegradable waste. The ban on plastic materials issued by Forest, Ecology and Environment Department, Government of Karnataka, should be effectively implemented by the GP so that the plastic materials covered under the notification do not form part of the non-biodegradable waste collected by the GP. Every GP or a group of GPs (depending on waste quantities, distance between GPs, density of population, space availability etc.) should provide one dry waste storage unit as an aggregation point for dry waste. This could be an old or unused building in the village/GP. If there is no such structure, the GP should construct dry waste storage unit and the suggested design of such unit is set out as Annexure VI. In the event there are scrap dealers and market for recyclable non biodegradable waste at the GP, such recyclable materials can be sold from this dry waste storage unit. The non-recyclable non-biodegradable waste which has a high calorific value should be stored at the dry waste storage unit and transported to the hobli/taluk/zilla level aggregation centre at intervals as maybe determined by the GP. The responsibility of transportation of such streams of waste will remain with Gram Panchayat.
- (iii) **Disposal of inert waste and domestic hazardous wastes:** In the event the GP has adequate land, funds and technical expertise to construct and maintain a sanitary landfill as per the stipulated norms; inert and domestic hazardous wastes can be disposed in such sanitary landfill. It should be ensured that not more than 15% of the entire waste generated in the GP is disposed in the landfill. Alternatively, such waste can be stored at the dry waste storage unit and transported to hobli/taluk/zilla level aggregation centre periodically if the hobli/taluk/zilla permits the GP the use of its processing facilities and/or sanitary landfill.
- (iv) **Storage and/or disposal of sanitary waste:** The sanitary waste could also be aggregated and treated along with the bio-medical waste generated at primary/community health centres, clinics and other medical establishments in each GP. Till such time linkages with bio medical waste are identified, the GP could also consider installing safe incinerators (complying with requisite standards) in higher secondary schools, women's community sanitary complexes, dry waste unit, primary health centres, or in any other suitable place in village that is safe for the environment and health of the local populations. Alternatively, the sanitary waste should be disposed in the sanitary landfill if such facility is available in the GP.
- (v) **Agricultural waste:** Depending on capacities, infrastructure and financing available with the GPs, it could consider processing agricultural waste in the following order; firstly, local composting in the solid waste management unit and/or faecal sludge treatment plant and if that is not feasible, by turning them into biomass briquettes which could be used for cooking or in industrial plants that are located close to the GPs as a replacement for fossil fuel.
- (vi) **Slaughterhouse waste:** Waste generated from slaughterhouses, poultry, meat and fish markets/ commercial shops will be processed or disposed through controlled incineration or deep burial where stipulated scientific standards are followed and/or any other method approved by CPCB, KSPCB and / or any other appropriate authority.



⁹Notification No. FEE 17 EPC 2012, Bangalore dated March 11, 2016

Hobli / Taluk or Zilla Level:

- (i) **Aggregation of non-biodegradable waste and domestic hazardous wastes:** The state or district administration should consider aggregation of (a) recyclable material to the extent individual GPs do not have market for such material and (b) non-recyclable non-biodegradable waste with sufficient calorific value, at a centralised facility at the hobli/taluk/zilla level which can cater to appropriate cluster of GPs for co-processing, RDF, waste to energy units, usage of plastic in roads etc. The transportation and processing of non-recyclable plastic waste could also be done as a part of implementation of extended producer responsibility (EPR) obligations under Plastic Waste Management Rules, 2016. At this level, given the volume of non-recyclable plastic, the extended producer responsibility of plastic producers/brand owners can be enforced by KSPCB and/or any other appropriate state authorities. The domestic hazardous wastes from the GP can also be transported to hobli/taluk/zilla level aggregation centre if such hobli/taluk/zilla permits the GP the use of its processing facilities and/or sanitary landfill.
- (ii) **Processing facilities for non-recyclable non-biodegradable waste and domestic hazardous waste:** Resource, technology, and capital-intensive waste management processes such as RDF plants, co-processing in cement kilns, waste to energy projects, sanitary landfills etc. are best planned and executed at the district and/or regional level because they can benefit from economies of scale and for easy management and environmental monitoring. Once these facilities have been set up, district authorities should devise a strategy to link the processing of non-recyclable dry waste and domestic hazardous waste generated at GPs with nearby urban areas especially if such facilities are constructed on land which belongs to the rural administration.

5.3. Timelines for setting up processing facilities

The GPs, district and state administration along with other relevant governmental agencies should co-operate and create the abovementioned infrastructure to achieve the goals set out in the Karnataka State Rural Sanitation Policy as per the following timelines:

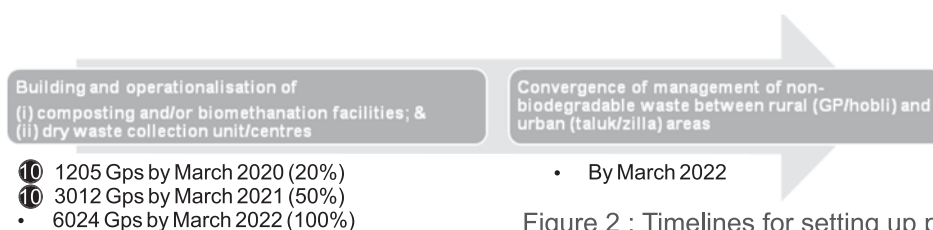


Figure 2 : Timelines for setting up processing facilities

V. FLOW OF LIQUID WASTE AND ITS MANAGEMENT

5.1. Types and sources of liquid waste

- (i) Liquid waste generated by domestic consumption consists of wastewater that is used and unwanted and it can be categorised into the following two types:
 - (a) **Blackwater or faecal sludge/septage:** the wastewater coming from the toilets including human faeces and flush/wash water, either at household level or in commercial establishments, anganwadis, schools, institutions etc.
 - (b) **Greywater:** the domestic wastewater not containing human excreta, such as household wastewater generated during bathing, cooking and washing activities from the kitchens, bathrooms and include wastewater from commercial establishments and activities such agriculture, dairy and animal rearing etc.
- (ii) The approach suggested to be adopted for management of greywater and blackwater is shown below:

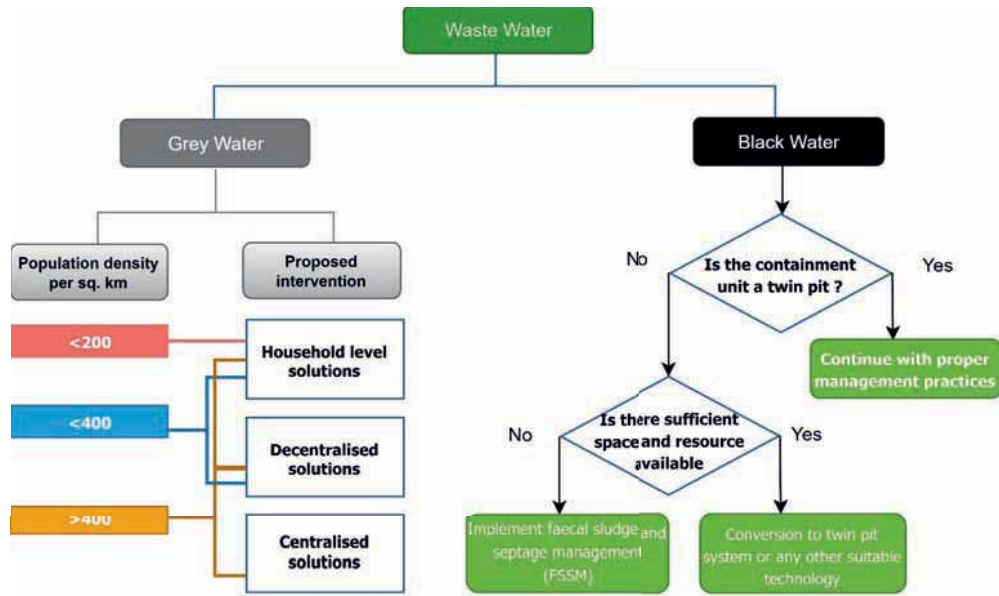


Figure 3 : Approach for management of wastewater


 Rural Drinking Water & Sanitation Department
 Rural Development & Panchayat Raj Department

What is Liquid Waste?

Any water that has been contaminated by human use is Liquid Waste




 Rural Drinking Water & Sanitation Department
 Rural Development & Panchayat Raj Department

Types of Liquid Waste

Black Water



Grey Water




 Rural Drinking Water & Sanitation Department
 Rural Development & Panchayat Raj Department

What are the Advantages of proper Liquid Waste Management?



Water Re-use



Groundwater Recharging



Recycled Water can be used for Agriculture / Irrigation



Nutrients for Plants from Recycled Blackwater

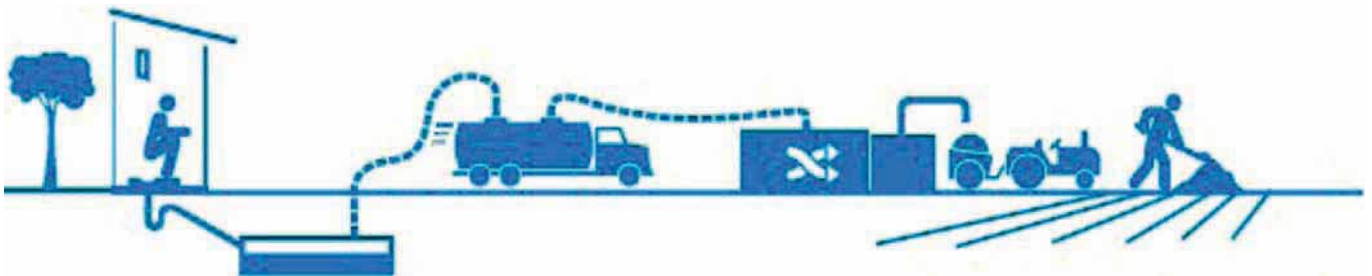

 Rural Drinking Water & Sanitation Department
 Rural Development & Panchayat Raj Department

What are the disadvantages of improper Liquid Waste Management?

- ❖ Breeding of mosquitoes and flies 
- ❖ Exposure of faeces leads to various health hazards 
- ❖ Contamination of water bodies 
- ❖ Pollutants may enter the food chain 
- ❖ Causes soil pollution 
- ❖ Leads to open defecation practice 

5.2. Management of Blackwater

- (i) The safe management of blackwater should ensure the following:
- (a) no contamination of soil surface, ground water or surface water;
 - (b) faecal waste should be inaccessible to flies or animals.
 - (c) no manual handling of fresh excreta and (d) freedom from odour and unsightly conditions.
- (ii) Faecal sludge and septage management refer to the entire management chain from containment (soak pits/septic tanks) to end use or disposal of treated faecal sludge. This includes the safe storage, collection, transport, treatment and end-use or safe disposal of treated faecal sludge which can be better understood through the graphic below:



Source : Water, Sanitation and Hygiene, BMGF, 2010.

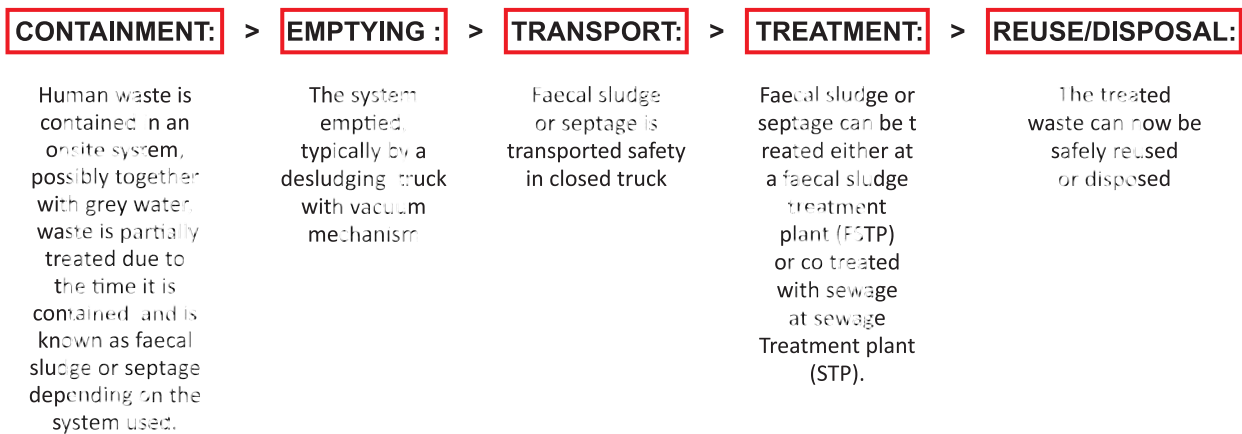


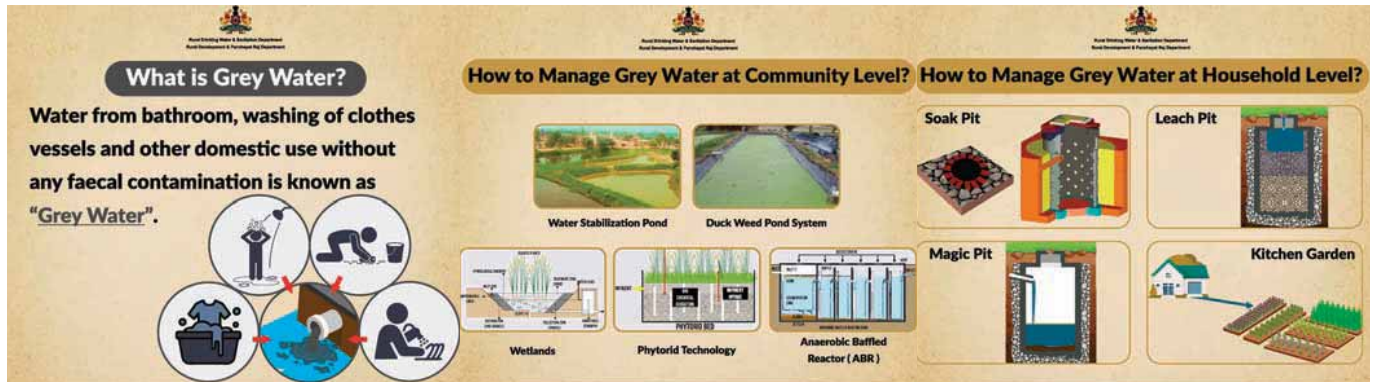
Figure 4 : Faecal sludge and septage management chain

- (a) **Containment:** As a first step, the single-pit toilets should be converted to twin pit (for areas where ground water table is $\geq 10\text{mbgl}$ and water source is $>5\text{m}$ away) and replaced by scientifically designed septic tanks in high water table areas ($<10\text{mbgl}$) and/or any other option set out in Annexure VII.
- (b) **Emptying and transportation:** Faecal sludge from pits and septic tanks should be emptied using desludging vehicles and transported in sealed containers to faecal sludge treatment plant (FSTP)/sewage treatment plant (STP). With respect to emptying of twin pits, it should be ensured that the sludge has been stabilised (for at least 2 years) and is inert (composted completely) before emptying. During the entire emptying and transportation process, compliance with Prohibition of Employment as Manual Scavengers and their Rehabilitation Act 2013 is mandatory. There should be no exposure to workers employed and standard safety precautions including provision of appropriate equipment and safety gear shall be adhered to during the entire process. These measures are critical to minimise potential health risks to sanitation workers from direct contact with the contents of the pits.

- (c) Treatment: As the first preference, the treatment of faecal sludge from a GP shall be explored at the STP of the nearest urban conglomerate to optimise use of existing infrastructure if it is under-utilized. However, a detailed assessment of the existing STP, its location, capacity, current performance, distances from identified GP/GPs and future expansion should be taken into account before linking the treatment of faecal sludge from the GPs. In case such linking is not possible, an FSTP shall be planned either at GP level or for a cluster of GPs depending on the population (households with containments) of the GPs and distance between respective GPs. The GPs can also consider integrating the faecal sludge treatment into the existing biogas plant for solid waste, after thorough technical feasibility assessment with additional treatment modules/facilities in order to meet the discharge standards.
- (d) Disposal/reuse: The treated solids could be used as soil conditioners or co-composted with organic component of solid waste. The treated water can be used for landscaping or in agricultural fields. Wherever feasible, it can also be piped back into toilets and used for flushing provided it has been appropriately treated. In case of treatment using biogas digesters, biogas can be used for cooking and lighting purposes.
- (iii) Different containment, transportation and treatment options for blackwater management with advantages, disadvantages, typical infrastructure requirement and operation and maintenance costs are provided in Annexure VII. Further, the guidelines for selection of the different technological options are provided in Annexure VIII.

5.3. Management of Greywater

- (i) In cases where the greywater does not include any component of blackwater, the planning process would mainly be dependent on the density of development. The main intent should be to treat the greywater at or near the source or safely convey the greywater to the required location for treatment, proper treatment as per need of end-use and safe disposal adhering to existing environmental standards.
- (ii) The wastewater coming from other commercial activities would need to be treated either in combination with greywater (in cases where it does not contain toxic waste) or separately (in cases where toxic wastes is mixed). Treatment of greywater can be planned at one of the following levels depending on density of development and availability of funds:
 - (a) At household level: In villages where ample space is available around houses, greywater could be used in the garden or directly discharged into soak away pit or dispersion trench.
 - (b) Decentralised solutions: If there is a space constraint around individual households or if there are closely packed cluster of households, greywater shall be discharged into covered surface drains alongside roads which will accumulate in a common location. An appropriate low-cost treatment solution could be planned at this point of accumulation because it would save costs involved in diversion and conveyance etc. of greywater. However, the location and sizing of the treatment system shall be done in conformance to the guidelines provided in the CPHEEO Manual on Sewage and Sewerage Treatment⁶. If this location does not meet the criteria of safe buffer then provision should be made to transport the treated wastewater to suitable location. The water let out after treatment should meet the discharge standards of KSPCB⁷.
 - (c) Centralised solutions: If the development of the village is dense or a cluster of villages are located at close proximity, the collection of the wastewater from all kinds of sources can be centralised and planned on the lines of urban sewerage systems. It must be noted that the costs of construction and operations of such heavy infrastructure is high. However, in peri-urban areas where there is a partially laid UGD/sewer network and availability of FSTP/STP nearby, both the streams of black and greywater can be managed in a combined sewage treatment plant, thereby reducing the costs of constructing of a FSTP/STP.
- (iii) The guidelines for choosing the preferred technological options for the different districts of Karnataka, depending on characterisation based on population density, ground water level, economic characteristics and geo-climatic conditions are provided in Annexure IX. In addition, to aid GPs in selecting an appropriate technology for liquid waste management, an excel based workable model is provided in Annexure X.



VI. PLANNING AND IMPLEMENTATION FOR SANITATION, SOLID AND LIQUID WASTE MANAGEMENT

6.1. Introduction

- (i) Planning of solid waste management should be done in close coordination with planning of management of liquid waste for efficient utilisation of funds and space. This is because there is enormous amount of overlap between the institutional structures, sources of funds (both internal and external), capacity building and IEC/BCC tools, monitoring and evaluation processes for both solid and liquid waste management systems. In this context, the following synergies in solid and liquid waste management systems shall be explored during the planning phase:
 - (a) Co-composting of organic waste and solids from FSTPs
 - (b) Common biogas digesters and/or composting of the slurry of biogas at FSTPs with organic waste as well as treatment of liquid streams at a common location
 - (c) Usage of treated water for composting of organic waste
 - (d) Co-location of treatment plants, integrated user fee collection mechanisms, common monitoring and evaluation processes, manpower, common IEC/BCC activities and integrated capacity building activities.
- (ii) In addition to the above, it must be noted that rural development as a sector has number of schemes operating to cater to needs of the rural masses for enhancement of many aspects of their lives. Given the tendency for such schemes to operate in isolation, one of the priorities of the State of Karnataka is to ensure coordination and convergence among funding arrangements and various schemes operated through various line departments like Rural Development and Panchayat Raj, Education, Health and Family Welfare, Women and Child Development, which have the common objective of enhancing quality of life in rural areas. This will also be necessary to ensure efficient and effective disbursement of funds for the development, ongoing implementation and monitoring of SLWM systems and sustainability of services. The areas of convergence are further detailed in paragraph 6.2(vii) below.

6.2. Overview of strategic steps for implementation:

- (i) Survey and audit: With respect to solid waste, GPs should carry out a waste survey and audit to identify number and type of waste generators in the GP along with waste characteristics (such as waste stream and quantities). This should be done by taking waste samples from different types of waste generators across a 7-day period during different seasons to understand the seasonal variations in waste generation and characteristics. The normative standards for computing waste data on a per capita basis and types of waste streams and generators are set out in Annexure III. With regard to wastewater, the GPs should carry out a survey and mapping of all sources of wastewater (black and grey) and drinking water, existing containment systems, vulnerable communities and land use pattern. The waste survey and audit for both solid and liquid wastes should identify bulk waste generators and the amount of waste generated by them separately. This is to ensure that the waste data from exceptional sources such as "bulk waste generators" does not distort the data from regular waste generators such as households and small shops.

- (ii) **Prioritisation and risk assessment:** In determining priority for sanitation and waste management activities, GPs should give priority in the following order: 100% toilet access, ensuring usage of toilets, solid waste management and liquid waste management. Within each segment, streams with maximum risk in terms of human health and environmental concerns should be given priority.
- (iii) **Technology selection:** Appropriate technologies for (a) collection and processing of solid waste and (b) containment, transportation and treatment of blackwater and greywater, based on local conditions and survey data shall be chosen. The GPs should refer to the guiding principles set out in the Karnataka State Rural Policy and technology options in this Karnataka State Rural Strategy for selection of suitable technologies.
- (iv) **Gram Panchayat Development Plan, detailed project report and microplans:** The GPs should include sanitation and SLWM systems in Gram Panchayat Development Plan and/or any other development plan for the GP so that development of sanitation and SLWM systems is not overlooked. A detailed sanitation plan in the Gram Panchayat Development Plan targeting toilet construction, correction and usage, personal and public hygiene, liquid and solid waste management, capacity building and IEC/BCC activities shall be prepared. The long-term plan (for 5 years) shall be broken down into yearly plans which should include details of infrastructure, assets, operations, human resources, IEC & BCC, funds required and sources of funds, monitoring and evaluation parameters etc. An implementation timeline should be worked out highlighting the milestones to be achieved annually. The implementation plan should be aligned to the targets and timelines mentioned under the objectives of the Karnataka State Rural Policy. As a part of the sanitation component under Gram Panchayat Development Plan, GPs should prepare detailed project report (DPR) for management of solid waste as per the model DPR set out in the Annexure XI which should be based on micro-plans prepared for collection mechanism and processing of solid wastes in the GP. The GPs can take assistance from the relevant consultants or professional agencies which have proven experience in the sector. The Gram Panchayat Development Plan, DPR and micro-plans should be prepared on the basis of ground-level data and field assessment of the factors set out in the model DPR and not only on the basis of assumptions and algorithms. The collection schedules and micro-plans should also consider bulk waste generators separately because they can significantly affect collection schedules and vehicle capacities.
- (v) **Roles and responsibilities:** The GP should ensure that VWSC/VHSNC is set up for management of sanitation and waste management activities in the GP. The suggested roles and responsibilities of different stakeholders such as governmental officials, elected representatives, informal sector such as waste pickers and scrap dealers and nongovernmental agencies (SHGs/cooperatives/NGOs etc) who will be involved in implementation & monitoring of SLWM systems are set out in Annexure XII. These roles and responsibilities should be communicated clearly to the different stakeholders such that SLWM systems can be smoothly implemented.
- (vi) **Financial planning and budgets:** Preparation of annual budgets for
 - (a) the capital costs required for initial investment in sanitation infrastructure and facilities;
 - (b) the recurrent costs/revenues required to operate and maintain the facilities; and
 - (c) the programme costs for activities such as training, IEC and BCC activities. The GPs are mandatorily required to set aside at least 25% of their total budget for sanitation and SLWM activities and the overall systems should be designed in a manner that is sustainable with incremental increase in service delivery every year. They can take guidance from the model DPR for solid waste to understand the components of the budgets and from Section VI of the Karnataka State Rural Sanitation Strategy on financial sustainability of SLWM systems. The priority of usage of the funds available with the GP should be drinking water, sanitation (including solid and liquid waste management), roads and streetlights.
- (vii) **Areas of convergence:** The state should identify areas of convergence under various schemes for departmental coordination, capacities, funding and other activities at a GP level to optimise finances and human resource required for the various activities relating to sanitation and waste management. The potential convergence could be explored between the following line departments:

Department	Possible areas of convergence
NRLM, Ministry of Rural Development	<ul style="list-style-type: none"> • Utilising the network of SHGs under NRLM for effective IEC and BCC and implementation of door-to-door collection and processing of solid waste and operations at STP/FSTP at GP or hobli levels. • Revolving funds for seed funding of SLWM projects, viability gap funding for initial few years • Skill development program for sanitation workers
MGNREGS, Ministry of Rural Development	<ul style="list-style-type: none"> • Building of drains • Conversion of single-pit to other suitable containment systems • Construction of composting assets and dry waste storage area.
Department of Education	<ul style="list-style-type: none"> • Including sanitation in school curriculum • Building of toilets with WASH facilities in schools • Support in IEC and BCC activities through teachers • Participation in VWSC/VHSNC to monitor sanitation & waste management activities
Department of Health & Family Welfare	<ul style="list-style-type: none"> • Set up water sanitation and hygiene (WASH) facilities in Anganwadis, • • Dissemination of IEC and BCC content through village health workers and VHSNC/VWSC • • Support in survey and risk assessment, monitoring of impact of safe sanitation practices & proper SLWM activities.
Department of Woman and Child Development	<ul style="list-style-type: none"> • Dissemination of IEC content and monitoring through ASHA workers and Anganwadi teachers, awareness about WASH and SLWM systems.
Department of Agriculture	<ul style="list-style-type: none"> • Subsidies in sale and purchase of compost & treated bio-solids

Department of Ecology and Environment	<ul style="list-style-type: none"> • Issuance of relevant consents to operate processing & treatment facilities. • Monitoring of the sanitation and waste management systems to ensure least environmental impact & adherence to regulatory standards
Tandem departments like Youth Groups, Nehru Yuva Kendra Sangathan, Ambedkar Development Corporation	<ul style="list-style-type: none"> • Provide staff for sanitation activities including operators of FSPTs / STPs, subsidies for purchase desludging vehicles etc.

Table 1 : Areas of convergence with other departments

- (viii) Setting up capital infrastructure: Once Gram Panchayat Development Plan (including sanitation components), DPR and financial budgets are approved, the GPs should commence infrastructural works for wet waste processing, storage of dry waste, wastewater treatment and purchase the required vehicles and equipment. Ideally, such infrastructure for solid waste management should in place by the time the GP decides to start door to door collection of solid waste.
- (ix) Training and awareness: Training of personnel who will be involved in SLWM systems should begin around the time the infrastructure for SLWM management is going to be completed. The IEC and BCC activities should also run in parallel such that the community, GP members and staff and other relevant stakeholders are prepared to support SLWM systems through sustained use of toilets, source segregation, handing over segregated waste through door to door collection and payment of user fees.
- (x) Monitoring & Evaluation: The parameters to be monitored, frequency of monitoring, monitoring body, standards against which monitoring is to be done (progress and effectiveness) shall be identified in accordance with the principles set out in Section IX.
- (xi) SLWM byelaws: GPs should prepare and adopt SLWM bye-laws, especially for enforcement of duties and obligations of different stakeholders, imposition of user fees, penalties and reporting requirements. These bye-laws along with the Karnataka Plastic Ban should effectively and continuously be implemented by the GP and other identified officials through surprise checks, imposition of fines for non-compliance etc.

6.3. Financial sustainability

In light of the established principle of “polluter pays” and given that the benefits of good and efficient solid and liquid waste management systems are shared between the waste generators and the community as a whole, the costs of collection, transportation, treatment and disposal of waste should be shared with contributions from both the government and citizens. Therefore, solid and liquid waste management systems should be made financially sustainable by ensuring cost recovery of operation, maintenance and asset depreciation costs through **(i)** external sources such as allocation of funds from government grants, viability gap funding from the government and any other schemes; and **(ii)** GP's own/internal sources of revenues such as property tax, license fees, levy of user fees on the beneficiaries, sale of compost, bio-gas and/or recyclable dry waste, as detailed in paragraphs below.

(i) External sources of funding:

- (a) The following central and state schemes can be availed by the GPs for implementing sanitation and SLWM activities, as per the scheme guidelines:

Sl.no	Source of funding	Activities it can be used for
1.	SBM(G) funds amounting to maximum of Rs. 20 lakhs per project per GP	<ul style="list-style-type: none"> - Capital expenditures like purchase of vehicles or setting up of waste processing units. - The project preparation, supervision and monitoring costs of SLWM projects payable to agencies - Maintenance costs for the first five years of operation
2.	Costs under Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) can be approved by the GP as assets for SLWM as rural infrastructure assets	Construction of capital/infrastructure assets for SLWM projects such as conversion of single pit toilets, construction of dry waste storage unit and compost pits
3.	Discretionary funds under Chief Minister Grama Vikasa Yojana for capital assets.	Capital expenses
4.	Funds under Central Finance Commission that are earmarked for cleanliness, underground drainage and solid waste management.	Capital expenses
5.	Revolving funds available under National Rural Livelihood Mission (NRLM)	Capacity building and training activities and operational expenses.
6.	Funds by the State Finance Commission which are also the annual grants under Section 206 under Karnataka Panchayat Act by the state government to each GP for different activities including sanitation.	Salaries of existing GP personnel
7.	Discretionary grants under Section 208 under Karnataka Panchayat Act by the state government to GPs, TPs and ZPs which currently given as development grants to TPs and ZPs	Capital expenses
8.	Discretionary funds under Legislators Area Development	Capital expenses
9.	Shyama Prasad Mukherji Rurban Mission (SPMRM) for cluster based development activities including waste management.	Capital expenses
10.	Subsidies under National Biogas Manure and Management Programme/GOBHARDHAN Scheme	Can be utilised for constructing biogas plants by beneficiaries at the GP level.
11.	Revolving credit under SBM(G)	Operating and capital expenses
12.	Micro financing through agencies such as NABARD.	Operating and capital expenses
13.	Special funds such as development grants from state, NitiAyog etc. awards, performance based incentives	Depend on the fund guidelines
14.	Funds from corporate social responsibility of companies and private donations through Swachh Bharat Kosh or otherwise.	Operating and capital expenses

Table 2 : Sources of funding

- (b) In order to assist GPs attain financial sustainability, the state will provide appropriate viability gap funding for the first two years of operation of the project to meet the operational costs of SLWM systems to the GPs that are over and above the share of Government of India. Thereafter, the SLWM systems should reach the level of self sustainability by the 3rd year of operations.

(ii) **Own Sources of revenue:**

- (a) **User fees:** In order to financially sustain SLWM systems, it is essential that the waste generators contribute towards its operations and maintenance costs. Therefore, as soon as SLWM systems are set up in the GPs, the GP should approve collection of user fees from every category of waste generator. Typically, quantum of user fees should be based on the size/area of the waste generator, amount of solid and liquid waste generated and managed onsite, costs incurred in operation & maintenance of SLWM infrastructure created and the capacity to pay. A list of recommended user fees for the different categories of waste generators is included as _ of this Karnataka State Rural Strategy. Given the possible reluctance to pay user fees for waste management services, the GP could consider providing the service for a nominal fee which could be increased gradually with increased acceptance among the communities and improved level of services. The user fees should automatically increase by a minimum of 15% (to the nearest multiple of Rs. 10) every three years with effect from April 1 of such year. This is necessary to cover inflation, depreciation of assets and operating costs such as increase in salaries etc.
- (b) **Sale of products/by-products:** Revenues can be generated from the recovered products such as compost, biosolids, biogas and from sale of recyclables if markets are established for the products/by-products. It should be noted that no income can be generated from treatment of greywater and cost benefit from treated water that can be used for agricultural purpose or landscaping is minimal and does not contribute towards meeting the operational cost of running a wastewater treatment system.
- (c) **Fines and penalties:** In the initial phase of implementing source segregation and to reduce dumping and burning of waste, the GP will need to use a multi-pronged approach to ensure compliance which involves intensive IEC/BCC activities and campaigns and enforcement of fines/penalties for non-compliance of SLWM related obligations through bye-laws. The recommended penalties for SWM related non-compliances are set out in . In addition, the GPs can also provide for a waterfall arrangement in the byelaws where penalties increase proportionately for consecutive and/or repeated non-compliance(s) by the same person. The bye-laws (a) should also provide for escalation of the penalty amounts every year by a specified percentage to take into account the inflation and other costs of recovery for the GP.
- (d) **Property tax, license fees and other sources of own revenue:** In the event the SLWM services along with user fees and penalties do not generate enough revenue/income, the GPs could consider offsetting the expenditure for SLWM services with income from other sources such as property tax, license fees, vehicle parking fees etc. Additionally, in tourist areas, Gram Panchayat should levy waste management charges from the tourists at the entry point or in any other manner to make the waste management services in such tourist areas sustainable.

