# Treated Wastewater Re-use Policy
*of*
# Urban West Bengal

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***Prepared by***

**Urban Development & Municipal Affairs Department**
**Government of West Bengal**

# Preface

Poor sanitation and wastewater management in developing countries leads to the contamination of fresh water sources and is a major cause of water borne diseases and also affect the health of eco-systems. Around 80% of all waste water is discharged into the surface water bodies without any treatment where it creates health, environmental and climate-related hazards. Urbanization further exacerbates this challenge with increasing wastewater generation, while at the same time using more of Earth's dwindling resources. Recycling and reuse of treated wastewater is an important part of the sanitation cycle and critical in an environment with decreasing freshwater availability and increasing costs for delivering desirable quality water, often from far distance. Recovering the water, energy, nutrients and other precious materials embedded in wastewater is a key opportunity to be seized. Target 6.3 of the Sustainable Development Goals (SGD) commits governments to halving the proportion of untreated wastewater and sustainability, increasing recycling and safe reuse by 2030.

This policy document gives substantial focus to the financial and economic benefits of wastewater recycling from the perspective of public spending. The policy presents possible strategies for city and state planners in view of the sanitation situation and the role of wastewater recycling in the cities in West Bengal, and focuses on recycling at the end of sewage systems with appropriate centralized or decentralized technology solution alongwith extensive public awareness activities.

# Contents

# Overview

# About Wastewater: At a Glance

## What is Wastewater:

Wastewater can have a number of definitions (UN-Water 2015). The approach taken in this policy is a very broad definition following that outlined in the UNEP/UN-Habitat document 'Sick Water?'. Thus, Wastewater is defined as "a combination of one or more of:

- domestic effluent consisting of blackwater (excreta, urine and faecal sludge) and grey- water (kitchen and bathing wastewater);
- water from commercial establishments and institutions, including hospitals;
- industrial effluent, storm water and other urban run-off;
- agricultural, horticultural and aquaculture effluent, either dissolved or as suspended matter

Although, using this definition, the term 'wastewater' clearly encompasses domestic, commercial, industrial, agricultural components and also fecal sludge, these are sometimes covered separately in order to clarify or highlight the importance of the individual components or wastewater streams. (UN-Water, 2015).

## Types of wastewater:

Wastewater comes in three main types namely Black water, Gray water and Yellow water.

**Black water**
This is wastewater that originates from toilet fixtures, dish washers, and food preparation sinks. It is made up of all the things that one can imagine going down the toilets, bath and sink drains. They include poop, urine, toilet paper and wipes; body cleaning liquids, anal cleansing water and so on. They are known to be highly contaminated with dissolved chemicals, particulate matter and is very pathogenic.

**Gray water**
This is wastewater that originates from non-toilet and food fixtures such as bathroom sinks, laundry machines, spas, bathtubs and so on. Technically it is sewage that does not contain poop or urine. Gray water is treated very differently from Black water and is usually suitable for re-use.

**Yellow water**
This is basically urine collected with specific channels and not contaminated with either black water or gray water.

## Sources of wastewater

**Domestic Sewage**
This includes all wastewater generated by home dwellings, public restrooms, hotels, restaurants, motels, resorts, schools, places of worship, sports stadiums, hospitals and other health centres, apartments and the like. They all produce high volumes of wastewater.

**Non-sewage**
This includes water from floods (storm water), runoff (rainwater running through cracks in the ground and into gutters), water from swimming pools, water from car garages and cleaning centres including laundromats, beauty salons, commercial kitchens, energy generation plants, industries and so on.

Wastewater is also generated from agricultural facilities. Water used for cleaning in animal farms, washing harvested produce and cleaning farm equipment.

## How is wastewater harmful?

In certain parts of the world, especially in developing countries, wastewater is pumped directly into the sea or into fresh water bodies without any form of treatment. In other parts of developed countries, lack of adequate wastewater treatment infrastructure, maintenance and outdated systems heavily compromise wastewater treatment efforts. The effects of this (either treated or partly treated) can be classified in the following:

**Water pollution:**
Fresh water bodies and marine waters, into which wastewater is discharged may be polluted and rendered unsafe for human use. Depending on what is discharged, aquatic life may be harmed too.

**Water security:**
There is water scarcity in many places in the world. Wastewater discharged on lands can leach into underground water tables and potentially contaminate aquifers and underground water. If discharged in freshwater bodies, it may render water sources unsuitable for use.

