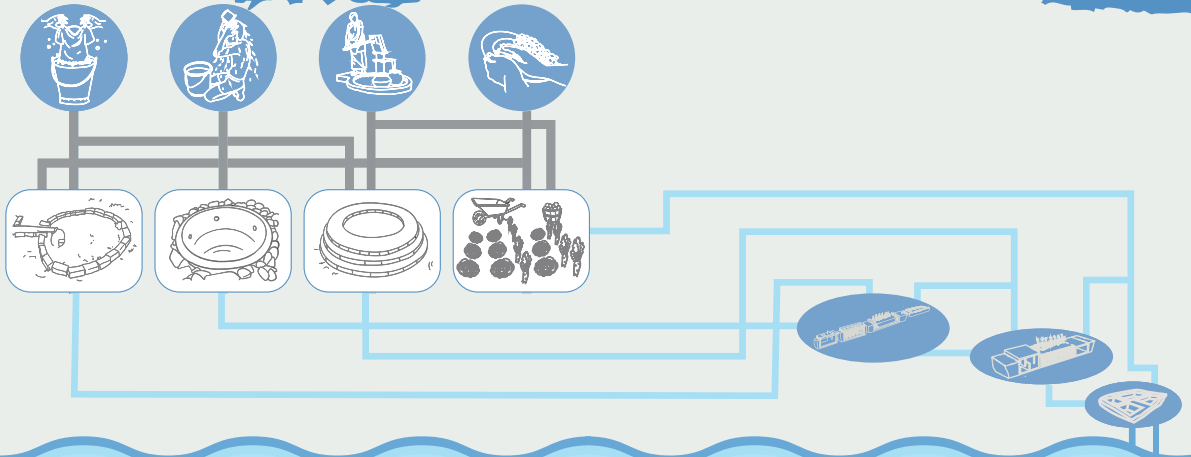




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जल शक्ति मंत्रालय
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DEPARTMENT OF DRINKING WATER AND SANITATION
MINISTRY OF JAL SHAKTI
GOVERNMENT OF INDIA

सत्यमेव जयते



Greywater Management

Liquid Waste/ Wastewater

Used and unwanted water generated during household or commercial activities is called liquid waste. Liquid waste is also called wastewater.



To Remember

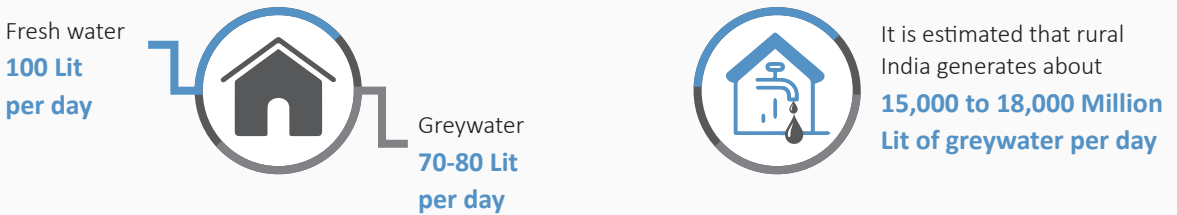
Management of wastewater from a commercial establishment, howsoever big or small is the responsibility of the concerned establishment.

*LWM (Liquidwaste Management) = GWM (Greywater Management) + BWM (Blackwater Management)

What is Greywater?



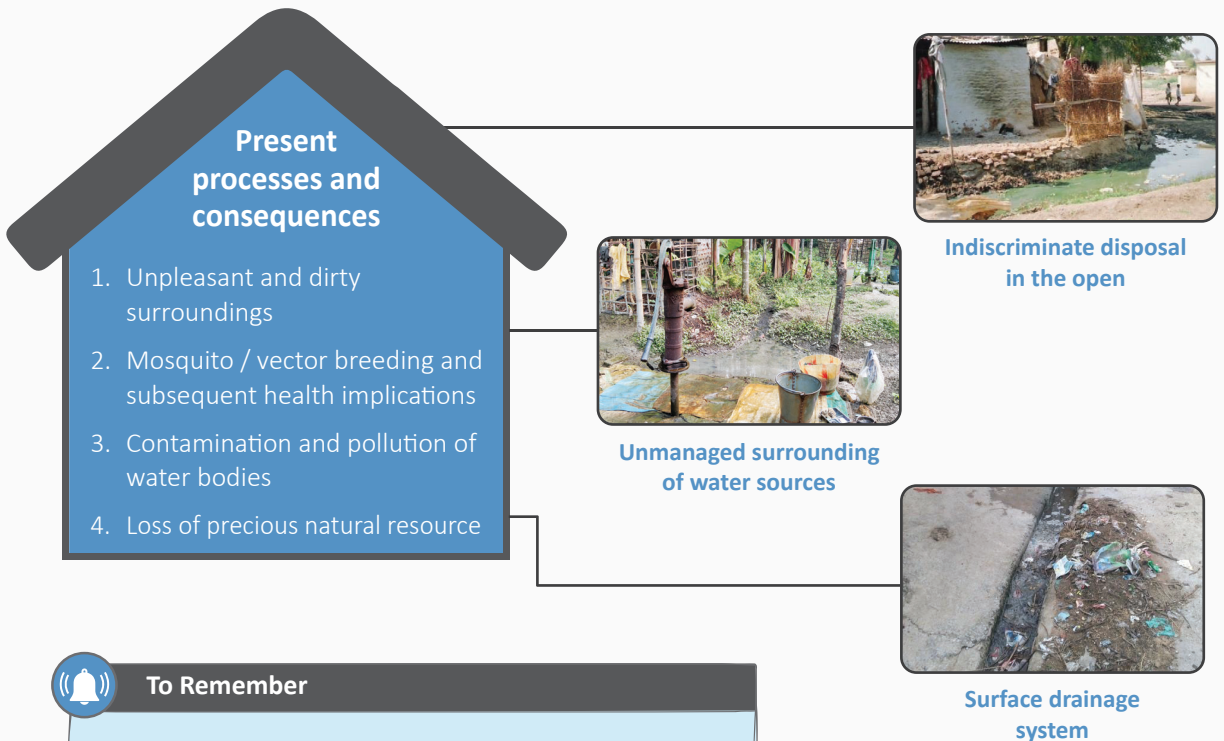
How Much Greywater is Produced?