⁸Funds for Solid and Liquid Waste Management activities with cap of Rs. 7/12/15/20 lakh are available for Gram Panchayats having upto 150/300/500/ more than 500 households

⁹Minimum Rs.10.00 Lakh statutory grant is provided to each Grama Panchayat and for Grama Panchayats having more than 10,000 population, an addition of Rs.1.00 Lakh is being released for every increase of 1000 population

6.4. Financial planning for wastewater

- (i) Given that the financial planning for liquid waste management requires specific contributions from the waste generator and the GP/governmental authorities, the specific responsibilities of such planning for management of blackwater is set out below:
 - (a) Emptying of single pit toilet and composted sludge in twin-pit: The primary responsibility of emptying the pit lies with the owner of the premises. The desludging machines could be hired by the owner from private parties or desludging machines could be procured at Taluk level through government funds. In both cases, the owners of the premises shall bear the emptying charges imposed by the private agency or governmental authority, as the case may be. The slab of such fees for desludging would however, be fixed at a GP or district level with differential pricing for low-income families, other users like commercial establishments, bulk generators, schools/institutions etc.
 - (b) Treatment: The infrastructure cost of FSTP shall be borne by the GP and the operations and maintenance cost of the FSTP should be recovered from the waste generators. These charges can be made a part of the hiring charges of the desludging machine or collected as a separate user fee for SLWM services or indirectly through existing utility charges/ property taxes etc.
- (ii) The responsibilities relating to financing of greywater management are set out below:
 - (a) Household level: The cost of containment and treatment may be borne by the owner of the premises.
 - (b) Cluster based systems: The cost of covered surface drains and treatment system may be borne by the GP through different central and state government schemes. Similar to blackwater treatment, the operations and maintenance costs should be borne by the community through user fee.
 - (c) Centralised solutions: The cost of laying the underground drainage systems and setting up the STPs should be borne by the state. The operations and maintenance costs should be borne by the waste generator through user fee and other funding options available with the GP.

6.5. Budgets and plans for management of waste

- (a) The budget estimate and development plan for each GP under Sections 241 and 309 of the Karnataka Panchayat Raj Act should include a component on the waste management including capital infrastructure and operations.
- (b) The budget estimate of the Taluk Panchayat under Section 247 of the Karnataka Panchayat Raj Act should include waste management services (such as treatment of wastewater at FSTP/STP, aggregation and management of dry waste and domestic hazardous waste) which will be provided at a taluk level. In addition, the relevant authorities shall, while integrating the GP plans at an intermediary level, identify areas for integration (resources/schemes/funds) with respect to waste management in accordance with Section 309E of the Karnataka Panchayat Raj Act.
- (c) The budget estimate of the Zilla Panchayat under Section 256 of the Karnataka Panchayati Raj Act should include waste management services which will be provided at the district level such treatment of wastewater at FSTP/STP, RDF plants, co-processing in cement kilns, recycling facilities, waste to energy projects and sanitary landfills.

¹³For example, if a waste generator manages biodegradable and/or greywater onsite, the user fees will be proportionately reduced.

6.6. Participation by community-based organisations and entrepreneurs:

- (i) The GPs should first assess whether they are able to provide waste management services on their own or if they will need to take assistance from external agencies due to considerations of limited capacity, staffing, and other resources. Suitability of waste management projects for implementation through entities such as NGOs, self-help groups, community-based organisations, entrepreneurs etc. should be ascertained. The GP should ensure that these entities are selected through a transparent selection process in accordance with the provisions of Karnataka Transparency in Public Procurements Act, 1999 and other applicable regulations after carefully prescribing minimum qualification and experience needed to perform the services effectively.
- (ii) The GP also has an obligation to ensure that the selected non-governmental players adhere to the local, regional, and national legal requirements. In the event of any non-compliance, the GP should impose penalties/ fines and/or blacklist such entities from providing any further services etc.

6.7. Wages, benefits and occupational safety

Payment of minimum wages and statutory benefits to sanitation workers will be progressively realised in accordance with applicable labour regulations. Benefits such as education, housing, healthcare, insurance etc. for sanitation workers employed at the GP shall be as per the eligible welfare schemes operated by the government. The GP shall also ensure occupational safety of its own staff including sanitation workers and staff of any authorised third party involved in solid and liquid waste management activities by providing appropriate and adequate personal protective equipments such as uniforms, shoes, gloves, masks, etc. In addition, the GP should organise for regular medical check-ups of the sanitation workers, sweepers and other eligible employees for occupational diseases and treatment of injuries resulting from solid and liquid waste management activities under applicable welfare schemes.

VII. CAPACITY BUILDING AND RESEARCH AND DEVELOPMENT

Target for capacity building: Capacity building of personnel involved in SLWM activities in rural Karnataka should be a priority. It is essential that all the stakeholders involved in the process of planning, implementing and monitoring the sanitation and waste management systems have the required knowledge and access to the right resources. This will ensure that the systems built are appropriate and sustainable over a period of time. There are different levels of staff who are involved in planning and implementation of waste management in rural areas and they require specialised training that is different in scope, duration and specialisation. Set out below is an overview of the stakeholders where capacities should be built and the suggested topics for capacity building and training:

Level	Stakeholders	Suggested Topics
Level 1	Sweepers, drivers and SHG members/ ASHA Anganwadi workers, sanitation workers, informal waste pickers, Swachhagrahis, other persons involved in collection, segregation and processing of wet waste.	<ul style="list-style-type: none">• Information about different waste streams and wastewater• Segregation at source and door-to-door collection• Importance of containment and treatment of blackwater• Use of tools and equipment• Dissemination of IEC and BCC content• Vehicle maintenance and preventive checks (specifically, drivers)• Occupational safety• Standard operating procedures for composting /biogas

Level 2	PDO and members of village health, sanitation and nutrition committee (VHSNC) and/or village water and sanitation committee (where no VHSNCs have been formed)	<ul style="list-style-type: none"> • Financial budgeting and sustainability (preliminary level) • MIS systems (for capturing waste data, capital and operating expenses and revenue) and monitoring at a micro level • IEC and BCC content • Composting and biogas technologies and overview of dry waste management • Different containment, transportation and treatment methods for wastewater. • Logistics and human resource development • Byelaws for SLWM
Level 3	Executive officers at Taluk level, project/nodal officers, engineers and SWM consultants at district and state levels	<ul style="list-style-type: none"> • Human resource development, • MIS systems, monitoring and reporting at a macro level • Financial budgeting and sustainability (advanced level) • Comprehensive overview of available technologies for rural waste management (solid and liquid) • Logistics implementation and monitoring
Level 4	CEOs at district level, Commissioners and Secretaries at State levels	<ul style="list-style-type: none"> • Latest developments and trends in the waste management sector • Rules and regulations around waste management • Urban-rural linkages for waste management. • Linkages to allied sectors such as health, nutrition, education drinking water, environment and agriculture, horticulture and watershed. • Information about developmental schemes from central and state governments.

Table 3 : Overview of stakeholders and topics for capacity building

7.2. **Capacity building techniques:** The state of Karnataka will ensure that the following techniques are adopted for capacity building, as may be appropriate in different districts:

- (i) The state will prepare different training modules for each level to ensure maximum benefit from training, productivity, efficient use of resources and high motivation among the personnel.
- (ii) The officials involved in SLWM and elected representatives should be mandated to attend a minimum number of hours of training and should be certified on the basis of clearing certain exams. In the event the officials do not clear the exams, there should be a provision for re-exam and review and if the official(s) continue to fail in the exams, the concerned head of department and/or CEO can consider taking disciplinary action against such official.
- (iii) The state will focus on training of the trainers such that consistent information is disseminated to various governmental stakeholders involved in the implementation of SLWM systems across GPs.
- (iv) Training related to safe sanitation and best waste management practices shall be made mandatory at the time of induction for all staff at each level of administration related to sanitation.
- (v) The district officials should also consider measures such as deputation of personnel to other GPs and states where good practices regarding SLWM are being carried out for gaining relevant experience.

(vi) Success stories and/or good practices should be publicised in training material, department's monthly magazine, Karnataka Vikas and across other publications.

- 7.3. **Planning and budgets:** The Gram Panchayat Development Plan should have the details of capacity building activities covering every village in the GP with identified training agency/institute, training modules and intended trainees. The capacity building action plan in the Gram Panchayat Development Plan shall be made taking into account the needs of the individual GPs based on the existing sanitation conditions in the GP. The state government and GPs should earmark sufficient amounts in state and GP budgets for training and capacity building of all levels of staff at regular intervals.
- 8.4. **Research and development:** While a number of technical options for solid and liquid waste treatment, processing and disposal are available, there are still challenges in applying them in the rural context due to various factors such as lack of technical expertise, manpower, financial resources etc. Therefore, the state of Karnataka will focus on research and development of appropriate technology for better resource recovery which can be localised and are cost effective. Other areas of research could be simple and easy to use water and sediment quality testing kits, toilets that use less water, sustainable menstruation products, low-cost technologies for emptying pits, as well as treatment of faecal sludge/other streams of waste such that there is no human contact with waste etc. The state will also ensure that any new technology is validated by KSPCB and/or any other appropriate authority and tested through meticulous pilot projects for technical, financial and environmental feasibility before being generally applied across the state.
- 7.5. **Role of institutions:** Karnataka State Rural Development and Panchayath Raj University and Abdul Nazir Sab State Institute of Rural Development and Panchayat Raj (along with their regional centres in Kalaburagi and Dharwad) have been set up to impart training and capacity building aimed at rural development and strengthening the Panchayat Raj Institutions. These institutions must be used to impart training and awareness for SLWM activities as well. They should also offer short and long term vocational and skill development courses in solid and liquid waste management. In addition, Mahatma Gandhi Institute of Rural Energy & Development and similar institutions can carry out research and development activities and impart training on different aspects of SLWM such as different technologies available for sustainable management of solid and liquid waste. The Knowledge Resource Centres (KRCs), other appropriate agencies/entities and/or subject matter experts should also be leveraged for local level capacity building and research-based activities.

viii. INFORMATION EDUCATION AND COMMUNICATION (IEC) AND BEHAVIOUR CHANGE COMMUNICATION (BCC)

- 8.1. For any policy or initiative to be successful, it requires significant participation, perceived need of the program and acceptance from people and communities. Demand creation is the first key step to ensure success of SLWM systems in the villages. Information, Education and Communication is an important tool in creating awareness and ensuring community demand for safe sanitation practices. Interesting, innovative and rigorous IEC is also one of the significant ways to bring about behavioural change. Set out below is an overview of the factors that the GP/district/state will need to consider while designing appropriate IEC activities.



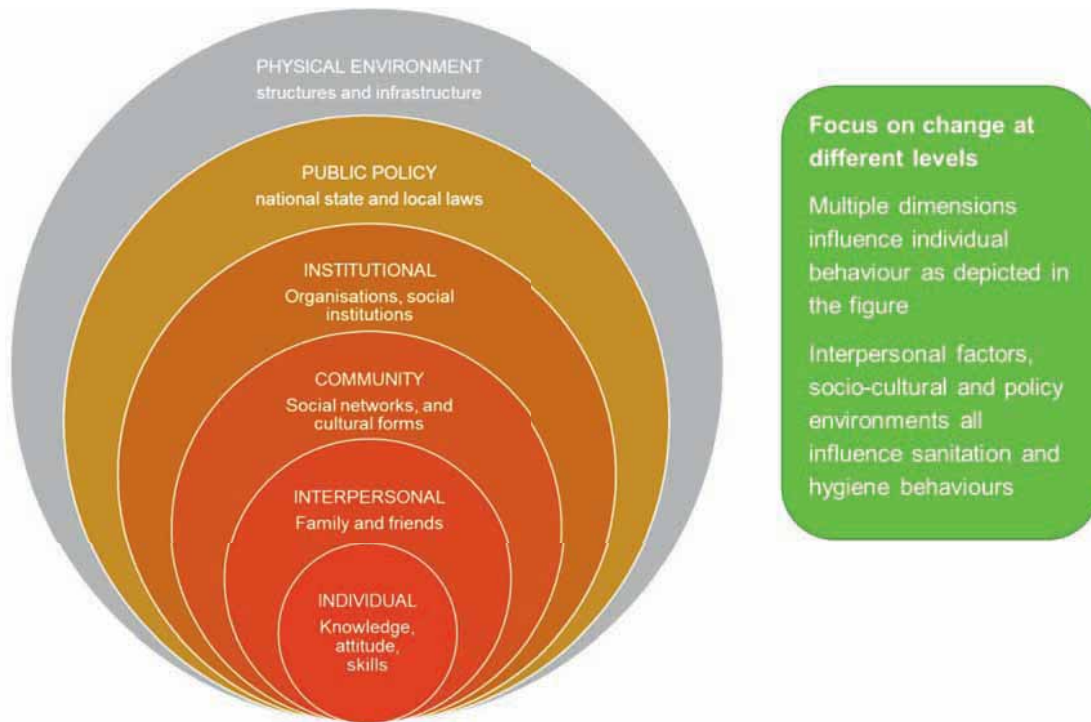


Figure 5: Factors to consider while designing IEC activities

8.2. While effective dissemination of IEC plays a key role in generating awareness, BCC takes it to the next level of enabling action and ensuring involvement and ownership of the SLWM practices by community on the ground.

8.3. Planning an IEC campaign

- (i) While planning a successful IEC campaign, it is imperative to identify the perception of different stakeholders on solid and liquid waste management (i.e. the who?). Thereafter, specific topics/messages that need to be disseminated to different stakeholders should be identified (i.e. the what?). Finally, the manner of dissemination of the IEC/BCC content has to be determined (i.e. how?).
- (ii) The IEC activities need to be planned well in advance (and not on adhoc basis) and this planning has to be synchronised in terms of messaging and initiatives with the overall IEC strategy of the district / state. For allocation of resources for conducting IEC activities a baseline survey shall be taken for prioritizing the GP / villages where the IEC campaign shall be taken up. IEC campaigns of other departments like Health, Education, Women and Children etc. can be converged with those of SLWM to increase the effectiveness and outreach.
- (iii) The planning and monitoring of IEC/BCC activities shall be done at multiple levels:



Level	Key Officer Responsible	Role	Supported by
State	Mission Director	<ul style="list-style-type: none"> • Develop state level strategy and plan • Operationalize state level activities • Ensuring all IEC and BCC related positions are filled • Engage relevant agencies and partners • Regular monitoring & reporting • Occupational safety • Standard operating procedures for composting/biogas 	State IEC Consultant
District	CEO(ZP)	<ul style="list-style-type: none"> • Develop detailed plans for the district • Work out a monthly calendar of activities for the year • Engage the services of Zilla Swachh Bharat Prerak • Build and use social media platforms at district level • Monitor the implementation in the GPs • Appoint Swachhagrahis in each GP 	District IEC Consultant, Zilla Swachh Bharat Prerak, NGOs/ Sector experts
Gram Panchayat / Village	PDO	<ul style="list-style-type: none"> • Execute the planned activities in the GP • Motivate and identify the Swachhagrahis • Identify and communicate local IEC/BCC needs to the district authorities 	GP members, local NGOs, Swachhagrahis, Anganwadi workers, ASHA workers, SHGs, Headmaster, village elders, Youth Groups VHSNC/VWSC members, local faith leaders

Table 4 : Overview of planning and monitoring of IEC/BCC activities

8.4. The Who - IEC target audience and stakeholders:

- (i) Following target groups should be kept in view while planning the campaign:
 - (a) Primary Target Group for creating awareness, raising the profile of SLWM issues and involving people in solving such issues. These include school going children (critical for BCC because they are receptive to new ideas and they could also help influence their parents to adopt good sanitation practices), women, youth, Panchayat members and village elders/ community leaders.
 - (b) Secondary Target Group such as other important stakeholders and influencers such as programme managers, district officials, etc.
- (ii) Overview of target audience at different levels is provided in the picture below:

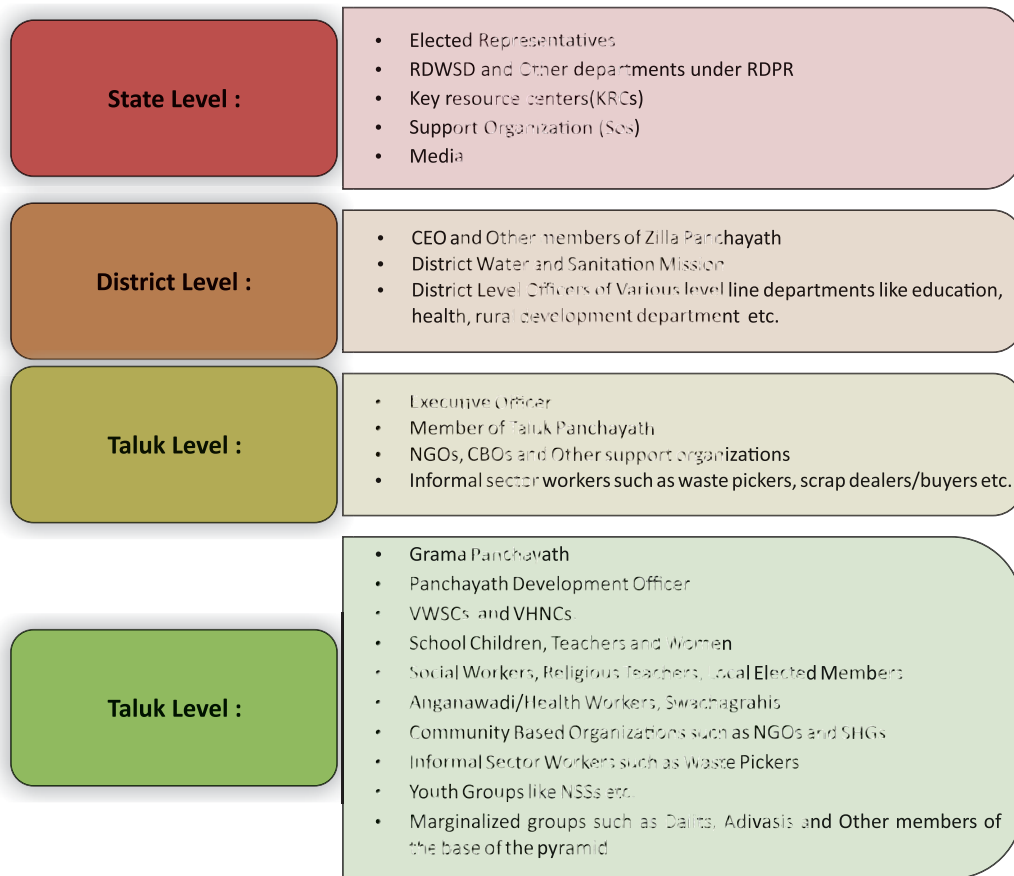


Figure 6 : Overview of Target audience for IEC activities

8.5. The What – the content of the information:

- (i) Considerable evidence shows that trying to change too many behaviours does not work and therefore, the IEC strategy should focus on the following critical areas:
 - (a) Sustained use of toilets and its maintenance and safe sanitation practices including regular de-sludging.
 - (b) Prohibition of manual scavenging and health and social impacts of this practice
 - (c) Segregation: Importance of 3-way source segregation of waste into biodegradable, non-biodegradable and domestic hazardous categories. In this respect GPs should continue supporting existing good practices such as feeding kitchen waste to livestock and home composting.
 - (d) No open dumping or burning waste
 - (e) Impact of mismanagement of solid and liquid waste on public health and the environment.
- (ii) In addition to the above main issues, the GP could also raise awareness on the following subsidiary issues:
 - (a) Prevention and minimising of waste at a generator level through implementation of Karnataka Plastic Ban (such as use of discposable items), rejection of products with excessive packaging and use of re-usable/ sustainable alternatives.

IEC activities	Target audience and suitability
Kala Jathas, street plays, folk songs, folk artists	One of the most impact ful tools for awareness generation among primary target group where language and literacy are major barriers
Door to Door awareness including interpersonal communication	Swachhagrahis and other trained manpower can carry out interpersonal communication with different types of waste generators regarding SLWM activities. This is an extremely critical component of IEC/BCC strategy and the GPs should use this as one of its primary mechanism for awareness and behavioural change.
Wall Painting/writing	An appealing message displayed through wall paintings can serve as an impactful tool targeting almost everyone in and out of the village and the floating population as well
Melas/ group meetings	To be conducted at GP/taluk level
Awareness and training workshops, exposure visits to locations of best practices	To be conducted at all the levels by identifying the need and type of training required.
School programmes like formation of eco-clubs, organising competitions based on solid waste management	Target audience is school children, who can help in propagating the campaign
Award presentation to villages, GPs or people performing well in the field of solid waste management	Target audience can be rural population, officials at GP / taluk / district/ state level. This promotes healthy competition among GPs and impetuous to perform better.
Mass media	Use of audio-visual on TV, audio messages through radio, community radio or public announcement in villages. Short films on success stories in other villages
Print media such as pamphlets, hoardings, banners, posters etc.,	Target audience will be rural population where literacy is not a barrier.
Social media and digital platforms	Use of social media campaigns is also an effective tool to generate awareness on SLWM. This should be used in districts where majority of the GP populations has access to mobile phones and internet facility
Celebrity endorsements	Community in fluencers to promote various SLWM programs /projects
Celebration of major occasions (e.g. Environment Day etc.)	Helps in promoting engagement of primary and secondary target group
Walk of Pride	Helps building pride in village residents who have attained successful milestones in the implementation of sanitation plan

Table 5 : Overview of IEC activities and the suitable target audience

ix. MONITORING OF SLWM SYSTEMS

- 9.1. Monitoring is one of the critical building blocks of a well-functioning solid and liquid waste management system. It is essential to ensure sustenance of safe sanitation practices and sustainable waste management systems. Performance of SLWM system shall be regularly monitored at all levels of administration i.e. GP, taluk, district and state for proper implementation and progress.
- 10.2. The monitoring framework for the Karnataka State Rural Sanitation Policy and Karnataka State Rural Sanitation Strategy will contain of the following broad aspects:

- (i) Overview of the parameters, key indicators and benchmarks to be monitored.
- (ii) The manner (including tools, technology etc.) and frequency at which the parameters and benchmarks will be monitored.
- (iii) Complaint redressal system

9.3. Overview of the parameters, key indicators and benchmarks:

As a part of the monitoring framework, the different administrative levels should monitor direct output, long-term outcomes and personnel involved in SLWM activities.

- (i) Output monitoring: Monitoring of direct outputs such as
 - (a) Extent and efficiency of containment and collection systems including percentage of waste generators covered.
 - (b) Setting up of proposed waste processing infrastructure within timelines included in approved DPR and implementation plans.
 - (c) Assessment of incurred expenditure and revenue generated as per the approved DPR and sanitation component of Gram Panchayat Development Plan.
 - (d) Number of IEC and BCC activities carried out within periodic timelines.
 - (e) Efficiency in redressal of citizen complaints pertaining to SLWM.
 - (f) Number of capacity building activities and their effectiveness
 - (g) Quality of the by-products such as compost, treated solids and water against established standards.

- (ii) **Outcome monitoring: Monitoring of impacts such as**
 - (a) Reduction in waste generation
 - (b) Level of segregation at source
 - (c) Usage of toilets and SLWM facilities in terms of efficiency, working capacity and financial sustainability.
 - (d) Efficient functioning of SLWM systems and equipment
 - (h) Behaviour change towards waste management among rural population and sensitivity towards personnel working with waste.
 - (i) Long term impact on health of local populations especially among vulnerable and marginalised communities and cleanliness of the villages
 - (j) Air, water and soil quality around the treatment plants
 - (k) Financial sustainability of SLWM systems including collection of user fees.

- (iii) **Monitoring of personnel**
 - (a) Continuous monitoring through people directly engaged in SLWM systems like swachhagrahis/sanitation motivators, ASHA workers, SLWM personnel and unit supervisors etc.
 - (b) Regular monitoring shall also be carried out for personnel responsible for implementation of SLWM activities as proposed under DPR, district annual implementation plan and annual implementation plan of the state.
 - (c) Monitoring of CBOs/NGOs/SHGs/other organizations/entrepreneurs engaged in SLWM projects.

9.4. **Manner of monitoring**

- (i) Use of technology: In order to make monitoring efficient, various technologies like biometric system for attendance, GPS, smart phones, tablets, management information systems (MIS) etc. based on their suitability, shall be explored at each level of administration.
- (ii) Periodic reporting: Periodic monitoring as set out in paragraph 9.5 shall be undertaken at each administrative level to ensure quality implementation of activities and suggest remedial measures, if required.
- (iii) Audits and role of third parties: Independent third-party audit and monitoring can be conducted at district or state level making use of Social Audit team of the districts and/or MGNREGS under Directorate of Social Audit, Government of Karnataka, KRCs and other relevant organisations. The state would aim at carrying out audits in at least 5% of the GPs every year. Rapid Action Learning Units (RALU) can be involved at state and district level to study and analyse the actions taken in rural sanitation, evaluation of their impact and identifying the best practices for up-scaling and suggesting innovations for implementation. CBOs/NGOs/SHGs/other organisations may also be engaged to conduct monitoring and evaluation surveys and participatory rural appraisals (PRA) specifically to determine key behaviour and perception changes regarding sanitation, hygiene, etc.
- (iv) Peer level monitoring: Similar to the monitoring during the construction of IHHL and community toilets, the peer level monitoring of a district shall be performed by district officials of another district. In the same way, inter-taluk and inter-GP monitoring of SLWM systems shall be carried out.
- (v) Regional offices of Karnataka State Pollution Control Board shall monitor the sanitation and waste management systems for adherence to environmental standards relating to air, water and soil pollution among others.

9.5. **Frequency of monitoring and reporting:**

- (i) Evaluation of the performance of the SLWM systems shall be carried out at District and State level on a periodic basis, as suggested in the following paragraphs. Corrective action shall be suggested based on the evaluation of key performance parameters.
- (ii) There shall be monthly on-field review of SLWM systems in all GPs by the Executive Officer (EO). In addition, quarterly review of progress of SLWM activities for the taluks in the district shall be conducted by the District Collector/Deputy Commissioner/Magistrate/CEO of the Zilla Panchayat. Finally, bi-annual monitoring reports shall be prepared at the state level for each district to assess the progress of SLWM programme against the proposed targets in annual implementation plan.
- (iii) Monitoring of the performance of CBOs/NGOs/SHGs/other organizations engaged in SLWM has to be done once every six months by the District Collector/Deputy Commissioner/Magistrate/CEO of the Zilla Panchayat and only those showing satisfactory results are to be retained.

9.6. The outcome of the above monitoring and evaluation activities should include corrective actions (in case of deviations, non-compliance and/or lack of progress), awards, publicity and recognition for good performance. The state shall provide detailed instructions to the districts and GPs on monitoring and evaluation parameters including outcomes of such monitoring exercises.

9.7. **Complaint Redressal System**

For effective functioning of SLWM plan and systems, a robust complaint redressal system is imperative. This system creates a platform for citizens to voice their complaints regarding waste management services and is an additional monitoring mechanism for the GP. This system could be enabled through complaints to the PDO and members of the VWSC / VHSNC

and/or any other mechanism which the GP may consider appropriate. The GP shall ensure that each grievance is redressed in a timely and efficient manner bearing in mind the type of grievance, inconvenience caused to public and the remedial action proposed to be taken. The PDO should make an area-wise periodic (daily, weekly or monthly) report of the number and type of complaints received, remedial action taken including time taken for such action, feedback of the complainant and pending complaints. This should be submitted to the EO and CEO as a part of the regular monthly and quarterly reporting formalities.

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94809 85555



Rural Drinking Water & Sanitation Department
Rural Development & Panchayat Raj Department

What is Black Water?

Water from toilets containing
faecal matter is known as **“Black Water”**.



ANNEXURE I | METHODS FOR RETROFITTING OF TOILETS

ODF : Can we make it Sustainable in True Sense ?

Pit Toilet : Major flaws observed & possible remedies

ODF in true sense is...

- Every Household as a toilet/Access toilet
- Every toilet is used
- No one defecates in the open

Does the story end here ...?

Pit Toilets: Major flaws observed

- Improper selection offsite
- Single pit instead of two
- Excessively deeper pits
- No safe distance between pits
- No honeycombing
- Cement finish from inside
- Two inter connected pits
- Vent pipe attached

Is our program sustainable ?

- Are there some families who are left outs ?
- Are the toilets usable in true sense
- Are there going to be some O&M issues

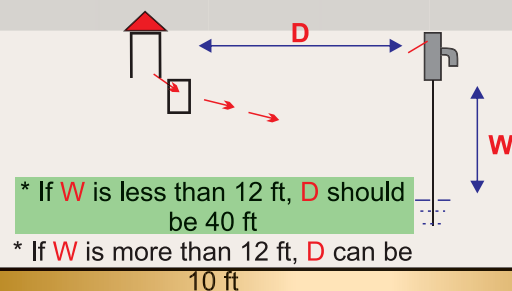
1. Selection Offsite

- Safe distance from drinking water sources
- Safe distance from big trees
- Safe distance from house wall

Major types of toilets

- Pit Toilets
- Septic Tank Toilets
- Ecosan Toilets
- Bio Toilets
- Other Types (Non –descript?)

How to determine distance from water source

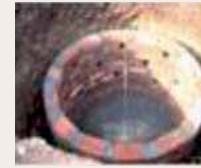


Improper site : Repercussions

- Microbial contamination
- Chemical contamination: Nitrate pollution



Leach Pit : Square or Round



Improper site : Possible Retrofitting

- Check Location of Toilet vis a vis ground water sources
- If round polluting ground water abandon
- If not found polluting : Check water quality periodically

Possible Retrofitting

- Square Pits: Content till these sustain
- Replace with new ones with correct design

2. Size, Shape & Construction of Pit

Ideal Construction of Leach Pit

4 inch thick
brickwork

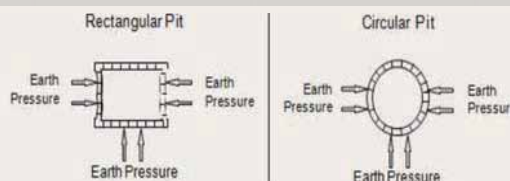


Honeycombing in
alternative layers

First layer 9 inch
thick

No cementing at the
bottom

Leach Pit : Square and Round ?