**Ecosystem services:**
All ecosystems are connected and they all ultimately depend on water. Similarly, all water (surface and underground) is connected. This means careless wastewater discharge can have some serious ripple effect. One common effect of wastewater is the eutrophication of fresh water bodies and oceans. If one part of the ecosystem chain is destroyed, it can upset its entire food chain.

**Agriculture / Fisheries / Tourism:**
Wastewater for irrigation may contain unsuitable chemicals and higher concentrations of nutrients needed for crops. This can result in delay and under yielding. Wastewater used for animal farming may also contain harmful things and chemicals dissolved in them. Animals may die, and there is a chance that humans that eat such animals may be harmed too. In some places, fecal sewage is discharged directly into the sea/river. The discharge contains pathogens and harmful dissolved chemicals which can affect fishing in that area. The smell and such behavior do not encourage tourism to that area.

**Health of urban and rural populations:**
Wastewater is a big health issue, as it carries and transports a myriad of diseases and illnesses. It is believed that about 2.2 million people die each year (globally) from diarrhoeal disease. (WHO) At least 1.8 million children under five years die every year due to water related disease, or one every 20 seconds (WHO, 2018).

## What is Waste water Management?

Wastewater management is the process of taking wastewater and treating/managing it in order to reduce the contaminants to acceptable levels so as to be safe for discharge into the environment. There are effectively two basic types of wastewater treatment: centralized and decentralized. Centralized systems are large-scale systems that gather wastewater from many users for treatment at one or a number of sites, whereas decentralized systems are dealing with wastewater from individual users, or small clusters of users, at the neighborhood or small community level.

The choice between centralized or decentralized wastewater management systems will depend upon a number of different factors, but it is important that full consideration be given to both the options rather than the situation that has existed in the past where sewerage was often considered to be the only 'proper' form of urban sanitation (UN-Water, 2015).

# Availability of Water in West Bengal

- West Bengal possesses 7.5% of Water Resources of India.
- Annual Per capita availability of fresh Water:

| Year | Water Availability ( in $m^3$ ) |
|---|---|
| 1961 | 5177 |
| 2001 | 1869 |
| 2025 | 1341 |

- Availability of Surface Water is 13.29 Million hectare meters (M.ham), 40% of it is useable.
- Availability of Ground Water is 2.38 M.ham, totally useable.

# Requirement of Water in West Bengal in (M.ham)

| Sector | 2000 | 2011 | 2025 |
|---|---|---|---|
| Agriculture | 5.38 | 7.71 | 10.98 |
| Domestic | 0.26 | 0.28 | 0.38 |
| Industry | 0.26 | 0.38 | 0.59 |
| Power (Thermal) | 0.31 | 0.00 | 0.00 |
| Inland Navigation | 3.63 | 3.63 | 3.63 |
| Forestry | 0.01 | 0.01 | 0.01 |
| Ecology, Environment and Others | 1.00 | 1.00 | 1.00 |
| Total (M.ham) | 10.85 | 13.02 | 16.60 |
| * Source: State Irrigation Department | | | |

# Shortfall of Water in West Bengal

As the supply of water is naturally constrained and demand is increasing in leaps and bounds the GAP in between is extending with time.

| GROWTH OF POPULATION AND DECLINING PER CAPITA WATER | | |
|---|---|---|
| YEAR | POPULATION (in Crore) | PER CAPITA WATER (in cu.m) |
| 1951 | 2.63 | 2574 |
| 1961 | 3.49 | 1940 |
| 1971 | 4.43 | 1528 |
| 1981 | 5.46 | 1240 |
| 1991 | 6.81 | 996 |
| 2001 | 8.02 | 844 |
| 2011 | 9.40 | 720 |
| *** Source: State Irrigation Department** | | |

| Water Requirement vs Supply | | |
|---|---|---|
| YEAR | Water Requirement (M.ham) | Deficit |
| 2001 | 10.85 | 38% |
| 2011 | 13.02 | 48% |
| 2025 | 16.60 | 59% |
| * Source: State Irrigation Department | | |

