GOVERNMENT OF KERALA

Abstract

Local Self Government Department - Policy on Safe Reuse of Treated Wastewater - Approved - Orders issued

LOCAL SELF GOVERNMENT (WM) DEPARTMENT

G.O.(P)No.38/2026/LSGD Dated,Thiruvananthapuram, 21-08-2026

Read (1) GO (Rt). No. 1896/2024/LSGD dated 11.10.2024

(2) Letter No. SM/2026/2024-G1 dated 17.07.2026 from the Executive Director, Suchitwa Mission

ORDER

The Government, recognizing the urgent need for innovative water security solutions to address the state's growing population, climate variability, seasonal water stress and the need for effective liquid waste management, had constituted a committee vide government order read first above, to study and finalize the Treated Wastewater Reuse Policy.

(2) Vide letter read second above, the Executive Director, Suchitwa Mission being the convenor of the committee has submitted the draft Policy on Safe Reuse of Treated Wastewater, after necessary stakeholder discussions and modifications.

(3) Government have examined the matter and are pleased to approve the Policy on Safe Reuse of Treated Wastewater, as appended to this order.

(By order of the Governor)
BISHWANATH SINHA
CHIEF SECRETARY

Principal Director, Local Self Government Department.
All District Collectors.
Executive Director, Suchitwa Mission.
Member Secretary, Kerala State Pollution Control Board.
Managing Director, Kerala Water Authority.
Mission Director, AMRUT.

Director, Ground Water Department.

Director, Agriculture Department.

Managing Director, IMPACT.

Secretary, All Municipal Corporations (through the Principal Director).

Secretary, All Municipalities (through the Principal Director).

Secretary, All Grama Panchayats (through the Principal Director).

Principal Accountant General (A&E/Audit) Kerala, Thiruvananthapuram.

Environment Department.

Water Resources Department.

Industries Department.

Information & Public Relation (Web& New Media) Department.

Executive Director, Information Kerala Mission.

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Section Officer

POLICY ON SAFE REUSE OF TREATED WASTEWATER, KERALA

Foreword

As we stand at the precipice of environmental challenges, the need for innovative solutions to ensure water security has never been more pressing. Kerala, with its unique geographical and climatic attributes, faces the daunting task of balancing water demand with supply, particularly in the face of increasing population and climate variability. The Ministry of Housing & Urban Affairs (MoHUA), Govt of India has taken a commendable step forward by advocating for the utilization of treated wastewater, recognizing it as a valuable resource in our quest for sustainable water management. The decision to prepare a policy on the safe reuse of treated wastewater is a testament to the state's commitment to addressing water scarcity and promoting environmental stewardship.

Through this policy, we aim to harness the untapped potential of treated wastewater, thereby alleviating water stress, conserving freshwater resources, and bolstering Kerala's resilience to climatic uncertainties. By reusing treated wastewater for industrial, agricultural, flushing, and fish culture purposes, we not only reduce dependency on finite freshwater sources but also mitigate the environmental impact of untreated wastewater discharge. Kerala has made significant strides in wastewater treatment infrastructure. However, the true measure of success lies in our ability to maximize the utilization of this infrastructure and optimize the safe reuse of treated wastewater. By capitalizing on completed STPs and expanding our reuse capabilities, we can unlock the full potential of this valuable resource, safeguarding our water future for generations to come.

This policy underscores the importance of a multi-faceted approach, encompassing infrastructure development, stakeholder engagement, and regulatory frameworks. It calls upon government agencies, industry stakeholders, academia, and civil society to join hands in a concerted effort to realize the vision of a water-secure and sustainable Kerala.

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ABBREVIATIONS

BOD	**:**	**Biochemical Oxygen Demand**
COD	**:**	**Chemical Oxygen Demand**
CPCB	**:**	**Central Pollution Control Board**
CPHEEO	**:**	**Central Public Health and Environmental Engineering Organization of MoHUA**
IS	**:**	**Indian Standards**
KSPCB	**:**	**Kerala State Pollution Control Board**
LSGIs	**:**	**Local Self Government Institutions**
MoHUA	**:**	**Ministry of Housing and Urban Affairs**
O&M	**:**	**Operation and Maintenance**
PPP	**:**	**Public Private Participation**
STP	**:**	**Sewage Treatment Plant**
TDS	**:**	**Total Dissolved Solids**
TSS	**:**	**Total Suspended Solids**
TWW	**:**	**Treated Wastewater**

Definitions:

In this policy, unless the context otherwise requires,

- "**Biochemical Oxygen Demand**" or "**BOD**" means the amount of oxygen utilized by aerobic microorganisms to break down decomposable organic matter in water or wastewater under aerobic conditions;
- "**Bulk Users of Water**" means any private or public commercial/ industrial/ institutional establishments/ residential societies etc. that has an average water consumption of 5000 liters per day;
- "**Chemical Oxygen Demand**" or "**COD**" means the amount of oxygen needed to oxidize total organic and inorganic pollutants in water chemically without the involvement of microbes;
- "**Local Self Government**" means rural and urban self-governments such as Corporation, Municipality, or Grama Panchayat within Kerala State;
- "**Non-potable water**" means water that is not fit for drinking quality, but may still be used for many other purposes, depending on its quality.
- "**On-site liquid waste system**" means a liquid waste system located on-site where the liquid waste is generated;
- "**Off-site liquid waste system**" means a liquid waste system that collects and transports wastewater away from the place it is generated;
- "**Polluter Pays Principle**" is an environmental principle that holds polluters responsible for the costs of pollution and the damage it causes to the environment;
- "**Potable Water**" means water used for direct human consumption;
- "**Residential Unit**" means a structure that is a residential unit that has

sewage-producing fixtures such as sinks, baths, showers, toilets, urinals, dish and clothes-washers or floor drains for receiving liquid waste including but not limited to only these;

- "**Reuse Responsibility**" means the responsibility/obligation of bulk users like industries, malls, etc. to reuse a considerable portion of water consumption for environmentally sound management of water;
- "**Sewage**" means the wastewater carried through pipes/network of pipes to a sewage treatment plant;
- "**Sludge**" means semisolid, or slurry residual material that is produced as a by-product of wastewater treatment processes which needs to be processed/dried by various sludge management processes;
- "**Treated Wastewater**" means output water from Sewage Treatment Plants (STP) that can be reused for various purposes in accordance with use based on its wastewater characteristics ;
- "**Wastewater or Used water**" means water that has been used for a variety of purposes and is contaminated with substances like human waste, food scraps, oils, soaps, chemicals, etc.;
- "**Wastewater Treatment**" means the processes used to remove contaminants from wastewater and convert it into a standard that can be discharged to the environment in a safe manner as per discharge standards.

1. **Preamble**

Kerala is the southern most Indian state with 38,863 km^2 area and it is the second most urbanized state in the country. Water plays a critical role in the economy and livelihood of the people of Kerala, and water and wastewater management in the state is sub optimal in comparison with other states. The state is accelerating the process of implementation of wastewater infrastructure throughout all the districts. The treated wastewater from the established treatment plant needs management and so, it is imperative for the state to formulate a policy for the safe reuse of treated wastewater.

The State presently adopts both centralized and decentralized approaches for treatment of wastewater. Currently, the available wastewater treatment facilities in the State include Sewage Treatment Plant (STP), Feacal Sludge Treatment Plant (FSTP), and Effluent Treatment Plant (ETP). Though the complete reuse of output water from all these treatment facilities is the final goal to be achieved, this can only be achieved in a phased manner. Hence, as a first phase, we are focusing on the reuse of treated wastewater from STPs. Thus, this policy covers only the aspect of the reuse of treated wastewater from existing and future STPs in Kerala State.

The treated wastewater is either discharged to the watercourses or used for irrigating parks, lawns, or public places. Its reuse for non-potable purposes, such as crop irrigation, industrial processes, and groundwater recharge, is still relatively uncommon. Only a small fraction of treated wastewater finds its way back into productive use, representing an untapped resource that could alleviate water scarcity concerns. Non-utilization of TWW is a waste of resources, the capital cost of the treatment facility, and the expense incurred in treating the used water. Treated wastewater is considered as a water resource and is added to the water stock for reuse.

This policy for the safe reuse of treated wastewater makes clear that the treated wastewater from the wastewater treatment plants addresses only the non-potable uses of treated wastewater, i.e., water is not meant for direct human consumption. Considering social sensitivities and public perception towards treated wastewater (TWW), it shall not be used for potable purposes.

2. Need for Safe Reuse of Treated Wastewater

Kerala receives copious rainfall, yet faces significant water management challenges that highlight the complexity of its water resources. While some regions experience severe flooding during monsoons, others struggle with water scarcity in non-monsoon months, demonstrating the stark reality of uneven water distribution across the state. This challenge is further intensified by rapid urbanization, population growth, and the increasing impacts of climate change on our freshwater resources.

As our cities expand and water consumption rises, there is mounting pressure on critical resources - particularly water, land, and energy needed for agricultural production and urban development. Implementing

comprehensive wastewater treatment and reuse programs presents a strategic solution to these challenges. Such programs can effectively address water scarcity in drought-prone areas while providing reliable water sources for industrial and agricultural needs.

The adoption of treated wastewater reuse serves multiple crucial objectives. The objectives are to:

- Reduce dependency on existing groundwater and surface water sources, contributing to water security.
- Create awareness among the public to accept treated wastewater as an alternative source of non-potable use.
- Protect public and environmental health by eliminating the contamination of surface and sub-surface water sources by indiscriminate disposal to the environment.
- Create a dependable source of water for reuse in non-potable uses.
- Comply with the available regulatory norms stipulated by the Government of India.