Pits smaller than
required

Excessively deep leach pit



Possible Retrofitting:

- Smaller pits: Continue these fill up
- Replace with new ones with correct design
- Deep pits:
- Check for water contamination
- Abandon if polluting
- Fill up with compact earth up to safe level

Possible : Repercussions

- Possible : Repercussions
- Manure will not dry
- Removal difficult
- No congenial conditions for pathogen deactivation



Excessive honeycombing

No honeycombing



Possible : Repercussions

- Dismantle the pit not in use and construct new one at safe distance
- Construct partition wall in between to extend sideward as well as below the bottom
- For more than one toilets at one place construct two common bigger pits instead of too many smaller ones

Possible Retrofitting

- Excessive honeycombing : close extra honeycombs
- Continue till it sustains
- In case of no honeycombing : have these carved in required in numbers

Errors in junction chambers



No safe distance between pits



Possible : Repercussions

- Manure will not dry
- Removal difficult
- No congenial conditions for pathogen deactivation

Possible Remedies

- Dismantle the faulty chamber and replace with correct one
- Block one way to direct flow to only one pit at a time

Emptying Pits: Some more essentials

A well protocol is essential

1. Timely change over of pits
2. Proper time of emptying
3. Safety measures
4. Due hygienic measures to be followed
5. No social classism to be encouraged

Single Pit Toilet

Single Pit Toilet

- Pit content does not decompose properly and fully
- Removal becomes problematic
- No scope for change over
- No resting period as per WHO guidelines

Possible : Repercussions

- What after if is full?
- Emptying is problematic/Unhygienic/Inhumane
- People tend to abandon the toilet

Possible : Remedies

- Best solution would be to have one more pit with a provision of junction chamber
- Vermi filtration
- Removal of manure with due precautions & use the same pit again

Emptying Pits: Some more essentials

- Myths about emptying
- Myths about the contents
- Time of emptying: When to empty, not to empty
- Method of emptying
- Safety Measures
- Hygiene Measures

Vermi filtration /Tiger Toilet



Removing Manure with Due Precautions

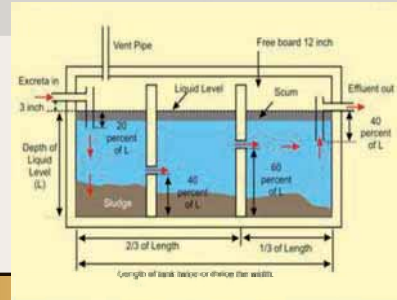
- Removal the pit cover
- Cover the contents with a mixture of soil and ash
- Replace the cover
- Don't use the toilet for a week
- Remove cover
- Remove the contents
- Start using the toilet again
- Make a conical heap
- Cover the heap with black polythene
- Keep in sun for 3-4 days
- Safely use the manure

Septic Tank Toilet : Errors Observed

- Inadequate volume of tank
- Errors in internal structure
- Inadequate baffle walls
- Errors in inlets /outlet connections
- Has an inlet but no outlet
- Effluent let in open /open drain

Septic Tank Toilet Standard Design

Septic Tank Toilet Standard Design



Septic Tank Toilet Most Loved and Least Understood

Septic Tank Toilet : Myths and Truths

Myths : Truths : Septic Tank Toilet : Myths and Truths

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Septic tank of any size can work 2. Effluent from a septic tank is safe and hence can let out in the open or into an open drain 3. Septic tank lasts very long and does not need emptying at shorter intervals 4. Septic tank need not be filled with water before commissioning | <ol style="list-style-type: none"> 1. Size of septic tank has to be decided according to the number of users 2. The effluent may contain several pathogens and needs to undergo secondary treatment 3. A septic tank needs to be emptied as often as necessary (generally once every 2 years) to prevent build up and filling up solid as a result of which raw sewage and solid flow out of the tank 4. A septic tank is an anaerobic digester of continuous type. It must be filled with water before commissioning for a proper functioning. |
|--|---|

Septic Tank Effluent : What are the right options

Decentralized → Semi-centralized → Centralized

1. Effluent discharged in a individual leach pit
2. Effluent discharged in a community leach pit
3. Stabilization pond with adequate HRT
4. Soil biotechnology /Phytoremediation systems

Leach Pit for Effluent Discharged

Decentralized



Where does the sludge go ?

1. Rivers/ water bodies
2. Open drains
3. Open barren land
4. Highways
5. Farms
6. STPs of nearby cities
7. FSTPs specially established for FSM

Community leach Pit for group of houses

Semi-centralized



FSTP : Recommended infrastructure for faecal sludge management



Retrofitting of Septic Tank Toilet

- Check volume of the tank
- Check the inlets & outlets & replace by tees
- Check the vent pipe & make necessary corrections : Location, Cowl, Mosquito net
- Effluent treatment: Complete ban on discharge in open/ open drains
- Construct leach pit for effluent discharge
- Tell user about desludging intervals: once in two years
- Monitor desludging

Steps in FSM

1. Containment
2. Emptying
3. Transport
4. Treatment
- Reuse/Disposal



Septic Tank : How to Manage the Sludge ?

Retrofitting of Septic Tank Toilet

- Check volume of the tank
- Check the inlets & outlets & replace by tees
- Check the vent pipe & make necessary corrections : Location, Cowl, Mosquito net
- Effluent treatment: Complete ban on discharge in open/ open drains
- Construct leach pit for effluent discharge
- Tell user about desludging intervals: once in two years
- Monitor desludging

A few words about Super Structure

ODF sustainability : Some useful tips

- Fact finding exercise : House to house survey
- Categorization of faulty toilets
- Plan of action
- Who is to do what ?
- Involving people in the process
- Focused IEC
- Technical training in retrofitting
- Concurrent quality monitoring

Vent pipe not needed in pot toilet

Very less production of gases

Gasses get leached in surroundings soil like water

Vent pipe in pit toilet can cause mosquito breeding & methane gas in atmosphere

Vent pipe is a must in septic tank

1. Vent pipe dia = 2-3 inch
2. Vent pipe should be minimum 2 ft above the nearest wall
3. Vent pipe should not have bends
4. A cowl should be covered with a vent pipe
5. Cowl should be covered with a mosquito net.
6. Vent pipe should protrude from tank & not from the inlet pipe.

Super structure : Common errors & Possible remedies

errors	remedies
Height not adequate	Extend the height to adequate standards
No ventilators provided	Provide a small window at appropriate place
Platform around pan does not have smooth finish & proper slope towards pan slope towards pan	Correct the platform finish accordingly
No roof / no door	Provide necessary roof & door



WHAT DO YOU KNOW ABOUT MANUAL SCAVENGING?

It is an act of manually cleaning, carrying, disposing or handling human excreta before it is fully decomposed.



Punishment for manual scavenging includes an imprisonment of 2-7 years or a fine of 2-5 lakh fine or both.



Many health hazards related to cardiovascular, respiratory & skin, are caused due to the exposure to harmful gases. Also results in microbial infections.



**ANNEXURE II | ILLUSTRATIVE LIST OF BIO- DEGRADABLE WASTE,
NON BIO- DEGRADABLE WASTE DOMESTIC HAZARDOUS WASTE AND
SANITARY WASTE FOR THE PURPOSE OF SEGREGATION**

Part A – Illustrative list of Bio-degradable Waste:

- Kitchen/market waste including fruit and vegetable peels, leftover and / or stale food, tea leaves, eggshells
- Meat and bones
- Leaf litter, including flowers
- Coconut shells
- Wood/ leaf ashes

Part B – Illustrative list of Non Bio-degradable Waste:

- Newspapers
- Paper, books and magazines
- Glass
- Metal objects and wire
- Plastic
- Aluminum cans
- Rubber
- Wood /furniture
- Packaging
- Fabrics
- Styrofoam
- Thermocol
- TetraPak

Part C – Illustrative list of Domestic Hazardous Waste and Sanitary Waste

Part C1– Illustrative list of Domestic Hazardous Waste

- Aerosol cans
- Bleaches and household kitchen and drain cleaning agents
- Batteries, oil filters and car care products and consumables
- Oils, chemicals and solvents and their empty containers
- Cosmetic items, chemical-based insecticides and their empty containers
- Medicines including expired medicines
- Paints, oils, lubricants, glues, thinners, and their empty containers
- Pesticides and herbicides and their empty containers
- Photographic chemicals
- Thermometers and mercury-containing products

Part C2 – Illustrative list of Sanitary Waste

- Used diapers
- Sanitary towels or napkins, menstrual cloths and similar items containing bodily fluids
- Condoms,
- Band aid, household gauze and soiled cotton
- Syringes from households

ANNEXURE III
NORMATIVE STANDARDS FOR MANPOWER AND VEHICLES MANPOWER AND VEHICLES FOR
COLLECTION AND TRANSPORTATION

Type of vehicle	Population density (per sq. Km) and terrain	Carrying Capacity	Number of vehicles	Basis of manpower allocation
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Primary collection

Pushcarts ¹⁴	Dense (>400 persons per km ²), flat terrain and narrow streets	250 L /125 Kg	1 pushcart per 300 house holds and small shops	Door to Door collection @1 worker per 150 households and small shops
				Along the street mechanism with a whistle or announcement @1 worker per 240 households and small shops
Pedal Tricycle	Moderately dense (<400 persons per km ²), flat terrain and narrow streets	500 L/ 250 Kg	1 pedal tricycle per 300 households and small shops	Door to Door collection @1 worker per 150 households and small shops.
				Along the street mechanism with a whistle or announcement @1 worker per 240 households and small shops.
Electric vehicle/ any smaller motorized vehicle	Sparse (<200 persons per km ²) persons, hilly terrain and wider roads/streets	1000L/350 Kg	1 electric /motorised vehicle per 200 house holds and small shops	One driver per vehicle
Auto tippers ¹⁴	Irrespective of population density and terrain but should be deployed in wider streets (may have to supplement with push carts for access to narrow lanes)	1500 L/ 750 – 1000 Kg	(i) One per 800 house holds and small shops. (ii) Separate vehicle required for slaughter house waste if the generation exceeds 100 Kg per day	One driver and one helper / loader per vehicle

Secondary Collection

Auto tippers	-	1500 L/ 750 – 1000 Kg	One per 2000 house holds and small shops.	One driver and one helper per vehicle
Tractor	-	4000 - 5000 kg	Shall be considered only for multi-GP solid waste management plan	Not applicable at a GP level
Trucks	-	6000 kg	Shall be considered only for multi-GP solid waste management plan	Not applicable at a GP level

¹¹Secondary collection vehicle needed if the waste unit is more than 500m away from the farthest collection point.

¹²Secondary collection vehicle needed if the waste unit is more than 2km from the farthest collection point

¹³Secondary collection vehicle may not be needed if the waste unit is within 5km of the farthest collection point

¹⁴Secondary collection vehicle may not be needed if the waste unit is within 5km of the farthest collection point

2. MANPOWER FOR WET WASTE MANAGEMENT AND SORTING OF DRY WASTE

- (i) The standard that can be used for secondary sorting of dry waste into 8 different categories is 16 - 22 kgs per hour per person.
- (ii) The standard that can be used for composting is one person in case the incoming wet waste is less than 200 kgs per day and working for 2-3 hours.

Notes:

- (i) Collection can be done in one shift of 6 hours or in two shifts of 3 hours each in morning and evening.
- (ii) Each primary waste collection vehicle should have two workers who can together cover twice the number of households as compared to a single waste collector. In case of electric vehicle / motorized vehicle, the driver can be accompanied by 1 helper.
- (iii) After collection, the collection staff can be engaged for two hours for secondary sorting / segregation at the dry waste storage shed in the afternoon. Alternatively, the GP can also consider using the staff at the wet waste processing unit for composting of wet waste. The collection staff can be also engaged in sweeping of the village as well.
- (iv) In case of transfer of dry waste from dry waste storage unit to the nearest ULB aggregation point, the GP should consider leasing trucks/tractor rather than purchasing them.

3. NORMATIVE STANDARDS FOR ESTIMATION OF WASTE GENERATION¹⁵

Waste management planning shall be done to sustain the population increase for at least next 10 years. Population projection can be done using the formula given below:

Population projection

$$P_n = P_p (1 + r)^n$$

Where P_n = Future projected population after "n" number of years

P_p = Present population

r = population growth rate (population increase per year)¹⁶

n = number of years

Average per capita generation¹⁷

Per capita generation for solid waste: 150-650 gm¹⁸ per day.

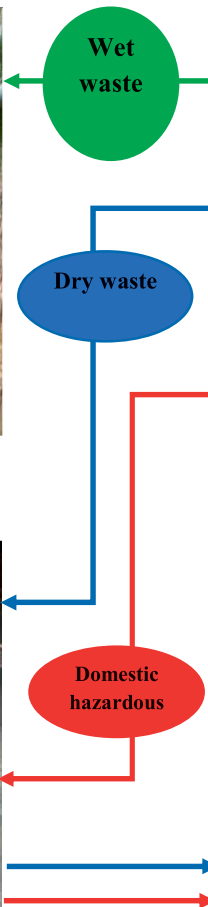
¹⁵Please refer to the model DPR included in Annexure VI for the categories of waste generators.

¹⁶Population growth rate for each state is available from Census of India

¹⁷Waste generated by one person per day: This can be calculated by taking total waste generated by all the sources divided by total population of the area (in this case GP)

¹⁸This is excluding bulk waste generators (i.e. waste generators generating more than 50 Kg per day)

ANNEXURE IV | WASTE FLOW IN GRAM PANCHAYATS
PART A – PERI – URBAN DENSELY POPULATED GRAM PANCHAYATS



PART B – RURAL SPARSELY POPULATED GRAM PANCHAYATS



Household and street level composting

Technology	Applicability	Financial Costs ¹⁹				Limitations
		Household (average 5 members)		Community/street level (about 50 households)		
		Capital cost	Operational cost	Capital cost	Operational cost	
Underground unlined manure pit or garbage pit	Rural areas with low rainfall Houses with an open space of about 7 sq.m Houses with no cattle or with single cattle.	Materials: Nil Manpower: Rs. 500 per pit (2-man days unskilled labour to dig the pit)	Nil	Materials – Nil Manpower: Rs. 750 per pit (3 man days unskilled labour)	Nil	Not suitable for heavy rainfall areas and rocky terrain.
Underground brick lined manure pit or garbage pit	Rural areas with low rainfall Houses with an open space of about 7 sq.m Houses with no cattle or with single cattle Loose soil structure.	Materials - Rs. 1800-2000 (Approximately 200 bricks, 1/3 bag cement, 3 cubic feet sand) Manpower: Rs. 450-500 per pit (one-man day unskilled and 1/2 man day skilled labour)	Nil	Materials – Rs. 11,000-11,500 (Approximately 1200 bricks, 3 bags cement, 20 cubic feet sand) Manpower: Rs 1500-2000 per pit. (3 man day unskilled labour and 2 man days skilled labour)	Nil	Not suitable for heavy rainfall areas and rocky terrain.
Overground heap	Rural areas with high rainfall and rocky terrain Houses with an open space of about 7 sq.m Houses with no cattle or with single cattle.	Materials - Nil Manpower: Rs. 250 (1-man days unskilled labour to make the platform.	Nil	Materials - Nil Manpower: Rs 500 (2-man days of unskilled labour) per heap.	Nil	
Over ground brick lined compost tank	Rural areas with high rainfall and rocky terrain Houses with an open space of about 7 sq.m	Materials – Rs. 3500-4000 (Approximately 400 bricks, 1/2 bag cement, 5 cubic feet sand)	Nil	Materials – Rs. 11,000-11,500 (Approximately 1200 bricks, 3 bags cement, 20 cubic feet sand)	Nil	

¹⁹ Labour and material rates as per MNREGA schedule of rates

Technology	Applicability	Financial Costs ¹⁹				Limitations
		Household (average 5 members)		Community/street level (about 50 households)		
		Capital cost	Operational cost	Capital cost	Operational cost	
	Houses with no cattle or with single cattle.	Manpower: Rs.450-500 per tank (one man-day unskilled and 1/2 man-day skilled labour) Materials – Rs. 1000 per set (2 pipes) Manpower: Nil	Nil	Manpower: Rs 1500-2000 per tank. (3 man day unskilled and 2 man days skilled labour) NA	NA	
Pipe composting	Applicable to houses with shortage of space. Houses with no cattle or with single cattle.					

55 Community level organic waste management²⁰

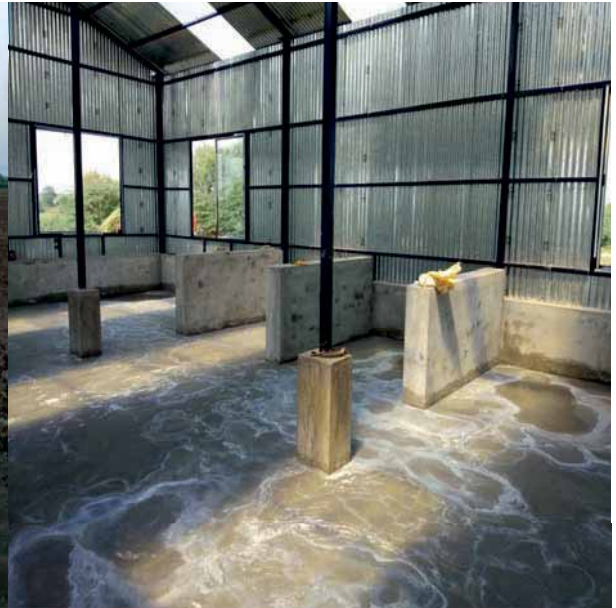
Technology	Brief description	Suitability (TPD)		Area (m ²)		CapEx (INR In Lakhs)		OpEx (INR per annum)		Handling Expertise
		Min	Max	Min	Max	Min	Max	Min	Max	
Vermi Composting	Vermi compost is the product of the composting process using various species of worms, usually red wigglers, white worms, and other earthworms, which feed in mixture of decomposing vegetable or food waste, and release droppings called vermicast which can be used as compost for soil	0.10	2	100	2500	0.25	2.50	2800	6000	Unskilled
Windrow Composting	Windrow composting is the production of compost by piling biodegradable waste, in long rows (windrows) and turning them. This method is suited to producing large volumes of compost.	50	1000	12141	60705	650	5500	83	467	Skilled Semi unskilled
Pit Composting	Pit or trench composting is the process of burying organic waste directly into soil. This is a slower composting process than composting in well-managed windrows, but the trenched materials will retain more nitrogen during the process.	0.10	2	100	2500	0.25	3	500	6200	Unskilled
Aerated static pile Composting	Aerated Static Pile (ASP) composting, refers to the system used to biodegrade organic material without physical manipulation (turning) during composting.	0.10	10	300	1000	2.50	11	183	6000	Unskilled
Biomethanation / Biogas	Biomethanation is the anaerobic (in the absence of free oxygen) fermentation of biodegradable matter in an enclosed space under controlled conditions of temperature, moisture, pH, etc.	0.50	300	350	37000	15	9000	100	1000	Skilled Semi unskilled

²⁰ The numbers in this annexure are on the basis of literature review and will need to be authenticated as per actual ground operations.

ANNEXURE VI | MODEL DRY WASTE CENTRE/UNIT



Model shed for dry waste



Low and open segregation areas for easy sorting and storage of segregated dry waste.



Segregation of dry waste



Weighing of incoming dry waste

NORMATIVE STANDARDS FOR DRY WASTE UNIT

Sl.no	Particulars	Details
1.	Waste handling capacity of dry waste management unit	1000 Kgs per day
2.	Maximum period of storage considered	1 month
3.	Height of storage unit (in feet)	8
4.	Area required for incoming waste (in square feet)	40
5.	Area required for sorting of waste (in square feet)	25 ²¹
6.	Area required for baling unit (if baling is planned) (in square feet)	20
7.	Area required for storage of sorted waste (baled) (in square feet)	714.3
8.	Area required for storage of sorted waste (unbaled) (in square feet)	1200
9.	Toilet block and washing areas (in square feet)	150
10.	Vehicle parking area for one vehicle, if required (in square feet)	300
11.	Extra space for unforeseen circumstances (in square feet)	200
12.	Total area required for Dry waste management unit (with baling facility) (in square feet)	1449.3
13.	Total area required for Dry waste management unit (without baling facility) (in square feet)	1915

²¹This is the minimum area to be considered. In case more than 2 persons are employed this area can be increased to 10% of the total area required for storage.

ANNEXURE VII | SUGGESTED TECHNOLOGY OPTIONS FOR TREATMENT OF LIQUID WASTE

Though there are several treatment technology options for liquid waste, when it comes to rural context, availability of skilled resources and technical services for operations and maintenance play a key role in deciding the most suitable technology in addition to the availability of funds and land for construction. Technologies which are easy to maintain and operate should be chosen to ensure sustained operation.

Following are a few technology solutions suggested for treatment of both streams of domestic liquid waste.

I. Blackwater/faecal sludge/septage:

In order to manage the blackwater/faecal sludge/septage efficiently, it is important to give due consideration to each activity along the sanitation services chain as shown on paragraph 5.2 of the Karnataka State Strategy above. The following sections detail out a few options available for the same.

1.1. Containment systems

(i) Twin-pit: Twin-pits are two underground chambers (pits) provided to hold faecal sludge. Both the pits should be at least 1 meter apart. A single pipe leads from the toilet to a small diversion chamber, from which separate pipes lead to the two underground chambers. The pits should be lined with open jointed brickwork. Each pit should be designed to hold at least 24 months accumulation of faecal sludge. Wastewater is discharged to one chamber until it is full and then switched to the second chamber by changing the flow in the diversion chamber. Just before the second chamber is full of faecal sludge, the contents of the first pit are dug out. During the time of storage, digestion would ensure that it is odourless and free of pathogens. However, safety measures should be taken against direct human contact during the emptying of the first pit.

Advantages

- (a) Takes care of faecal sludge at source, no further treatment is required as the composted faecal sludge is used in farms. If not used in farm, then arrangements should be made for safe disposal
- (b) Simple technology
- (c) No electrical energy is required
- (d) Low operating costs
- (e) Long service life
- (f) Small land area required (can be built underground)

Disadvantages

- (a) Not applicable in high water table areas due to risk of polluting ground water.

Costs

The cost of construction of each unit might be in the range of Rs. 5,000-7,000 depending on the size, cost of local material and labour. There is no maintenance requirement for this option, however after one of the pits is filled up and allowed enough resting time of at least 2 years the composted sludge would need to be removed and used for farming/horticulture etc. which might involve some labour. However, in practice, mostly the household owner carries out this activity hence we can assume a near zero maintenance cost.

(ii) Septic tank: A septic tank is a watertight chamber made up of brick work, concrete, fibreglass, PVC or plastic provided to hold back water from cistern flush or pour flush toilets and includes a soak pit. A properly designed septic tank provides primary treatment to certain degree. Settling and anaerobic processes reduce solids and organics, but the treatment is only moderate. Accumulating faecal sludge needs to be dug out of the chamber at a regular interval and correctly disposed of after proper treatment in another facility. Effluent is infiltrated into the ground through the adjoining soak pit or transported via a sewer to a treatment plant in another location. During designing, the Standards specified by the CPHEEO Manual, IS: 2470 or SBMG guidelines would need to be followed on ground.

Advantages

- (a) Simple and robust technology
- (b) No electrical energy is required
- (c) Low operating costs
- (d) Long service life and suitable in high water table areas
- (e) Small land area required (can be built underground)

Disadvantages

- (i) Low reduction in pathogens, solids and organics
- (ii) Regular desludging must be ensured
- (iii) Effluent and sludge require further treatment and/or appropriate discharge

Costs

Though the septic tank can be constructed on site along with the toilet or other building structure, readymade septic tanks are also available in the market today (with different materials used for construction). The cost range could vary between Rs. 5,000 – 18,000 depending upon the type of material and size considered (which would need to be calculated depending on number of users). The operating costs for these would ideally include some repairs over a longer period of time and regular desludging after at least 2-3 years (depending on the size of septic tank) which would cost the user anywhere between Rs. 800 to 3000 in these areas (as per information provided during site visits).

1.2. Faecal sludge collection and conveyance mechanism.

There are desludging vehicles available in market to extract and transport faecal sludge known as “Cesspool vehicles” or “Vacuum trucks” commonly referred to as “Honeysuckers” in recent times. Most commonly available and used desludging equipment in India have been listed below. Depending upon the accessibility and capacity of containment unit most feasible desludging vehicle should be procured.

Cesspool vehicle options

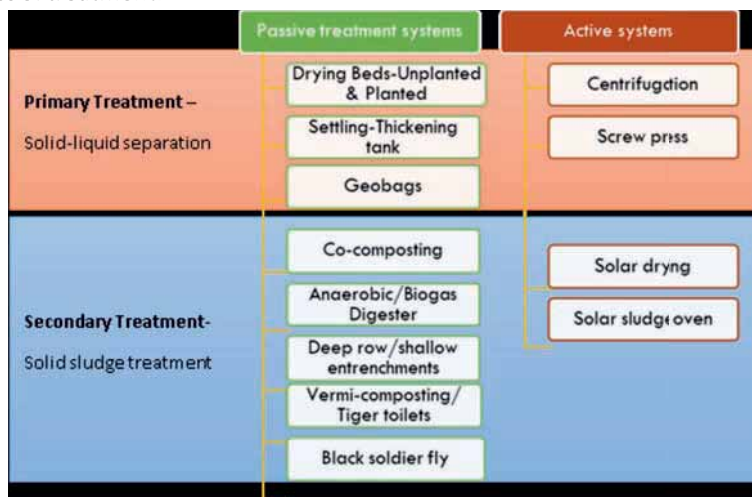
Capacities	Carriage	Capital Cost	Width
500 – 1000	Litre Mounted on Auto	Rs. 4- 5 Lakhs per vehicle	1.5 meter
1500 – 2000	Litre Mounted on a four wheel LCV	Rs. 7 -8 Lakhs per vehicle	1.5 meter
3000 – 5000	Litre Mounted on a Tractor	Rs. 12-15 Lakhs per vehicle	2 meters
3500 – 5000	Litre Mounted on a mini Truck	Rs. 15-16 Lakhs per vehicle	2.5 meter
5000 – 6000	Litre Mounted on a truck	Rs 20 – 22 Lakhs per vehicle	3 meters

For each emptying machine irrespective of the size at least one operator and one driver will be required for ensuring smooth operations.

1.3. Treatment of blackwater/faecal sludge/septage

- (I) Faecal Sludge treatment can be divided into four steps:
 - (a) Primary treatment (separation of solids and liquids)
 - (b) Secondary treatment of solid part/sludge (solid which is generated from the primary treatment)
 - (c) Secondary treatment of liquid part/ effluent (liquid which is generated from the primary treatment) and finally
 - (d) Tertiary treatment of effluent from the secondary treatment modules (final treatment of the liquid and solid parts).

- (ii) In the rural context, technologies selected for treatment of wastewater and faecal sludge should be low on Capex, Opex and should be easy to maintain by local level entities. Technologies available in market can be classified into passive and active systems as shown below. In order to arrive at a logical quantity of FS to be treated, the existing desludging numbers per day/week shall also be identified by discussion with the GP/Taluk officials and vehicle operators. The final design quantity of faecal sludge to be treated shall be arrived at based on discussions on the theoretical (generation) and practical (desludging practice) findings. In order to decide on setting up of an FSTP, the first consideration shall be given to availability of a sewage treatment plant (STP) or FSTP in nearby urban areas. These existing plants could be used (with suitable modifications) for treating FS from rural areas. In case no such treatment facility is available, then a cluster level FSTP could be planned such that all villages falling within a radius of upto 15 kms could be catered to. Finally, if both these solutions are not feasible then a GP level FSTP would need to be designed with a suitable capacity.
- (iii) While deciding on an FSTP for a village or group of villages, due considerations will have to be given to the ideal location of such an FSTP to:
- Optimize the distance to be travelled by the desludging vehicles/vacuum trucks
 - Availability of sludge on daily basis.
 - The type and width of roads available for proper access to the FSTP
 - The administrative set-up to ensure continued co-operation between all the villages which share such an FSTP facility
 - Common understanding and agreement on the structure and modalities of investment on construction of FSTP as well as sharing of the operational expenditures among all the related villages.
 - Contract and reporting structure to be entered into with the operator and modalities of the funds transfer for both construction and operation & maintenance.
- (iv) The passive systems are designed around nature-based systems while the active systems use electrical or mechanical energy for the process of treatment.



Faecal sludge treatment options

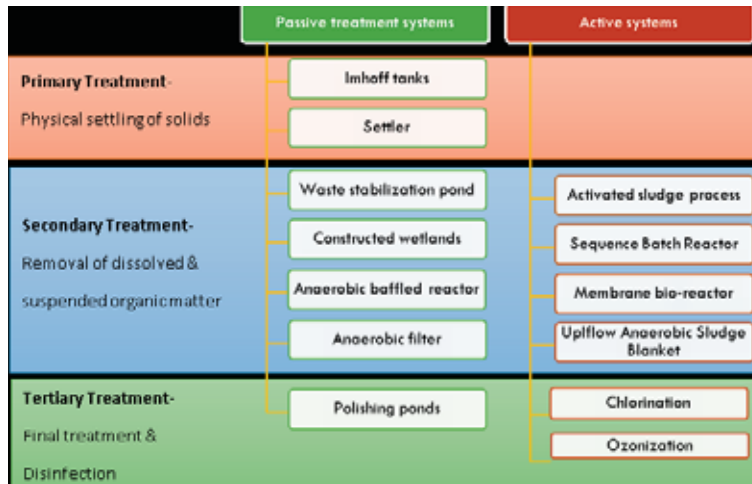
The capital cost for the passive systems cannot be standardized based on capacity but will be dependent of several factors like loading rate, drying period, climatic conditions, level of treatment preferred, costs of materials & human resources in different locations, etc.

II. Greywater

The different technology options available for treatment of the greywater as well as liquid percolate of faecal sludge/septage have been provided below on the same basis of Passive and Active systems as defined above. In order to keep the CapEx and OpEx low, it is advised that passive treatment systems be chosen in rural areas.

- Optimize the distance to be travelled by the desludging vehicles/vacuum trucks
- Availability of sludge on daily basis.

- (c) The type and width of roads available for proper access to the FSTP
 - (d) The administrative set-up to ensure continued co-operation between all the villages which share such an FSTP facility
 - (e) Common understanding and agreement on the structure and modalities of investment on construction of FSTP as well as sharing of the operational expenditures among all the related villages.
 - (f) Contract and reporting structure to be entered into with the operator and modalities of the funds transfer for both construction and operation & maintenance.
- (iv) The passive systems are designed around nature-based systems while the active systems use electrical or mechanical energy for the process of treatment.



Liquid component treatment options

While discharging of final by-products of both solid and liquid components of the above, the adherence to environmental norms and existing standards prescribed by the regulatory authorities/KSPCB shall be ensured. Suitable tests would need to be conducted on samples regularly through designated laboratories for ensuring such adherence.



ANNEXURE VIII |

GUIDELINES FOR SELECTION OF SUITABLE TECHNOLOGIES FOR LIQUID WASTE MANAGEMENT

As each of the treatment options listed out in Annexure VII provides for treatment of different parts of liquid waste, a combination of the same would be required to plan an integrated and efficient treatment system on ground. As the existing examples of treatment in terms of combination are limited in faecal sludge, following could be the suggested approach for rural areas in Karnataka based on the category of rural area (as provided in Annexure IX: classification of districts in Karnataka):

Suggested models of liquid waste management

Technologies	Advantages	Limitations	Costs	Applicability
Faecal sludge/septage treatment				
Twin-pit Upgrade:	Relatively cheap; Household level intervention; single pits can easily be upgraded to twin-pits;	Minimum distance from groundwater table and drinking water sources (e.g. wells) has to be maintained	Rs. 10,000-14,000/ Rs. 5000-7000(single pit upgrade)	<ul style="list-style-type: none"> • Areas with low ground water table • Agrarian areas • Hilly terrain and arid regions
Deep row trenching:	Relatively cheap; Caters to low/irregular loads; no skill required to construct/operate, No/low nuisance. Retention Time:6-8months	Minimum distance from groundwater table and drinking water sources (e.g. wells) has to be maintained, Land required as per the amount of sludge to be disposed	Capex: Rs. 14 Lakhs (over a period of 10 years) Rs.500/KLD	Same as above
Planted drying beds	Low O&M, semi-skilled labour required, relatively higher flexibility in terms of irregular load intake, Half the cost of Devanahalli; doesn't depend on groundwater levels	Demands digested sludge, not suitable for intake from public toilets; Modifications in case of heavy rainfall adds to the Capex, Feasible for an intake of above 3KLD	Capex: Rs.15-30Lakhs (3-6KLD) Opex: Rs.10Lakhs p.a	<ul style="list-style-type: none"> • Ideal for low population densities with irregular desludging practises • Agrarian villages • Central plains as well as dry hilly terrain
Anaerobic digestion with un-landed drying beds:	Low/no electricity required, Low area requirement, Easy O&M, semi-skilled labour; Intakes of as low as 0.8KLD to a 3KLD plant possible	Relatively expensive for low population villages; Designed on the basis of collection (Most of the collection trucks are of 3KL capacity); Continuous operations; cleaning operations every 4-5 months; Pathogen removal requires tertiary treatment	Capex: Rs.25-55 Lakhs (3-6KLD); Opex: Rs. 10 Lakhs p.a	<ul style="list-style-type: none"> • Medium to high densities • Does not depend on ground water levels • Agrarian and peri-urban areas • Suitable for hot and dry areas

Pyrolysis or thermal treatment:	Treats FS completely; End product is biochar, acts as a soil enhancer, Easy implementation	Minimum feasible capacity of 5KLD; High Capex and Opex; Higher land required; Fuel/Electricity intensive	Capex: Rs.22-27.6 Lakhs (5-6KLD); Opex: Rs. 19-21 Lakhs p.a	Suitable for areas with good/continuous power supply and availability of skilled human resources
Greywater/liquid percolate (from faecal sludge) treatment				
Kitchen garden	Household level greywater management; Independent of central conveyance system; Easy to implement, no skills required and low cost	Not every household/cluster of households have enough space	Rs. 300-500/KLD Opex: Minimal for cleaning solid waste/slime	<ul style="list-style-type: none"> • Areas with large spaces available around houses • Areas with low ground water table
Dispersion Trenching/Soakaway Pit:	Relatively cheap; Caters to low capacities (upto 0.8 KLD); no skill required to construct/operate, No/low nuisance; ideal for low groundwater table. Can be done at household and community level	Requires some cleaning activities every 4-5 months depending on the amount of solids clogging the soaking mechanism	Rs. 300-500/KLD Opex: Minimal for cleaning solid waste/slime	<ul style="list-style-type: none"> • Areas with low ground water table • Hot and arid areas
Covered drains-Treatment facility (WSP/Settler+CW)	Applicable to densely populated clusters; without any space for HH-level solution; Lower cost	Additional costs for laying drains for all HHs; Village/Cluster level intervention	Rs. 700-940/KLD	<ul style="list-style-type: none"> • Peri-urban and densely populated areas • High rainfall areas
Combined wastewater treatment				
DEWATS	Applicable to villages with complete sewer coverage; Modular upgrade of capacity possible;	Can handle very low inflow to very high inflow; Low O&M; Low life-cycle cost	Rs. 6.6-14 Lakhs(3-6KLD) Opex: 2-2.5 Lakhs p.a	<ul style="list-style-type: none"> • Peri-urban and densely populated areas • Areas with erratic power supply and lack of skilled labour
MBBR based STP	Applicable to villages with complete sewer coverage; Modular upgrade of capacity possible;	Minimum feasible inflow of 10KLD; Capex intensive; Infrastructure demands spatial planning	Capex: 10-100 KLD: 6-50 Lakhs 100-500KLD: 53 Lakhs-1.75 Cr 500-1000 KLD: 1.75-2.35 crores Opex: Rs. 3 -17 Lakhs(10-100 KLD)	<ul style="list-style-type: none"> • Peri-urban and densely populated areas • Areas with reliable power supply

In addition to the above suggested treatment options, any other technologies / innovations could be chosen depending on the suitability for the regional context. Biogas digestors/plants could be used for treatment of cow dung and other organic wastes at a cluster level which could be considered for capacities ranging from 10-20 KLD. However, the output slurry would require further treatment before discharge into open environment.