# Main Features of Urban West Bengal

**Area of West Bengal:** 88752 sq. km.
**Total No. of Districts:** 23 nos.

**Area of Statutory Towns of West Bengal:** 2742.21 sq. km. (3.09% of Total Area of WB)

**Total Towns:**

1. 125 Statutory Urban Local Bodies having 2938 Wards
   - 7 Municipal Corporations; 115 Municipalities; 3 Notified Area Authorities
2. 782 Census Towns

**Three Industrial Township Authorities –** Nabadiganta Industrial Township Authority,
Bantala Industrial Township Authority and
Golden City Industrial Township Authority

**Development Authority** – 19 Nos.

**Urban Growth:**

- Density of Urban Population – 6798 per sq. km. (highest in India)
- 30% of the total Urban Population live in Slum Areas
- Population share in size classes of towns to total Urban Population (Census 2011):

| Sl No | Category of Town | Population Range | No. of Towns | Total Population |
|---|---|---|---|---|
| 1 | Municipal Corporation | | 7 | 8591218 |
| 2 | A | above 2,15,000 | 13 | 4013321 |
| 3 | B | above 1,70,000 to 2,15,000 | 8 | 1548015 |
| 4 | C | above 85,000 to 1,70,000 | 34 | 4010347 |
| 5 | D | above 35,000 to 85,000 | 42 | 2321142 |
| 6 | E | below 35,000 | 21 | 473658 |
| | **TOTAL** | | **125** | **20957701** |

| Sl No | Town Size Classes | No. of Towns | Total Population |
|---|---|---|---|
| 1 | I (> 1000000 population) | 3 MC | 6726212 |
| 2 | I (> 500000 - 1000000 population) | 3 MC | 1698139 |
| 3 | I (> 100000 - 500000 population) | 1 MC & 47 Municipality | 9040626 |
| 4 | II (50000-99999 pop.) | 33 Municipality | 2334791 |
| 5 | III (20000-49999 pop.) | 29 Municipality & 1 Notified Area Authority | 1036389 |
| 6 | IV (10000-19999 pop.) | 5 Municipality & 2 Notified Area Authority | 112417 |
| 7 | V (5000-9999 pop.) | 1 Municipality | 9127 |
| | **TOTAL** | **125** | **20957701** |

## Service Level Scenario of Piped Water Supply in Urban West Bengal

| Piped Water Supply | | | | |
|---|---|---|---|---|
| **Sl No** | **Indicator** | **Service Level Benchmark** | **Present Status (Average)** | **Gap** |
| 1 | Household level coverage (%) | 100% | 56% | 44% |
| 2 | Per capita supply of water | 135 lpcd | 72 lpcd | 63 lpcd |

# Comparative Urban Growth of India and West Bengal

| Sl .No. | Years | India (In Million) | West Bengal (in Million) |
|---|---|---|---|
| 1 | 1961 | 78.16 | 8.54 |
| 2 | 1971 | 107.82 | 10.97 |
| 3 | 1981 | 159.46 | 14.45 |
| 4 | 1991 | 217.61 | 18.71 |
| 5 | 2001 | 285.36 | 22.43 |
| 6 | 2011 | 377.11 | 29.1 |
| ***Source: 1. Census of India*** | | | |

# Urbanization in West Bengal

| Year | Total Population (in Million) | Urban Population (in Million) | % of Urban Population |
|---|---|---|---|
| 1981 | 54.6 | 14.4 | 26.37% |
| 1991 | 68.1 | 18.7 | 27.46% |
| 2001 | 80.17 | 22.5 | 28.06% |
| 2011 | 91.2 | 29.1 | 31.90% |

# Some Statistic of Urban West Bengal

| Sl. No. | Particulars | Generation/ Capacity (MLD) As on 2020 |
|---|---|---|
| 1. | Estimated Sewage Generation | 2758.07 |
| 2. | Estimated Sewage Treatment Capacity exist | 2039 |

In West Bengal, an Internationally recognized Energy Efficient natural Sewage Treatment System acting as carbon sink was established in East Kolkata Wet Land. Here 900 MLD domestic sewage are getting treated in a energy efficient natural treatment system, which is regularly being used in pisciculture.