This approach is not just an environmental solution but a necessity for ensuring Kerala's water security, supporting sustainable economic growth, and building climate resilience across the state. This policy will help Kerala in improving its wastewater management and assist in making proactive initiatives for future challenges in wastewater management.

3. Need for Policy on Safe Reuse of Treated Wastewater

The current regulations of Kerala lack a comprehensive policy specifically governing treated wastewater reuse. This policy gap significantly hampers the systematic implementation of wastewater reuse initiatives across the state. In the current scenario, several stakeholders including LSGIs, commercial/residential complexes, government departments & agencies and private players are engaged in the setting up and operation of liquid waste management facilities. While existing regulations provide basic directions to the implementing entities for pollution control and environmental protection, these do not address the specific requirements, standards, and implementation mechanisms needed for effective treated wastewater reuse programs.

A dedicated treated wastewater reuse policy is crucial for Kerala to establish clear quality standards for different reuse applications, define stakeholder responsibilities, create monitoring mechanisms, and provide uniform guidelines for pricing and distribution, to all entities involved. Such a policy would ensure optimal utilization of treated wastewater resources, reduce freshwater demand for non-potable uses, and protect water bodies from pollution. It would also support economic benefits through the creation of alternative water resources for industrial and agricultural use while reducing treatment and disposal costs. The policy would fill current regulatory gaps by providing specific guidelines for infrastructure development, establishing institutional mechanisms, defining quality standards for various reuse applications, and creating frameworks for public-private partnerships. Additionally, it would address critical aspects such as pricing mechanisms, monitoring protocols, and public awareness programs, ultimately contributing to Kerala's water security and environmental sustainability goals.

4. Vision of the policy

Kerala will ensure that treated water from wastewater treatment facilities is effectively utilized across key sectors such as horticulture, agriculture, urban landscaping, construction activities, industrial processes, and cleaning applications. The state will actively reduce dependence on freshwater for construction and cleaning activities by promoting the use of treated wastewater as a sustainable alternative. This will be achieved through robust policy measures, strong institutional frameworks, and effective monitoring mechanism.

5. Objectives of the policy

A comprehensive policy on treated wastewater reuse is essential to address Kerala's water management challenges. The objectives of the policy are to:

a. Ensure maximum safe reuse of treated wastewater in the State for non potable purposes.
b. Provide a clear framework for implementing reuse projects, ensuring

public health and environmental safety.

c. Comply with the quality standards in force for different reuse applications.
d. Develop a coordinated policy framework that clearly defines the roles and responsibilities of government departments, agencies, local authorities, private players, end-users, and research institutions, fostering effective collaboration and communication to ensure safe, efficient, and sustainable treated wastewater reuse practices.
e. Encourage and formulate peer learning groups for officials to share knowledge among the stakeholders through formal and informal platforms for networking among the officials and stakeholders working on the treated wastewater reuse.
f. To establish a monitoring mechanism for treated wastewater reuse, ensuring compliance with prescribed quality standards.
g. This policy shall be used as a reference document while planning and implementing new projects.
h. Penalize the discharge or non-reuse of treated wastewater to maximize resource recovery.

6. Legislation and guidance documents

The concept of wastewater recycling is recognized by most policy frameworks and institutions in India. Some of the significant legislations and documents are as follows:

1. Constitutional provisions:

1. The Constitution of India, part IV, lays down directive principles of State policy. Article 48A states “The State shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country.”

2. Fundamental duties of every citizen in India: Article 51A states that “It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers, and wildlife, and to have compassion for living creatures.”

3. Role of Self-Government (73rd and 74th Constitutional Amendments) - These amendments make it obligatory for the State Governments to constitute Urban Local Bodies and transfer responsibility for water supply and sanitation services to them.

As such, there is a constitutional mandate to preserve, protect, and promote natural resources and water constitutes the most important ingredient of all.

2. Legislative (State and Central) Provisions, Standards, Manuals and Guidelines

The Treated Wastewater Reuse Policy should be read in accordance with the most current versions of the following, legislations, rules, statutes, policies, and other guidance documents issued at the State and Central levels:

1. The Water (Prevention and Control of Pollution) Act, 1974
2. The Water (Prevention and Control of Pollution) Rules, 1975
3. The Water (Prevention and Control of Pollution) Cess Act, 1977
4. The Water (Prevention and Control of Pollution) Cess Rules, 1978
5. The Environmental (Protection) Act, 1986
6. The Environment (Protection) Rules, 1986
7. Policy Statement for Abatement of Pollution, 1992
8. The Panchayati Raj Act, 1993

- Enacted in 1992 through the 73rd Constitutional Amendment Act, came into effect on April 24, 1993