ANNEXURE IX | CLASSIFICATION OF DISTRICTS IN KARNATAKA

Suggestions for different approaches to liquid waste management based on classification of districts across the sanitation value chain:

Sl. No.	Division Key Category	Bengaluru	Mysuru	Belagavi	Kalaburagi	Suggestions for LWM
1. Population Density (per sq.km)						
a)	<200	Chitradurga	Kodagu Chikkamagalur Chamrajnagar	Uttara Kannada		<ul style="list-style-type: none"> • Conversion to twin-pit if feasible • Household level interventions for greywater
b)	200-400	Tumkur Chikkaballapur Shimoga	Hassan Udupi Mandya	Bijapur Gadag Bagalkot Belagavi Haveri	Yadgir Raichur Gulbarga Koppal Bellary Bidar	<ul style="list-style-type: none"> • Conversion to twin-pit + GP level FSTPs • Decentralized solutions for greywater management
c)	>400	Bengaluru Rural Bengaluru Urban	Mysuru Dakshina Kannada	Dharwad		<ul style="list-style-type: none"> • Conversion to twin-pit + GP level FSTPs • Centralized or decentralized solutions based on distance of treatment system from habitations
2. Groundwater table level in meters below ground level (as per KSNDMC) [Districts (no. of Taluks)]						
a)	<10	Shivamogga(5)	Mysuru(5), Mandya(3), Dakshina Kannada(2), Chikkamagaluru(1), Hassan(2), Kodagu(1), Udupi(3)	Uttara Kannada (10), Gadag(1), Bagalkote (1), Belagavi(6) ,	Kalaburagi (9), Bellary(3), Koppala(3), Raichur(3),	<ul style="list-style-type: none"> • Promote conversion of soak pits into properly constructed septic tanks or any other water tight containment system • Avoid trenching or similar solutions

b)	>10	Bengaluru Urban(4) Bengaluru Rural (4) Chikkaballapur(5) Chitradurga(6) Davanagere(4) Kolar(5) Ramanagara(2) Tumakuru(10)	Chamarajanagar (4) Chikkamagaluru(6) Dakshina Kannada(2) Hassan(6) Kodagu(2)	Belgaum(4) Bagalkot (4) Dharwad(5) Gadag(3) Haveri(6) Vijayapura (5)	Bellary(3) Bidar(5) Koppal (1) Raichur(2) Yadgir(1)	<ul style="list-style-type: none"> • Promote soak pits and dispersion trenching solutions • Promote kitchen gardens wherever feasible
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3. Economic characteristic

a)	Agrarian (more than 70% population)	Chitradurga Chikkaballapur	Chikkamagalur Chamrajnagar Dakshina Kannada	Gadag Dharwad	Yadgir Koppal Bagalkot Bidar	<ul style="list-style-type: none"> • Promote twin-pits, drenching depending on groundwater levels • Co-composting, biogas digesters etc. may be promoted
b)	Peri-urban/ Industrial development s/ Educational hubs	Bengaluru Urban Bengaluru Rural Tumkur Ramnagara Davanagere Kolar	Hassan Udupi Mandya Mysuru	Haveri Belgaum	Raichur Gulbarga Bellary	<ul style="list-style-type: none"> • Combined treatment systems • Electro-mechanical solutions depending on availability of funds and continuous power supply
c)	Tourist attractions/high footfalls	Shimoga	Kodagu	Uttara Kannada	Bijapur Bellary	<ul style="list-style-type: none"> • Solutions to be chosen based on groundwater table levels, availability of space and funds.

4. Geo-climatic conditions

a)	Coastal region		Udupi Dakshina Kannada	Uttara Kannada		<ul style="list-style-type: none"> • For selection of treatment technology, rainfall and humidity to be considered
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						<ul style="list-style-type: none"> Given that mostly water tables are high avoid soak pits and drenching solutions
b)	Central plains	Tumkur Chikkaballapur	Chamrajnagar Hassan	Gadag Bagalkot	Bijapur Koppal	<ul style="list-style-type: none"> Depending on space and funds availability choose the most suitable treatment technology
		Ramanagara Davanagere Mandya Kolar Bangalore Rural Bangalore Urban	Mysuru	Haveri Belgaum Dharwad	Bidar	
c)	Hilly terrain-rainfed	Shimoga (1500-2500mm)	Kodagu (>2500mm) Chikkamagalur (1500-2500mm)			<ul style="list-style-type: none"> Avoid systems requiring conveyance/ transportation over long distances (mostly decentralized solutions)
d)	Hilly terrain-dry	Chitradurga (<600mm)			Bellary (600-900 mm)	
e)	Arid regions				Yadgir Raichur Gulbarga	<ul style="list-style-type: none"> Soak pits and drenching solutions could be considered depending on availability of space

ANNEXURE X | WORKABLE MODEL FOR LIQUID WASTE MANAGEMENT

Layout of the workable model for liquid waste management in rural areas of Karnataka The workable model shall be used to arrive at the appropriate technological models and approximate costs. The sheet shall be available online at the website of RDPR, <http://rdpr.kar.nic.in>

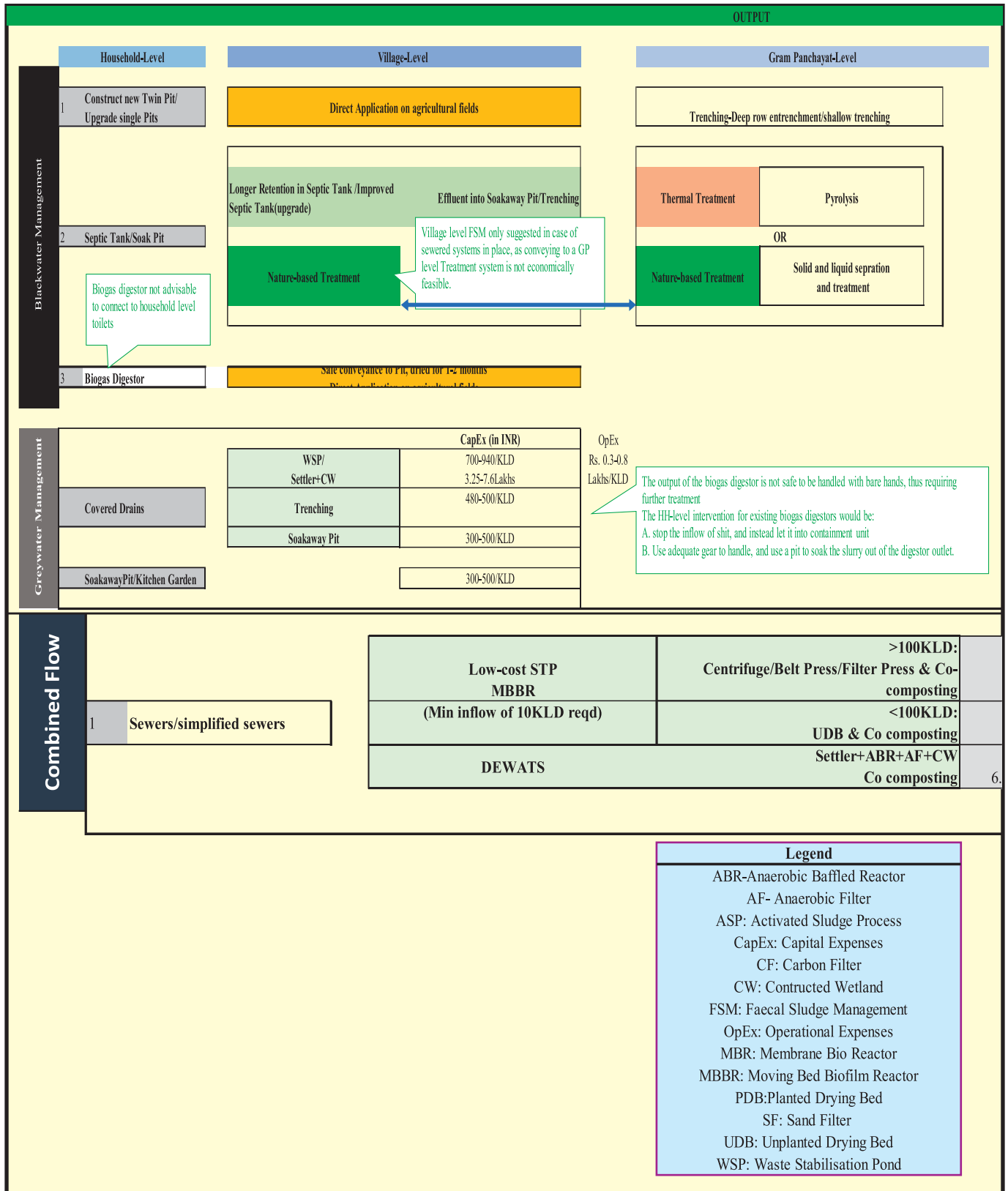
1. Sheet providing guidance to the model- Provides description of the model and instructions for use

1	Introduction to the model
	This excel based workable model has been prepared with an intent to help local administration including PDOs, EOs, DCs etc. at the Gram Panchayat, Taluk or District level in planning implementation of liquid waste management project. The excel sheet is an input based model wherein the user would be required to feed in basic information of the current wastewater management practices, including population details, numbers and types of assets available, geo-climatic and ground water related details etc.
2	Key components of the model
	The model includes the following key components
a	Basic information about the Village/GP/Taluk/District for which RLWM plan is being prepared including details of the population, number of households, types of containment systems etc.
b	Information necessary for making decision on the approach to RLWM planning including ground water table details and desired approach to RLWM
3	Instructions for using the model
a	Fill in the cells highlighted in Yellow with the required input data
b	The cells coloured green are mandatory to display only the suitable solutions.
c	The suggested solution will appear in grey cells
d	Explanation/guidance for feeding the input data provided on the right of the respective cells in '{ }' parenthesis
4	Understanding of the decision-making process-
	The decision for the most suitable solution would be taken at three levels as indicated in the diagram:
5	Assumptions
a	Considering the population of villages as per Census 2011 and the minimum collection capacities the treatment capacity for nature-based technologies at a village level for Faecal Sludge Management is considered to be 3KLD-6KLD, the prices are provided as a range for this capacity range
b	The primary end use is assumed to be discharge on land; therefore, disinfection and tertiary treatment is specified as optional systems.
c	Twin pits/Single Pits are ruled out in cases where groundwater is less than 10m below ground level
d	Nature based Treatment Plant

2. Input sheet - provides template for capturing basic inputs required for planned LWM at village / GP level

INPUT			
1	Workable model for planning RLWM for		{Enter name of GP/Taluk/District
1	Basic information-		
1.1	Demographic details		
a	Name of Village/GP		
b	Taluk		
c	District		
d	Total population as on date	10000	{If current population is not available, provide the projected population for next 15 years based on growth in past decade}
e	Total number of households		{As per the recent surveys or data available along with the source of information}
1.2	Details about Sanitation coverage		{Enter name of GP/Taluk/District
a	Percentage of coverage of toilets		{Percentage of households / commercial properties / institutions having toilets out of the total population}
b	Percentage of toilets connected to-		
	Septic tanks		{As a percentage of total number of properties if available or households}
	Single soak pits		
	Piped sewer network		
	Twin-pits		
c	Does the village/GP have desludging vehicles		{Please mention Yes or No}
d	How many vehicles are available in the village / GP		{Please mention the number of vehicles}
e	What is the total capacity of the vehicles		{Please calculate total capacity by Multiplying number of vehicles with same capacity and summing up all the capacities. For example- if there are 2 vehicles of 3000 litres and 1 vehicle of 5000 litres, the answer will be - $(2 \times 3000) + (1 \times 5000) = 11,000$ litres or 11 KLD}
f	Is there a sewage treatment plant available in the village/GP or at a distance of upto 15 kms from the centre of the village/GP		{Please mention Yes or No}
g	Is there a solid waste treatment plant available in the village/GP or at a distance of upto 15 kms from the centre of the village/GP		{Please mention Yes or No}
2	2 Details of geo-climatic conditions		
	Groundwater Table (in mbgl)	<10	{Please select the value based on available information from reliable sources}
	Population	10000	
	Geo climatic Parameters/Taluk		{Please select the applicable category. Refer to the classification table provided in guidance sheet}

3. Output sheet- contains the main output in terms of suggested solutions and block cost estimates against each



4. References to OP- Provides further information not covered in the output sheet highlighting comparison between different technology solutions

Combinations of Technologies		Cost (in INR)	Assumptions/dimensions
Nature Based Treatment	PDB/Centrifugation+Presses	WSP/(SABR+AF+CW) Co composting	
	Settling Thickening Tank/Stabilisation Tank	26.7Lakhs-54Lakhs AF) +12.85(3KLD)-25.4(6KLD) Stabilisation Tank: 13.7-27 Lakhs(without AF) 12.85-25.4 Lakhs (w/WSP)	Trenching:480/KLD [ibvvd:4mx0.5mx0.8m; variable length and width as per inflow] Soakaway Pit: 300-400/KLD [dia:depth:1mx1.3; 0.3 free board]
	Imhoff Tank/ Stabilisation Tank	WSP/(SABR+AF+CW) UDB+Co composting	
	Geobags	(ISAF+CW)/WSP Trenching/Co composting	

Comparison of Technologies/Decision making guidance	
<p>PDB vs Centrifugation PDB: Higher Land, Lower O&M, low/no electricity, Low/no chemicals, Skilled labour not required, High CapEx but lower OpEx</p> <p>Centrifuge: Compatible with existing STPs for augmentation and enabling the option of co-treatment, unlike PDB Centrifuge independent of climatic conditions, esp. rain</p> <p>Screw Press/Belt Press/Geobags CapEx: SP BP < Geobags OpEx: BP and SP require electricity, while Geobags have to be replaced after each use, Geobags have higher land reqt than other two; Treatment efficiency Geobags < BP < SP BP and SP are more compatible to existing STPs than Geobags</p>	<p>Stabilisation Tank/BioGas+UDB CapEx: ST > BioGas+UDB OpEx: ST have higher land requirement; BP and SP require electricity while Geobags don't BioGas is practical to an inflow of undigested sludge only, compared to ST</p> <p>WSP/ AF/ABR Compared to ABR and AF, WSP has higher land requirement; provides higher degree of pathogen and nutrient reduction compared to ABR and AF AF requires primary or pre treatment to minimise risk of clogging of filter media, whereas WSP and ABR is resistant to organic and hydraulic shocks. AF has higher O&M requirements compared to WSP</p>
<p>Settling Thickening Tank vs Imhoff Tank STT has higher CapEx & OpEx, treatment efficiency, higher land reqd., trained operator reqd., requires pump</p> <p>ASP/MBBR/MBR Treatment efficiency MBR > MBBR > ASP Land Requirements ASP (very high) > MBBR > MBR Energy consumption of ASP and MBR is higher than MBBR Cost of MBR is greater than MBBR Sludge generation :ASP>MBBR>MBR ASP demands the sludge treatment modules for the effluent to be of higher capacity</p> <p>WSP vs AF WSP has higher land requirements Provides higher degree of pathogen and nutrient reduction compared to AF AF requires primary or pre treatment to minimise risk of clogging of filter media, whereas WSP is resistant to organic and hydraulic shocks; higher O&M requirements compared to WSP</p> <p>CW/Sand filter/Carbon filter Operational Cost: SF/CF > CW CapEx of CW > SF/CF Treatment efficiency CW > SF/CF CW has a higher threshold to be able to tolerate TSS and nutrient removal of the influent compared to SF/CF Land Requirements CW (very high) > SF/CF Energy consumption SF/CF > CW</p>	

ANNEXURE XI | FORMAT OF MODEL DETAILED PROJECT REPORT

1. Introduction

1.1 Details of villages covered

Particulars Details			
Name of the Gram Panchayat			
Name of Taluk Panchayat			
Name of the District			
No. of villages covered in the GP			
Village wise population	Name of the village	Current Population	Projected population in 10 years ²²
	Total population		
Name of the closest urban local bodies (ULBs)			

1.2 Basic amenities and infrastructure available in the GP:

Particulars	Details
Availability of electricity	
Water supply	
Drainage system	
Road length (in kms)	

1.3 Existing solid waste management system

Collection and segregation			
Particulars	Please tick (✓) if applicable	Percentage of coverage/ number/ frequency	Any other details
Segregation at source, if yes, categories of segregation (% of generators segregating waste) Door to			
Door to door collection (% of coverage)			
Number of persons employed (including sweepers, driver, helpers etc.) ²³			
Frequency of collection of dry waste			
Frequency of collection of wet waste			
Frequency of collection of sanitary waste and domestic hazardous waste			

²² Please use the formula set out in Annexure II containing the normative standards

²³ If there are any other persons who are not GP employees and are involved in waste management activities, please provide details in the column "Any Other Details".

Transportation			
Type of vehicle	Please tick (v) if applicable	Number	Owned or leased
Pedal tricycle			
Push carts			
Auto tipper			
Tractor			
Truck			
Others, if any			
Existing processing/recycling/disposal facilities			
Waste stream	Type of facility	Capacity (in terms of kg / tons per day)	Any other details
Biodegradable waste (wet waste)			
Recyclable waste (dry waste like plastic, glass etc.)			
Non-recyclable non-biodegradable waste (like multilayered packaging, low grade plastics etc.)			
Mixed waste, sanitary waste and inert waste			

2. Proposed solid waste management system

2.1 Data on waste generation

Sl. No.	Particulars	Number	Daily Wet waste generation (in Kg)	Daily Dry waste generation (in Kg)	Daily generation of Domestic hazardous (including sanitary waste) (in Kg)
1.	Households ²⁴				
2.	Canteen, lodges, hotel, restaurants and similar establishments.				
3.	Schools, colleges and other educational institutions				
4.	Commercial shops				
5.	Markets				
6.	Anganwadis				
7.	Marriage halls				
8.	Temples, churches, mosques and other places of worship				
9.	Chicken, mutton, fish and other meat shops				
10.	Tourist attractions				

²⁴ Please consider the standard family as consisting of 5 members.

11.	Government / private offices				
12.	Any other category of waste generator				
	Total				

2.2 Material and Equipment

Sl.no.	Particulars	Quantity	Total cost (in INR)
A	Waste bins		
1	Number of dustbins having a capacity of 5 L required (Number of households or waste generators x 2) @80 per unit		
2	Number of HDPE bags admeasuring 2 feet x 1.5 feet required (Number of households or waste generators x 1) @30 per unit		
3	Number of bins having a capacity of 20 L required at commercial units (number of commercial units x 2) @400 per unit		
B	Personal protective equipment for sanitation workers		
1	Gloves @38 per unit		
2	2. Mask @Rs. 15 per unit		
3	3. Apron @Rs. 350 per unit		
4	4. Shoes @ Rs. 500 per unit		
5	5. Detergent soap and other cleaning agents		
C	Other equipment and tools		
1	Bags for sorted dry waste		
2	Bailing machine, if required		
3	Incinerators for sanitary waste		
4	Thread		
5	Bins for collection		
6	Any other equipment or tool		
	TOTAL		

2.3 Transportation²⁵:

Distance between solid waste unit to villages (Km):

Type of vehicle	Population density (per sq. Km)	Transportation type	Carrying Capacity	Price per unit	No. of vehicle(s) to be procured	Total price
Pushcarts	Dense (>400 persons)	Primary	250 L /125 Kg	15,000		
Pedal Tricycle	Moderately dense (< 400 persons)	Primary	500 L/ 250 Kg	35,000		
Electric vehicle / any smaller motorized	Sparse (<200) persons	Primary	1000L/350 Kg	1,50,000		

²⁵ Calculation can be done on the basis of density of population and amount of waste generation

Electric vehicle / any smaller motorized vehicle	Sparse (<200) persons	Primary	1000L/350 Kg	1,50,000		
Auto tippers	-	Secondary	1500 L/ 750 – 1000 Kg	4,50,000		
Tractor	-	Secondary	1500 Kg	3,25,000		
Trucks	-	Secondary	6000 Kg	8,00,000		

2.4 Manpower Planning

Manpower ²⁶	Number of persons	Unit Salary	Total Salary
Door to Door collection @1 worker per 150 HH and small shops using pushcarts			
Along the street mechanism with a whistle or announcement @1 worker per 240 HH and small shops using pushcart / tricycle / motorised vehicle			
Sorting manpower at the dry waste unit (to be filled only if in addition to the collection staff)			
Driver (for secondary collection)			
Helper (for secondary collection, optional)			
Street sweeping (to be filled only if in addition to the collection staff)			
Manpower at the wet waste processing unit (to be filled only if in addition to the collection staff)			
Total			

2.5 Wet Waste Management

It is suggested to go for a low-cost composting such as pile composting, pit composting, windrow composting, vermi- composting as per the capacities and requirements. The design capacity of the unit should be based on future projection of 10 years for population and waste generation etc.)

Sl. No.	Particulars	Details
A.	Composting	
1.	Type of composting	
2.	Capacity (daily amount of waste handled)	
3.	Area required for wet waste management	
4.	Number and size of pits required	
5.	Leachate management facilities	
B.	Biomethanation	
1.	Type of biogas plant	
2.	Capacity (daily amount of waste handled)	
3.	Biogas generation capacity	
4.	Area required	
5.	Leachate management facilities	

²⁶ Method of collection will be selected based on the density of population and type of vehicle that can be deployed in the given terrain and road conditions

2.6 Dry Waste Management

The dry waste management unit should comprise of storage and sorting area, office (if required) and toilet and washing facilities. The dry waste management unit shall also be planned on the basis of future projection of 10 years for population and waste generation etc.

Sl. No.	Particulars	Details
1.	Waste handling capacity of dry waste management unit	
2.	Maximum period of storage considered	1 – 3 months
3.	Height of storage unit (in feet)	8
4.	Area required for incoming waste	
5.	Area required for sorting of waste	
6.	Area required for baling unit (if baling is planned)	
7.	Area required for storage of sorted waste (baled and unbaled)	
8.	Toilet block and washing areas	
9.	Vehicle parking area and buffer area, if required	
10.	Extra space for unforeseen circumstances	
11.	Total area required for Dry waste management unit	
12.	Transportation costs for transporting nonrecyclable/ recyclable dry waste to the nearest ULB.	

Note:

- In determining area of the dry waste unit, the standards that should be considered are (i) 25 kgs of loose dry waste can be stored per square feet and (ii) 42 kgs of baled dry waste stored per square feet.
- The sorting area should be at least 25 square feet. In the event more than 2 persons are employed for sorting, the area should be at least 10% of the total dry waste unit.

3. Financial planning

3.1 Capital expenditure

Sl. No.	Particulars	Cost (in INR)
1.	Cost of acquisition of land for SWM units	
2.	Cost of civil works of solid waste management shed	
3.	Cost of civil works of compost pits	
4.	Cost of civil works of Biogas plant	
5.	Total cost of vehicles	
6.	Total cost of equipment and machinery and PPE	
	Total Cost	

3.2 Operational expenditure

Sl. No.	Particulars	Amount per year (in INR)
1.	Salaries	
	(I) Personnel for street sweeping, collection, wet waste management	
	(ii) Drivers	
	(iii) Manager of the waste management unit, if any	

Sl. No.	Particulars	Amount per year (in INR)
2.	Water and electricity	
3.	Consumables (such as PPE, bio-solution, worms)	
4.	Fuel	
5.	Repair and maintenance (vehicle and equipment maintenance)	
6.	Transportation costs for transporting non-recyclable/recyclable dry waste to the nearest ULB.	
7.	Any other recurrent expenditure	
	Total Expenditure per year	

3.3 Sources of income

Sl.no	Particulars	Number	Unit rate per year (in INR)	Amount per year (in INR)
1.	User fees			
(i)	Households			
(ii)	Canteen, lodges, hotel, restaurants and similar establishments.			
(iii)	Schools, colleges and other educational institutions			
(iv)	Commercial shops			
(v)	Markets			
(vi)	Aanganwadi			
(vii)	Marriage halls			
(viii)	Temples, churches, mosques and other places of worship			
(ix)	Chicken, mutton, fish and other meat shops			
(x)	Tourist attractions			
(xi)	Government /private offices			
	Total			
2.	Sale of compost and/or biogas			
3.	Sale of recyclables			
4.	Fines and penalties			
5.	Any other source of income			
	Total income			

4. Implementation Plan

4.1 Proposed timelines for different activities

Particulars	Responsibility	Proposed timeline
Approval of DPR		
Allocation of funds		
Procurement of land		
Procurement of vehicles		
Setting up of infrastructure facilities		
Appointment of manpower required		
Commencement of door-to-door collection		
Commencement of processing of wet waste and storage and/or sale of dry waste.		

4.2 Proposed IEC / BCC activities

Topic of IEC activity	Target Audience	Mode of communication / Type of activity	Cost incurred



ANNEXURE XII | ROLES AND RESPONSIBILITIES FOR SLWM IN RURAL AREAS:

PART I: Roles and responsibilities at state, district and taluk levels

Task	State level	District level	Taluk level
Primary responsibility	Rural Drinking Water and Sanitation Department	The Chief Executive Officer of the district and the District Water and Sanitation Mission (DWSM)	Executive officer (EO) along with Taluk Panchayat
State policy, plan and strategy	<ul style="list-style-type: none"> ▪ Preparation of state level rural solid and liquid waste management (SLWM) policy and strategy and model by-laws for planning, implementation and enforcement of SLWM activities. ▪ Setting up objectives for achievement of various components of SLWM systems for the state. ▪ Preparation of state plan that includes a 5 year project implementation plan and 5 independent annual implementation plans, providing details of: <ul style="list-style-type: none"> ○ Implementation of SLWM systems including capital assets, infrastructure and manpower ○ Financial support ○ Capacity building and training ○ Monitoring and evaluation ○ Information Education and Communication (IEC) and Behaviour Change Communication (BCC) 	<ul style="list-style-type: none"> ▪ Providing inputs for the state SLWM policy and strategy ▪ Facilitate detailed baseline survey to assess the status of SLWM practices in talukas and GPs within its jurisdiction. ▪ Develop District Annual Implementation Plan (AIP) in consultation with talukas and GPs and submit it to state. ▪ Undertake manpower planning and hiring (specialists/ consultants/ agencies in the areas of HRD, IEC, school WASH, SLWM etc.) for SLWM activities at the district level. ▪ Identify and prioritize talukas and GPs for commissioning SLWM projects in consultation with various stakeholders. 	<ul style="list-style-type: none"> ▪ Consolidate Annual Implementation Plans of GPs
Capital Finance	<ul style="list-style-type: none"> ▪ Financial planning and budget estimation for various proposed projects in the state. ▪ Examination and approval of district level projects and other proposals of technical nature at the State level through State Level Scheme Sanctioning Committee (SLSSC). ▪ Disbursement of funds to all the GP projects as per the approved state and district annual implementation plans. ▪ State level monitoring of expenditure under various schemes and projects through review meetings. 	<ul style="list-style-type: none"> ▪ Manage and allocate funds for SLWM projects from various sources in the district. ▪ Submit utilization certificates containing details of expenditure against the funds allocated for proposed SLWM projects to the State. ▪ Plan for dovetailing funds from centre/state/ corporate social responsibility (CSR) initiatives/funding bodies/ multilateral organizations. ▪ Constitute revolving fund for SLWM activities at district level. 	<ul style="list-style-type: none"> ▪ Extend technical and financial guidance and support for construction and operating SLWM system in GPs.
Organisational	<ul style="list-style-type: none"> ▪ Ensure that there is adequate administrative, 	<ul style="list-style-type: none"> ▪ Selection of agencies and/ NGOs and enter into 	<ul style="list-style-type: none"> ▪ Provide training to

development	<p>technical and support supervisory staff at the state, district, taluk and GP levels for SLWM activities</p> <ul style="list-style-type: none"> ▪ Conduct regular need assessment exercise for ensuring that the different departmental levels are optimally organised in terms of staff, finance and skills. ▪ Engaging Institutions (Key Resource Centres (KRC)) for imparting training for capacity development of all stakeholders and undertaking communication campaign. 	<p>agreements for social mobilisation, capacity development, communication, project management and supervision.</p> <ul style="list-style-type: none"> ▪ Engaging institutions for imparting training for capacity development to all stakeholders and undertaking communication campaign. ▪ Obtain financial, technical and organisational support from CSR initiatives of corporate, CBOs and other organisations for SLWM projects 	<p>personnel engaged in SLWM system at GP level</p> <ul style="list-style-type: none"> ▪ Act as a bridge between GPs and districts.
Implementation	<ul style="list-style-type: none"> ▪ Facilitate convergence mechanism between line departments like health department, education department etc. and amongst various schemes like NRLM, MNREGS etc. ▪ State shall provide guidance for planning, designing and establishing a successful solid waste management system highlighting the most feasible solid and liquid waste management options in terms of finance, technology, skills and expertise required. ▪ State shall be responsible for resolving any sort of divergence related to solid and liquid waste management among districts. Such conflicts/discrepancies shall be directed to RDW&SD and be discussed during six monthly meeting. 	<ul style="list-style-type: none"> ▪ Plan convergence mechanisms with line department, state schemes and priority programs such as MGNREGS, Prime Minister Awas Yojana (PMAY) etc. ▪ Identification and procurement of suitable land for SLWM activities. ▪ Plan, coordinate and monitor urban and rural linkages for waste management such as usage of recycling facilities, RDF units, co-processing at cement plants, waste to energy plants, sanitary landfills, FSTP etc. Implementation of extended producer responsibility for plastic waste. ▪ Interaction with relevant central and state governmental authorities involved in planning and implementation of SLWM systems in rural areas. ▪ Scrutiny and approval of the schemes/projects/programs submitted by the Taluk Panchayat/ Gram Panchayat and forwarding them to the State where necessary. 	<ul style="list-style-type: none"> ▪ Overall responsible for taluk level implementation of SLWM projects such as aggregation of dry waste, logistics/ transportation of such waste to appropriate processing facilities etc. ▪ Provide continuous support in terms of awareness generation, motivation, mobilization, training and handholding of village communities, GPs and VWSCs.
IEC and BCC	<ul style="list-style-type: none"> ▪ Develop and implement state IEC strategy and plan ▪ Ensuring a proper human resource structure for 	<ul style="list-style-type: none"> ▪ Preparing a detailed IEC plan for the district based on the state plan which factors local conditions and requirements 	<ul style="list-style-type: none"> ▪ Undertake triggering exercise to create demand for solid and

	<p>IEC at state and district level</p> <ul style="list-style-type: none"> ▪ Regular progress monitoring and reporting on IMIS on IEC activities ▪ Facilitate organisation of workshops and events related to SLWM at the state level 	<ul style="list-style-type: none"> ▪ Develop an annual calendar of IEC activities at GP, taluk and district levels ▪ Sensitising the public representatives, elected officials and the general public about solid and liquid waste management. 	<p>liquid management among the communities.</p> <p>waste among village communities.</p>
Monitoring, audit and reporting	<ul style="list-style-type: none"> ▪ Review progress of SLWM systems with the district officials on a monthly/fortnightly/quarterly basis and prepare action points at the end of each such meeting ▪ Regular monitoring and evaluation of SLWM sector and performance of various schemes and projects across various districts. This should be audited by an independent third party for assessing the progress of SLWM schemes and projects. 	<ul style="list-style-type: none"> ▪ Concurrent district level monitoring of SLWM projects shall be conducted periodically through meetings and with the help of independent agencies/CSOs/NGOs ▪ Submission of regular progress reports to the state. ▪ Monitor capacity building and training activities at the district level ▪ Ensure social audit meetings for verifying officially recorded work at ground level, are conducted at the GP level once in six months ▪ Monitor the activities of social organization/CBOs/ NGOs/ SHGs/ support organizations engaged in SLWM activities 	<ul style="list-style-type: none"> ▪ Maintain GP level data on waste quantity collected and processed. ▪ Monitor and review progress of SLWM systems/projects in GPs at least every fortnight.
Research and Development	<ul style="list-style-type: none"> ▪ State shall be responsible for promoting newer technologies for SLWM handling and management after thorough technical, financial and environmental evaluation by expert organisations and governmental authorities. 	<ul style="list-style-type: none"> ▪ Facilitate promotion of new successful technologies at district level 	

82 PART II: Roles and responsibilities at GP level

The Project Development Officer of the GP and the Village Water and Sanitation Committee (VWSC) and/or Village Health, Sanitation and Nutrition Committee (VHSNC) are primarily responsible for the solid and liquid waste management activities at the GP level. The specific roles and responsibilities at GP level include:

Tasks	Gram Panchayat and VWSC/VHSNC	Panchayat Development Officer (PDO)
Meetings and organisation	<ul style="list-style-type: none"> ▪ Meet as required by Karnataka Panchayati Act and other regulations 	<ul style="list-style-type: none"> ▪ Attend GP and VWSC meetings
Planning	<ul style="list-style-type: none"> ▪ Identify and allocate GP land for SLWM activities at village level ▪ Approve annual plans and budgets and present annual budgets in the Gram Sabha with provision for SLWM activities ▪ Approve user fees for SLWM activities after discussion in the Gram Sabha ▪ Interact with TP for management of waste at Multi-GP/Taluk level 	<ul style="list-style-type: none"> ▪ Prepare and update plans, budgets for SLWM and provide inputs for use fees. ▪ Provide information to the GP members about various technologies, schemes etc. relating to SLWM.
Implementation	<ul style="list-style-type: none"> ▪ Approve works for SLWM activities. ▪ Procure capital infrastructure such as machinery, vehicles and equipment. ▪ Organise for agencies for capital infrastructure such as toilets, dry waste shed, composting units, STP/FSTP, underground drains, purchase of vehicles etc. ▪ Hire personnel for different SLWM activities such as collection, transportation and processing. ▪ Organize people for awareness creation for waste management. ▪ Provide logistical support for transportation of non-recyclable dry waste. 	<ul style="list-style-type: none"> ▪ Supervise and work with GP members for implementation of SWM activities such as construction of compost pits and dry waste storage units. ▪ Assist GPs in procuring suitable vehicles and equipments. ▪ Menstrual hygiene management (MHM) activities including awareness generation among adolescent girls and safe disposal of sanitary waste.
Operation and maintenance	<ul style="list-style-type: none"> ▪ Approve manpower, vehicle and other operational activities. ▪ Authorizing expenditure payments. ▪ Assessment of quantifiable impacts such as improvement in source segregation, reduced dumping and burning etc. 	<ul style="list-style-type: none"> ▪ Supervision of operation and maintenance of SWM facilities. ▪ Daily financial management and maintenance of records.
Monitoring, audit and reporting	<ul style="list-style-type: none"> ▪ Half yearly review of budgets against the expenditures. ▪ Quarterly and annual reports on implementation progress and operational performance. 	<ul style="list-style-type: none"> ▪ Monthly review of accounts ▪ Weekly review of resources, assets and systems. ▪ Periodic reporting on SWM systems as stipulated.