# Water Demand with Projected view of next 50 years in West Bengal

| Sl No | Municipality/ Corporation | Population in 2020 | Rate of Growth per year | Population in 2070 |
|---|---|---|---|---|
| 1 | West Bengal Urban Area | 31,819,118 | 1.585% | 69,850,157 |

| | | Ultimate Year 2070 | Units | Remarks |
|---|---|---|---|---|
| **Projected Population** | | 69850157 | Nos. | Based on population computed |
| | | | | |
| Floating Population @ | 2.00% | 1397003 | Nos. | Assumed |
| | | | | |
| Total Population | | 71247160 | Nos. | |
| | | | | |
| Population Served in LPCD @ | 135 | 9618366619 | Lit/Day | CPHEEO Manual |
| | | | | |
| Institutional & Industrial Demand @ | 8.00% | 769469330 | Lit/Day | Assumed |
| | | | | |
| Fire Fighting @ 100000(Popu/1000)^0.5 | | 26692164 | Lit/Day | CPHEEO Manual |
| | | | | |
| UFW @ | 15% | 1562179217 | Lit/Day | CPHEEO Manual |
| | | | | |
| **Total Estimated Demand** | | **11976707329** | Lit/Day | |
| | | | | |
| **Total Estimated Demand** | | **11976.71** | **MLD** | |
| | | | | |
| **Required demand for next 50 years in KMA area** | | **2635.00** | **MGD** | |

# Capacity of STP in Towns beside Ganga River

| Sl.No. | Town | District | Agency Responsible for Construction and/or O & M | Installed Capacity (MLD) |
|---|---|---|---|---|
| 1 | (a)Kolkata-<br>(b)Cossipore<br>Chitpore<br>(c)Graden reach | Kolkata | KMC | 122.50 |
| 2 | (a) Howrah<br>(b) Kona<br>(c) Howrah STP<br>(d) Anupara<br>(e) North Howrah | Howrah | KMDA | 127.00 |
| 3 | Ulluberia | | KMDA | |
| 4 | Serampore | Hooghly | KMDA | 18.90 |
| 5 | Chandanagar | | KMDA | 22.70 |
| 6 | Bhadreswar | | KMDA | 7.60 |
| 7 | Champdani | | KMDA | 0.30 |
| 8 | Bansberia | | KMDA | 0.30 |
| 9 | Baidyabati | | KMDA | 6.00 |
| 10 | Konnagar | | KMDA | |
| 11 | Rishra | | KMDA | |
| 12 | Uttarpara-Kotrung | | KMDA | 22.00 |
| 13 | Hooghly-Chinsurah | | KMDA | 29.30 |
| 14 | Panihati | North 24 Parganas | KMDA | 12.00 |
| 15 | Titagarh | | KMDA | 23.00 |
| 16 | Bhatpara | | KMDA | 61.00 |
| 17 | Baranagar | | KMDA | 40.00 |
| 18 | Kamarhati | | KMDA | |
| 19 | Garulia | | KMDA | 7.90 |
| 20 | Naihati | | KMDA | 11.60 |
| 21 | Halisahar | | KMDA | 6.50 |
| 22 | Barrackpore | | KMDA | 24.00 |
| 23 | Khardah | | KMDA | 3.00 |
| 24 | Kanchrapara | | KMDA | 18.00 |
| 25 | Maheshtala | South 24 Parganas | KMDA | 26.00 |
| 26 | Budge Budge | | KMDA | 9.30 |
| 27 | Diamond Harbour | | KMDA | 0.52 |
| 28 | Nabadwip | Nadia | KMDA | 19.50 |
| 29 | Kalyani | | KMDA | 21.00 |
| 30 | Gayeshpur | | KMDA | 8.33 |
| 31 | Santipur | | KMDA | 6.00 |
| 32 | Krishnanagar | | MED | |
| 33 | Chakdah | | MED | |
| 34 | Ranaghat | | KMDA | 11.80 |
| 35 | Katwa | Burdwan | KMDA | 10.45 |
| 36 | Haldia | Purba Mednipur | MED | |
| 37 | English Bazar | Malda | MED | |
| 38 | Murshidabad | Murshidabad | KMDA | 11.96 |
| 39 | Jaigunj-Ajimganj | | KMDA | 8.00 |
| 40 | Dhulian | | MED | |
| 41 | Jangipur | | KMDA | 13.00 |
| 42 | Behrampore | | KMDA | 3.70 |
| 43 | Raiganj | Uttar Dinajpur | MED | |
| 44 | North Barrackpore | North 24 Parganas | KMDA | 14.85 |
| | | | **Total** | **728.01** |

