



Swachh Bharat Mission

Used Water Management: Rajasthan

DIRECTORATE OF LOCAL BODIES

10th Oct 2026



LOCAL SELF GOVERNMENT DEPARTMENT, RAJASTHAN GOVERNMENT

STPs STATUS IN STATE

PARTICULARS	IN-MLD
Estimated Sewage Generation in 309 sewerage towns	2280.77 MLD
Estimated Sewage Generation in 81 sewerage towns	1876.73 MLD
Estimated Sewage Generation in remaining 228 towns	404.04 MLD
Capacity of Operational STPs (153 Nos)	1588.19 MLD
Capacity of STPs under construction (83+12+ 5)=100 Nos	384.81+124.25+ 124 =633.06 MLD
Capacity Utilization	1373 .26 MLD
Gap in treatment capacity	214.93 MLD
Gap Between Sewage generation & Utilization capacity	503.47 MLD
Total No of Towns covered under Sewerage	81
Reuse of Treated Waste water in Operational STPs	674.77 MLD

Summary (Used Water Management)				
Sl. No.	Particulars	Total ULBs	Remarks	Methodology Adopted
1	UWM DPR including treatment system & desludging vehicle - Approved from SLTC (Inclusive Cost of Preparation of DPR)	125	57 DPR SLTC 4th SLTC 50 DPR SLTC 5th SLTC 66 ULBs work order Issued 37 ULB Waiting for rate approval 14 ULB Work Order Issued	Less than 90 LPCD- 1. Constructed Wetland - For 150 KLD to 2 MLD. 2. Community Soak Pit - For less than 150 KLD and for Sandy/Permeable Soil. 3. ABR - For less than 150 Kl and for Rocky/Hard/Impermeable Soil. 4. MBBR - For more than 2 MLD.
2	Already Sewer town, where sewer lines already laid/ ongoing/ proposed (Inclusive Cost of Preparation of DPR)	50	HSC are under Rate approval Other works are under progress	1. House Sewer Connection - 53398 Nos in 16 ULBS. 2. Trunk Line & New STP - 10 ULBs, approved from SLTC
3	ULBs with Water Supply > 90 LPCD _ Proposed for Sewer Under SBM (U) 2.0 (Inclusive Cost of Preparation of DPR)	33	7 ULBs are under Legal Litigation 24 ULBs are under Rate Approval 2 ULBs are Under Progress by RUDSICO	1. For more than 90 LPCD. 2. Networking for Core Area of ULB only. 3. STP & Trunk Line for ULB. 4. By Considering 20% Core Area of ULBs
Sub Total		208		
4	Sewer Cleaning Machine (Machine Hole Cleaning Robot) 21 Nos ULBs	17	Already Purchased	
5	Sewer Cleaning Suction cum Jetting Machine	12	Under Procurement	
Total Amount Approved in Action Plan			1785 Cr.	
	7 ULBS are De-notified (Gudhagorji, Jawal, Lalgarh Jattan, Raniwada, Rishabhdeo, Semari, Kaithoon)			