PART III: Roles and responsibilities of NGOs and other community based organisations

- (i) Support the GP in dissemination of IEC by planning and executing activities involving the entire community
- (ii) Involvement in training and capacity building of the GP officials, Swachhagrahis and other voluntary organizations in the village.
- (iii) Involvement in planning and implementation of village sanitation and waste management programs.
- (iv) Carry out surveys and monitor the impact of the sanitation and waste management programs.
- (v) Be involved in collection, transportation and processing of waste generated in the GP.

PART IV: Roles and responsibilities of Swachhagrahis / Sanitation Motivators

- (i) Swachhagrahis/ Sanitation Motivators are motivators and triggering agents from within the community who have keen interest in sanitation and who are assigned the task of supporting the Gram Panchayat in executing the sanitation and waste management plan. Every village shall have at least one Swachhagrahi/ Sanitation Motivator, with preference to women candidates. The Swachhagrahi/ Sanitation Motivator is envisaged to be a voluntary position and is not permanent in nature. The Swachhagrahis/ Sanitation Motivators shall be engaged by the district based on the recommendation of the Gram Panchayat. The Swachhagrahis/ Sanitation Motivators shall be incentivised based on the criteria spelt out in the guidelines issued by the MDWS, from time to time.
- (ii) The role of Swachhagrahis/ Sanitation Motivators shall remain post the ODF declaration stage and they shall assist in ensuring sustainability of the ODF status of the village. It is important that there is sustained engagement with the Swachhagrahis/Sanitation Motivators, they are regularly trained and motivated through incentives. The Swachhagrahis/ Sanitation Motivators shall play the following crucial role in all three stages: planning, implementation and sustainability of the GP sanitation and waste management plan:
 - (a) Carry out pre-triggering activities and community preparation.
 - (b) Involve in triggering activities to motivate people to participate in the sanitation programs.
 - (c) Participate in preparation of GP sanitation and waste management plans.
 - (d) Facilitate formation and strengthening of VWSC/VHSNC.
 - (e) Assist in IEC dissemination and facilitate sustained behaviour change.
 - (f) Monitor the quality of the infrastructure being built.
 - (g) Support in retrofitting and improvisation of assets.
 - (h) Ensure sustainability of the program by constantly monitoring the programs and engaging the community in the programs.
 - (i) Raise awareness about the proper operations and maintenance of the assets created for safe sanitation and waste management.
 - (j) Assist the PDO in maintenance of records of data at the GP level.

ANNEXURE XIII | RECOMMENDED USER FEES

S.no	Type of Waste Generator	User Fee per month (in INR) from each Waste Generator to be not less than:		
		Population \geq 50 and $<$ 500	Population \geq 500 and $<$ 2000	Population $>$ 2000
1.	Houses up to 200 sq.ft. built-up area	20	20	20
2.	Houses over 200 sq.ft. built-up area up to 500 sq.ft	30	30	30
3.	Houses with over 500 sq.ft built up area	40	50	60
4.	Small commercial establishments, shops and eating places (such as hotels, dhabas, messes, tiffin rooms, canteens and sweet shops) having an area less than 200 sq.ft.	60	75	90
5.	Large shops, commercial establishments and eating places (such as hotels, dhabas, messes, tiffin rooms, canteens and sweet shops) having an area more than 200 sqft and less than 700 sq.ft.	100	150	200
6.	Large shops and commercial establishments having an area more than 700 sq.ft.	200	300	500
7.	Guesthouse, lodges, dharamshalas having an area less than 1000 sq.ft.	150	200	250
8.	Guesthouse, lodges and dharamshalas having an area more than 1,000 sq.ft.	200	300	500
9.	Hospitals, clinic, dispensary up to 20 beds)	110	130	150
10.	Hospitals, clinic, dispensary (more than 20 beds)	200	300	500
11.	Small and cottage industry units (only non-hazardous)	200	250	300
12.	Halls for marriage and festivals with area up to 1000 sq. ft. per event	800	1000	1200
13.	Halls for marriage and festivals with area over 1,000 sq.ft. per event	1200	1500	2000
14.	Vegetable and other markets generating less than 50 kgs of waste per day	150	200	250
15.	Vegetable and other markets generating more than 50 kgs of	200	250	300

	waste per day			
16.	Institutions such as schools, colleges, places of worship tourist attractions etc. generating less than 50 kgs of waste per day.	200	250	300
17.	Institutions such as schools, colleges, places of worship tourist attractions etc. generating more than 50 kgs of waste per day	200	300	500
18.	Other places/activity not marked as above	As decided by GP by general or special order/notification.	As decided by the GP by general or special order/notification.	As decided by GP by general or special order/notification.

ANNEXURE XIV | RECOMMENDED PENALTIES

S.no	Non-compliance and type of Waste Generator	Fines (in INR) to be not less than:		
		Population >= 50 and < 500	Population >= 500 and < 2000	Population >2000
1.	Littering, spitting, urinating in open areas	500	700	1,000
2.	Failure to segregate solid waste by the bulk waste generators.	2000	3000	5000
3.	Failure to segregate and/or handover solid waste by waste generators who are not bulk waste generators.	500	700	1000
4.	Disposal of solid waste by burning, dumping and/or unauthorised burial by a bulk waste generator	2000	3000	5000
5.	Disposal of solid waste by burning, dumping and/or unauthorised burial by any waste generator who is not a bulk waste generator	500	700	1000
6.	Other places/activity not marked as above	As decided by GP by general or special order/notification.	As decided by the GP by general or special order/notification.	As decided by GP by general or special order/notification.

The Karnataka Panchayat Raj (Management of Liquid Waste) Model Bye-laws, 2020



The Karnataka Panchayat Raj (Management of Sanitation & Liquid Waste) Model Bye-laws, 2020

The Karnataka Panchayat Raj (Gram Panchayat Sanitation & Liquid Waste Management) Model Bye-laws, 2020 for management of Liquid Waste within the territorial limits of the Gram Panchayats which the government of Karnataka proposes to make in exercise of Section 316 of Karnataka Gram Swaraj and Panchayat Raj Act, 1993 and is hereby published as required by sub-section (1) of Section 316 of the said Act. This is for the information of all persons likely to be affected by it and notice is hereby given that the said draft will be taken into consideration after 30 (thirty) days from the date of its publication in the Official Gazette.

Any objection or suggestion which may be received by the State Government from any person with respect to the said draft before the expiry of the period specified above will be considered by the State Government. Objections and suggestions may be addressed to [Commissioner, Rural Drinking Water & Sanitation Department, 2nd floor, KHB Building, Kaveri Bhavan, Bangalore-560009, email-wsrdr@gmail.com]

Chapter I: GENERAL

Short title, commencement and application

These Bye-laws may be called Karnataka Panchayat Raj (Management of Sanitation & Liquid Waste) Model Bye-Laws, 2020.

These Bye-laws shall be operational from the date of their publication in the Official Gazette.

These Bye-laws shall come into force in accordance with Karnataka Gram Swaraj and Panchayat Raj Act, 1993.

These Bye-Laws shall not apply to wastewater from industrial units and Primary Healthcare Centres housed in the Gram Panchayat.

2. Definitions

a. In these Bye-laws, unless the context otherwise requires, capitalised words shall have the following meaning:

“Act” means the Karnataka Gram Swaraj and Panchayat Raj Act, 1993, as may be amended from time to time;

“Agency” means any Person or entity, including any cooperative formed by individuals or organizations working in the sanitation sector, appointed or authorised by the Gram Panchayat or directed by the Government to act on behalf of the Gram Panchayat in accordance with an agreement, for the discharge of duties or functions under these Bye-laws.

“Blackwater” means the wastewater coming from the Latrines including human faeces and flush/wash water, either at household level or in commercial establishments, anganwadis, schools, institutions;

“Biosolids” mean nutrient-rich organic materials resulting from the treatment of domestic sewage in a treatment facility.

“Bye-Laws” means the Karnataka Panchayat Raj (Management of Sanitation & Liquid Waste) Model Bye-Laws, 2020 as amended from time to time;

“Compost” means the product obtained by the controlled action of microbes /earthworms on biodegradable matter.

“CPCB” means the Central Pollution Control Board;

“Cluster” means two or more geographically contiguous Gram Panchayats that converge for setting up Faecal Sludge Treatment Plants

“Committee” means the Village Water and Sanitation Committee (VWSC) and the Village Health, Sanitation and Nutrition Committees (VHSNC) formed under Section 61-A of the Act.

“Containment System” means an on-site sanitation system into which the User Interface discharges, once flushed. This can be either lined (Septic Tanks) or unlined (Leach Pits) or a combination of both (Septic Tank followed by Soak-pit), with varying levels of treatment as may be suitable.

“Drain” means a conduit or channel for the carriage of storm water, sewage, wastewater or other waterborne wastes in a drainage system;

“Desludging” means the operation of removing sludge (and septage) from septic/digestion tanks, pit latrines or any other containment systems.

“Domestic Generator” means Owner of the Premises listed under Schedule I of these Bye-laws where no commercial activity is carried out.

“Effluent” means liquid that leaves a system where the system can be a holding tank or a treatment system (e.g. supernatant liquid discharge from a septic tank);

“Faecal Sludge” means the solid or settled contents of a containment (Leach pits and Septic Tanks) but shall not include Sludge produced in municipal waste-water treatment plants.

“Faecal Sludge Treatment Plant or FSTP” means an authorized independent septage and Faecal Sludge treatment facility for remediating the solid and liquid components of Faecal Sludge to prescribed standards for safe disposal and re-use;

“Generator” means Persons and Premises listed in Schedule I of these Bye-laws and any other Person or Premises as decided by the Gram Panchayat, and includes an aggregation of generators;

“Gram Panchayat” shall have the same meaning as set out in the Act;

“Gram Panchayat Development Plan” means the development plan formulated by the Gram Panchayat in accordance with Section 309 and other applicable provisions of the Act;

“Greywater” or **“Sullage”** means domestic wastewater not containing human excreta, such as household wastewater generated during bathing, cooking and washing activities from the kitchen, bathrooms and include wastewater from commercial establishments and activities such agriculture, dairy and animal rearing;

“KSPCB” means Karnataka State Pollution Control Board;

“Liquid Waste” means Blackwater and/or Greywater;

“Latrine” means the user interface, mobile or immobile, from which excreta is flushed to a containment or sewer line, facilitating prevention from health hazards due to faecal contamination.

“Manual Scavenging” shall have the same meaning as defined under sub-clause (g) of Section 2 of The Prohibition of Employment as Manual Scavengers and their Rehabilitation Act of 2013;

“Non-domestic Generator” means Owner of the Premises listed under Schedule I of these Bye-laws where commercial activity is carried out.

“Owner” means a person who for the time being is receiving or is entitled to receive, whether on his own account or as agent, trustee, guardian, manager or receiver for another person or for any religious or charitable purpose, the rent or profit of the property in connection with which the word is used and in whose name the approval for development is issued.

“Occupier” means any person in actual possession of any land or building or part thereof and includes an owner in actual possession, and the tenant or licensee whether such tenant or licensee is liable to pay rent or not;

“Passive Treatment Systems” mean systems which are designed using nature-based technologies and do not use electrical or mechanical energy for the process of treatment

“Person” means any person or association of persons and shall include any shop, commercial establishment, firm, company, association or body of individuals whether incorporated or not;

“Pit Latrine” includes a privy, water-closet and urinal, with one or two pits for collection and decomposition of excreta and from which liquid infiltrates into the surrounding soil;

“Premises” includes buildings, tenements in a building, house, outhouse, stable, shed, hut, and any other structure whether open or enclosed whether built upon or not being used for the time being for purpose of residence, trade, industry, service, business, government or any other public or private purpose including weddings, banquets, meetings, exhibition or organised events;

“Sanitation Motivator” means an individual engaged by the Gram Panchayat in accordance with the Swachhagrahi Guidelines, 2018, issued by the Government of India and/or any other subsequent applicable regulations, for sanitation related activities in the Gram Panchayat.

“Septage” means settled matter in semi-solid condition, including the liquids, solids (sludge) as well as fats, oils and grease (scum) that accumulates in Septic Tanks over a period of time;

“Septic Tank” means an underground tank that treats wastewater by a combination of solids settling and anaerobic digestion;

“Sewage” means wastewater generated from Latrines containing human excreta and faecal matter

“Sewage Treatment Plant” or **“STP”** means authorized waste treatment plant consisting of a series of tanks, screens, filters and other processes by which pollutants are removed from sewage;

“Sewers” or **“Under Ground Drains”** means a system of pipes used for collecting domestic and non-domestic waste, as well as storm water run-off;

“Sludge” means the settled solid matter in semi-solid condition, including a mixture of solids and water deposited on the bottom of septic tanks and ponds.

“Soakaway pit” or **“Soak pit”** means a pit through which influent is allowed to seep or leach into the surrounding soil; or porous-covered chamber that allows wastewater to soak into the ground.

“Source” means the Premises in which the Liquid Waste is generated;

“Storm Water Drain” means a pipeline or channel system that carries surface water and/or runoff to public waters, but does not feed into sewer system;

“Transportation” means conveyance of waste, either treated, partly treated or untreated from a location to another location in an environmentally sound manner through specially designed and covered transport system so as to prevent the foul odour, littering and unsightly conditions;

“Treatment” means the method, technique or process designed to modify physical, chemical or biological characteristics or composition of any waste so as to reduce its potential to cause harm;

“User Charge” means a charge imposed by the Gram Panchayat on the Generators to cover full or part cost of providing Liquid Waste collection, transportation, treatment and disposal services by the Gram Panchayat and/or the Agency as authorised by the Gram Panchayat in accordance with these Bye-laws.

Chapter II:

FAECAL SLUDGE AND SEPTAGE MANAGEMENT- CONTAINMENT, COLLECTION, TREATMENT AND DISPOSAL

Construction and retrofitting of Latrines:

The Gram Panchayat shall be responsible for ensuring the construction of and access to Latrines for every household within its jurisdiction in order to ensure and maintain an Open Defecation Free status, as per Swachh Bharat Mission (Gramin) Guidelines.

The Gram Panchayat shall:

- i. Ensure that all residents have access to scientifically designed Latrines as per the technical guidelines or design standards specified by the Karnataka Rural Drinking Water and Sanitation Department and other competent authorities from time to time.
- ii. Ensure the construction of and access to community-planned and managed Latrines wherever necessary, for use by groups of households who have constraints of space, tenure or economic constraints in gaining access to individual facilities.
- iii. Ensure that toilets, as required, are constructed at public places that are built and managed by Gram Panchayats such as bus stands, vegetable markets, shopping complexes.
- iv. Ensure that all households that do not have space to construct Latrines have access to a community Latrine within a distance of 500 meters.
- v. Undertake an annual survey, based on the sample form provided in Schedule IV of these Bye-laws, at village level to identify the insanitary Latrines, categorise them based on design and identified faults.
- vi. Make provisions in the budget and identify sources of funds to subsidize/incentivize retrofitting and other correctional measures of insanitary Latrines.
- vii. Ensure that every insanitary latrine is either retrofitted or rebuilt, by the owner at his own cost and/or through subsidies provided by the Gram Panchayat, within 3 (three) years of adoption of these Bye-laws by the Gram Panchayat.

Approvals: All owners shall obtain necessary approval from the Gram Panchayat before construction of new Containment Systems, so as to ensure compliance with the guidelines released by the Karnataka Rural Drinking Water and Sanitation Department and any other competent authority.

In the event that a Containment System is not adequate, the Gram Panchayat or its Designated Officer, shall issue a notice directing the Generator using or owning such inadequate Containment System to retrofit or undertake correctional measures within the period decided by the Gram Panchayat.

Containment of Faecal Sludge by Generators:

- a. The maintenance of on-site Blackwater containment systems shall be the responsibility of the Owner of the Premises.
- b. All Owners shall construct Containment Systems which may include twin pits, septic tanks or other appropriate Containment Systems based on the local conditions and in accordance with guidelines issued by the Karnataka Rural Drinking Water and Sanitation Department and other competent authorities.
- c. Containment systems should be designed and constructed to ensure no contamination of soil surface, ground water or surface water, and the Faecal Waste should be inaccessible to flies or animals.
- d. All such constructions, as specified under this section, shall be made only by masons trained in toilet construction.

Desludging of containment system:

No generator shall dispose or discharge sewage or effluents into storm water drains, water bodies, water ways, open lands, agricultural lands or any other public places.

The Generator shall not engage manual scavengers to de-sludge on-site Containment Systems within his or her premises. The desludging of Containment Systems shall only be done in compliance with Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013 at all times.

The desludging and transportation of Faecal Sludge to a FSTP and the safe closure of containment system shall be carried out only by an Agency licensed by the Gram Panchayat or by the Gram Panchayat itself. The Generator shall pay the Agency or the authorized representative of the Gram Panchayat a desludging fee as prescribed in Schedule II of these Bye-laws.

Desludging of Containment Systems shall be carried out without manual intervention and only with the use of mechanical equipment, including vacuum tankers and sludge pipes with delivery valve to draw the sludge.

The desludging of containment systems shall be carried out in conformance with safety precautions mentioned in the "Standard Operating Procedure (SOP) for Cleaning Sewers and Septic Tanks" released by the Ministry of Housing and Urban Affairs, Nov 2018.

Depending on the capacity of the Containment System, and the amount of Sludge generated, the Containment System shall be desludged periodically.

In case of twin-pit latrines, emptying of filled pit shall be done after the sludge has stabilised for at least two years and is inert (composted completely).

The Gram Panchayat shall maintain sanitation records covering construction dates and desludging records of all the waste generators under its purview. The Gram Panchayat shall send reminders to owners of premises for desludging based on the periodicity specified for different types of containment systems.

The Gram Panchayat shall carry out the desludging operations either on its own or through licensing an Agency to carry out desludging operations in the villages under its jurisdiction after conducting due diligence on the operations, capacity and capability of the Agency.

Transportation of Faecal Sludge from Containment Systems:

The Gram Panchayat shall be responsible for the Desludging and Transportation of Faecal Sludge from Containment Systems, either by itself or through a licensed Agency.

The Gram Panchayat shall choose one of the following modes for Desludging and Transportation of Faecal Sludge:

Procure and maintain equipment/vehicles to provide Desludging services; or Utilise the services of Desludging vehicles available at the Taluk level; or Authorize an Agency to provide desludging services.

The Gram Panchayat shall be responsible for Desludging on-site sanitation Containment Systems and transporting the Faecal Sludge only through appropriate desludging vehicles, either by itself or through a licensed Agency. The choice of the vehicle shall be made on the basis of accessibility and capacity of the Containment System.

The Gram Panchayat shall be responsible for ensuring that:

The vehicles used for transportation of Faecal Sludge are covered such that the collected Faecal Sludge is not exposed to the open environment.

The effluents or Faecal Sludge or any matter emptied from on-site Containment Systems shall not be disposed into open grounds, water bodies, agricultural lands or any other public places, and are delivered and deposited in authorised sewage treatment facilities of the Gram Panchayat.

If the Gram Panchayat is in a peri-urban area where there is partially-laid sewer network and availability of STP nearby, both the streams of black and greywater may be connected to the combined Under Ground Drain.

Treatment and disposal of Faecal Sludge:

The Gram Panchayat shall be responsible for treating and disposing of Faecal Sludge and Septage, which shall be done in the following manner:

Within an existing STP located within the jurisdiction of the nearest Urban Local Body, provided that such STP is:

- A. Located within 10km of the source of generation of the Faecal Sludge or Septage; and
- B. Has adequate capacity to handle the Faecal Sludge or Septage generated within the Gram Panchayat.
- C. The Gram Panchayat has carried out a detailed assessment of the existing STPs by current performance, and future expansions planned thereof, and other parameters as the Gram Panchayat may decide in consultation with the ULB, subject matter experts, Village Water and Sanitation Committee before linking to the STP of the ULB. The assessment shall be carried out periodically.

Through constructing a FSTP for the treatment and disposal of Faecal Sludge and Septage, which may be shared by a Cluster of Gram Panchayats, in the event that it is not feasible to treat and dispose of Faecal Sludge and Septage within an existing FSTP, provided that the Gram Panchayat shall carry out a detailed assessment of the possible location, required capacity, distance from the other collaborating Gram Panchayats in consultation with their representatives and with subject matter experts before finalizing the location and specifications of the FSTP. Details of financial planning shall be worked out to ensure sustainable operations and maintenance.

The planning and implementation of cluster-based treatment plants shall be facilitated by the Executive Officer at Taluk level.

- I. In the event that co-treatment of Faecal Sludge at a Cluster level is not possible, the Gram Panchayat may set up FSTP at Gram Panchayat level.
- ii. The selection of technology for the treatment solution shall be based on the guidelines issued by the Karnataka Rural Drinking Water and Sanitation Department from time to time.

Approvals: The Gram Panchayat shall be responsible for:

- I. Notifying the details to be submitted for acquiring approval for setting up of a STP or FSTP, including but not limited to:
 - A. Technical diagram/design/details of technology and process used, pollution control mechanism (including noise reduction), disinfection technology (e.g., ultraviolet/chlorination) outflow meter on line leading to drains or natural water bodies;
 - B. Estimated electricity consumption and capacity of generator required;
 - C. Technical/maintenance manpower and equipment required;
 - D. Guarantee of operation from the technology provider of STP or FSTP, as fixed by the Gram Panchayat;

Providing approval for setting up of a FSTP/STP based on the guidelines issued by the Karnataka Rural Drinking Water and Sanitation Department to regulate the construction, operation and maintenance of such STP or FSTPs from time to time.

Regularly inspecting all FSTP/STP, their construction, operation, maintenance, equipment, quality and quantity of treated outflow, monitoring reports, where such inspection shall be carried out by an officer designated by the Gram Panchayat along with a representative from the VWSC, and such assessment reports shall be made available to the public.

Periodically monitoring and evaluating the effluents and emissions from the FSTP/STP, through personnel or Agencies authorised by the Gram Panchayat to ensure compliance with the effluent standards as prescribed by the CPCB or KSPCB or as notified by the State Government.

Granting permissions under the Water (Prevention & Control of Pollution) Act 1974, and other laws and regulations, wherever applicable.

It shall be the duty of the Gram Panchayat or any other prescribed authority to protect all waste handlers from the ill-effects of the occupation

Usage of recovered resources from treatment of Faecal Sludge:

- I. The owner of the premises housing a twin-pit Latrine may sell the stabilised sludge as a soil enhancer or conditioner.
- ii. The biosolids or compost from a FSTP or STP may be sold, after quality checks by the Gram Panchayat, or the Agency operating the FSTP.
- iii. The treated water can be sold by the Gram Panchayat or the Agency operating the FSTP or STP for agricultural or landscaping purpose after performing applicable treated water discharge quality checks as prescribed by KSPCB.

Chapter III: GREYWATER & COMBINED WASTEWATER MANAGEMENT

8. Decentralized management and treatment of Greywater:

- a. Where the Greywater does not include any component of Blackwater, the Greywater shall be treated as close to the source of generation as possible.
- b. It shall be the responsibility of the owner of the Premises to construct Passive Greywater Treatment Systems including soak pits or dispersion trenches and reuse the treated water for kitchen gardens.
- c. In cases where the Owner is unable to construct the Passive Treatment Systems, due to financial or spatial restrictions, the Gram Panchayat shall be responsible for constructing treatment systems like soak pits, constructed wet lands or waste stabilization ponds as well as constructing appropriately covered surface drains connecting generators who are located in close proximity to such treatment systems.
- d. These treatment systems shall be constructed and maintained in conformance with the guidelines provided in the Central Public Health and Environmental Engineering Organisation (CPHEEO) 'Manual on Sewage and Sewerage Treatment' or guidelines release by the Karnataka Rural Drinking Water and Sanitation Department from time to time.

9. Centralized treatment systems:

The Gram Panchayat may set up a combined treatment plant for the treatment of Blackwater and Greywater, in cases where it is unable to construct passive decentralised greywater treatment systems as specified above, taking into consideration factors of population density and spatial restrictions.

The technology for such treatment plants shall be based on the guidelines issued by the Karnataka Rural Drinking Water and Sanitation Department from time to time.

The combined treatment plant may be set up either by an individual Gram Panchayat, or a Cluster of Gram Panchayats where such Gram Panchayats are located in close proximity.

The Liquid Waste shall be conveyed to the combined treatment plant through existing Sewers, or through Sewers which shall be constructed by the Gram Panchayat for this purpose.

Provided that the Gram Panchayat shall build sewerage lines as close to the Premises of the Generators as possible.

10. Connections to Sewers:

All generators shall combine their Blackwater and Greywater outlets and make provision to connect them to the Sewers as per these Bye-Laws and other regulations issued by the competent authorities.

All generators shall obtain approval of the Gram Panchayat before making any connections to the Sewers.

All the connections shall comply with the applicable guidelines as released by the Karnataka Rural Drinking Water and Sanitation Department regarding diameter, material, depth, fall and direction of outfall, and shall be made only by trained masons.

The drainage line shall have proper slope to drain off the wastewater and provide sufficient number of manholes for maintenance of the drainage line.

The Gram Panchayat shall seek to provide, as far as possible, a public sewer line upto or near to the premises of all building / sewage generators within its jurisdiction.

The Gram Panchayat shall provision either wholly or in part, receptacles, fittings, pipes and other appliances whatsoever on or for the use of private premises for receiving and conducting the Liquid Waste into a Sewer under the control of the Gram Panchayat.

The Gram Panchayat shall, as stated in section 100 of the Act, give direction to carry any sewerage through, across or under any street after giving reasonable notice in writing to the owner or occupier, into, through or under any land whatsoever within the panchayat area, in accordance with the sanitation plan.

The Gram Panchayat shall cause any defective sewers to be rectified to handle Liquid Waste in accordance with the provisions of these Bye-Laws.

Level of buildings built in the Panchayat area shall not be lower than the level of drainage and sewer systems so as to prevent flooding during monsoons.

The Gram Panchayat shall charge a one-time fee from the Generator for connecting outlets to the sewer lines.

11. Provisions regarding Manhole cleaning:

- a. The Gram Panchayat shall ensure that only mechanized cleaning is adopted for cleaning of manholes unless human intervention is absolutely necessary.
- b. The Gram Panchayat shall mandatorily provide manhole workers with the necessary safety equipment such as uniforms; hand gloves; raincoats; appropriate gum boots; head cover; eye shades and face masks for cleaning operations.
- c. The Gram Panchayat shall carry out inspection against poisonous and inflammable gases mandatorily before the manhole workers enter the manhole.
- d. The Gram Panchayat shall ensure that all manhole workers attend the training on safety and health imparted to workers by the Gram Panchayat or the Agency.
- e. The Gram Panchayat shall ensure that all manhole workers attend periodical medical check-up conducted by the Gram Panchayat or the Agency authorized by the Gram Panchayat to clean the manholes.
- f. The Gram Panchayat or the Agency authorized by the Gram Panchayat to clean the manholes shall be liable for providing all safety equipment and for any injury or loss to workers.
- g. The cleaning of manholes shall be carried out in conformance with safety precautions mentioned in the "Standard Operating Procedure (SOP) for Cleaning Sewers and Septic Tanks" released by the Ministry of Housing and Urban Affairs, Nov 2018.

12. Other waste generators:

- a. Industrial units, Primary Health Centres, slaughter houses and meat markets shall set up, operate and maintain at their own cost treatment measures as per the standards prescribed in the Environment Protection Act, 1986, or as directed by CPCB or the KSPCB.