# Status of old STPs maintained

| SL. No. | Location of STP | Year of Commissioning | STP Capacity | Technology Adopted | Present Functional Status | Purpose of Use of Treated Water |
|---|---|---|---|---|---|---|
| 1. | Baidyabati | 2007 | 6.00 MLD | Oxidation Pond | Operational | Used in pisiculture purpose |
| 2. | Champdani | 2009 | 1.00 MLD | Aerated Lagoon | Non-operational | - |
| 3. | Bhadreswar | 2006 | 7.60 MLD | Aerated Lagoon | Operational | Used in pisiculture purpose |
| 4. | Bansberia | 2009 | 1.00 MLD | Waste Stabilization Pond | Non-operational | - |
| 5. | Chandannagar | 1993 | 22.70 MLD | Bio-filter and Waste Stabilization Pond | Operational | Used in pisiculture purpose and partially for agriculture |
| 6. | Garulia | 2004 | 7.90 MLD | Waste Stabilization Pond | Non-operational | - |
| 7. | Titagarh | 1989 | 23.00 MLD | WSP, ASP and Low Cost STP | Operational | Used for agricultural purpose |
| 8. | Seerampore | 1990 | 18.90 MLD | Trickling Filter | Non-operational | - |
| 9. | Uttarpara – Kotrung, Konnagar and Rishra | 2007 | 22.00 MLD | Low Cost STP | Operational | Used for pisiculture and for agricultural purpose |
| 10. | Panihati | 1993 | 12.00 MLD | Low Cost STP | Non-operational | - |
| 11. | Naihati | 2009 | 11.56 MLD | ASP | Operational | - |

# Status of new STP augmented / to be augmented

| SL. No. | Location of STP | STP Capacity | Expected Date of Commissioning / Already Commissioned | Technology Being Adopted | Purpose of Use of Treated Water | Remarks |
|---|---|---|---|---|---|---|
| 1. | Kalyani | 21.00 MLD | 2018 | Trickling Filter and Waste Stabilization Pond | Being used for pisiculture and proposed for Agriculture and Industrial use | Already Commissioned |
| 2. | Hooghly – Chinsurah | 29.30 MLD | 2022 | SBR | - | Tendering Stage |
| 3. | Mahestala | 30.20 MLD | 2022 | SBR | - | |
| 4. | Budge Budge | 9.50 MLD | 2020 | SBR | - | Work in Progress |
| 5. | Baranagar – Kamarhati | 60.00 MLD | 2022 | Trickling Filter | - | LOA Awarded |
| 6. | Halisahar | 16.00 MLD | 2020 | SBR | - | Work in Progress |
| 7. | Bhatpara | 60.50 MLD | 2018 | FBBS Technology | Partially used for pisiculture | Already Commissioned |
| 8. | Barrackpore | 24.00 MLD | 2020 | SBR | - | Work in Progress |
| 9. | Kona | 62.00 MLD | 2022 | SBR & WSP | - | LOA Awarded |
| 10. | Arupara | 65.00 MLD | 2022 | SBR | - | |
| 11. | Kanchrapara | 18.00 MLD | 2022 | Aerated Lagoon | - | In the process of finalization of tender |

# Industrial Waste Water Treatment

Effluent Treatment Plants (ETPs) and/or Common Effluent Treatment Plants (CETPs) are integral part of industrial wastewater management systems. A CETP caters to a number of industrial units with same of closely similar industrial processes as only in such case the CETP can be designed in respect of the treatment chemistry. ETPs are the ultimate step of wastewater treatment by any industry before discharge to the environment. It is a compulsion for any water polluting industrial unit to have a suitable ETP treating the wastewater to the required discharge standard.

Depending on two wastewater components, (1) the volume of discharge and (2) the wastewater quality, “Grossly Polluting Industries (GPI)” has been identified in the state. Such GPIs are considered to be highly water polluting industries. At present West Bengal has 46 such Industries. An account of the quantum of wastewater discharge by these industrial units is provided in table below. The wastewater discharged by these industries will be identified in the first place for further treatment and reuse in (1) the same industry, or, (2) in industries or establishments nearby. As industrial wastewater, even after treated to the prescribed discharge standard, may contain substances unsuitable for certain uses, reuse of industrial wastewater requires a level of scrutiny before specific re-use.

An industrial unit will have to submit specific application to the State Pollution Control Board about the scheme of the re-use and can initiate such activity after specific approval by the State Board. The State Government shall actively consider incentive scheme(s) for the industries willing for initiating wastewater re-use schemes.