9. The Kerala Municipal Act, 1994
10. State Water Policy, 2008
11. National Urban Sanitation Policy, 2008
12. National Water Policy, 2012
13. Manual on Sewerage and Sewage Treatment Systems, 2013

- By Central Public Health and Environmental Engineering Organization (CPHEEO), Ministry of Urban Development, Government of India

14. The National Building Code of India, 2016
15. National Fecal Sludge and Septage Management Policy (FSSM), 2017
16. Quality Standards by Central Pollution Control Board, 2017

- General Standards for Discharge of Environmental Pollutants Part A and Wastewater Generation Discharge Standards (Part B) under Schedule-VI of Environment (Protection) Amendment Rules

17. Service Level Benchmark (SLB), Ministry of MoHUA, 2018

- Mandates 20% reuse or recycling of sewage in urban areas

18. National Guidelines on Zero Liquid Discharge (ZLD) for Industries, 2019

- Reinforces no mixing of industrial and municipal used water

19. Kerala Municipality Building Rules, 2019
20. Kerala Panchayath Building Rules, 2019
21. CGWB Master Plan for Artificial Recharge to Groundwater in India, 2020
22. Groundwater Policy, 2020
23. Bureau of Indian Standards (BIS) for Wastewater, 2021- Including IS 17663:2021
24. Quality Standards by Kerala State Pollution Control Board (KSPCB), 2023

- KSPCB SoP, PCB/HO/SEE-3/MISCELLANEOUS/65/2019 dated 15/03/2023

25. Reuse of Treated Water in Urban/Peri-urban Agriculture in India, 2023 - NITI Aayog
26. Guidelines for Reuse of Treated Sewage, 2024

- In reference to Circular Economy, CPCB, dated 08.02.2024

27. Effluent Quality Guidelines for Health Protection Measures in Aquaculture Use of Wastewater
28. Quality Guidelines for Health Protection in Using Human Wastes for Aquaculture
29. Quality Standards by Kerala State Pollution Control Board (KSPCB) vide No KSPCB/841/2024-SEE-1 dated 19/11/2025

Even though unmentioned, all the prevailing and upcoming Central and State

legislations and guiding documents are also valid under this context.

7. Treated Waste Water allocation mechanism

The Local Self Government//Department/Agency owning the STP/FSTP shall, within six months from the notification of this policy, assess and declare the availability of Treated Wastewater under their ownership, and thereafter update and publish the same annually on or before 1st June. The declaration shall include details on the quantity of treated wastewater available, quality parameters as per prescribed KSPCB standards, location of STPs/FSTPs, and the nature of potential reuse applications. While assessing the availability of TWW in their jurisdiction, the LSGI shall ensure that treated wastewater from STPs of bulk users such as apartments, malls, and similar establishments are taken into account.

LSGIs/Department/Agency owning the STP/FSTP shall prioritize the utilization of treated wastewater for their own purposes, including road and street cleaning, irrigation of parks and green spaces, and construction activities undertaken by the concerned entity.

The details of treated wastewater availability shall be made publicly accessible through official website and other appropriate media platforms by the LSGI/Department/Agency owning the STP/FSTP to facilitate its use by public, private entities, and entrepreneurs. Interested users may apply for allocation based on declared availability.

The LSGIs or Department/Agency owning the STP/FSTP shall determine allocation priorities based on an assessment of factors such as distance from the treatment facility, availability of freshwater in their premises, intended use, infrastructure feasibility, and overall public benefit, ensuring optimal and efficient utilization of treated wastewater.

8. Technology recommendations

Wastewater treatment plants may be distinguished by the type of wastewater to be treated. Numerous processes/technologies can be used to treat wastewater depending on the type, extent of contamination, and the expected treated wastewater quality based on reuse applications. The treatment steps

include physical, chemical, and biological treatment processes.

A critical area in the planning process of a wastewater treatment system is the identification of an appropriate treatment technology (set of unit processes) that is techno-economically feasible, environmentally safe, and sustainable. The technologies approved under the Manual on Sewerage and Sewage Treatment Systems, 2013 of the Central Public Health and Environmental Engineering Organisation (CPHEEO) can be adopted. In Chapter 7 of Part A of Manual on Sewerage and Sewage Treatment Systems (2013), CPHEEO discusses in detail the different types of treatment technologies suitable under different conditions. The manual also provides details on the design considerations and operating requirements for a variety of technologies which will be suitable for different usage.

The policy, while suggesting the use of conventional treatment technologies, does not restrict the exploration of innovative technologies. Thus, the technology options that meet the treated wastewater standards as per the Quality standards suggested by the Central Pollution Control Board and Kerala State Pollution Control Board can be included as technology options for treating wastewater.