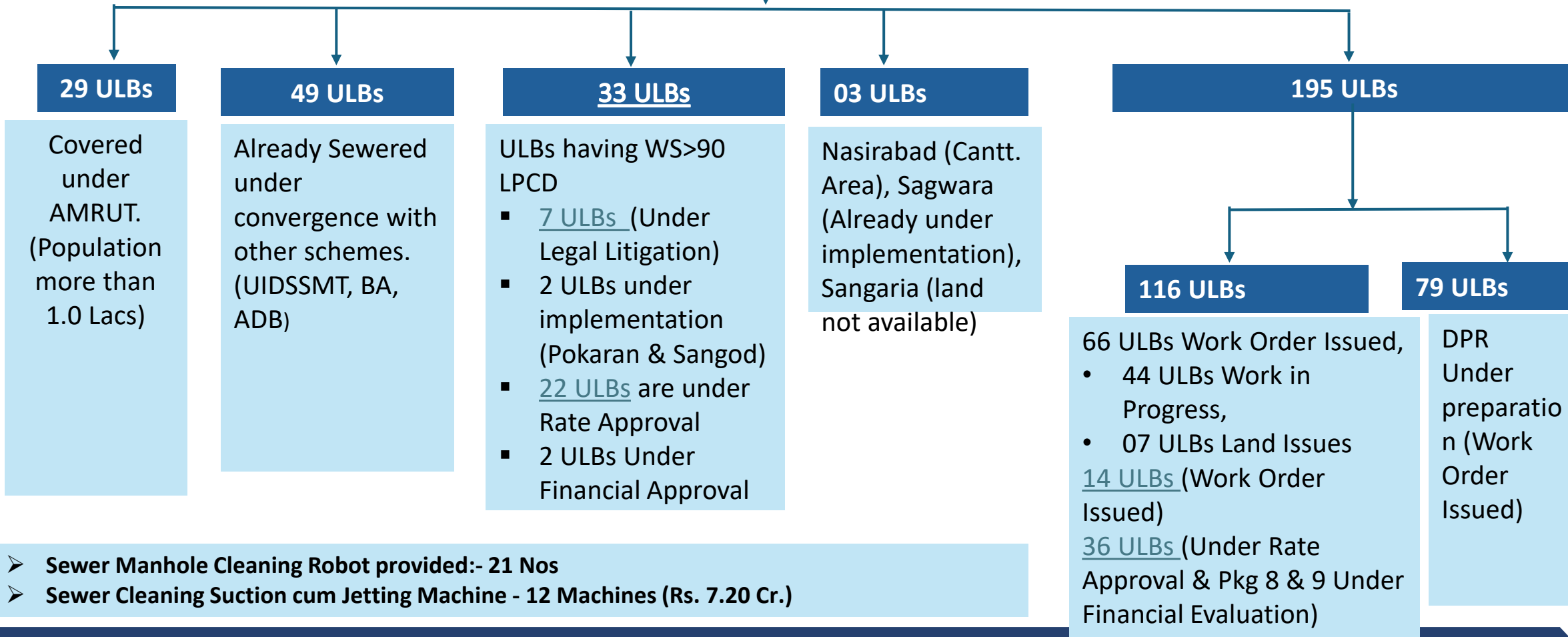
Summary (Used Water Management) Approved Action Plan

Particulars	Name of Project	No. of ULB	Total No. of Project	Total Capacity	Total Project Cost (in Crs)
Sewerage Network	Trunk Sewer Line	40	40	296.52 (Km)	315.81
	Main Sewer Line	33	33	154.38 (Km)	213.62
	Lateral Sewer Line	33	33	617.51 (Km)	498.45
Interception & Diversion of Drains		119	763	241.366 (Km)	118.64
Pumping Stations		1	1	2 (MLD)	1.50
Sewage Treatment Plant	STPs	137	375	440.565 (MLD)	542.16
	FS Co-Treatment	21	73	34040 (KLD)	
Desludging Vehicles		21	21	84 (KL)	5.17
Sewer Cleaning Vehicle	Combination Hydro Vac Equipment	12	12	NA	7.20
Stand-alone FSTP/ Soak Arrangement	FSTP(Sludge Management)	21	21	81.35 (KLD)	6.05
	Soak Arrangement	44	171	10060 (KLD)	6.78
House Sewer Connection		17	55533	NA	46.97
Robots for Sewer Machine Hole Cleaning	Robots for Machine Hole Cleaning	13	13	NA	10.18
	Total Project Cost				1772.52



UWM Work Summary Sheet

Total ULBs: 309 ULBs



UWM Work Summary Sheet: Ongoing Work

- Laying of Interception and Diversion (I&D) Structures including provision of pumping stations and pumping main gravity main up to STP Treatment Facility with and establishment of setting up of STPs/CWT/ community soak pits / ABR/ MBBR including 1 year defect liability period and 5 years of O&M for the package 1, 2, 4A, 5,10,11 and 6A (81 ULBs of 6 Divisions i.e. Bharatpur, Jaipur, Jodhpur, Udaipur, Kota and Ajmer)

Sl. No.	Package No.	Package Name with Divisions wise	No of ULBs	Cost of Package (In Cr.)	Status
1	1	Ajmer, Bharatpur & Jaipur	31	89.75	WO issued to SKC Technocrat Pvt. Ltd. 16685 dated 04.07.2025. (1 ULB De-notified)
2	2	Kota & Udaipur	9	29.37	WO Issued to Divija Construction 16382 dated 17.06.2025
3	4A	Ajmer	5	29.06	WO Issued to Divija Construction 29990 dated 15.10.2025
4	5	Bharatpur	10	52.01	WO issued to SKC Technocrat Pvt. Ltd. 71853 dated 21.11.2025.
5	6A	Jaipur	11	36.14	WO Issued to Divija Construction 30007 dated 15.10.2025
6	10	Ajmer, Udaipur & Jodhpur	6	25.61	WO Issued to M/s Shriti Infraengineering Pvt Ltd 18385 dated 13.08.2026
7	11	Jaipur	8	33.45	WO Issued to M/s Shriti Infraengineering Pvt Ltd Jv Netri Buildcon India Pvt Ltd 18913 dated 18.08.2026
	Total		80	295.39	