# Industrial Waste Water Discharge

| An account of wastewater discharge by Grossly Polluting Industries in West Bengal | | |
|---|---|---|
| **INDUSTRY NAME** | **DISTRICT** | **WASTE WATER DISCHARGE QUANTITY (M3 / Day)** |
| BALLAVPUR PAPER MFG.lTD | Burdwan | 288 |
| BardhamanDharmaraj Paper Mill Private Limited | Burdwan | 8 |
| Durgapur Steel Plant (DSP) | Burdwan | 22390 |
| EAST INDIA PHARMACEUTICAL WORKS LIMITED (DURGAPUR WORKS) | Burdwan | 140 |
| Krishna Tissues Private Limited | Burdwan | 620 |
| SAIL-IISCO Steel Plant | Burdwan | 32700 |
| The Durgapur Projects Limited | Burdwan | 57500 |
| Bengal Beverages Pvt. Ltd. | Hooghly | 730 |
| Berger Paints India Ltd. (BAICL Divn.) | Hooghly | 80 |
| Dankuni Coal Complex, S.E.C.L. | Hooghly | 1000 |
| Grasim Industries Limited (Unit - Aditya Birla Insulators) | Hooghly | 208 |
| ITC Limited, PSPD, Unit: Tribeni | Hooghly | 14000 |
| Kesoram Rayon - Unit of Cygnet Industries Ltd. | Hooghly | 11670 |
| Mother Dairy Calcutta | Hooghly | 700 |
| Nalco Water India Limited | Hooghly | 33 |
| PMC Rubber Chemicals India Pvt. Ltd. | Hooghly | 244 |
| BERGER PAINTS INDIA LIMITED | Howrah | 72.2 |
| PEPSICO INDIA HOLDINGS PVT. LTD. (FRITOLAY DIVISION) | Howrah | 1312.4 |
| Britannia Industries Limited | Kolkata | 236 |
| Diamond Beverages (P) Limited | Kolkata | 213 |
| Gun and Shell Factory | Kolkata | 2278 |
| Hindustan Unilever Limited | Kolkata | 300 |
| AdaniWilmar Limited | Medinipore(E) | 107 |
| Exide Industries Limited | Medinipore(E) | 630 |
| Haldia Petrochemicals Limited | Medinipore(E) | 11470 |
| Indian Oil Corporation Limited- Haldia Refinery | Medinipore(E) | 6300 |
| IVL Dhunseri Petrochem Industries Private Limited | Medinipore(E) | 403 |
| MCPI Private Limited | Medinipore(E) | 30792 |
| Ruchi Soya Industries Limited | Medinipore(E) | 130 |
| Shree Renuka Sugars Ltd | Medinipore(E) | 740 |
| Tata Chemicals Limited | Medinipore(E) | 45 |
| UPL Limited (United Phosphorus Limited) | Medinipore(E) | 72 |
| UNIGLOBAL PAPERS PVT. LTD | Medinipore(W) | 210 |
| UNITECH PAPERS MILLS PVT. LTD | Medinipore(W) | 242 |
| AB Mauri India Pvt. Ltd. | Nadia | 225 |
| Khaitan (India) Ltd. | Nadia | 200 |
| SUPREME PAPER MILLS LTD | Nadia | 1230 |
| EMAMI PAPER MILLS LTD. (UNIT-GULMOHAR) | North 24-Parganas | 900 |
| EXIDE INDUSTRIES LIMITED, SHYAMNAGAR UNIT | North 24-Parganas | 1660 |
| INDIAN PULP AND PAPER PRIVATE LIMITED | North 24-Parganas | 241.25 |
| METAL & STEEL FACTORY (ORDNANCE FACTORY, MINISTRY OF DEFENCE) | North 24-Parganas | 4411 |
| IFB AGRO INDUSTRIES LTD (Noorpur- 743368) | South 24-Parganas | 1189 |
| Kohinoor Paper & Newsprint Pvt. Ltd. | South 24-Parganas | 12 |
| UNITED BREWERIES LIMITED,KALYANI UNIT | Nadia | 950 |
| Krishna Tissues Private Limited | Burdwan | 620 |
| Nataraj Electro Casting | Burdwan | 2 |
| CETP of Bantala Leather Complex | South 24-Parganas | 20000 |

# Policy Statement

and that too concentrated mostly during the summer monsoons. Expanding urban population without a

proportional increase in civic amenities is already putting pressure on water resource management in urban areas. By 2050, half of India's population will live in urban areas and face issues around water. These bring more into focus on the institutional arrangements and delivery mechanisms of this scarce and non-substitutable resource.