Any Department/Public/private authority owning the STP/FSTP authorized for the purpose are at liberty to establish tertiary treatment facilities along with STPs and supply treated wastewater for reuse to any beneficiary. The treated wastewater supplied shall, at a minimum, conform to the standards prescribed by KSPCB for discharge into soak pits. In cases where the treated wastewater is intended for specific reuse applications requiring higher quality standards, further advanced polishing treatment, including ultrafiltration, heavy metal removal, or other suitable treatment processes, shall be the responsibility of the beneficiary/user to achieve the required standards for the intended use.

9. **User category and prioritizing**

The reuse of treated wastewater can decrease the water demand from surface sources like rivers, ponds, lakes, and also subsurface sources (groundwater), and less consumption of raw water will help conserve natural water resources and promote a circular economy. In recent years, different LSGIs and concerned authorities focused on the safe reuse of treated wastewater and

initiated the reuse of treated wastewater in horticulture, irrigation, cleaning activities (road, vehicles, etc.), toilet flushing, construction activities, gardening, and utilization for industrial activities.

The treated wastewater from STPs of bulk users such as apartments, malls, and similar establishments shall be reused within the premises for non-potable purposes such as toilet flushing, landscaping, and cleaning, in accordance with prescribed standards, to the maximum extent feasible.

To promote the safe reuse of treated wastewater of STPs, the potential users have been identified and prioritized. The required treated wastewater quality standards will vary depending on the type of treated wastewater reuse purposes. So, prioritizing the treated wastewater reuse purposes is vital and the treated wastewater reuse standards should comply with the norms set by the CPCB, KSPCB, and CPHEEO. Priorities shall be allocated for the utilization of water for various uses so that the same may become a guideline for all. Looking at the importance of the economy of the Kerala State and the importance of sector development, it is desired to give priority to the distribution of treated wastewater with the following sequence:

1. Irrigation/ Agriculture/Floriculture/Horticulture/Real Estate purposes/Farm forestry/ roadside plantations
2. Landscaping, Gardening & Fire fighting
3. Construction activities (buildings townships, roads, railways, metro-rail, bus depots, and airports)
4. Toilet flushing in newly constructed buildings (plumbing must cater for the treated wastewater usage)
5. Aquaculture purposes
6. Industries (bulk users of water like the textile industry, paper and pulp industry, cooling towers, boilers, etc.)
7. Promotion to help sports activities like the development of Cricket grounds, football grounds, etc.,
8. Bulk water usage cleaning purposes, especially vehicle washing

9. Non-potable uses in bus stations, railways, metro rail, and airports
10. Sprinkling for dust control, especially on roads
11. Rejuvenation of water bodies like lakes/rivers/ ponds etc. for navigation and other uses (especially, water metro)
12. Power generation (Thermal power plants, hydro-power, etc.)
13. Urban landscaping & Green belts
14. Domestic Reuse (Flushing, floor cleaning, lawns, etc.)
15. Groundwater recharging
16. Any Other

Prioritization impacts total water-resource management and therefore demands careful balancing with a perspective for the future. Therefore, these priorities could be modified or added, if necessary, keeping in view the characteristics and necessities of the concerned areas and regions. Where effluent is to be used in the industrial processes, it should be the responsibility of the industry to treat it to the quality standards required based on each industry requirement.

10. **Quality standards of treated wastewater and reuse plan**

The Central Pollution Control Board (CPCB) and Kerala State Pollution Control Boards (KSPCB) have implemented norms and guidelines to ensure that the treated wastewater from Sewage Treatment Plants (STP) is of acceptable quality and does not harm the environment or public health. The CPCB [General Standards For Discharge Of Environmental Pollutants Part-A and wastewater generation discharge standards (Part B) under Schedule-VI of Environment (Protection) Amendment Rules, 2017] which was amended by the Order dated 30/04/2019 of the Hon'ble NGT Principal Bench in OA No. 1069 of 2018, directing compliance with the effluent standards specified therein for all new and existing STPs, the Ministry of Housing and Urban Affairs, Government of India, vide Letter No. D.O Q-12011/9/2023-CPHEEO dated 18/12/2023, reviewed and amended the norms for recycling

and reuse of wastewater for specific uses prescribed in the Manual on Sewage and Sewerage Treatment Systems, 2013. Based on that KSPCB (SoP, PCB/HO /SEE-3/ MISCELLANEOUS/ 65/2019 dated 19/11/2025) have set specific norms for the water quality of treated wastewater based on the type of treated wastewater reuse plan. The KSPCB prescribed quality standards are attached as Annexure - Table 1. Stakeholders shall follow latest Water quality standards that are notified by the Kerala State Pollution Control Board.

The norms set by the CPCB, KSPCB, and CPHEEO include parameters such as pH, BOD, TSS, TDS, oil and grease, total coliforms, nitrate, phosphate, and heavy metals. These norms are important to protect the environment and public health from the harmful effects of water pollution. Industries and local bodies need to adhere to these norms, treat wastewater effectively, and reuse the treated wastewater based on the user category prioritization.