UWM Work Summary Sheet: Projects Under Pipeline

- Laying of Interception and Diversion (I&D) Structures including provision of pumping stations and pumping main gravity main up to STP Treatment Facility with and establishment of setting up of STPs/CWT/ community soak pits / ABR/ MBBR including 1 year defect liability period and 5 years of O&M for the package 6B, 7, 8, 9 of 5 Divisions i.e. Jaipur, Udaipur, Bikaner, Kota and Jodhpur)

Sl. No.	Package No.	Package Name with Divisions wise	No of ULBs	Cost of Package (In Cr.)	Status
1	6B	Jaipur	10	37.36	Under Rate Approval
2	7	Kota & Udaipur	8	39.01	Under Rate Approval
3	8	Bikaner	12	46.35	Under Rate Approval
4	9	Jodhpur	7	24.67	Under Rate Approval

Processing of Constructed Wetlands

(Natural, Low-Cost and Sustainable Wastewater Treatment)

What is a Constructed Wetland?

A constructed wetland (CW) is an **engineered, natural** wastewater treatment system that uses the physical, chemical and biological processes of wetland plants, soil and microorganisms to remove pollutants from wastewater. It mimics the natural function of wetlands and provides an **effective, low-cost and environmentally friendly** treatment solution, **especially for small and medium-sized towns and decentralized systems**.

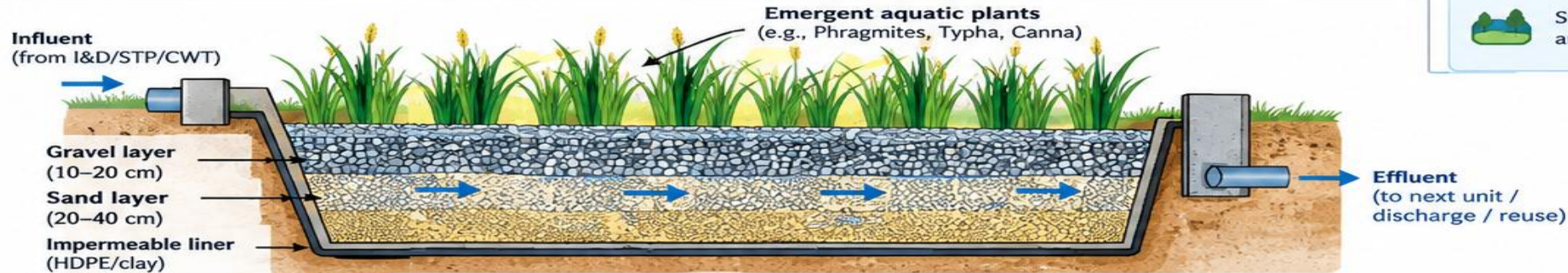
Key Processes Involved

- 1 **Physical filtration** – Suspended solids are trapped in the media (gravel, sand, soil) and plant roots.
- 2 **Biological degradation** – Microorganisms break down organic matter and nutrients (nitrogen and phosphorus).
- 3 **Chemical reactions** – Adsorption, precipitation and redox reactions remove pollutants like heavy metals.
- 4 **Plant uptake** – Aquatic plants absorb nutrients and pollutants, supporting microbial activity and oxygen transfer.

Advantages

- Low operation & maintenance cost
- Energy efficient (gravity flow possible)
- Environmentally friendly and sustainable
- Simple technology with long life
- Effective removal of BOD, COD, TSS, nutrients (N, P) and some heavy metals
- Suitable for decentralized and small communities

Typical Constructed Wetland System (Horizontal Subsurface Flow)



Process Flow Diagram



Typical Design & Operation Parameters

Type	Horizontal Subsurface Flow (HSSF) or Vertical Flow (VF)
Hydraulic Retention Time (HRT)	3 – 7 days (varies with design and flow)
Depth	0.6 – 1.0 m (typical)
Media	Gravel (20–40 mm), sand (0.5–5 mm)
Plants	Local species such as <i>Phragmites</i> , <i>Typha</i> , <i>Canna</i> , <i>Vetiver</i> , etc.
Treatment Efficiency (typical)	BOD: 70–90%, COD: 60–85%, TSS: 70–90%, TN: 30–70%, TP: 20–60% (depending on design)

Applications

- Decentralized wastewater treatment
- Grey water and domestic wastewater
- FSTP / CWT polishing
- Urban and rural areas
- As part of UWM/ SBM-U 2.0 projects

MBBR Process (Moving Bed Biofilm Reactor)

Efficient • Compact • Reliable • Sustainable

What is MBBR?