West Bengal is the most densely populated state of India at 1000 persons per square km. Its average urban density is much higher at around 7500 persons per square km. West Bengal has liberal water availability as a natural resource that supports intensive rain-fed agriculture. However the pressure on urban water resources has been increasing over some years due to increasing population, low investment in supply augmentation and dilapidating state of existing systems. It is realized that current and future fresh water demand could be met by enhancing water use efficiency and demand management.

With rapid expansion of cities and domestic water supply, quantity of wastewater is increasing in the same proportion. As per CPHEEO estimates about 70-80% of total water supplied for domestic use gets generated as wastewater. The per capita wastewater generation by the class-I cities and class-II towns, representing 72% of urban population in India, has been estimated to be around 98 lpcd while that from the National Capital Territory-Delhi alone (discharging 3,663 mld of wastewaters, 61% of which is treated) is over 220 lpcd (CPCB, 1999). As per CPCB estimates, the total wastewater generation from Class I cities (498) and Class II (410) towns in the country is around 35,558 and 2,696 MLD respectively. While, the installed sewage treatment capacity is just 11,553 and 233 MLD, respectively, thereby leading to a gap of 26,468 MLD in sewage treatment capacity. Maharashtra, Delhi, Uttar Pradesh, West Bengal and Gujarat are the major contributors of wastewater (63%; CPCB, 2007a). Further, as per the UNESCO and WWAP (2006) estimates (Van-Rooijen *et al.,* 2008), the industrial water use productivity of India (TWP, in billion constant 1995 US$ per m3) is the lowest (i.e. just 3.42) and about 1/30th of that for Japan and Republic of Korea. It is projected that by 2050, about 48.2 BCM (132 billion litres per day) of wastewaters (with a potential to meet 4.5% of the total irrigation water demand) would be generated thereby further widening this gap (Bhardwaj, 2005). Thus, overall analysis of water resources indicates that in coming years, there will be a twin edged problem to deal with reduced fresh water availability and increased wastewater generation due to increased population and industrialization.

Though wastewater reuse is endorsed in many policies and programmes, there is a lack of clear guidelines and frameworks to support the implementation of such projects. As a result, the reuse of reclaimed water for non-potable purposes continues to face challenges. The problem is further exacerbated by limited enforcement of the restriction to extract groundwater for non-potable purposes. More detailed policies and stronger enforcement is needed for wastewater reuse projects to be viable.

To address these issues in a coordinated and focused manner by the development actors, a need has been felt to articulate an uniform State Policy on treated waste water re-use with specific direction towards the reforms in planning, institutional framework, capacity building, research & development, legal & regulatory measures, financial arrangement, public-private partnership, technology upgradation, community participation and awareness. The UD & MA Department has formulated this Policy taking the note of the National Policy of Government of India.

This Policy is applicable to the interventions carried out by Urban Development & Municipal Affairs Department, Development Authorities, Urban Local Bodies and private organizations in urban areas. Other Departments and Institutions carrying out similar/related projects in urban areas are also requested to follow this Policy.

## 2. Statement of Intent:

The Government intends to shift his role from 'Provider' to 'Provider cum Facilitator cum Regulator' in sustainable management of water resources by way of establishing an effective system of re-use of treated wastewater by the urban citizens of West Bengal thereby reducing dependency on fresh ground/surface water resources bringing reforms in the areas of Planning, Institution, Finance, Technology and Legal & Regulation.