Chapter IV: PREVENTION OF WATER/VECTOR AND FOOD BORNE DISEASES

13. Prevention of water/vector breeding:

- a. The Gram Panchayat shall, from time to time, issue directions for the prevention of water borne, vector borne and food borne diseases, which may include specifications regarding the construction, sanitary operation and maintenance of water storage/tanks, cisterns or drains or any other related matters.
- b. The directions may be issued towards the general population of the Gram Panchayat or towards specific Generators.
- c. All Generators shall undertake precautions to prevent vector breeding within their premises (including in any artificial water body therein) by preventing water logging, waste dumping, cracks in their walls and by undertaking regular cleaning, maintenance and anti-larvae measures within their premises.
- d. The Gram Panchayat shall direct for the filling up, cleansing or deepening of any water body, drainage, sewerage, etc. within the panchayat area which is injurious to health or offensive to the neighbourhood.
- e. For the purpose of this section, "Vector borne diseases" mean diseases in which pathogenic micro-organisms are transmitted from an infected individual to another individual by an anthropoid or other agent, sometimes with other animals serving as intermediary hosts;

14. Prevention of vector breeding by specific Generators:

- a. Generators occupying the Premises specified hereunder, shall comply with the following additional requirements:
- b. Dairy and Cattle Sheds:
 - i. The Generator shall regularly clean the area of cattle sheds and spray insecticide to prevent the breeding of vectors.
 - ii. The Generator shall ensure that drinking water for cattle is not kept open and stagnant.
- c. Slaughter houses and meat markets:
 - i. The Generators shall ensure that slaughter houses are properly ventilated and that surfaces are disinfected with non-poisonous disinfectant and aerobic deodorants.
- d. Construction Sites:
 - i. The Owner or any Person constructing any building on their behalf shall provide clean drinking water and sanitary toilet facilities to all workers engaged in construction at the construction site and near the temporary dwellings, if any, constructed for the workers.
 - ii. The Owner or any Person constructing any building on their behalf shall ensure the sanitation and cleanliness of surroundings of the construction site and around temporary dwellings, if any, constructed for the workers.

Chapter V: POWERS AND FUNCTIONS OF DIFFERENT STAKEHOLDERS IN THE GRAM PANCHAYAT

- 15. The Gram Panchayat shall be primarily responsible for the collection, transportation, treatment and disposal of Liquid Waste in accordance with these Bye-Laws.**

16. Planning and Management: The Village Water and Sanitation Committee or Village Health, Sanitation and Nutrition Committee of the Gram Panchayat formed under the Act, or in their absence, the Gram Panchayat shall be responsible for the following functions related to Liquid Waste management:

- a. Identification and allocation of land within the Gram Panchayat for setting up of Liquid Waste treatment systems.
- b. Preparation of the sanitation plan as a part of the Gram Panchayat Development Plan, detailed project report, annual budgets for sanitation and waste management systems which shall not be less than [25%] of the annual budget for Gram Panchayat and approval of such plans and budgets in the Gram Sabha.
- c. Incentivising Generators to retrofit faulty individual household Latrines as per applicable guidelines.
- d. Ensuring that no sanction may be given to any building plan submitted to the Gram Panchayat, which has not conformed to these bye-laws relating to drainage, privy, urinal accommodation, within the premises.
- e. Ensure that funds for discretionary functions of the Gram Panchayat have been allocated only after meeting the requirement of necessary funds for liquid waste management and other obligatory functions of the Gram Panchayat as per the Act;
- f. Charging Generators for Liquid Waste management as per Schedule II of these Bye-laws which may be used towards operational expenditures of the Liquid Waste treatment systems.
- g. Increasing awareness of and access to affordable and sustainable sanitary products, including bio-degradable sanitary pads and menstrual cups.
- h. Approving works and expenditures for building infrastructure required for safely conveying Liquid Waste to treatment plants and for constructing and operating treatment plants for Liquid Waste.
- i. Be responsible for the periodic cleaning of the drains and proper maintenance of the treatment systems, for which purposes it may utilise user charges collected as per Schedule II of these Bye-laws.
- j. Conducting regular assessments of local health and environmental conditions to monitor the impact of the sanitation plans.
- k. Reviewing annual budgets for Liquid Waste management activities against the expenditures every six months.
- l. Preparing quarterly and annual reports on progress in implementation, and performance of Liquid Waste management activities in the Gram Panchayats.
- m. Conducting a social audit of the sanitation plan developed by the Gram Panchayat in accordance with the guidelines issued by the State Government, through consultation with stakeholders, beneficiaries, vulnerable communities and other members of the Gram Panchayat.
- n. Any other role and/or responsibility as may be directed in accordance with applicable law.
- o. The transaction of business of the Gram Panchayat and its committees shall take place in the meetings of the Gram Panchayat or its committees, as per the procedure established under the Act.
- p. Provided that the Gram Panchayat and/or the committees shall meet for the purposes of these Bye-Laws at least once every three months in a year.

17. Panchayat Development Officer: The Panchayat Development Officer shall be responsible for the following functions and responsibilities relating to Liquid Waste management:

- a. Assist the Gram Panchayat and Village Water and Sanitation Committee or Village Health, Sanitation and Nutrition Committee in preparation of the sanitation plan as a part of the Gram Panchayat Development Plan, detailed project report, annual budgets for sanitation and waste management systems, and computation and finalisation of the User Charges.

- b. Provide information to the Gram Panchayat members about various technologies and schemes relating to Waste management.
- c. Supervise implementation, operation and maintenance of wastewater treatment plants, covered surface drains, sewer lines as applicable.
- d. Assist Gram Panchayat in procuring suitable desludging vehicles and setting up decentralized treatment system.
- e. Carry out Menstrual hygiene management activities including awareness generation in the usage of sustainable sanitary products, with a particular focus on women and adolescent girls.
- f. Assist in daily financial management and maintenance of records of the FSTP, wherever applicable, including review of accounts, resources, assets and systems.
- g. Assist the Gram Panchayat and Village Water and Sanitation Committee or Village Health, Sanitation and Nutrition Committee in preparing the reports, forms and other documents evidencing status and progress of waste management systems.
- h. Any other role and/or responsibility as may be directed as per applicable law by the Gram Panchayat, district and state authorities.

18. Non-governmental and community-based organisations: The Gram Panchayat may entrust the following roles relating to wastewater management to non-governmental and/or community-based organisations and self-help groups:

- a. Support the Gram Panchayat in planning, dissemination and execution of various awareness, information, educational and behavioural change activities involving the entire community.
- b. Involvement in training and capacity building of the Gram Panchayat officials, Sanitation Motivators, Agencies and other Persons involved in waste management.
- c. Assist the Gram Panchayat in implementation of sanitation plan and other waste management programs.
- d. Carry out surveys and monitor the impact of the sanitation and waste management programs and assist in the social and other independent audits of wastewater treatment systems.
- e. Building decentralized treatment systems for Blackwater and/or greywater.
- f. Any other role as may be directed in accordance with applicable law by the Gram Panchayat, district and state authorities.

19. Sanitation Motivators: The Sanitation Motivators shall have the following functions as may be entrusted by the Gram Panchayat:

- a. Assist Gram Panchayat in preparation of Gram Panchayat sanitation plan, Detailed Project Report, and other waste management plans.
- b. Act as triggering agents to bring about behavioural change to ensure usage and maintenance of individual household Latrines by waste generators. Assist in planning, dissemination and execution of various awareness, information, educational and communication activities and facilitate sustained behaviour change.
- c. Facilitate strengthening and capacity building of members of Village Water and Sanitation Committee and/or Village Health, Sanitation and Nutrition Committee, Agencies and other Persons involved in waste management activities.
- d. Evaluate the quality of the infrastructure being built for wastewater treatment, desludging vehicles and other assets procured in this regard.
- e. Raise awareness about the proper operations and maintenance of the assets created for safe sanitation and waste management.

- f. Ensure sustainability of the waste management program by assisting the Panchayat Development Officer with monitoring activities and maintenance of records of data at the Gram Panchayat level.
- g. Menstrual hygiene management activities including awareness generation in the usage of sustainable menstrual products, with a particular focus on women and adolescent girls.
- h. Carry out surveys and monitor the impact of the sanitation and waste management programs and assist in the social and other independent audits of waste management systems.
- i. Any other role as may be directed in accordance with applicable laws by the Gram Panchayat, district and state authorities.

Chapter VI: PLANNING AND MONITORING OF WASTEWATER MANAGEMENT SYSTEMS

20. Liquid Waste management planning and budgets:

- a. The Gram Panchayat, either individually or as a Cluster, shall prepare a detailed five-year sanitation plan, which shall be composed of yearly plans, as a part of the Gram Panchayat Development Plan.
- b. The Gram Panchayat sanitation plan shall contain details of the following:
 - i. Implementation timelines and annual milestones to be achieved by the Gram Panchayat.
 - ii. assets and infrastructure relating to waste management, including Liquid Waste management
 - iii. funding requirements for capital and operational expenses including sources of the funds to cover such expenses,
 - iv. monitoring and evaluation parameters,
 - v. capacity building, awareness and behavioural change activities; and
 - vi. any other details that may be communicated by Karnataka Rural Drinking Water & Sanitation Department, from time to time.
- c. The Gram Panchayat shall conduct a survey to map all the sources of drinking water, location, their type and status, outlets of water supply network, generators of wastewater, existing containment systems and their status, vulnerable communities and land use pattern.
- d. The Gram Panchayat shall carry out a survey of insanitary latrines within 2 (two) months of adoption of these Bye-laws.
- e. In Gram Panchayats where development is dense, the Gram Panchayat shall maintain a list of wastewater generators and categorize them into domestic and non-domestic generators based on nature of their activities.
- f. The Gram Panchayat shall prepare Detailed Project Report (DPR) for management of Liquid Waste generated within the territorial limits of the Gram Panchayat based on the development density of the Gram Panchayat. Such DPR shall contain the following:
 - i. length and coverage map of covered surface drains, wherever applicable
 - ii. length and coverage map of sewer lines, wherever applicable,
 - iii. details of the FSTP/STP, wherever applicable
 - iv. details of the greywater treatment system, wherever applicable
 - v. details of the desludging vehicle to be procured, if the Gram Panchayat desires to provide the desludging services on its own

- vi. details of individual household Latrines that the Gram Panchayat plans to build and/or retrofit
 - vii. details of community Latrines the Gram Panchayat plans to build
 - viii. other information required for effective implementation of the wastewater management that may be communicated by Karnataka Rural Drinking Water & Sanitation Department from time to time.
- g. The Gram Panchayat shall prepare annual budgets as a part of the Gram Panchayat Development Plan which shall include
- i. the capital costs required for initial investment in Liquid Waste transportation and treatment infrastructure and facilities;
 - ii. the recurrent expenditures required to operate and maintain the facilities and;
 - iii. the programme costs for activities such as capacity building including training, information education and communication, behavioural change and awareness activities. The Gram Panchayats shall reserve at least [25%] of their total budget for sanitation and solid and Liquid Waste management activities every year.
- h. The Gram Panchayat shall open a separate bank account for sanitation and waste management activities including management of Solid and Liquid Waste, into which all amounts collected as User Charges for LWM, grants and fund under various schemes from the central and state shall be deposited.
- i. The funds from this bank account shall only be used towards the costs incurred by the Gram Panchayat in fulfilling its functions relating to Solid and Liquid Waste management.
 - ii. The transactions of this bank account shall be audited periodically in a manner determined by the Karnataka Rural Drinking Water & Sanitation Department in accordance with applicable law.

21. Monitoring of LWM systems:

- a. Periodic reporting: The Gram Panchayat shall periodically report the status, progress and operations of Liquid Waste management systems within its territorial limits to the Executive Officer, Chief Executive Officer and state authorities in the formats and in accordance with the directions issued by the Karnataka Rural Drinking Water & Sanitation Department.
- b. Use of ICT: The Gram Panchayat shall seek to maximize the use of Information and Communication Technology (ICT) such as web-based platforms, SMS, mobile applications etc. for effective monitoring, reporting and effective management of sanitation and liquid waste.
- c. Audits: Independent third-party audits including social audits of the Gram Panchayat sanitation plan and wastewater management systems in the Gram Panchayat will be carried out in accordance with the guidelines issued by the Karnataka Rural Drinking Water & Sanitation Department.
- d. Review of Agencies:
 - i. The Gram Panchayat and/or the Government shall regularly review the facilities and operations of the Agencies to ensure that they are in compliance with the provisions of these Bye-laws and other applicable regulations.
 - ii. In the event of any non-compliance, the Gram Panchayat and/or the Government can take action against the defaulting Agencies including notice of remedial action, cancellation of licenses, blacklisting, imposition of fines and penalties as set out in these Bye-laws.
- e. Regular checks and review of Detailed Project Report and Plan:
 - i. The Panchayat Development Officer, Gram Panchayat members and other officers authorised by the Gram Panchayat shall conduct regular checks in various parts of the villages and other places of wastewater generation within its territorial limits to supervise compliance of various provisions of these Bye-laws.

- ii. Such official(s) shall have right to enter, at all reasonable times, with such assistance as he/she considers necessary, any place for the purpose of
- A. performing any of the functions entrusted to him by the Gram Panchayat under these Bye-laws, or B. **d e t e r m i n e** compliance of the provisions of these Bye-laws.
- f. Designated officers: The Panchayat Development Officer and other authorised officials shall have the following responsibilities:
 - i. addressing grievances of the Waste Generators and suggesting improvements in the implementation of the Bye-laws,
 - ii. levying fines, spot fines and penalties,
 - iii. collecting User Charges, and
 - iv. implementing such responsibilities of the Gram Panchayat specified under these Bye-laws, as may be entrusted or delegated by the Gram Panchayat in accordance with these Bye-laws, Act and any other applicable law.
- g. Accident Reporting: In case of an accident at any liquid waste processing or treatment or disposal facility or landfill site, the Officer- in- charge of the facility shall report to the Gram Panchayat in Form-I and the Gram Panchayat shall review and issue instructions if any, to the in- charge of the facility.

Chapter VII: USER CHARGES FOR WASTEWATER MANAGEMENT

22. Provisions with respect to user charges payable to Gram Panchayat:

- a. The Gram Panchayat shall be responsible for operating and maintaining the Liquid Waste management systems in the Gram Panchayat through its own funds including through User Charges collected by the Gram Panchayat, with effect from 3 (three) years of the adoption of these Bye-Laws.
- b. The Generator shall pay desludging charges towards emptying of on-site Containment Systems to the Gram Panchayat or the licensed Agency, as the case may be, as per Schedule II of these Bye-Laws.
- c. In Gram Panchayats where the Greywater treatment is decentralized and which has a FSTP for Faecal Sludge treatment, the User Charges shall be payable by the Generator for the maintenance of covered surface drains and the operation and maintenance of treatment systems, including FSTP and the Greywater treatment system.
- d. In Gram Panchayats that have a Sewer network and a centralized FSTP/STP connected to such Sewer, the Generator shall pay a one-time fee for connecting the Liquid Waste outlet from his/her premises to the Sewer network, as well as User Charges for maintenance of the UGD network and operations and maintenance of the treatment plant, as specified in Schedule II of these Bye-Laws.
- e. The User Charges mentioned in Schedule II shall increase automatically by 5% every three years (rounded off to the nearest multiple of Rs. 10) with effect from April 1 of such year. These rates shall be advertised in the Gram Panchayat office and other visible public areas within the jurisdiction of the Gram Panchayat.
- f. The User Charges shall be combined with the water bill in Gram Panchayats, in cases where a water bill is payable by Generators.
- g. The User Charges shall be collected by the Gram Panchayat, either in person and/or through any other method and on such days as may be specified by the Gram Panchayat, preferably in first week of each month.
- h. The User Charges may also be collected by the Gram Panchayat by charging the amount through property tax or license fees under the provisions of Act.

- l. The Gram Panchayat may evolve additional mechanisms for the billing, collection or recovery of User Charges, from time to time and these shall be notified through general or special order/notification.
- j. The Gram Panchayat shall, by itself or through an Agency, prepare the database of all the Generators for the purpose of levying User Charge and shall regularly update such database.
- k. In case of default of payment of User Charges for more than 6 (six) months, the Gram Panchayat or any other competent authority may recover the User Charges from the defaulter as taxes under the provisions of Act, as the case may be.
- l. The Gram Panchayat may stop providing such services the Gram Panchayat may deem suitable, until such time that the User Charges are paid by the defaulter.
- m. All amounts collected as User Charges by the Gram Panchayat shall be used towards the costs for operation and maintenance of wastewater management systems under these Bye-laws, salaries of personnel and other waste management related activities as may be considered appropriate by the Gram Panchayat from time to time.

Chapter VIII: OFFENSES UNDER THESE BYE-LAWS

23. Specific offences:

- a. No Generator shall engage or employ, either directly or indirectly, a Manual Scavenger for emptying or cleaning of Faecal Sludge containment system present within his/her premises. Any generator found practicing the above will be penalized in accordance with Prohibition of Employment as Manual Scavengers and their Rehabilitation Act, 2013.
- b. No Person shall:
 - i. Discharge or cause to discharge domestic sewage/sullage/effluents from his/her premises to storm water drains, road, open lands, water bodies, water ways, agricultural land or any other non-designated locations.
 - ii. Connect Containment Systems to the public sewer line without obtaining necessary permissions from the Gram Panchayat and in accordance with the standards and specifications as per these Bye-Laws.
 - iii. Allow the inflow of any substance likely to damage the drains (covered surface drains or Sewers), or to interfere with the flow of Liquid Waste to the public sewer-line or the drain system.
 - iv. Cause damage to the drains through illegal constructions or encroachments.
 - v. Discharge or cause to be discharged industrial effluents or any other effluents particular to the activity of any industry, household industry, slaughter house and meat market, dairy and cattle sheds, workshops or garage into the public drain or water bodies, except as may be prescribed by applicable laws.
 - vi. Spit, urinate or defecate in any public place, including water bodies, except in such public facilities or conveniences specifically provided for such purposes.
 - vii. Damage or remove without permission any infrastructure including vehicles, covers of surface drains, manhole covers, drains and equipment provided by the Gram Panchayat or any Agency appointed by it under these Bye-laws.

Chapter IX: PENALTIES AND GRIEVANCE REDRESSAL

24. Penalties:

- a. Whoever contravenes or fails to comply with any of the provisions of these Bye-laws shall be punished with a fine as specified in Schedule III.

- b. In case of second contravention or subsequent non-compliance, the Gram Panchayat shall have the power to levy a fine which could be the twice of the amount set out against the offence in Schedule III.
- c. In case of third contravention or subsequent non-compliance, the Gram Panchayat shall have the power to levy a fine which could be the thrice of the amount set out against the offence in Schedule III.
- d. In case of fourth contravention or subsequent non-compliance, the Gram Panchayat shall have power to:
 - i. cancel the relevant business license that is attached to the Generator (if any), and/or,
 - ii. recover the penalty amounts as per the different modes set out in the Act, and/or
 - iii. take any other appropriate action as may be determined by the Gram Panchayat by notification from time to time.
- e. Whoever makes unauthorized connections to the sewerage system of the Gram Panchayat in contravention of these Bye-Laws shall, in addition to any other penalty and pro-rata charges payable, be liable to pay up to 50% of the pro-rata charges payable, as mentioned in the Schedule III.
- f. Gram Panchayat shall have the power to levy spot fines for violations of provisions mentioned under these bye-laws; however, the amount of such spot fines shall not exceed the amount set out in Schedule III.
- g. The fine or penalty mentioned in Schedule III shall stand automatically increased by 10% per year (to the nearest multiple of Rs. 10) with effect from April 1 of each successive year. In addition, the Gram Panchayat, in accordance with applicable law, may at any time increase the penalties as mentioned in Schedule III of these Bye-laws.
 - i. The Gram Panchayat shall take appropriate disciplinary action against the employees of Gram Panchayat or the licensed Agency, if they are found to employ Manual Scavengers or allowing the practice of Manual Scavenging within its jurisdiction, letting out the sewage/septage at undesignated places, indulging in acts of negligence that cause improper functioning of the treatment plants or any other practices that violate the provisions of these Bye-laws.
 - ii. In the event an Agency contravenes or fails to comply with any of the provisions of these Bye-laws, the Gram Panchayat shall have the power to terminate the services of, or revoke and suspend the license of such Agency for any function undertaken by it under these Bye-Laws or applicable regulations.
 - iii. The Gram Panchayat may initiate appropriate proceedings for violation of any provisions of these Bye-laws under any other law in addition to any action under these Bye-laws, including the Act, the Environment (Protection) Act, 1986, the Indian Penal code, 1860, the Water (Prevention and Control of Pollution) Act 1974, the Air (Prevention and Control of Pollution) Act 1981 and/or any other applicable regulations.
 - iv. All amounts collected as penalties shall be used towards the Gram Panchayat's operation and maintenance costs for providing wastewater management services under these Bye-laws, salaries of personnel, incentives and other waste management activities uses as may be considered appropriate by the Gram Panchayat from time to time.

25. Grievance redressal:

- a. The Gram Panchayat shall develop public grievance redressal system(s) for registering complaints regarding violations of these Bye-Laws.
- b. These systems may include a complaint center in each village and/or Gram Panchayat office, mobile application and/or any other mechanism which the Gram Panchayat may consider appropriate keeping in mind the local conditions.
- c. The grievance may be submitted in person by any citizen, through telephone, email, website, post, on the mobile application and/or any other appropriate method as determined by the Gram Panchayat.
- d. The Gram Panchayat shall ensure that each grievance is redressed in a timely and efficient manner and in no event later than 15 (fifteen) days from the date of submission of the complaint.

- e. The Gram Panchayat shall consider the type of grievance, environmental and/or health related consequences, inconvenience caused to public, associated financial costs and other relevant considerations, when determining the appropriate remedial action for the grievance.

CHAPTER - X – OTHER RESPONSIBILITIES AND DUTIES OF THE GRAM PANCHAYAT

26. In addition to the responsibilities and duties set out in other Chapters of these Bye-laws, the Gram Panchayat shall also have the following duties:

- a. **Publicity and citizen information services:** The Gram Panchayat shall publicise the provisions of the Bye-laws through interpersonal communication by Sanitation Motivators, community based organisations, signs, leaflets, announcement on radio, newspapers and through any other appropriate means, to raise awareness about the duties of the Gram Panchayat and residents of the Gram Panchayat in relation to maintaining personal and public hygiene, usage and maintenance of Latrines, prevention of exposure of human faeces, prevention of vector borne diseases, non-blocking of drains among others.
- b. **Transparency and public accessibility:** To ensure greater transparency and public accessibility, the Gram Panchayat shall provide the following information, data and reports in relation to the activities under the Bye-laws in the offices of the Gram Panchayat during its working hours.
- i. Name and contacts of the officers who shall be responsible for implementing the responsibilities of Gram Panchayat specified under these Bye-Laws.
 - ii. Annual data about the number of individual household Latrines and community Latrines present in the Gram Panchayat.
 - iii. Statistics of complaints and actions taken by the Gram Panchayat to address the complaints.
 - iv. Details of User Charges, penalties collected by and on behalf of the Gram Panchayat and the manner in which these amounts have been utilised on a monthly basis.
- c. **Creating Incentives:**
- i. The Gram Panchayat may consider creating systems for incentives to promote usage of the products from wastewater treatment.
 - ii. The Gram Panchayat shall incentivize farmers to buy the stabilized sludge from twin-pit latrines for use as soil enhancers and for usage of the treated water from the treatment plants.
 - iii. The Gram Panchayat may purchase any extra compost, if available, from the FSTP/STP, at a specified price as notified from time to time by the Gram Panchayat for its own use or for sale at remunerative prices.
- d. **Training and public awareness:**
- i. The Gram Panchayat may, by itself or through experts in the field undertake awareness and outreach programmes about management of wastewater, safe sanitation practices, grievance redressal mechanisms under the Bye-Laws.
 - ii. The Gram Panchayat shall make efforts encourage regular usage and maintenance of individual household Latrines, on-site treatment of greywater within the premises of the Generator, to the extent possible.
 - iii. The Gram Panchayat shall promote and organize focused information education and communication and behavioural change communication programs aimed at adoption of healthy sanitation practices, including technical training to masons and such personnel to correct the flaws from the toilet designs and to ensure community participation.

- iv. The Gram Panchayat shall fund and organise technical training in retrofitting to the masons and such technical experts, who will be involved in retrofitting and other correction measures of insanitary Latrines.

CHAPTER XI – MISCELLANEOUS

- 27. Co-ordination with government bodies:** The Gram Panchayat shall co-ordinate with other Government agencies and authorities, to ensure compliance of these Bye-Laws within areas under the jurisdiction or control of such bodies.
- 28. Review of implementation:** The Gram Panchayat will review the effective implementation of these Bye-Laws, at least twice a year, and take appropriate steps to ensure the completion of its targets for implementing the same.
- 29. Amendments:** Where it is expedient to do so, the Gram Panchayat may, by following the relevant procedure(s) in the Act, add to, or amend the Bye-Laws, with prior permission of the Government.
- 30. Repeal and saving of Orders**
- a. The coming into effect of these Bye-Laws shall not affect any actions taken according to applicable rules and regulations, unless such actions violate these Bye-Laws.
- 31. Interpretation:** Where any discrepancy, in the interpretation of any clause or terms of these bye-laws arises, the interpretation as per this English version shall be final and shall supersede the Kannada version.

SCHEDULE - I

List of Generators and their categories:

Domestic Generators:

Premises used solely for residential purposes.

Premises used as Hostels for students run by Educational Institutions including Hostels run on Co-operative basis.

Premises belonging to the statutory bodies established by the Central Government or State Government and used solely for residential purposes.

Premises belonging to Central and State Governments and used solely as residential quarters for Government Employees.

Premises used for housing the poor to whom no fees are charged, or where fees are charged but no profit is made for the occupation such as dharmshalas and musafir khanas.

Dispensaries, sanitorial asylums.

All other waste generators shall be considered non-domestic generators, unless they have been listed under Domestic generators by a suitable notification by the Karnataka Rural Drinking Water & Sanitation Department.

SCHEDULE - II

Desludging charges and User Charges: These charges are indicative. The Gram Panchayat and the cluster may decide on the charges applicable, not less than those indicated.

- 1. Desludging charges** (payable to the Gram Panchayat or Agency providing desludging services):

Category of Generator	Location	Desludging Charge (INR)
Domestic generator	Desludging vehicle available within the Gram Panchayat	1000
Domestic generator	Desludging vehicle available at Taluk	1500
Non-domestic generator	Desludging vehicle available within the Gram Panchayat	2500
Non-domestic generator	Desludging vehicle available at Taluk	3000

The charges may vary depending on the quantum of the sludge and the distance.

2. User Charges for decentralized treatment system (payable to the Gram Panchayat, for maintenance of drains and O&M of FSTP and greywater treatment systems):

Location	Monthly User Charges (INR)
Category of Generator Domestic generator (having own water source)	10
Domestic generator (using piped water supply provided by Gram Panchayat)	20% of water bill or 10, whichever is higher
Domestic generator (using piped water supply provided by Gram Panchayat + own source of water)	20% of water bill + 10
Non-domestic generator (having own water source)	250
Non-domestic generator (using piped water supply provided by Gram Panchayat)	25% of water bill
Non-domestic generator (using piped water supply provided by Gram Panchayat + own source of water)	25% of water bill + 250

3. **User Charges for centralized treatment system** (payable to the Gram Panchayat *, for connection to UGD, maintenance of UGD, O&M of STP):

One-time fee for connection to UGD:

Category of Generator	One-time connection Fee (INR)
Domestic generator (having own water source)	500
Domestic generator (using piped water supply provided by Gram Panchayat)	1000
Domestic generator (using piped water supply provided by Gram Panchayat + own source of water)	1500
Non-domestic generator (having own water source)	1000
Non-domestic generator (using piped water supply provided by Gram Panchayat)	1500
Non-domestic generator (using piped water supply provided by Gram Panchayat + own source of water)	2500

User Charges:

Category of Generator	Monthly User charges (INR)
Domestic generator (having own water source)	30
Domestic generator (using piped water supply provided by Gram Panchayat)	25% of water bill
Domestic generator (using piped water supply provided by Gram Panchayat + own source of water)	25% of water bill + 30
Non-domestic generator (having own water source)	500
Non-domestic generator (using piped water supply provided by Gram Panchayat)	25% of water bill
Non-domestic generator (using piped water supply provided by Gram Panchayat + own source of water)	25% of water bill + 500

SCHEDULE III

Penalties:

Sl.no.	Non-compliance and type of Waste Generator	Penalty (INR)
	Discharge or cause to discharge domestic sewage / sullage / effluents from his/her premises to storm water drains, road, open lands, water bodies, water ways, agricultural land or any other non-designated locations.	200
	Connect domestic sewer to the public sewer line without obtaining necessary permissions from the Gram Panchayat and in accordance with the standards and specifications	1000
	Allow the inflow of any substance likely to injure the drains (covered surface drains or UGDs), or to interfere with the flow of wastewater to the public sewer-line or the drain system.	500
	Cause damage to the drains by illegal projection or encroachments	1000
	Discharge or cause to be discharged industrial effluents or any other effluents particular to the activity of any industry, house hold industry, slaughter house and meat market, dairy & cattle sheds, workshops or garage into the public drain before necessary prescribed treatment	2000
	Spit, urinate, defecate in any public place	100
	Damage or remove without permission any infrastructure including vehicles, covers of surface drains, manhole covers, drains and equipment	500
	Other places/activity not marked as above	As decided by Gram Panchayat by general or special order/notification.

SCHEDULE - IV

Template of Survey form for compiling database of containment units:

Property Details	[These details can be readily obtained from the Property Tax Register of the Gram Panchayat]
Does the Household have a toilet	[These details can be readily obtained from the Property Tax Register of the Gram Panchayat]
No. of Toilets in the Household	Yes/No
Type of toilet	
Receptacle of the toilet	Single-pit / Twin-pit / Septic tank / drain / any other
Construction of the toilet & receptacle	Faulty/As per design
Physical condition of the toilet and receptacle	
Cleaning Frequency	Every 6 months / Every Year / Every 2 Years / Never
Who is contacted to provide Pit/Septic Tank Cleaning Services	(Name of Agent)
Actual Number of People Living in the Household	
Does the Household have water connection	
Distance between toilet/s and drinking water source	
Septic Tank/pit latrine Details	
Capacity as Per Plan	[Can be gained from the Gram Panchayat records]
Actual capacity	
Location of Pit/Septic Tank Can a desludging truck easily reach the pit/ tank outlet	Front of House Entrance / Back of House
Is grey water let out in the open	Yes/No
If no, is it let out into a drain?	Yes/No
Is there space around the house for a soak pit	Yes/No

Form - I [See Bye-Law 21(g)]

Accident Reporting

Sl. No	Particulars	Data
1.	Date and time of accident	
2.	Sequence of events leading to accident	
3.	The waste involved in the accident	
4.	Assessment of the effects of the accidents on human health and the environment	
5.	Emergency measures taken	
6.	Steps taken to alleviate the effects of accidents	
7.	Steps taken to prevent the recurrence of such an accident	

Date:

Signature:

Place:

Designation:

The Karnataka Panchayat Raj (Management of Solid Waste) Model Bye-laws, 2020



The Karnataka Panchayat Raj (Management of Solid Waste) Model Bye-laws, 2020

The Karnataka Panchayat Raj (Management of Solid Waste) Model Bye-laws, 2020 for handling and management of Solid Waste within the territorial limits of the Gram Panchayats which the government of Karnataka proposes to make in exercise of Section 316 of Karnataka Gram Swaraj and Panchayat Raj Act, 1993 along with provisions of the Solid Waste Management Rules, 2016 is hereby published as required by sub-section (1) of Section 316 of the said Act. This is for the information of all persons likely to be affected by it and notice is hereby given that the said draft will be taken into consideration after 30 (thirty) days from the date of its publication in the Official Gazette.

Any objection or suggestion which may be received by the State Government from any person with respect to the said draft before the expiry of the period specified above will be considered by the State Government. Objections and suggestions may be addressed to [Commissioner, Rural Drinking Water & Sanitation Department, 2nd floor, KHB Building, Kaveri Bhavan, Bangalore-560009, email-wsrdpr@gmail.com]

CHAPTER I – GENERAL

1. Short title, commencement and application

- 1.1. These are the Karnataka Panchayat Raj (Management of Solid Waste) Model Bye-laws, 2020 and shall come into operation from the date of their publication in the Official Gazette.
- 1.2. These Bye-laws shall come into force in accordance with the procedure laid down under the Karnataka Gram Swaraj and Panchayat Raj Act, 1993.