The **Moving Bed Biofilm Reactor (MBBR)** is a biological wastewater treatment process in which **microorganisms** grow as a **biofilm** on **free-floating plastic media**. The media continuously moves in the aerated tank, providing a large surface area for microbial growth. This results in efficient removal of organic matter and nutrients (BOD, COD, TSS, N & P) in a compact footprint.

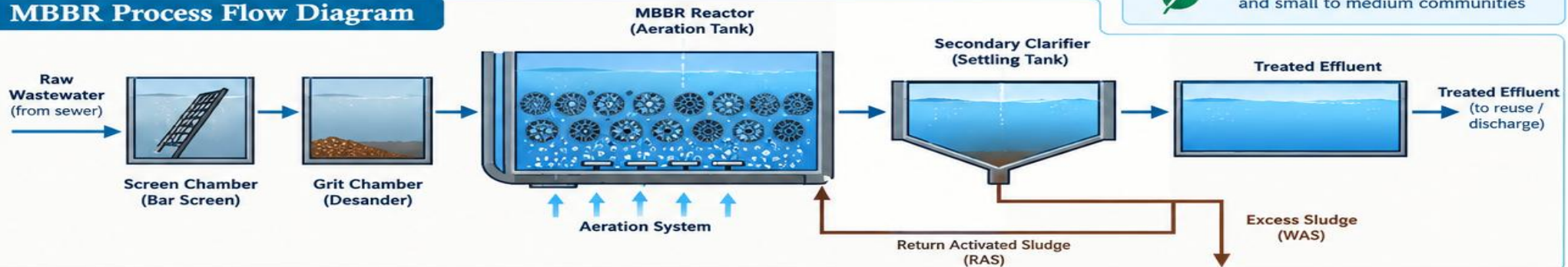
How It Works?

- 1 **Biofilm Growth** – Microorganisms attach to the moving media and form a biofilm.
- 2 **Contact & Degradation** – Wastewater comes in contact with the biofilm, where organic matter is broken down.
- 3 **Aeration & Mixing** – Aeration keeps the media in motion and supplies oxygen for aerobic bacteria.
- 4 **Separation** – Treated water is separated in a settler (secondary clarifier).
- 5 **Sludge Return** – Settled biomass is returned to the reactor; excess sludge is wasted.

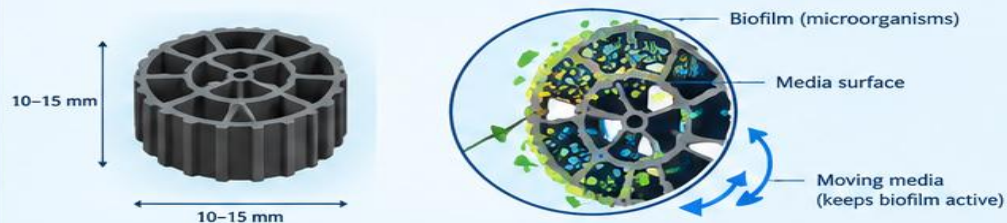
Advantages

-  **High treatment efficiency** (BOD, COD, TSS, N & P removal)
-  **Compact footprint** (less space required)
-  **Stable operation** (tolerates load and flow variations)
-  **Low maintenance** (no backwashing required)
-  **Simple and easy to operate**
-  **Suitable for decentralized** and small to medium communities

MBBR Process Flow Diagram



MBBR Media (Moving Biofilm Carrier)



Applications

- Municipal sewage treatment plants (STPs)
- Industrial wastewater (food, textile, paper, pharmaceuticals, etc.)
- Decentralized and small communities
- Retrofit and upgrade of existing plants

Key Features

- Free-floating plastic media with high surface area
- Aerobic biological treatment
- Effective removal of organic matter and nutrients
- Low sludge production
- Modular and scalable design