As the permissible limits of required water quality vary with each treated wastewater purpose, the tolerance limits with respective codal provisions may be referred to for each treated wastewater reuse plan.

11. Pricing

Kerala has relatively abundant water resources due to frequent rainfall and the presence of rivers, lakes, and lagoons, and most bulk users are already served through piped public water supply. In this context, treated wastewater may not be perceived as a necessary alternative source for most users. The additional costs associated with storage, and distribution, along with concerns regarding quality and public acceptance, may further limit its uptake. As a result, treated wastewater reuse, especially for non-potable applications, may not generate sufficient demand from private-sector users. But allowing treated wastewater to be discharged without reuse is neither sustainable nor economical, especially after incurring significant costs for its treatment. Therefore, it is essential to promote the reuse of treated wastewater to reduce demand on natural water sources. Hence Treated wastewater shall be priced in such a way that it is attractive to the buyers. The LSGI or the Department/Agency owning the STP/FSTP can decide the tariff of treated wastewater from the STPs/FSTPs based on the factors such as distance from the treatment facility, availability of freshwater in their

premises, intended use etc. STPs/FSTPs owned and operated by the private sector may sell their excess treated wastewater by deciding appropriate tariff by themselves, but at reasonable non exploitative rates.

The treated wastewater shall be made available through separate transmission pipes/other transportation facilities for bulk water users like industries, malls, big hotels, colleges, universities, stadiums, real estate owners, contractors for construction, etc. Treated wastewater can also be made available at separate vending points at different locations for tanker lorry supply. Bulk water users utilizing treated wastewater for non-potable purposes shall be charged at a rate lower than the prevailing freshwater tariff prescribed by the Kerala Government, along with applicable costs for piping and transportation to the point of use. (The G.O(P) No.11/2023/WRD dated February 2023 may be referred for the tariff currently charged for drinking water.) The base tariff for treated wastewater will be fixed by the respective LSGI or the asset-owning department/agency, ensuring fair and good practices.

12. Incentives

To promote reuse, incentives such as rebates on taxes and other applicable charges may be provided to bulk users/establishments as well as the residential apartments. These incentives shall be determined by the respective Local Self Governments through bye-laws in consultation with concerned government departments and agencies. Rewarding systems for the best performing LSGIs in the reuse of treated water shall be formulated.

13. Penalty

As per the priority uses category in section 9, the bulk users/establishments shall be mandated to use the treated wastewater if the wastewater treatment plant is available within 10 km radius and non-compliance shall be penalized as per section 15 of the Environment (Protection) Act, 1986. The bulk users/establishments with their own treatment unit shall report their quality and quantity of water usage to the Kerala State Pollution Control Board as per the Water (Prevention and Control of Pollution) Act, 1974 and non-compliance shall be penalized as per section 42 of the aforementioned Act.

14. Business models and PPP

Private sector engagement shall be expanded through management contracts, concessions, and other forms for wastewater management, including the reuse of treated wastewater. In case surplus treated wastewater is available, the same can be sold by the LSGIs/entity owning the facility to third party agencies who may generate revenue by commercialising the same. LSGIs may authorize aggregators through Public-Private Partnership (PPP) arrangements to develop markets for treated wastewater, including its distribution, sale, and value addition, in accordance with applicable regulations. The app based treated wastewater delivery mechanisms shall also be encouraged as it is not only transparent and traceable but also creates opportunities for start-ups and entrepreneurs. All the treated wastewater shall comply with the norms specified by Kerala PCB.

15. Roles and Responsibilities of the Stakeholders

The stakeholders for this treated wastewater reuse policy are attached as Annexure to this document. The following are the roles and responsibilities of some of these stakeholders involved in treated wastewater reuse:

Stakeholder	**Responsibilities**
Local Self Government Department	● The Local Self Government Department (LSGD) shall facilitate coordination and liaison among relevant Departments to ensure the effective implementation, convergence and monitoring of the policy.
Local Self Government Institutions/Any Department/Agency owning the STP/FSTP	● Shall, within six months of policy notification and thereafter annually by 1st June, assess and declare treated wastewater availability; publish details on official platforms; and enable interested public and private users to apply for allocation based on availability.