2. Definitions

In these Bye-laws, unless the context otherwise requires -

- 2.1. “**Act**” means the Karnataka Gram Swaraj and Panchayat Raj Act, 1993, as may be amended from time to time.
- 2.2. “**Agency**” means any person or entity, including any registered organisation of Waste Pickers or Waste Traders, appointed or authorised by the Gram Panchayat or directed by the Government to act on behalf of the Gram Panchayat in accordance with an agreement, for the discharge of duties or functions under these Bye-laws.
- 2.3. “**Bio-degradable Waste**” means any organic material that can be degraded by micro-organisms into simpler stable compounds, an illustrative list which is specified in **Part A of Schedule I**.
- 2.4. “**Bio-medical Waste**” shall have the same meaning as set out in the Bio-medical Waste Management Rules, 2016.
- 2.5. “**Building**” means any temporary or permanent structure which may be mobile or immobile that generates solid waste.
- 2.6. “**Bulk Waste Generator**” means and includes
 - (i) Buildings occupied by the Central government departments or undertakings, State government departments or undertakings, Gram Panchayat, Market Associations, hospitals, nursing homes, schools, colleges, universities, other educational institutions, hostels, hotels, restaurants, shops, households, commercial establishments, places of worship, marriage halls, railway stations, bus stations etc., each generating an average of 50kg or more of Solid Waste(from all waste streams) per day;
 - (ii) residential, apartment and housing complexes and Resident Welfare Associations, each generating an average of

50 kg or more of Solid Waste (from all waste streams) per day;

- (iii) gated communities, corporate campus, technology parks and institutions with an area of more than 5000 sqm; and
 - (iv) any other Bulk Waste Generator as notified by the Gram Panchayat in accordance with these Bye-laws from time to time.
- 2.7. **“Bye-laws”** shall mean the Karnataka Panchayat Raj (Management of Solid Waste) Model Bye-laws, 2020, as amended from time to time.
- 2.8. **“Chief Executive Officer”** shall have the same meaning as set out in the Act.
- 2.9. **“Cluster”** means two or more geographically contiguous Gram Panchayats that converge for processing of Solid Waste.
- 2.10. **“Committees”** means the Village Water and Sanitation Committees and the Village Health, Sanitation and Nutrition Committees formed under Section 61-A of the Act.
- 2.11. **“CPCB”** means the Central Pollution Control Board.
- 2.12. **“Domestic Hazardous Waste”** means household waste that can catch fire, react, contaminate or explode under certain circumstances, or that is corrosive or toxic, an illustrative list of which is specified in **Part C of Schedule I**.
- 2.13. **“Door to Door Collection”** means collection of Solid Waste from the door step of households, shops, commercial establishments, offices, institutional or any other Premises occupied by Waste Generators.
- 2.14. **“Dry Waste Collection Centre or DWCC”** means a decentralised waste management facility to aggregate, store, sort and handle Non-Biodegradable Waste that is operated by the Gram Panchayat and/or the Agency.
- 2.15. **“E-Waste”** shall have the same meaning as set out in the E-Waste Management Rules 2016.
- 2.16. **“Executive Officer”** shall have the same meaning as set out in the Act.
- 2.17. **“Government”** shall have the same meaning as set out in the Act.
- 2.18. **“Gram Panchayat”** shall have the same meaning as set out in the Act.
- 2.19. **“Gram Panchayat Development Plan”** means the development plan formulated by the Gram Panchayat in accordance with Section 309 and other applicable provisions of the Act.
- 2.20. **“KSPCB”** means the Karnataka State Pollution Control Board.
- 2.21. **“Market Associations”** means any registered or unregistered group or association of sellers, shop owners, shop keepers, traders, businessmen, dealers, merchants, vendors, brokers or other Persons of a particular market or locality including Agricultural Produce Market Committees.
- 2.22. **“Micro-plan”** means the plan for collection and transportation of Solid Waste for the smallest unit of management of the Gram Panchayat which includes allocation of the manpower and vehicles and schedule of Street Sweeping in such unit.
- 2.23. **“Non-biodegradable Waste”** means any Solid Waste that cannot be degraded by microorganisms into simpler stable compounds.

- 2.24. **“Panchayat Development Officer”** shall have the same meaning as set out in the Act.
- 2.25. **“Person”** includes any individual or association of individuals whether incorporated or not.
- 2.26. **“Point to Point Collection”** means the system wherein segregated Solid Waste is deposited by the Waste Generator at such places and storage points which may be designated by the Gram Panchayat for onward delivery provided by the Gram Panchayat or Agency.
- 2.27. **“Premises”** means any land, building or part of a building and includes any gardens and grounds appertaining to a building or part thereof and structures constructed on the land, used for purposes of residence, trade, industry, business, government or any other public or private purpose including weddings, meetings, exhibitions, organized events etc.
- 2.28. **“Receptacle”** means container, including bins and bags, used for the storage of any category of Solid Waste.
- 2.29. **“Recyclable Non-biodegradable Waste”** means Non-biodegradable Waste that can be transformed through a process into raw materials for producing new products, which may or may not be similar to the original products, an illustrative list of which is specified in **Schedule Part B of Schedule I**.
- 2.30. **“Resident Welfare Associations”** means a group or association of owners and/or occupiers of residential premises of a particular neighborhood or locality that may or may not be registered with the Registrar of Co-operative Societies.
- 2.31. **“Sanitation Motivator”** means an individual engaged by the Gram Panchayat in accordance with the Swacchagrahi Guidelines, 2018, issued by the Government of India and/or any other subsequent applicable regulations, for sanitation related activities in the Gram Panchayat.
- 2.32. **“Sanitary Landfill”** means the final and safe disposal facility of residual Solid Wastes and inert waste which is designed in accordance with various applicable regulations to prevent the pollution of ground water, surface water, air fugitive dust, wind-blown litter, bad odour, fire hazard, animal menace, bird menace, pests or rodents, greenhouse gas emissions, persistent organic pollutants, slope instability.
- 2.33. **“Sanitary Waste”** means wastes comprising of used diapers, sanitary towels or napkins, menstrual cloth and cups, incontinence sheets, tampons, condoms, ear buds, toilet paper, bandage, cotton swabs, syringes from households and any other similar waste.
- 2.34. **“Solid Waste”** means and includes solid or semi-solid domestic waste, Sanitary Waste, commercial waste, institutional waste, catering and market waste and other non-residential wastes, Street Sweepings, silt removed or collected from the surface drains, horticulture waste, agriculture waste, excluding industrial waste, Bio-medical Waste, E-waste, battery waste and radio-active waste generated within the Gram Panchayat.
- 2.35. **“Street Sweeping”** means the sweeping and collection of Solid Waste from public streets, parks and other public areas and cleaning of surface drains/ trenches abutting public streets and related activities.
- 2.36. **“SWM Rules”** means the Solid Waste Management Rules, 2016, as may be amended from time to time.
- 2.37. **“SWM User Fee”** means a fee imposed by the Gram Panchayat on the Waste Generator to cover the whole or part of the cost of providing Solid Waste collection, transportation, processing and disposal services by the Gram Panchayat and/or the Agency in accordance with these Bye-laws.
- 2.38. **“Waste Generator”** means and includes Persons or group of Persons, every Building, residential premise and non-

residential establishment including Indian Railways and defence establishments, which generate Solid Waste.

2.39. **“Waste Picker”** means a person or groups of persons informally engaged in collection and recovery of Non-Biodegradable Waste from the source of waste generation, streets, bins, dumping areas, public areas etc. for sale to recyclers directly or through intermediaries such as Waste Traders to earn their livelihood.

2.40. **“Swachatha Worker” or “Sanitary Worker”** means a person employed by the Gram Panchayat or Agency, either directly or indirectly who is responsible for

- (i) Street Sweeping including drain cleaning;
- (ii) Door-to-Door Collection such as collection of Solid Waste using pushcarts/small auto-tippers (excluding night soil);
- (iii) operations in waste processing units such as composting, bio-methanation, Dry Waste Collection Centres and other waste processing units; and/or
- (iv) other sanitation and waste management activities as required by the Gram Panchayat from time to time.

2.41. **“Waste Traders”** means Persons and entities who are involved in the sorting, sale and purchase of Non-biodegradable Waste including scrap dealers, itinerant buyers, and traders.

Any words or expressions not defined in these Bye-laws shall have the same meaning as in the Solid Waste Management Rules, 2016.

CHAPTER II – SOLID WASTE MANAGEMENT PLANNING

3. Solid Waste management planning and budgets:



- 3.1. The Gram Panchayat, either individually or as a Cluster, shall prepare a detailed five year sanitation plan, which shall be composed of yearly plans, as a part of the Gram Panchayat Development Plan.
- 3.2. The Gram Panchayat sanitation plan shall contain details of the following:
- (i) implementation timelines and annual milestones to be achieved by the Gram Panchayat,
 - (ii) assets and infrastructure relating to Solid Waste management,
 - (iii) human resources required for Solid Waste management activities in the Gram Panchayat,
 - (iv) funding requirements for capital and operational expenses including sources of the funds to cover such expenses,
 - (v) monitoring and evaluation parameters,
 - (vi) capacity building, awareness and behavioural change activities; and
 - (vii) any other details that may be communicated by Karnataka Rural Drinking Water & Sanitation Department, from time to time.
- 3.3. The Gram Panchayat shall, either individually or as a Cluster, prepare a detailed project report for management of Solid Waste generated within the territorial limits of the Gram Panchayat or the Cluster, as the case may be, on the basis of Micro-plans relating to collection mechanism and processing of Solid Wastes
- 3.4. Such detailed project report and Micro-plan shall contain details for each of the following:
- (i) collection times for different categories of Solid Waste,
 - (ii) details of the collection vehicles and points,
 - (iii) map of the village(s) in the Gram Panchayat or the Cluster,
 - (iv) roads/public streets for Street Sweeping,
 - (v) personnel required for carrying out Solid Waste management activities,
 - (vi) other information required for effective implementation of the Solid Waste management that may be communicated by Karnataka Rural Drinking Water & Sanitation Department from time to time.
- 3.5. The Gram Panchayat shall prepare annual budgets as a part of the Gram Panchayat Development Plan which shall include:
- (i) the capital costs required for initial investment in Solid Waste infrastructure and facilities,
 - (ii) the recurrent expenditures required to operate and maintain the facilities and,
 - (iii) the programme costs for activities such as capacity building including training, information education and communication, behavioural change and awareness activities.

The Gram Panchayats shall reserve at least 25% of their total budget for all sanitation and solid and liquid waste

management infrastructure, operations and activities every year.

- 3.6. The Gram Panchayat shall open a separate bank account for sanitation and waste management activities including management of Solid Waste, in which all amounts collected as SWM User Fees, grants and fund under various schemes from the central government and state shall be deposited. The funds from this bank account shall only be used towards the costs incurred by the Gram Panchayat in fulfilling its functions relating to sanitation and waste management. The transactions of this bank account will be audited periodically and in a manner determined by the Karnataka Rural Drinking Water & Sanitation Department in accordance with applicable law.

CHAPTER - III - POWERS AND FUNCTIONS

4. Powers and Functions of Different stakeholders in the Gram Panchayat



- 4.1. The Gram Panchayat shall be primarily responsible for the collection, processing and disposal of Solid Waste in accordance with these Bye-laws.
- 4.2. **Planning and Management.** The Village Water and Sanitation Committee and/or Village Health, Sanitation and Nutrition Committee formed under the Act, or, in their absence, the Gram Panchayat, shall be responsible for the following functions related to Solid Waste management:
- (i) Identification and allocation of land within the Gram Panchayat for Solid Waste management activities such as processing of Bio-degradable Waste and storage of Non-Biodegradable Waste in a Dry Waste Collection Centre.
 - (ii) Preparation of the sanitation plan as a part of the Gram Panchayat Development Plan, detailed project report,

micro-plans, annual budgets for sanitation and waste management systems and approval of such plans and budgets in the Gram Sabha.

- (iii) Ensure that funds for discretionary functions of the Gram Panchayat have been allocated only after meeting the requirement of necessary funds for Solid Waste management and other obligatory functions of the Gram Panchayat as per the Act.
 - (iv) Enforcement and collection of SWM User Fees for Solid Waste management services.
 - (v) Approve works and expenditures for Solid Waste Management activities, procure capital infrastructure such as machinery, vehicles and equipment and organise for agencies for capital infrastructure such as DWCC, waste collection vehicles and composting or bio-methanation units.
 - (vi) Engage personnel and/or Agency for different activities such as collection, transportation and processing of Solid Waste and for various awareness, information, educational and behavioural change activities within the Gram Panchayat.
 - (vii) Provide logistical support for transportation of Non-recyclable Non-Biodegradable Waste to nearest aggregation centre in Taluk Panchayat and/or Zilla Panchayat, as may be necessary.
 - (viii) Help create a system to recognise organisations (including self help groups) of Waste Pickers and promote and establish a system for integration of these authorised Waste-Pickers to facilitate their participation in Solid Waste management including door to door collection of waste.
 - (ix) Assessment of quantifiable impacts such as improvement in source segregation, reduced dumping and burning of Solid Waste, increased recovery of resources from Solid Waste, improvement in local health and environment due to proper waste management systems through itself and/or other qualified agencies.
 - (x) Half yearly review of annual budgets for Solid Waste management activities against the expenditures and quarterly and annual reports on implementation progress and operational performance of Solid Waste management activities.
 - (xi) Facilitate social audit of the sanitation plan developed by the Gram Panchayat in accordance with the guidelines issued by the state by involving all primary stakeholders, beneficiaries, vulnerable communities and other members of the Gram Panchayat as may be required for a comprehensive review of the sanitation plan.
 - (xii) Compliance with all the duties listed for Gram Panchayats in Plastic Waste Management Rules, 2016 and enforcement of the ban on use of plastic issued by Forest, Ecology and Environment Department, Government of Karnataka as per Notification No. FEE 17 EPC 2012, Bangalore dated March 11, 2016.
 - (xiii) Any other role and/or responsibility as may be directed in accordance with applicable law by the Gram Panchayat, district and state authorities.
- 4.3. The transaction of business of the Gram Panchayat and its Committees, shall take place in the meetings of the Gram Panchayat or its Committees as per the procedure established under the Act, provided that the Gram Panchayat and/or the Committees shall meet for the purposes of these Bye-laws at least once every three months in a year.
- 4.4 **Panchayat Development Officer:** The Panchayat Development Officer shall be responsible for the following functions and responsibilities related to Solid Waste management:
- (i) Assist the Gram Panchayat and Village Water and Sanitation Committee and/or Village Health, Sanitation and

Nutrition Committee in preparation of the sanitation plan as a part of the Gram Panchayat Development Plan, detailed project report, micro-plans, annual budgets for sanitation and waste management systems, and computation and finalisation of the SWM User Fees.

- (ii) Provide information to the Gram Panchayat members about various technologies, schemes etc. relating to Solid Waste management.
- (iii) Supervise implementation, operation and maintenance of Solid Waste management systems such as Door to Door Collection, Street Sweeping, construction of compost pits, bio-methanation plants and DWCC, Sanitary Landfills (if applicable) and operations of such processing and disposal facilities.
- (iv) Assist the Gram Panchayat in procuring suitable vehicles and equipment for Solid Waste management.
- (v) Menstrual hygiene management activities, including awareness generation among the general public, with particular focus on women and adolescent girls, and safe disposal of Sanitary Waste.
- (vi) Daily financial management and maintenance of records of the Solid Waste management systems, including review of accounts, resources, assets and systems.
- (vii) Assisting the Gram Panchayat and the Committees in preparing the reports, forms and other documents evidencing status and progress of Solid Waste management systems.
- (viii) Any other role and/or responsibility as may be directed as per applicable law by the Gram Panchayat, district and state authorities.

Non-governmental and community based organisations:

The Gram Panchayat may entrust the following roles relating to Solid Waste Management to non-governmental and / or community based organisations and self-help groups:

- (i) Support the Gram Panchayat in planning, dissemination and execution of various awareness, information, educational and behavioural change activities involving the entire community.
- (ii) Involvement in training and capacity building of the Gram Panchayat officials, Sanitation Motivators, Swachatha Worker, Agencies and other Persons involved in Solid Waste management.
- (iii) Assist the Gram Panchayat in implementation of sanitation plan and other waste management programs.
- (iv) Carry out surveys and monitor the impact of the sanitation and waste management programs and assist in the social and other independent audits of Solid Waste management systems.
- (v) Door to door collection, transportation and processing of Solid Waste generated in the Gram Panchayat as may be entrusted by the Gram Panchayat.
- (vi) Any other role as may be directed by the Gram Panchayat, district and state authorities, in accordance with applicable law.

4.6 Sanitation Motivators:



The Sanitation Motivators shall have the following functions, as may be entrusted by the Gram Panchayat:

- (i) Assist Gram Panchayat in preparation of Gram Panchayat sanitation plan, detailed project report, Micro plans and other waste management plans.
- (ii) Facilitate strengthening and capacity building of members of Committees, Swachatha Worker, Agencies and other Persons involved in Solid Waste management activities.
- (iii) Assist in planning, dissemination and execution of various awareness, information, educational and communication activities and facilitate sustained behaviour change.
- (iv) Evaluate the quality of the infrastructure being built for Solid Waste management, equipment and other assets procured in this regard.
- (v) Raise awareness about the proper operations and maintenance of the assets created for safe sanitation and Solid Waste management.
- (vi) Ensure sustainability of the Solid Waste management program by assisting the PDO with monitoring activities and maintenance of records of data at the Gram Panchayat level.
- (vii) Menstrual hygiene management activities including awareness generation and safe disposal of Sanitary Waste.
- (viii) Carry out surveys and monitor the impact of the sanitation and waste management programs and assist in the social and other independent audits of Solid Waste management systems.
- (ix) Any other role as may be directed by the Gram Panchayat, district and state authorities, in accordance with applicable laws.

CHAPTER - IV - SEGREGATION OF SOLID WASTE

Segregation of Solid Waste into different categories at source by the Waste Generator



- 5.1. Every Waste Generator, including Bulk Waste Generators, shall be required to segregate Solid Waste at source of generation into the following categories:
- (i) Bio-degradable Waste, also referred to as Wet Waste,
 - (ii) Non-biodegradable Waste, also referred to as Dry Waste,
 - (iii) Domestic Hazardous Waste, including Sanitary Waste,
- 5.2. The Sanitary Waste shall be securely wrapped in pouches provided by the manufacturers or brand owners or in appropriate wrapping which shall clearly indicate its nature and all Sanitary Waste shall be stored with the Domestic Hazardous Waste.
- 5.3. The Bio-degradable Waste, Non-biodegradable Waste and Domestic Hazardous Waste (along with Sanitary Waste) shall each be stored separately, without mixing them, in specified Receptacles for handing over or delivery to Gram Panchayat and/or Agency, as the case may be.
- 5.4. The colour of the Receptacles where the following segregated Solid Waste shall be stored before eventual handover to Gram Panchayat and/or Agency, as the case may be, shall be:
- (i) Green for Bio-degradable Waste, in the event the Gram Panchayat is carrying out Door to Door Collection of Bio-degradable Waste;
 - (ii) Blue for Non-biodegradable Waste or high density polyethylene (HDPE) bag, and

- (iii) Res for Domestic Hazardous Waste including Sanitary Waste.

5.5. Duty of specific categories of Waste Generators:

- (i) The Waste Generators such as street vendors shall segregate the Solid Waste generated during the course of its activity such as food waste, disposable plates, cups, cans, wrappers, coconut shells, leftover food, vegetables, fruits and similar items in accordance with the categories set out in Bye-law 5.1.
- (ii) Every occupier of any Premises who generates poultry, fish and slaughter waste as a result of any commercial activity, shall store such waste separately in a closed and hygienic condition and such waste shall not be mixed with any other category of Solid Waste.

CHAPTER - V - COLLECTION AND TRANSPORTATION OF SOLID WASTE

6. Door to Door Collection of segregated Solid Waste



- 6.1. The Gram Panchayat shall be responsible for Door to Door Collection of segregated Solid Waste at such times and in such manner as shall be notified by the Gram Panchayat in accordance with these Bye-laws.
- 6.2. The Gram Panchayat shall notify the area-wise time slots including the relevant day of the week, the frequency and the manner (through pushcarts or automated vehicles) of Door to Door Collection of different categories of Solid Waste in accordance with Bye-law 6.3, provided that the Gram Panchayat shall collect Non-biodegradable Waste at least once a week subject to the payment of SWM User Fee under Chapter X of the Bye-laws. Such notifications shall be published in the Gram Panchayat office and other prominent and visible areas of the Gram Panchayat.
- 6.3. The Gram Panchayat shall take into account the following factors while determining the frequency and manner of Door to Door Collection as per Bye-Law 6.2:
 - (i) density of population,
 - (ii) characteristics of the Solid Waste,
 - (iii) width of the streets, and
 - (iv) manpower and funds available with the Gram Panchayat.
- 6.4. The Waste Generators may handle the Bio-degradable Waste onsite or offsite by feeding it to livestock, through home

composting, bio-methanation or any other forms of treatment as permitted under applicable laws or guidelines, instead of handing over such waste for Door-to-Door Collection.

- 6.5. In addition to Door to Door Collection of Solid Waste under Bye-law 6.1, the Gram Panchayat and/or Agency, as the case may be, shall also collect Solid Waste from public places such as roads, public streets, common areas, playgrounds, parks, markets, gardens, tourist areas and similar areas at specified times and days.
- 6.6. The Gram Panchayat may designate an Agency in accordance with applicable laws to implement Door to Door Collection of all and/or certain categories of segregated Solid Waste, from Waste Generators in all villages of the Gram Panchayat.
- 6.7. The Gram Panchayat shall designate a specific days in a week and vehicles for collection of slaughterhouse waste and the relevant occupier/owner shall ensure that such waste is ready for collection on the designated days and times.
- 6.8. The Gram Panchayat shall assess the number of vehicles, push-carts and **Swachatha**/Sanitary Workers that will be allotted to each village for efficient collection of Solid Waste and to ensure that there is no inter-mixing of segregated Solid Waste.
- 6.9. The ratio of number of Swachatha/Sanitary Workers and vehicles with respect to number of Waste Generators shall be computed in accordance with the methodology as may be specified by the Karnataka Rural Drinking Water & Sanitation Department from time to time.
- 6.10. It shall be the duty of every Waste Generator to assist the Gram Panchayat and/or Agency in collection of the segregated Solid Waste by ensuring the Solid Waste is segregated and deposited in correct Receptacles and is ready for collection at the appointed time in accordance with the time-slots published by the Gram Panchayat or Agency.
- 6.11. The Door to Door Collection of segregated Solid Waste shall be implemented in the following manner:
 - (i) The Gram Panchayat or Agency shall publicly announce its arrival at the specified area for Door to Door Collection.
 - (ii) The Waste Generator shall handover the Solid Waste to the Gram Panchayat and/or Agency upon its arrival at the specified area.
 - (iii) In the event the Waste Generator is not available to handover the Solid Waste, such Waste Generator shall ensure that the Solid Waste is stored in a segregated manner at a prominently visible, convenient and accessible place for the Gram Panchayat and/or Agency to collect the Solid Waste. The segregated Solid Waste should not be left in the open without an enclosure where they are susceptible to be wind, water or animals.
- 6.12. There shall be no mixing of segregated Solid Waste during the collection and transportation of the Solid Waste.
- 6.13. The collected Bio-degradable Waste will be transported to composting units, bio-methanation plants or any other processing unit which complies with SWM Rules and/or applicable CPCB and KSPCB guidelines.
- 6.14. The Non-biodegradable Waste and/or Domestic Hazardous Waste (including Sanitary Waste) will be transported to the Dry Waste Collection Centre of the Gram Panchayat or any other authorised site designated by the Gram Panchayat.
- 6.15. The different streams of Solid Waste shall be processed in accordance with provisions contained in Chapter VI of the Bye-laws.

7. Point to Point Collection of Solid Waste



- 7.1. Until Door to Door Collection is implemented by the Gram Panchayat, the Gram Panchayat may, through notification, designate certain areas and collection points within its jurisdiction for Point to Point Collection, where segregated Solid Waste shall be deposited by Waste Generators.

8. Vehicles for transportation of Solid Waste:



- 8.1. The Gram Panchayat will deploy suitable vehicles for the collection of Solid Waste including auto-tippers or vehicles having separate compartments for carrying Bio-degradable, Non-biodegradable Waste and Domestic Hazardous Waste.
- 8.2. In the event it is not feasible to have three compartments for different streams of Solid Waste, separate days shall be designated for collection of Bio-degradable, Non-biodegradable Waste and Domestic Hazardous Waste to ensure that there is no mixing of different categories of Solid Waste.
- 8.3. The vehicles used for transportation of Solid Waste shall be covered in such a manner that the collected waste is not
- exposed to the open environment, or
 - visible to the public and
 - scattered on the road and/or open areas during transportation.

CHAPTER - VI – PROCESSING AND DISPOSAL OF SOLID WASTE

9. Facilities to be provided by the Gram Panchayat:

- 9.1. The Gram Panchayat shall, either individually or as a Cluster, comply with the following provisions with respect to processing and disposal of Solid Waste:
- The Gram Panchayat shall identify suitable site(s) for storage and processing of different streams of Solid Waste within one year from the date of coming into force of these Bye-laws.

- (ii) The Gram Panchayat shall construct, operate and maintain solid waste processing facilities and associated infrastructure on its own or through an Agency.
- (iii) The Gram Panchayat shall utilise suitable technology as per the guidelines issued by Karnataka Rural Drinking Water & Sanitation Department, KSPCB, CPCB and/or any other appropriate authority, in order to minimise the use of Sanitary Landfills.
- (iv) The facilities shall have adequate utilities to ensure clean & hygienic conditions including provision of water and toilets, for the avoidance of adverse health and environmental conditions.
- (v) All processing facilities shall comply with any additional standards, specifications and guidelines notified by KSPCB, CPCB, Karnataka Rural Drinking Water & Sanitation Department and/or relevant authority or prescribed by any law for the time being in force.

9.2. Dry Waste Collection Centres:

- (i) The Gram Panchayat shall provide for Dry Waste Collection Centre(s) for collection and sorting of Non-biodegradable Waste, either by itself or through an Agency, which shall be operational within one year of notification of these Bye-Laws.
- (ii) The Gram Panchayat may identify suitable existing buildings or sheds for use as Dry Waste Collection Centres.
- (iii) Recyclable Non-Biodegradable Waste from the Dry Waste Collection Centres shall be sold to Waste Traders and/or recyclers authorised by competent authorities.
- (iv) Non-Recyclable Non-Biodegradable Waste and Domestic Hazardous Waste from the Dry Waste Collection Centres shall be aggregated at the hobli or taluka level for appropriate processing and disposal such as waste-to-energy technologies, co-processing at cement plants, disposal at Sanitary Landfills and any other processing/disposal method prescribed by KSPCB and/or CPCB.



9.3 Bio-degradable Waste processing unit:



- (i) The Gram Panchayat will provide, by itself or through an Agency, processing units for composting, vermi-composting, microbial composting, aerobic composting, anaerobic digestion, bio-methanation or any other KSPCB and/or CPCB approved process for stabilisation of Bio-degradable Waste.
- (ii) The processing units shall be operational in each Gram Panchayat within one year of notification of these Bye-Laws.

9.4. Disposal of Sanitary Waste:

- (i) The Gram Panchayat shall ensure that Sanitary Waste, is processed along with Bio-medical Waste, at the nearest common biomedical treatment facility and/or incinerators.
- (ii) Until the common biomedical treatment facility and/or incinerators are not available, the Gram Panchayat shall dispose the Sanitary Waste in safe local incinerators and/or by any other appropriate method that complies with the relevant standards issued by the CPCB, KSPCB and/or any other appropriate authority.

9.5. Disposal of slaughterhouse waste:

Waste generated from slaughterhouses, poultry, meat and fish markets/commercial shops will be processed or disposed through controlled incineration or deep burial where stipulated scientific standards are followed and/or any other method approved by CPCB, KSPCB and/or any other appropriate authority.

9.6. Disposal at Sanitary Landfills:

- (i) The Gram Panchayat shall, on its own or through an Agency, construct, operate and maintain Sanitary Landfills and associated infrastructure in accordance with standards prescribed under SWM Rules, for disposal of residual waste (i.e. Solid Waste which cannot be processed in accordance with Bye-laws 9.2 to 5) and inerts.
- (ii) The Gram Panchayat and/or Cluster of Gram Panchayats shall establish, operate and maintain Sanitary Landfills in accordance with SWM Rules, guidelines issued by CPCB, KSPCB, Karnataka Rural Drinking Water & Sanitation Department and/or any other competent authority after carrying out appropriate pre feasibility studies and other required tests/pilot projects.
- (iii) The residual Solid Waste and inerts which cannot be processed by any of the methods set in Bye-laws 9.2 to 5 above shall be disposed in Sanitary Landfills in a scientific manner by the Gram Panchayat.
- (iv) The Gram Panchayat shall ensure that the Solid Waste disposed in Sanitary Landfills does not exceed 15% of the Solid Waste generated within the territorial jurisdiction of the Gram Panchayat.

9.7. Waste management in tourist spots:



The Gram Panchayat will have the following responsibilities when it comes to management of Solid Waste in the tourist areas:

- (i) The Gram Panchayat will ensure that tourists comply with provisions of Bye-law 12 relating to prohibition of littering and they shall be directed to deposit Solid Waste in the Receptacles that shall be placed by the Gram Panchayat at all tourist destinations.
- (ii) Gram panchayat shall arrange to convey the provisions of waste management under these Bye-laws and generally provide information regarding Solid Waste management to all tourists visiting these areas at the entry point or in any other manner deemed fit by the Gram Panchayat.
- (iii) Gram panchayat may levy waste management charges from the tourist at the entry point or in any other manner to make the waste management services in such tourist areas sustainable.

9.8. Prohibition on Open dumping and burning of Solid Waste:

Open dumping of Solid Waste and disposal by burning of any type of Solid Waste is prohibited. The Gram Panchayat shall handle instances of open dumping or burning of Solid Waste in the following manner:

- (i) The Gram Panchayat shall serve a notice to the relevant Waste Generator and/or occupier of the Premises, as the case may be, requiring such Person to clear any waste on such premises in a manner and within a time specified in such notice.
- (ii) If the Person on whom the notice has been served fails to comply with the requirements imposed by the notice, the Gram Panchayat shall take all or any of the following actions:
 - (a) enter the premises and clear the waste and recover from the Person the expenditure incurred in having done so; or
 - (b) impose penalties for dumping of Solid Waste in accordance with these Bye-laws.

9.9. Occupational safety:



The Gram Panchayat shall ensure occupational safety of its own staff including Swachatha/Sanitary Workers and staff of the Agency involved in Solid Waste management activities by providing appropriate and adequate personal protective equipment including uniforms, hand gloves, raincoats, appropriate foot wear and masks to all workers handling Solid Waste and ensuring that these are used by the workforce.

- 9.10. Compliance with extended producer responsibility:** All manufacturers, producers and brandowners who introduce products in the Gram Panchayat that generate plastic waste shall directly or indirectly through government, comply with all its extended producer responsibility obligations as set out in Plastic Waste Management Rules, 2016.

CHAPTER - VII -

IDENTIFICATION OF BULK WASTE GENERATORS AND THEIR OBLIGATIONS

10. Identification of a Bulk Waste Generator

10.1. Public notice and verification:

- (i) Within thirty days of these Bye-laws coming into force, the Gram Panchayat shall issue a public notice in the format set out in **Schedule II**, informing the public about the provisions relating to Solid Waste management which are applicable to Bulk Waste Generators.
- (ii) The Gram Panchayat shall also carry out field surveys as per its own records to identify individual Bulk Waste Generators and issue notices to them as per the format set out in **Schedule III**, with instructions or for complying with the applicable provisions of these Bye-laws.

10.2. Responsibilities of Bulk Waste Generators: All Bulk Waste Generators shall:

- (i) to the extent possible, manage the Bio-degradable Waste in their Premises by themselves and handle Non-biodegradable Waste through their own arrangement in accordance with these Bye-laws;
- (ii) directly deposit their segregated Solid Waste to Bio-degradable Waste processing facilities and Dry Waste Collection Centres upon payment of processing fees component of the SWM User Fees to Gram Panchayat; and/or
- (iii) avail the services of Gram Panchayat for the collection, transport and processing of Solid Waste generated as a part of the Door to Door Collection system upon payment of SWM User Fees set out in **Schedule V**.