Typical Design & Operation Parameters

Parameter	Typical Range / Value
HRT (Hydraulic Retention Time)	4 – 8 hours
Media Fill Ratio	40 – 70% of tank volume
Specific Surface Area of Media	500 – 1,000 m ² /m ³
MLSS (Mixed Liquor Suspended Solids)	3,000 – 6,000 mg/L
Dissolved Oxygen (DO)	2 – 4 mg/L
BOD Removal Efficiency	85 – 95%
COD Removal Efficiency	80 – 95%
TSS Removal Efficiency	85 – 95%
Nitrogen Removal (with nitrification)	70 – 90%
Phosphorus Removal (with additional stage)	20 – 60%



Clean Water | Healthy Environment | Sustainable Future



Community Soak Pit



CWT: Bhusawar



Indian Institute of Technology Bombay (IIT-B)
Capacity ~30,000 litres of sewage per day



1.40 MLD STP, Smart City
Dharamshala, H.P.

Government of Rajasthan

Reuse of Treated Wastewater from STPs

Introduction

- Rajasthan is one of the most water-stressed states in India.
- Industrial areas under RIICO face increasing water demand. Therefore, sustainable and reliable water supply is essential for industrial growth.
- Reuse of treated wastewater from nearby STPs offers a viable alternative to fresh water and may reduces pressure on limited freshwater
- Hon'ble NGT in O.A. No. 673/2018 has recommended reuse of Treated Waste Water with a view to prevent pollution entering into rivers and water bodies. Also, AMRUT 2.0 has been launched in Oct 2021 with the aims to develop water secure cities, in this regard Ministry of Housing and urban affairs, G.O.I. has also issued the guide lines.
- As per the State Sewerage and Treated Waste Water policy- 2016 &2025 as per direction of Chief Secretary, GoR - the priority is to be given for the reuse of Treated Waste Water for industrial use due to potable water scarcity in Rajasthan.

Policy Framework for reuse of treated sewage

Local Self Government Department, Government of Rajasthan has framed the **State Sewerage & Waste Water Policy, 2025** for the Reuse of Treated Waste Water. As per the Policy, the possible uses of treated waste water as per priority are:

- (i) Agriculture, Horticulture, Irrigation
- (ii) Gardening in Park
- (iii) Road Washing and Water sprinkling to reduce fugitive dust
- (iv) Industries including mining
- (v) Recreational pond and lakes
- (vi) Social Forestry
- (vii) Construction Activities
- (viii) Firefighting and other municipal uses
- (ix) Railway
- (x) Thermal power plants
- (xi) Cantonments

Policy Framework for reuse of treated sewage

- ✓ As per the State Sewerage & Waste water policy 2025, the **base tariff** for treated waste water shall be:
 - **50% of drinking water supply tariff** in case of **industrial/commercial reuse** and
 - **Rs. 3.00 per thousand liters** increasing at the rate of 10% per annum, in case of **agriculture/horticulture/fishery/landscape reuse**.
- ✓ The Action plan for the treated wastewater reuse has been prepared and circulated to all ULBs in April 2019.
- ✓ Paryavaran Samiti headed by District Collector has to decide the most suitable reuse of treated water after consultation of end users as per the Action Plan prepared by the LSG Department for Reuse of Treated Wastewater in Rajasthan.
- ✓ City level Committee under the Chairmanship of District Collector is constituted as under to relax the base TWW tariff up to limit that cost of TWW reuse project & operating cost may be recovered.

C. Reuse of Treated Waste Water:-

Reuse of Treated Waste Water			
Existing Status	Gap	Under Implementation	Future Plan
➤ 674.77 MLD of Treated Waste Water is in reuse as reported by ULBs in different areas ➤ Ground water Recharge ➤ Horticulture & Agriculture ➤ River Fronts & Fishing ➤ Fire Brigade ➤ Industries	➤ 1373.26- 674.77 =698.49 MLD Treated Waste Water are under planning to be utilized	➤ RIICO has been requested to provide the industrial water demand for Reuse of Treated Waste in industrial sector ➤ Mapping of STPs have been completed with industrial Clusters ➤ All ULBs have been directed to decide the most suitable reuse of treated waste water in meeting Of Paryawaran Samiti under the chairmanship of District Collector.	➤ Actual demand of Industrial Clusters to be identified in co-ordiantion with RIICO ➤ Framing of Policy/methodology for reuse in industrial sector ➤ Identification of other reuse options: Horticulture/Agricultural/ etc. Timeline: Long Term (5 Years).