

“USED WATER” AND SCOPE OF DEWATS – LEARNING FROM PILOTS IN MADURAI, INDIA



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INTRODUCTION

In twenty first century, the issues related to water and wastewater, otherwise “used water” (newly coined term to overcome mental blocks of humanity) get more attention of governmental and non-governmental organizations. Especially the quality and quantity of water bodies in Indian sub-continent is the most precarious and are in an alarming situation in terms of meeting access, affordability and equity.

During the year 2000 the world signed up to the UN Millennium Development Goal (MDG) target to halve the proportion of people (in 1990) without access to safe drinking water by 2015 (MDG 7 – Target 10 – Indicator 30). In 2002 another target was added: to halve the proportion of people without access to improved sanitation (Indicator 31). At the current rate the sanitation target will be missed in both Africa and Asia.

In order to increase the number of people with access to adequate sanitation, DHAN Foundation inaugurated during the International Year of Sanitation 2008 its new Centre for Urban Water Resources (CURE) within DHAN Vayalagam (Tank) Foundation. The centre and its staff focus on renovation and sustainable use of water resources. CURE's activities concentrate on three fields of services to address people needs with their active participation. They include:

- Renovation of Urban Water Resources,
- Provision of Safe Drinking Water,
- Wastewater and Sanitation Management.



MADURAI CITY – WASTE WATER AND ISSUES:

Under the centrally sponsored Scheme of Jawaharlal Nehru National Urban Renewal Mission (JnNURM), the south Indian cities like Madurai in South India the efforts have been taken on improving the inadequate situation by increasingly providing underground wastewater drainage and adequate treatment in the wards within Madurai Corporation. However, planned improvements through augmentation of the wastewater collection system are often restricted to certain main city wards and the planned centralized treatment systems are limited to wastewater generated in core areas.

For the uncovered area of Madurai City, decentralized wastewater treatment offers a cost effective, environmentally sound, fair, efficient and sustainable answer. Those technologies provide a number of advantages besides the fact that they are easily applicable in areas where centralized treatment is not feasible for technical, political or economical reasons (e.g. remote or sparsely populated areas, areas where local reuse of the water is applicable, areas where freshwater is in short supply, areas where centralized collection is economically not feasible, etc). Benefits of decentralized wastewater management include cost efficient investments, minimal O&M needs and costs, water and energy savings, local reuse of resources (water, nutrients and energy), reduced groundwater pollution, reduced pollution of open water bodies, efficient pathogen removal, easy storm water separation and so on.

Appropriate areas for decentralized systems identified while developing Detailed Project Report on Sanitation by Madurai Corporation include settlements in the periphery, new settlement, villages in the outskirts, areas with low population density, single households, unauthorized settlements (temporary solution), areas with high groundwater tables, schools, training centers, hospitals, hostels, and all areas which are not connected to a centralized underground sewer system.

SCOPE FOR DEWATS

- DEWATS is a socio-technical sanitation approach developed and continuously improved by the Bremen Overseas Research and Development Association (BORDA), an international development organization headquartered in Germany. The Consortium for DEWATS Dissemination (CDD) Society represents and coordinates BORDA activities in South Asia and represents as an umbrella organisation several relevant government, public and private stakeholders.
- DEWATS systems are effective, reliable, cost efficient and custom-made wastewater treatment systems, which are perfectly suited for small to medium-size systems (5-1000m³/d) on community level and for individual users like e.g. schools, hospitals, or enterprises (SME). On community level, DEWATS can be integrated into a sanitation complex, which is operated on pay-and-use basis, creating income opportunities for local personal (Community Based Sanitation, CBS). DEWATS solutions are not intended to replace but rather to complement centralised systems in applicable areas.
- The technical options within DEWATS are based on a modular and partly standardized design. DEWATS is based on basic technical treatment processes: mechanical treatment (sedimentation and flotation) and biological (anaerobic and aerobic) treatment. The most common DEWATS modules are settlers, biogas settlers, anaerobic baffled reactors (ABR), anaerobic filters (AF), planted gravel filters (PGF), and (if needed) polishing ponds.

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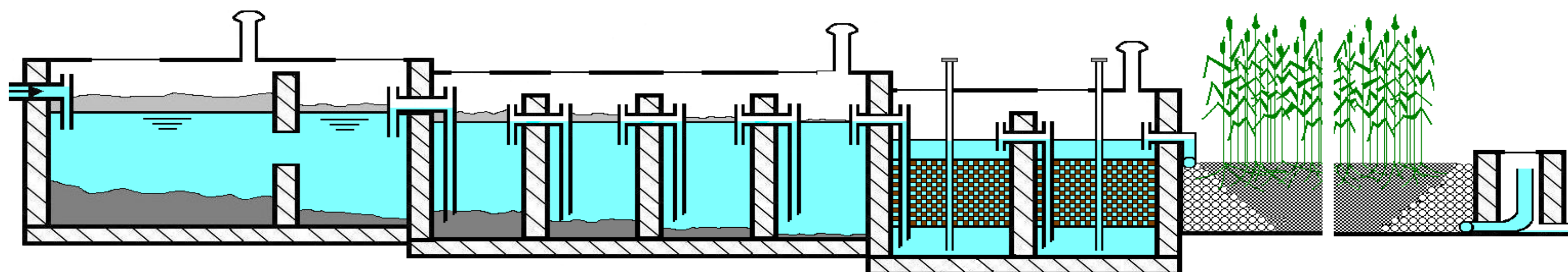


Figure 1. DEWATS consisting of settler – ABR – AF – PGF (not true to scale)



PILOT PROJECTS IN MADURAI

Case 1: Tata-Dhan Academy is a development school located in Mellakal, Madurai. The academy offers two years post-graduation in development management, creating multi-disciplinary knowledge including applied technologies relevant to the context. The academy consists of an administrative block (including classrooms and offices), a library block, and a hostel complex (including kitchen and canteen) for students and permanent staff. The complete campus is covered by two DEWATS units. One DEWATS is constructed at the admin cluster to treat the wastewater generated at the school and the library. Another DEWATS serves the hostel block.

Design quantity in Cu.m/day	Buildup Area in Sq,m	Total project cost in Lakh	Inlet in mg/l		Outlet in mg/l		No of users	Operation status
			COD	BOD	COD	BOD		
15	210	9.00	300	150	28	10	100	Efficiently functioning over the past two years.
8	150						200	

Case 2: Panaiyur village is located in the South-East of Madurai, 4km outside of Municipal Corporation limits. 674 families live in the village. The total population is about 3,150 residents. Only 200 houses are equipped with individual toilets; however about 50% of them are not in use to keep O&M costs for the attached septic tank low. One 9-seater community toilet is provided by the local Panchayat; however it is partly dysfunctional and only for women. Hence, before project implementation, open defecation was practiced for above reasons excessively along the main road, leading to disgusting sceneries, smell and community health problems. So, community toilet and DEWATS unit is constructed.

Design quantity in Cu.m/day	Buildup Area in Sq,m	Total project cost in Rs	Inlet in mg/l		Outlet in mg/l		No of users	Operation status
			COD	BOD	COD	BOD		
12	300	14.95	3000	1500	65	20	1700 Nos	Being governed and operated by Self Help Women Groups for the past one and half year

CONCLUSION

Decentralised sanitation management (through DEWATS or ecosan) is beyond doubt a feasible, or better, an imperatively necessary wastewater management strategy to complement the centralized urban sewerage system for Madurai and comparable cities, especially with focus on poverty reduction and environmental conservation.

References:

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