- 10.3. The Bulk Waste Generators who do not use the services of the Gram Panchayat under these Bye-laws shall be required to submit an annual return on the amount of Solid Waste generated at its Premises which is collected, processed and disposed in the form set out in **Schedule IV**.

CHAPTER VIII – STREET SWEEPING AND PROHIBITION OF LITTERING

11. Regular cleaning and Street Sweeping:

11.1. The Gram Panchayat shall:

- (i) Within its territory, be responsible for the cleaning of all public places including markets, parks, public streets and gardens, as well as ensuring regular Street Sweeping through Swachatha/Sanitary Workers.
- (ii) By notification, determine the frequency of Street Sweeping, the location of community bins and related activities, having regard to vehicular and pedestrian traffic, density of population, extent of commercial activity, labour welfare/safety and local situation in any public street or public areas, as stipulated by the normative standards which may be notified by the Karnataka Rural Drinking Water & Sanitation Department, from time to time.

- 11.2. The Gram Panchayat shall provide adequate and appropriate cleaning tools and equipment such as brooms and collection plates among others to the Swachatha/Sanitary Workers
- 11.3. The Solid Waste collected from these street sweepings shall not be mixed with the segregated waste collected from the Waste Generators through Door to Door Collection. The Solid Waste collected from these Street Sweepings shall be segregated if required and the Gram Panchayat shall provide for transportation of:
- (i) Bio-degradable Waste to a convenient Bio-degradable processing facility; and
 - (ii) Non-Biodegradable Waste to DWCC and/or any other processing facility as may be notified by the Gram Panchayat from time to time.
 - (iii) Inert and residual waste to Sanitary Landfill, if available within the Gram Panchayat and/or Cluster of Gram Panchayats.

12. Prohibition of littering and provision of community bins



- 12.1. No person shall throw, deposit or cause to be thrown or deposited any Solid Waste in any public place including agricultural fields, playgrounds, common areas, streets, market areas, drains and sewage system, any type of water body (natural or manmade) or open areas, except in the manner provided for in these Bye-laws, or any other applicable law.

12.2. Community bins in public places:

- (i) The Gram Panchayat shall provide and maintain suitable community bins/Receptacles in public places such as roads, public streets, playgrounds, gardens, parks, tourist areas and similar places, through itself or through an Agency where litter can be deposited by the public.
- (ii) The Gram Panchayat and/or the Agency shall ensure that the community bins/ Receptacles are not overflowing or exposed to the open environment and take steps to prevent their scattering by stray animals or birds.
- (iii) There shall be separate community bins/ Receptacles for Bio-degradable Waste and Non Bio-degradable Waste.

CHAPTER - IX – EVENTS AND PUBLIC GATHERINGS

13. Public gatherings and events in public places:

13.1 Obligations of organizers:

- (i) The organiser of events or gatherings of more than one hundred Persons at any licensed or unlicensed place and events in public places for any reason (including for processions, exhibitions, circus, fairs, political rallies, commercial, religious, socio-cultural events or demonstrations.) shall ensure that Solid Waste is segregated, collected and processed in accordance with these Bye-laws no later than 24 hours after the completion of the event.
- (ii) In case the organizer of such event wish to avail the services of Gram Panchayat for the cleaning, collection and transport of Solid Waste generated as a result of that event, they shall apply to the concerned authority at the Gram Panchayat and pay the necessary charges in advance as may be fixed for this purpose by Gram Panchayat.

13.2. Refundable Cleanliness Deposit:

- (i) The organiser of the public gatherings and events, as set out in Bye-law 13.1, shall, prior to the gathering or event, deposit such amount with the Gram Panchayat, as may be determined by the Gram Panchayat having regard to the size of the event and the amount of Solid Waste likely to be generated.
- (ii) Any amount deposited with the Gram Panchayat under this Bye-law shall be refundable on the completion of the event, after the Gram Panchayat has determined that the Solid Waste generated as a result of the event has been segregated, collected and transported to designated sites in accordance with these Bye-laws.
- (iii) In the event the public space is not restored to a clean state within twenty four hours of the completion of the event, the cleanliness deposit paid to the Gram Panchayat shall be forfeited and the organiser shall be penalized as per these Bye-laws.

CHAPTER - X - USER FEES FOR MANAGEMENT OF SOLID WASTE

14. Provisions with respect to user fees payable to Gram Panchayat

- 14.1. The Gram Panchayat shall operate and maintain the Solid Waste management system within its territory through its own funds, including SWM User Fees generated by the Gram Panchayat, within 2 (two) years of these Bye-laws being adopted by the Gram Panchayat.
- 14.2. The SWM User Fee shall be payable by the Waste Generator to Gram Panchayat and/or the Agency, as the case may be, for services of collection, transportation, processing and disposal of Solid Waste.
- 14.3. The SWM User Fee shall be payable as per the rate specified under **Schedule V** of these Bye-laws. The SWM User Fees shall be proportionately reduced in the event the Waste Generator is managing its Bio-degradable Waste, through community initiatives and/or any other manner in accordance with applicable law, and is not handing over such waste to the Gram Panchayat for processing.
- 14.4. The SWM User Fee mentioned in **Schedule V** shall stand automatically increased by 15% every three years (to the nearest multiple of Rs. 10), with effect from the first day of April of each year. These rates shall be advertised in the Gram Panchayat office and other visible public areas within the jurisdiction of the Gram Panchayat.

14.5. **Collection of SWM User Fee:**

- (i) The SWM User Fee shall be collected by the Gram Panchayat in person and/or through any other method and on such days as may be specified by the Gram Panchayat, preferably in first week of each month.
- (ii) The SWM User Fee may also be collected by the Gram Panchayat by charging the amount through property tax or license fees under provisions of the Act.
- (iii) The Gram Panchayat may evolve additional mechanisms for billing/collection/ recovery of SWM User Fees, from time to time and these shall be notified through general or special order/notification.

14.6. The Gram Panchayat by itself or through an Agency shall prepare the database of all the Waste Generators for the purpose of levying SWM User Fee and shall regularly update such database.

14.7. A surcharge at the rate of 10% of the SWM User Fee per month shall be charged if the fees are not paid within 30 (thirty) days of raising the demand for the amount by the Gram Panchayat.

14.8. In case of default of payment of SWM User Fee for longer than three months, the Gram Panchayat or any other competent authority may recover the SWM User Fee from the defaulter as taxes under the provisions of the Act.

14.9. Notwithstanding anything contained in these Bye-laws, the Gram Panchayat may stop providing Solid Waste management services till such SWM User Fees are paid by the defaulter.

14.10. All amounts collected as SWM User Fee by the Gram Panchayat shall be used towards the Gram Panchayat's operation and maintenance costs for providing Solid Waste management services under these Bye-laws, salaries of personnel and other waste management related activities as may be considered appropriate by the Gram Panchayat from time to time.

CHAPTER - XI – MONITORING OF SOLID WASTE MANAGEMENT SYSTEMS

15. Provisions with respect to solid waste management systems:

15.1. Periodic reporting: In addition to the responsibilities as may be specified in these Bye-laws, the Gram Panchayat shall periodically report the status, progress, operations of Solid Waste management systems within its territorial limits to the Executive Officer, Chief Executive Officer and state authorities in such formats and in accordance with the directions as may be issued by the Karnataka Rural Drinking Water & Sanitation Department.

15.2. Audits: Independent third party audits including social audits of the Gram Panchayat sanitation plan and Solid Waste management systems in the Gram Panchayat will be carried out in accordance with the guidelines issued by the Karnataka Rural Drinking Water & Sanitation Department.

15.3. Review of Agencies:

- (i) The Gram Panchayat and/or the Government shall regularly review the facilities and operations of the Agencies to ensure that they are in compliance with the provisions of SWM Rules, these Bye-laws and other applicable regulations.
- (ii) In the event of any non-compliance, the Gram Panchayat and/or the Government may take action against the defaulting Agencies including notice of remedial action, cancellation for Solid Waste management services, blacklisting, imposition of fines and penalties as set out in these Bye-laws.

15.4. Regular checks and review of Detailed Project Report and Plan:

- (i) The Panchayat Development Officer, Gram Panchayat members and other officers authorised by the Gram Panchayat shall conduct regular checks in various parts of the villages and other places of collection, transportation, processing and disposal of Solid Waste within its territory to supervise compliance of various provisions of these Bye-laws.
- (ii) Such official(s) shall have right to enter, at all reasonable times, with such assistance as he considers necessary, any place for the purpose of
 - (a) performing any of the functions entrusted to him by the Gram Panchayat under these Bye-laws,
 - (b) determining compliance of the provisions of these Bye-laws.

15.5. Designated officers: The Panchayat Development Officer and other authorised officials shall have the following responsibilities:

- a. addressing grievances of the Waste Generators and suggestions for improvements in the implementation of the Bye-laws;
- b. levying fines and penalties;
- c. collecting SWM User Fees; and
- d. implementing such responsibilities of the Gram Panchayat specified under these Bye-laws, as may be entrusted or delegated by the Gram Panchayat in accordance with these Bye-laws, Act and any other applicable law.

CHAPTER - XII – PENALTIES AND GRIEVANCE REDRESSAL

16. Penalties:

- 16.1 Whoever contravenes or fails to comply with any of the provisions of these Bye-laws shall be punished with a fine levied by the Gram Panchayat, as specified in **Schedule VI**.
- 16.2 In case of second contravention or non-compliance, the Gram Panchayat shall have the power to levy a fine which shall be twice the amount set out against the offence in **Schedule VI**.
- 16.3. In case of third contravention or non-compliance, the Gram Panchayat shall have the power to levy a fine which shall be thrice the amount set out against the offence in **Schedule VI**.
- 16.4. In the event of any contravention after the third contravention or non-compliance, the Gram Panchayat shall have power to cancel the relevant business license that is attached to the Waste Generator (if any), recover the penalty amounts as per the different modes set out in the Act and/or take any other appropriate action as may be notified from time to time.
- 16.5. The fine or penalty mentioned in **Schedule VI** shall stand automatically increased by 10% per year (to the nearest multiple of Rs. 10) with effect from April 1 of each successive year.
- 16.6. The Gram Panchayat may, in accordance with applicable law, alter or amend or vary any of the entries as mentioned in **Schedule VI** of these Bye-laws which shall in any event not be less than the amounts set out in **Schedule VI**.

- 16.7. The Gram Panchayat shall take appropriate disciplinary action against the employees of Gram Panchayat or the Agency or Swachatha/Sanitary Workers, if any of them mix segregated Solid Waste at any point of collection or transportation, fail to pick up Solid Waste during the specified time-slots, or otherwise, violate the provisions of these Bye-laws.
- 16.8. In the event an Agency contravenes or fails to comply with any of the provisions of these Bye-laws, the Gram Panchayat shall have the power to take any one or more of the following actions:
- (i) suspension or revocation of any license given to the agency to operate any Solid Waste collection, transportation or processing facility under these Bye-laws and/or applicable regulations.
 - (ii) termination of Solid Waste management services being provided by the agency for the Gram Panchayat under the relevant contract, and/or
 - (iii) any other permissible remedial or penal action authorized under the act and/or other applicable laws.
- 16.9. The Gram Panchayat may initiate appropriate proceedings for violation of any provisions of these Bye-laws under any other law in addition to any action under these Bye-laws, including the Act, the Environment (Protection) Act, 1986, the Indian Penal code, 1860, the Water (Prevention and Control of Pollution) Act 1974, the Air (Prevention and Control of Pollution) Act 1981 and/or any other applicable regulations.
- 16.10. All amounts collected as penalties shall be used towards the Gram Panchayat's operation and maintenance costs for providing Solid Waste management services under these Bye-laws, salaries of personnel, incentives and other waste management activities as may be considered appropriate by the Gram Panchayat from time to time.

17. Grievance redressal:

- 17.1 The Gram Panchayat shall develop public grievance redressal system(s) for registering complaints regarding non-collection of Solid Waste or violations of these Bye-laws among others. These systems may include a complaint centre in each village and/or Gram Panchayat office, mobile application and/or any other mechanism which the Gram Panchayat may consider appropriate keeping in mind the local conditions of the Gram Panchayat. The grievance may be submitted in person by any citizen, through telephone, email/website, post, on the mobile application and/or any other appropriate method as determined by the Gram Panchayat.
- 17.2. The Gram Panchayat shall ensure that each grievance is redressed in a timely and efficient manner and in no event later than 15 (fifteen) days from the date of submission of the complaint. The Gram Panchayat shall consider the type of grievance, environmental and/or health related consequences, inconvenience cause to public, associated financial costs and other relevant considerations when determining the appropriate remedial action for the grievance.
- 18. Accident Reporting:** In case of an accident at any Solid Waste processing or disposal facility or landfill site, the Person - in-charge of the facility shall report to the Gram Panchayat in **Schedule VII** and the Gram Panchayat shall review and issue instructions if any, to the in-charge of the facility.

CHAPTER - XIII – OTHER RESPONSIBILITIES AND DUTIES OF THE GRAM PANCHAYAT

19. In addition to the responsibilities and duties set out in other Chapters of these Bye-laws, the Gram Panchayat shall also have the following additional duties:

19.1. Publicity and citizen information services:

- (i) The Gram Panchayat shall publicise the provisions of the Bye-laws through interpersonal communication by Sanitation Motivators, community based organisations, and through signs, leaflets, announcements on radio, newspapers and any other appropriate means, so that all citizens are made aware of the Gram Panchayat's duties and their own duties in relation to segregation, littering, penalties and fines.
- (ii) The Gram Panchayat shall provide information about segregation, composting, bio-gas generation, recycling and menstrual hygiene management at community level by conducting training classes, seminars and workshops.
- (iii) The Gram Panchayat may, by itself or through experts in the field undertake awareness and outreach programmes about management of Solid Waste, reduction and minimising of Solid Waste, grievance redressal mechanisms under the Bye-Laws etc.
- (iv) The Gram Panchayat shall make efforts to minimise and reduce the generation of Solid Waste by publicising the ban of plastic bags and other materials issued by the state, discouraging the production, sale and consumption of other single use disposable products through awareness programs and provision of incentives.

19.2. Transparency and public accessibility: To ensure greater transparency and public accessibility, the Gram Panchayat shall make available the following information, data and reports in relation to the activities under the Bye-laws in the offices of the Gram Panchayat during its working hours:

- (i) Name and contacts of the officers who shall be responsible for implementing the responsibilities of Gram Panchayat specified under these Bye-laws.
- (ii) Annual data about the quantity of Solid Waste collected and processed
- (iii) Statistics of complaints and actions taken by the Gram Panchayat to address the complaints.
- (iv) Details of SWM User Fee, penalties collected by and on behalf of the Gram Panchayat and the manner in which these amounts have been utilised on a monthly basis.

19.3. Creating Incentives:

- (i) The Gram Panchayat may create incentive systems for adoption of decentralised processing of Bio-degradable Waste such as bio-methanation and composting such as through waivers of SWM User Fees, awarding and recognising the relevant Waste Generator by giving certificates and publishing their names on Gram Panchayat's office.
- (ii) The Gram Panchayat may purchase any extra compost, if available, from the Waste Generator, at a specified price as notified from time to time by the Gram Panchayat for its own use or for sale at remunerative prices.

CHAPTER - XIII – MISCELLANEOUS

- 20. Co-ordination with government bodies:** The Gram Panchayat shall co-ordinate with other government agencies and authorities, to ensure compliance of these Bye-laws within areas under the jurisdiction or control of such bodies.
- 21. Review of implementation:** The Gram Panchayat shall review the implementation of these Bye-laws at least twice a year, and shall take appropriate remedial steps to ensure the effective implementation of and execution of the benchmarks under the Solid Waste Management plan.
- 22. Amendments:** Where it is expedient to do so, the Gram Panchayat may, by following the relevant procedure(s) in the Act, add to, or amend the Bye-laws with the prior permission of the Government.
- 23. Repeal and saving of Orders**
- 23.1. The coming into effect of these Bye-laws shall not affect any actions taken according to the applicable rules/regulations, unless such actions violate these Bye-laws.
- 24. Interpretation:** Where any discrepancy, in the interpretation of any clause or terms of these bye-laws arises, the interpretation as per this English version shall be final and shall supersede the Kannada version.

SCHEDULE - I

ILLUSTRATIVE LIST OF BIO- DEGRADABLE WASTE, RECYCLABLE NON BIO- DEGRADABLE WASTE AND DOMESTIC HAZARDOUS WASTE

Part - A – Illustrative list of Bio-degradable Waste:

- § Kitchen waste including tea leaves, egg shells, fruit and vegetable peels, meat, bones leftover and/or stale food
- § Organic market waste such as fruit and vegetable peels, rotten and/or spoilt vegetables and fruits
- § Garden and leaf litter, including flowers
- § Coconut shells
- § Wood/ leaf ashes

Part - B – Illustrative list of Recyclable Non Bio-degradable Waste*:

- § Newspapers
- § Paper, books and magazines
- § Glass
- § Metal objects and wire

- § Plastic
- § Aluminum cans
- § Rexene
- § Rubber
- § Wood/furniture
- § Packaging
- § Fabrics
- § Styrofoam
- § Thermocol
- § Tetrapak

**The above are sample lists and will be customized (i.e. items to be added or removed) by each Gram Panchayat based on the identified processing and recycling destinations for each item.*

Part - C – Illustrative list of Domestic Hazardous Waste:

- § Aerosol cans
- § Batteries
- § Bleaches and household kitchen and drain cleaning agents
- § Car batteries, oil filters and car care products and consumables
- § Oils, Chemicals and solvents and their empty containers
- § Cosmetic items, chemical-based Insecticides and their empty containers
- § Medicines including expired medicines
- § Paints, oils, lubricants, glues, thinners, and their empty containers
- § Pesticides and herbicides and their empty containers
- § Photographic chemicals
- § Soft foam packaging from new equipment
- § Thermometers and mercury-containing products

Authorised Signatory on behalf of the Gram Panchayat

SCHEDULE - II

PUBLIC NOTICE NOTIFYING BULK WASTE GENERATOR

The Gram Panchayat hereby directs all Bulk Waste Generators of Solid Waste defined as generating 50 kg or more of Solid Waste (from all waste streams) per day to implement the provisions of the Bye-laws thereof notified by the Gram Panchayat not later than 60 days(by date.....) from the date of this notice, including segregation of Solid Waste into 3 (three) categories/streams (Bio-degradable, Non-Biodegradable and Domestic Hazardous Waste (including Sanitary Waste) at source and onsite processing of Bio-degradable Waste and other obligations relating different streams of the Solid Waste. Detailed instructions are available in the Bye-laws available at website at _____)

All Waste Generators falling within the definition of Bulk Waste Generators will be classified as such unless they submit within the notice period, a self- declaration of generating less than 50 kg of waste from their premises. Such self-declaration will be subject to verification and applicable penal costs if found untrue. Such self-declarations shall be submitted to the Gram Panchayat within 20 days (by date.....) of this notice for enabling verification. Self-declarations sent/submitted after the due date will be summarily rejected.

Any violation of these Bye-laws for Bulk Waste Generators after 60 days of this notice (after date) will attract applicable penal charges/fines as stated in the Bye-laws of the Gram Panchayat.

The declaration if found false at a later date will attract penalties as per the Bye-laws of the Gram Panchayat.

Place:

Authorised Signatory on behalf of the Gram Panchayat

SCHEDULE - III

INDIVIDUAL NOTICE FORMAT

To <Insert name of the proposed Bulk Waste Generator>

Subject: Categorization as Bulk Waste Generator

Considering the activities/ business carried out at your premises and the amount of Solid Waste generated by you, the Gram Panchayat has designated you as a **Bulk Waste Generator**. Accordingly, you are directed to comply with the provisions of the Bye-laws and implement segregation of waste at source, segregated storage within premises and onsite processing of Bio-degradable Waste within Premises and other obligations contained in the Bye-laws.

In case you claim not to be a Bulk Waste Generator, you are required to submit a self-declaration to that effect within 20 days otherwise it will be deemed that you have no objection to be classified as a Bulk Waste Generator. In case your self-declaration is found untrue, the same will be cancelled and penalties in accordance with the Bye-laws will be levied.

SCHEDULE - IV

FORM OF ANNUAL RETURN BY A BULK WASTE GENERATOR WHO DOES NOT USE THE SERVICES OF THE GRAM PANCHAYAT

Sl. No	Headings	Details
1.	Name and address of the Bulk Waste Generator Phone no:	
2.	Type of Bulk Waste Generator (commercial shop or establishment / marriage halls/ place of worship/educational institutions, school, college and research institutes/government offices, courts and other Premises occupied by the local, state or central governments/ any other type of Bulk Waste Generator)	
3.	Total quantity of Solid waste generated per year (i) Bio-degradable Waste (ii) Non-biodegradable Waste (iii) Domestic Hazardous Waste (including Sanitary Waste)	
4.	Whether Bio Degradable Waste is processed on site or through any other Person	Yes / No
5.	If Bio Degradable Waste is processed through any other Person, provide name, address and phone number of such Person	
6.	Details of technologies adopted for processing Bio Degradable Waste	
(i)	Composting	Qty. of compost produced per year
(ii)	Bio-methanation	Quantity of residual waste generated per year
(iii)	Any other manner	
7.	Quantity of the Non-Biodegradable Waste collected per year	
8.	Name, address and phone number of the Person handling and processing the Non-Biodegradable Waste	
9.	Manner / method / technology of handling and processing the Non-Biodegradable Waste (sale to Waste Traders / Recycling / Co-Processing in cement plants / any other manner) including names, addresses and phone numbers of such processing destinations	
10.	Quantity of the Domestic Hazardous Waste (including Sanitary Waste) collected per year	
11.	Name, address and phone number of the Person handling and processing the Domestic Hazardous Waste (including Sanitary Waste)	
12.	Manner/method/technology of handling and processing Domestic Hazardous Waste (including Sanitary Waste) including names, addresses and phone numbers of such processing destinations	

SCHEDULE - V

SWM USER FEES IN INDIAN RUPEES

PART - A : SWM USER FEES FOR WASTE GENERATORS EXCEPT BULK WASTE GENERATORS

S.no	Type of Waste Generator except Bulk Waste Generator	User Fee per month (in INR) from each Waste Generator except Bulk Waste Generator to be not less than:		
		Population of the Gram Panchayat > = 50 and < 500	Population of the Gram Panchayat > = 500 and < 2000	Population of the Gram Panchayat > 2000
19.	Houses up to 200 sq.ft. built-up area	20	20	20
20.	Houses over 200 sq.ft. built-up area up to 500 sq.ft	30	30	30
21.	Houses with over 500 sq.ft built up area	40	50	60
22.	Small commercial establishments, shops and eating places (such as hotels, dhabas, messes, tiffin rooms, canteens and sweet shops) having an area less than 200 sqft and generating less than 50 kgs of Solid Waste per day	60	75	90
23.	Large shops, commercial establishments and eating places (such as hotels, dhabas, messes, tiffin rooms, canteens and sweet shops) having an area more than 200 sqft and generating less than 50 kgs of Solid Waste per day	100	150	200
24.	Guesthouse, lodges, dharamshalas having an area less than 1000 sqft and generating less than 50 kgs of Solid Waste per day	150	200	250

25.	Hospitals, clinic, dispensary up to 20 beds)	110	130	150
26.	Hospitals, clinic, dispensary (more than 20 beds)	200	300	500
27.	Small and cottage industry units, factories and similar units (only non-hazardous) and generating less than 50 kgs of Solid Waste per day	200	250	300
28.	Vegetable and other markets generating less than 50 kgs of Solid Waste per day	150	200	250
29.	Institutions such as schools, colleges, places of worship tourist attractions etc. generating less than 50 kgs of Solid Waste per day.	200	250	300
30.	Cleanliness Refundable Deposit for events and gatherings in public places (one time)	3000	4500	6000
31.	User Fee for collection, transport & processing of Solid Waste generated for events & gatherings in public places (one time)	2500	4000	5000
32.	Other places / activity not marked as above	As decided by Gram Panchayat by general or special order / notification.	As decided by the Gram Panchayat by general or special order /notification.	As decided by Gram Panchayat by general or special order / notification.

31The SWM User Fees shall be reduced by 50% in the event the Bulk Waste Generator processes its entire Biodegradable Waste by itself and does not use the services of the gram panchayat.

The SWM User Fees shall be reduced by 40% in the event the Bulk Waste Generator deposits segregated Solid Waste at the Bio-degradable Waste processing unit and the DWCCs by itself and does not use the transportation provided by the gram panchayat.

PART - B: SWM USER FEES FOR BULK WASTE GENERATORS

S.no	Type of Bulk Waste Generator	User Fee per month (in INR) from each Bulk Waste Generator to be not less than:		
		Population of the Gram Panchayat > = 50 and < 500	Population of the Gram Panchayat > = 500 and < 2000	Population of the Gram Panchayat > 2000
1.	Vegetable and other markets	200	250	300
2.	Guesthouse, lodges & dharamshalas having an area more than 1,000 sqft	200	300	500
3.	Large shops & commercial establishments	300	500	700
4.	Institutions such as schools, colleges, places of worship tourist attractions etc.	300	500	700
5.	Halls for marriage and festivals with area over 1,000 sq.ft per event	1200	1500	2000
6.	Hospitals, clinic, dispensary (more than 20 beds)	300	500	700
7.	Cottage industry units, factories and similar units generating more than 50 kgs of Solid Waste per day.	300	500	700

SCHEDULE - VI

FINES AND PENALTIES

S.no	Non-compliance & type of Waste Generator	Fines (in INR) to be not less than:		
		Population of the Gram Panchayat > = 50 and < 500	Population of the Gram Panchayat > = 500 and < 2000	Population of the Gram Panchayat > 2000
7.	Littering, spitting, urinating in open areas	500	700	1000
8.	Failure to segregate Solid Waste by the Bulk Waste Generators.	2000	3000	5000
9.	Failure to segregate & / or handover Solid Waste by Waste Generators who are not Bulk Waste Generators.	500	700	1000
10.	Disposal of Solid Waste by burning, dumping and/or unauthorised burial by a Bulk Waste Generator	2000	3000	5000
11.	Disposal of Solid Waste by burning, dumping and/or unauthorised burial by any Waste Generator who is not a Bulk Waste Generator	500	700	1000
12.	False declaration by the Bulk Waste Generator	2000	3000	5000
13.	Other places / activity not marked as above	As decided by Gram Panchayat by general or special order / notification.	As decided by the Gram Panchayat by general or special order / notification.	As decided by the Gram Panchayat by general or special order / notification.

SCHEDULE - VII

ACCIDENT REPORTING

Sl. No	Particulars	
1.	Date and time of accident	
2.	Sequence of events leading to accident	
3.	The waste involved in the accident	
4.	Assessment of the effects of the accidents on human health and the environment	
5.	Emergency measures taken	
6.	Steps taken to alleviate the effects of accidents	
7.	Steps taken to prevent the recurrence of such an accident	

Date:.....

Signature:.....

Place:.....

Designation:.....

GLOSSARY OF TERMS

Biodegradable waste / Wet Waste / Organic Waste	Any organic material that can be degraded by micro-organisms into simpler stable compounds.
Bio-methanation	A process which entails enzymatic decomposition of the organic matter by microbial action to produce methane rich biogas;
Bulk waste generator	Waste generators such as buildings occupied by the Central government departments or undertakings, State government departments or undertakings, GP, public sector undertakings or private companies, marriage halls, hospitals, nursing homes, schools, colleges, universities, other educational institutions, hostels, hotels, commercial establishments, markets, places of worship etc. having an average solid waste generation rate exceeding 50kg per day.
Bye-laws	Regulatory framework notified by Gram Panchayat for facilitating the implementation of solid and/or liquid waste management effectively in their jurisdiction
Composting	A controlled process involving microbial decomposition of organic matter
Co-processing	Use of non-biodegradable and non-recyclable solid waste having calorific value exceeding 1500k/cal as raw material or as a source of energy or both to replace or supplement the natural mineral resources and fossil fuels in industrial processes;
Desludging	The operation of removing sludge (and septage) from septic/digestion tanks, pit latrines or any other primary treatment units is called desludging. Usually this is done by mechanical means (by vacuum suction pumps) but manual desludging is sometimes used despite it being banned in India.
Dispersion trench	A trench in which open jointed pipes are laid and surrounded by coarse aggregate media and overlaid by fine aggregate. The effluent gets dispersed through the open joints and is absorbed in the neighbouring soil.
Domestic hazardous waste	Discarded paint drums, pesticide cans, CFL bulbs, tube lights, expired medicines, broken mercury thermometers, used batteries, used needles and syringes and contaminated gauge, etc., generated at the household level.
Door to door collection	Collection of solid waste from the door step of households, shops, commercial establishments , offices, institutional or any other Waste Generator non residential premises and includes collection of such waste from entry gate or a designated location on the ground floor in a housing society, multi storied building or apartments, large residential, commercial or institutional complex or premises.
Non-Biodegradable / Dry inorganic waste	Any waste that cannot be degraded by microorganisms into simpler stable compounds Extended producer responsibility (EPR)

Extended producer responsibility (EPR)	Responsibility of any producer of packaging products such as plastic, tin, glass and corrugated boxes, etc., for environmentally sound management, till end-of-life of the packaging products;
Faecal Sludge	<p>It is the solid or settled contents of pit latrines and septic tanks. Faecal sludge differs from the sludge produced in the municipal waste water treatment plants. Faecal sludge characteristics can differ widely from household to household, from city to city, and from country to country.</p> <p>The physical, chemical and biological qualities of faecal sludge are influenced by the duration of storage, temperature, intrusion of ground water or surface water in septic tanks or pits, performance of septic tanks, and tank emptying technology or pattern.</p>
Informal waste collector	Includes individuals, associations or waste traders who are involved in sorting, sale and purchase of recyclable materials;
Processing	Any scientific process by which segregated solid waste is handled for the purpose of reuse, recycling or transformation into new products
Recycling	The process of transforming segregated non-biodegradable solid waste into new material or product or as raw material for producing new products which may or may not be similar to the original products
Refused derived fuel (RDF)	Fuel derived from combustible waste fraction of solid waste like plastic, wood, pulp or organic waste, other than chlorinated materials, in the form of pellets or fluff produced by drying, shredding, dehydrating and compacting of solid waste
Sanitary landfill	Facility designed for the final and safe disposal of residual solid waste and inert wastes that has protective measures against pollution of ground water, surface water and fugitive air dust, wind-blown litter, bad odour, fire hazard, animal menace, bird menace, pests or rodents, greenhouse gas emissions, persistent organic pollutants slope instability and erosion.
Sanitary waste	Wastes comprising of used diapers, sanitary towels or napkins, tampons, condoms, incontinence sheets and any other similar waste
Segregated combustible fraction (SCF)	Non-biodegradable, non-recyclable, non-reusable, non-hazardous solid waste having minimum calorific value exceeding 1500 kcal/kg and excluding chlorinated materials like plastic, wood pulp, etc
Septic tank effluent	Contents of the septic tanks. It includes the liquids, solids (sludge) as well as the fats, oils and grease (scum) that accumulates in the septic tanks over a period of time.
Sludge	It is the settled solid matter in semi-solid condition. It is usually a mixture of solids and water deposited on the bottom of septic tanks, ponds etc. The term sewage sludge is generally used to describe residuals from centralized wastewater treatment, while the term septage is used to describe the residuals from septic tanks.
Soakaway pit	A pit through which effluent is allowed to seep or leach into the surrounding soil.

Solid waste	Includes solid or semi-solid domestic waste, sanitary waste, commercial waste, institutional waste, catering and market waste and other non-residential wastes, street sweepings, silt removed or collected from the surface drains, horticulture waste, agriculture and dairy waste, treated bio-medical waste excluding industrial waste, biomedical waste and e-waste, battery waste, radio-active waste generated in the area under the Panchayati Raj Institutions
ULB	Urban local body which means and includes the city municipal corporation, city municipal council, town municipal councils and town panchayat, notified areas and notified industrial townships with whatever name they are called in Karnataka.
User fee	A fee imposed by the Gram Panchayat on the waste generator to cover full or part cost of providing waste collection, transportation, processing/treatment and disposal services
Vermi composting	The process of conversion of bio-degradable waste into compost using earth worms
Waste picker	A person or groups of persons informally engaged in collection and recovery of reusable and recyclable solid waste from the source of waste generation the streets, bins, material recovery facilities, processing and waste disposal facilities for sale to recyclers directly or through intermediaries to earn their livelihood.



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