Where does the Greywater Go?

In rural areas, structured arrangement for the collection and treatment of waste water is very rarely found.

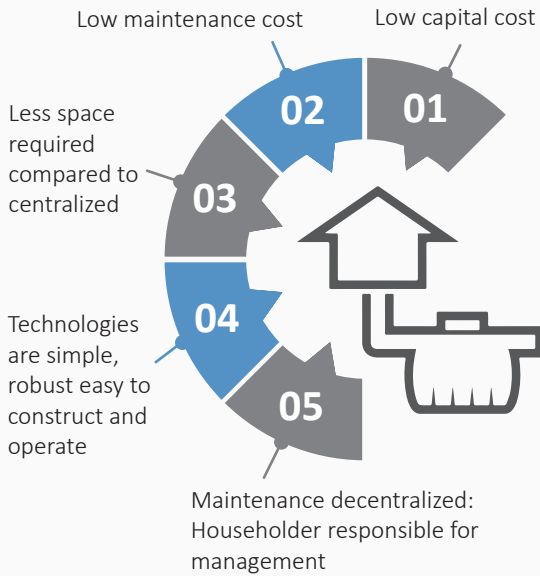
Observed Trends of Greywater Disposal



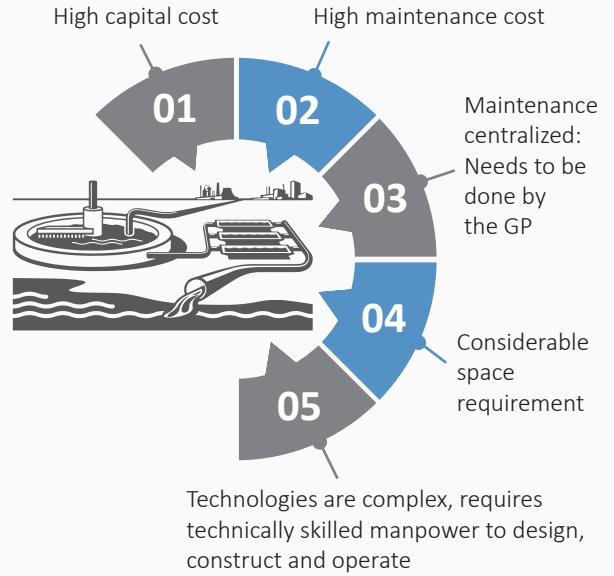
To Remember

Decentralized management of greywater always helps.

Decentralized (Household)



Centralized (Community Level)



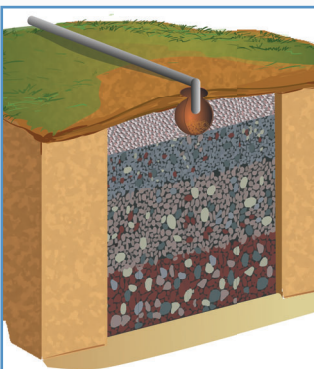
To Remember

- * Drainage is not a technology option for GWM but only a means of transport.
- * Storm water drains along roads are for carrying rain water and not waste water.
- * Pipes are always better for carrying grey water than drains.