	● Ensure that treated wastewater in the Wastewater treatment Plants under the operation of LSGI meets the prescribed quality standards for its intended reuse, with continuous monitoring, record maintenance, and timely upgrades to treatment processes as required. ● Shall prioritize its use for purposes such as road/street cleaning, irrigation of green spaces, and construction. ● Shall identify potential users such as govt Departments, Industries, other private bulk users and insist the use of treated wastewater for the road and other construction activities, irrigation/gardening activities. ● Promote public awareness and acceptance of Treated wastewater reuse through IEC campaigns that clearly explain the safety, benefits, and appropriate uses of treated wastewater. ● Develop, notify, and enforce bylaws to ensure the safe and effective reuse of treated wastewater. The byelaws shall also include provisions for tariff determination of treated wastewater.
Kerala Water Authority	● Ensure that treated wastewater in the Wastewater treatment Plants under the operation of Kerala Water Authority meets the prescribed quality standards for its intended reuse, with continuous monitoring, record maintenance, and timely upgrades to treatment processes as

	required. ● Establish dedicated mechanisms for the active reuse of treated wastewater generated from plants owned by the Authority.
Industries Department	● Facilitate and promote the use of treated wastewater among industries, particularly for non-potable applications such as cooling, construction and utility purposes. ● Identify industrial clusters with high water demand and coordinate with LSGIs for assured supply of treated wastewater. ● Encourage industries to substitute freshwater with treated wastewater through policy directives, incentives, and inclusion in industrial approvals and clearances. ● Support development of conveyance infrastructure (pipelines, storage, distribution systems) for supplying treated wastewater to industrial areas. ● Establish dedicated mechanisms for the active reuse of treated wastewater generated from plants owned by the Department.
Kerala State Pollution Control Board	● The board shall monitor compliance of bulk users in ensuring maximum feasible reuse of treated wastewater from their STPs, through periodic inspections during renewal of Consent and enforcement actions as per applicable regulations. ● Monitor/ensure that treated wastewater comply with the prescribed standards based on its use.

	● Monitor water quality at each stretch of the water bodies where wastewater treatment facilities are situated.
STP Operators	● Operate and maintain treatment facilities to meet required reuse standards prescribed by KSPCB. ● Ensure compliance with all relevant regulations and permits. ● Maximize on-site reuse of treated wastewater within the premises for non-potable purposes to the fullest extent feasible. ● Facilitate access and storage of surplus treated wastewater for authorized buyers, wherever feasible. ● Mandate direct water reuse with nearby industries or agricultural users.
Suchitwa Mission	● Suchitwa Mission shall be responsible for the evaluation and monitoring of implementation of treated wastewater reuse plan across LSGIs. ● Provide technical assistance to the LSG department in the implementation of these interventions. ● Assess the proposals submitted for treatment infrastructure by LSGIs. ● Coordinate between different stakeholders. ● Assist in IEC activities. ● Capacity building to LSGIs.
Agriculture Department	● Shall advocate and disseminate the

Agriculture Department	● Shall advocate and disseminate the knowledge of using treated wastewater for irrigation, horticulture purposes, specifically for farmers. ● Providing guidance for disseminating the knowledge on the use of treated wastewater for irrigation or horticulture purposes. ● Conduct research on cost-effectiveness in the farms using the treated wastewater as their source of water.
Groundwater Department	● Promote the usage of treated wastewater for non-potable purposes. Specifically, while issuing permissions the usage of water needs to be assessed for the necessity of using fresh groundwater. ● Monitor water quality at the groundwater table, especially in areas nearby wastewater treatment facilities.

16. Public Education and IEC

Education is the key to overcoming the public fears about a reuse system, particularly fears that relate to public health and water quality. The public shall be educated through various means about the risks associated with exposure to untreated wastewater and the value of treated effluents for different end uses.

An in-depth public relations Programme and a demonstration project are especially helpful when the reuse project is the first of its kind in the area. Separate programs for awareness to stakeholders shall be designed and conducted to promote the safe reuse of treated wastewater, methods of irrigation, permissible limits of treated wastewater quality for each purpose,

and handling of products. Such programs shall concentrate on methods of protection of farmer's health, animal and bird health, and the environment. As students are young buds, workshops, camps, and training shall be organized at schools/colleges emphasizing the need, and various applications of treated wastewater shall be conducted.

17. Management Information system

A well-developed data management and information system is a prime requisite for better management. Therefore, it is important to have data on wastewater generation, treatment of wastewater, recycling of wastewater, method of wastewater treatment plants, safe reuse of treated wastewater income, and expenditure, etc. LSGI/other Department/Agency owning the STP/FSTP shall maintain a Data Management and Information System to have data with regard to wastewater generation, characteristics of the treated effluent, intended reuse, revenue generated and demand arisen in the jurisdiction of LSGI.

18. Research Collaborations for Treated Wastewater Reuse

This policy promotes and facilitates research collaborations to advance treated wastewater reuse practices. It establishes partnerships between universities, research institutions, and water utilities to address priority research areas including advanced treatment technologies, contaminants of emerging concern, health and environmental impact assessments, economic feasibility studies, and social acceptance. A dedicated funding mechanism will support collaborative projects, while conferences, workshops, and publications will facilitate knowledge sharing. Research institutions like CWRDM, NIIST can contribute to providing new technologies or options for the safe reuse of treated wastewater in various fields of applications. Similarly, the technical expertise of NEERI or some other technical consultants shall be sought for technically viable projects for the development of water grids required for irrigation with treated wastewater.