How do we Manage Greywater?

a. Household Level Interventions

Soak pit



Low cost and easy to construct



Can be built and repaired with locally available materials

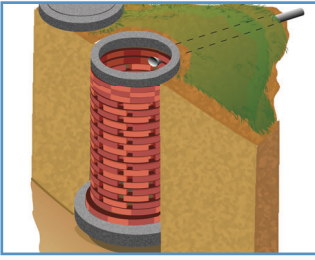


Low O&M costs



Periodic cleaning of earthen pot with filter media is easier compared to cleaning of siltation tank in magic pit

Leach pit



Capable of handling higher volumes compared to soak pit and magic pit

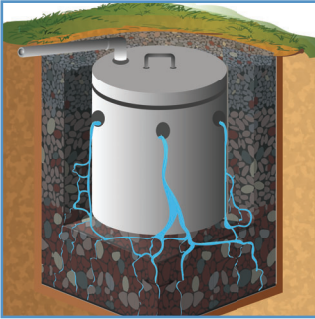


Can be constructed in semi-permeable soils with nominal modification



Low chances of clogging

Magic pit



Low cost and easy to construct



Can be built and repaired with locally available materials

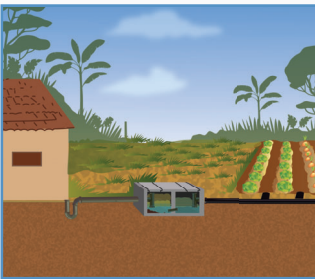


O&M costs are low and borne by individual households



Chances of clogging of filter media are low due to organic trapped in the siltation chamber

Kitchen garden



This is the most environment- friendly way of handling greywater



This is suitable for all terrains and soil types



Suitable for high-water areas



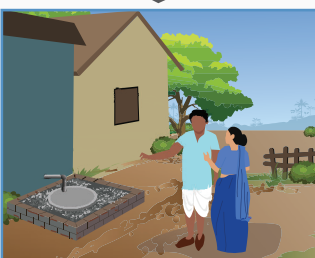
The nutrients contained in the grey water also provide nourishment to the growing plants



Kitchen gardens demonstrate the reuse, which is better utilization of greywater

b. Community Level Interventions

Community leach pit



This is an enlarged version of individual leach pit

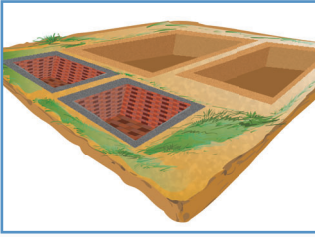


Suitable for group of houses where individual leach pit is not possible



Transport of greywater recommended through pipes

Waste stabilisation pond (WSP)



Capital cost requirements are very low compared to other village level treatment technologies



The effluent from maturation pond can be suitable for irrigation, pisciculture, etc.

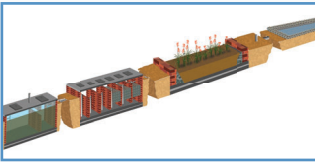


Can withstand hydraulic and organic shock loads



Low skill requirement for operation of the plant

Decentralized wastewater treatment system (DEWATS)



Modular design of all components

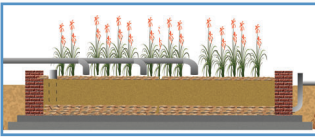


Tolerant towards inflow fluctuations and adaptable to a variety of organic wastewater characteristics



Reliable and long-lasting construction design

Constructed wetland (CW)



These systems are able to tolerate fluctuations in hydraulic and organic load



High possibility of resource recovery



No mosquitoes and odour nuisance

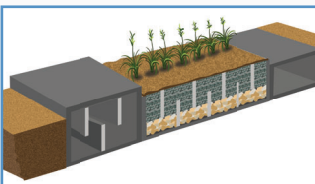


Self-sufficiency, ecological balance and economic viability is greater



Vegetation can be used as cattle feeder and can be used by local artisans to make products

Phytorid technology



Space saving technology as compared to WSP



One-day retention time for phytorid as compared to 10-18 days for WSP



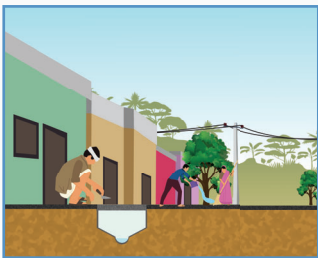
Scalable from individual household to community to village/township level



No mosquitoes and odour nuisance as compared to some other surface flow technologies

c. Conveyance System

Closed drains

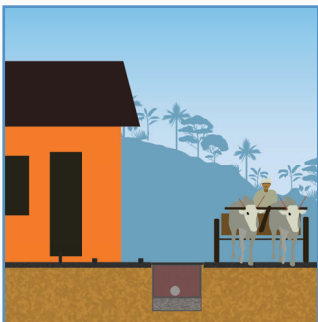


Cheaper as compared to small bore pipe system



Lower chances of choking as compared to open drains

Small bore pipe system



Lower chances of choking as compared to open and close drains



Requires less hydraulic gradient and velocity to transport the waste water through the lines than is necessary with conventional conveyance system



Most appropriate for areas where the soil cannot (or can no longer) absorb the effluent, or where the population is too dense and there is no room for household level treatment



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