The policy encourages pilot projects to test and demonstrate new technologies and fosters international collaborations to leverage global expertise. A centralized database will be created to store and disseminate research findings and best practices. Interdisciplinary research teams will be promoted, and ethical guidelines for wastewater reuse studies will be

developed. The policy also emphasizes the importance of translating research outcomes into practical applications and policy recommendations, ensuring that scientific advancements directly inform and improve wastewater reuse practices.

19. Implementation of the Policy

The Local Self Government Department (LSGD) shall facilitate coordination and liaison among relevant Departments, especially Water Resources and Enviroment Departments to ensure the effective implementation, convergence and monitoring of the policy.

Local Self Governments/ other departments/Agency owning the STP/FSTP shall prepare treated wastewater reuse strategies and implementation plans based on the capacity of their STPs/FSTPs and local water availability. The concerned LSGIs shall ensure testing of treated wastewater quality at specified intervals through laboratories approved by the Kerala State Pollution Control Board or NABL accredited laboratories, in accordance with prescribed sampling and testing protocols. KSPCB shall carry out monitoring and compliance verification at prescribed intervals as per the prevailing norms. They shall use the treated wastewater for non-potable purposes such as irrigation of parks and roadside greenery,road washing, and construction activities, thereby reducing the demand for freshwater.

A State-level Committee shall be constituted for the periodic evaluation and implementation of the Treated Wastewater Reuse Policy. The Committee shall comprise representatives from including Local Self Government Department, Water Resources, Kerala Water Authority, Kerala State Pollution Control Board, Industries Department and Suchitwa Mission. The Committee shall be responsible for assessing implementation progress, compliance with prescribed standards and identifying gaps and corrective measures. It shall meet at regular intervals and submit recommendations to the Government for necessary improvements.

20. Policy Evaluation

The State Treated Wastewater Reuse Policy would be a dynamic policy document and would be periodically reviewed, as and when needed, to meet

the future wastewater reuse technology development and management challenges. This policy shall come into force from the date of the issue of this Government Order or notification in the official gazette of the State. As for any interpretation of the provisions of this Policy, the matter shall be referred to the State Government, whose decision thereon shall be final and not challengeable in the Court of Law. As any policy, this policy requires continuous monitoring and revision to comply with the new additions in technology and legislation. Thus, this policy may be revised/monitored at every interval of 5 years.

Annexure

1. List of stakeholders involved in Treated Wastewater Reuse Policy:

1. Local Self Government Department
2. Water Resources Department
3. Kerala Water Authority
4. State Pollution Control Board
5. AMRUT
6. IMPACT Kerala
7. Groundwater Department
8. Irrigation Department
9. Education Department
10. Fisheries Department
11. Suchitwa Mission
12. Directorate of Health Services
13. Department of Agriculture & Farmers Welfare
14. Kerala Forest Department
15. State Horticulture Mission Kerala
16. Biotechnology and Model Floriculture Centre, Karshika Keralam
17. Department of Soil & Water Conservation
18. Local Self Governments (LSGs)
19. Kerala State Planning Board
20. Kerala Land Development Corporation (KLDC)
21. Kerala Industrial Infrastructure Development Corporation (KINFRA)
22. Airport Authority
23. Public Works Department (PWD)
24. Kerala Infrastructure Development Corporation - KIIDC
25. Indian Railways
26. Kochi Metro Rail Limited (KMRL)
27. Kerala State Road Transport Corporation (KSRTC)
28. Kerala Rural Water Supply and Sanitation Agency (KRWSA)

29. Centre for Water Resources Development and Management (CWRDM)
30. Ministry/Department of Power
31. Directorate of handloom and textiles
32. Environment and climate change
33. Kerala Fire Force
34. Research organizations (NIIST)
35. Kerala Dairy Development Department
36. Directorate of Animal Husbandry
37. Tourism Department
38. Confederation of Real Estate Developers Associations of India (CREDAI)
39. Thiruvananthapuram Development Authority (TRIDA)
40. Flats/Apartments/ Residential Associations in Kerala
41. Car washing centres
42. All Kerala Government Contractor's Association
43. Chamber of Municipal Chairmen
44. Mayor's Council
45. Grama Panchayath Association
46. Private STP operators and Institutions with STPs

2. Table 1:

Treated effluent standards for sewage treatment plants

(KSPCB/841/2024-SEE-1 dated 19.11.2025)

Parameters	Gardening/ Flushing/ Vehicle washing/ other reused	Irrigation/ Soak Pit/Other modes of disposal
pH	6.5 - 8.5	6.5 - 8.5
BOD (mg/L)	<6	<10
COD (mg/L)	<25	<50
TSS (mg/L)	<20	<20

Oil & Grease (mg/L)	<10	<10
Total Nitrogen (mg/L)	<10	<10
Total Phosphorus (mg/L)	-	<1
Fecal Coliform (mg/L)	<100	<100