## 3. Objectives:

## 3.1. Immediate Objective: (2 Years)

- To assess sources of generation of wastewater and quantity of wastewater production in urban West Bengal and to create a GIS enabled MIS
- To identify bulk users of water like Industrial Clusters, Metro rail, Indian Railways, Infrastructure Projects, Construction Sectors, Agriculture, Bus Depots and Public Works Department, and quantify their potential water demand as bulk user of water.
- To assess the existing centralized and decentralized plants of wastewater treatment especially the Sewage Treatment Plants (STPs), Effluent Treatment Plants (ETPs) & Common Effluent Treatment Plants (CETPs) and take appropriate measures for upgradation or expansion.
- To identify centralized and decentralized options of wastewater treatment and its application in appropriate places.
- To develop land bank for centralized wastewater treatment plants
- To develop an integrated approach in wastewater management bringing coordinated mission between several Government Departments and Private Sector.
- To develop several issue-based policies & actions and review the existing legal & regulatory measures to bring reforms in wastewater management and its re-use.
- To ensure employment opportunities in wastewater management and its re-use
- To attract investment in wastewater management with innovative financial mechanisms.
- To formulate a comprehensive plan on water resource management including wastewater management with active community participation in Urban Wastewater Treatment and its re-use in cost effective manner.

## 3.2. Medium Term Objective: (next 4 Years)

- To develop a comprehensive institutional arrangement in all levels either through new establishment of institution or re-orienting institutions responsible for proper planning, implementation, monitoring, conflict resolution and grievance redressal of wastewater treatment & its re-use with appropriate management system, and leveraging awareness about green habit and collective behavioural change amongst all citizens.
- To implement the comprehensive plan on water resource management including wastewater management in urban West Bengal in phased manner subject to availability of finance.
- To establish an appropriate system of operation and maintenance of the wastewater treatment infrastructure through active involvement of the citizens.

## 3.3. Long Term Objective: (next 4 Years)

- Planned wastewater treatment infrastructure and its re-use are fully functional and maintained in each city.
- Reduce pressure on potable water (fresh ground and surface water) vis a vis reduce pressure on wastewater treatment facilities.

## 4. Key issues:

- Wastewater management happening in piecemeal manner.

- Lack of awareness among all stakeholders in treatment and disposal of wastewater: As a result, there is insufficient focus on ensuring adequate coverage of network sewerage, and connections to the same; or on decentralised options, where network sewerage may not be viable; and on the health hazards for use of untreated wastewater in agriculture.

- Viability of urban wastewater treatment facilities: Lack of revenue generation from sanitation services in urban centres and/or fiscal transfers for the same are inadequate to ensure operation and maintenance of wastewater treatment plants to required standards. Consequentially, secondarily treated wastewater often does not meet regulatory standards, and is unfit for reuse.

- Lack of clear guidelines and framework: While wastewater reuse finds mention in several policies and programmes, there is an absence of a clear framework to support implementation of projects in a manner that aligns stakeholder interests and priorities, and is operationally sustainable

- Institutional coordination: Water plays a significant role in several sectors, including urban, agriculture, industries and power. There is a need for a platform for interaction and coordination among sectoral departments and other concerned stakeholders to facilitate greater synergies and collaboration towards efficient resource use.

## 5. Alignment with International/ National Policies and Frameworks

Several policy and guideline documents in India recognized the concept of waste water re-use, and the need to include the same in water supply management programs. Specifically, this policy aligns with the following national and international agenda:

- UN Sustainable Development Goals: The Sustainable Development Goals (SDGs) are focused, among other areas, on environmental protection and prosperity creation. In particular, the policy aligns with the following SDGs: SDG 3: Good Health and Well-Being; SDG 6: Clean Water and Sanitation; SDG 8: Decent Work and Economic Growth; SDG 11: Sustainable Cities and Communities.

- National Water Policy 2012: The National Water Policy 2012 promotes and incentivizes the reuse of wastewater, including through Section 6.3: 'Recycling and reuse of water, including return flows, should be the general norm'; Section 7.3: 'Recycling and reuse of water, after treatment to specified standards, should also be incentivized through a properly planned tariff system'; and Section 11.7: 'Subsidies and incentives should be implemented to encourage ... and recycling / reuse, which are otherwise capital intensive.

- National Service Level Benchmarks; National Urban Sanitation Policy (NUSP): The National Service Level Benchmarks, instituted by the Ministry of Housing & Urban Affairs, Government of India, establish a 20% target for reuse of urban wastewater generated.

- Power Tariff Policy (revised, 2016): The revised power tariff policy mandates thermal power plants within 50 kms of a city STP to off-take all the treated wastewater from the STP. Charges incurred in conveyance of wastewater from the STP to the power plant are eligible for pass through in the power tariff.

- *Atal* Mission for Rejuvenation & Urban Transformation (AMRUT): Following the policy guidelines implementation of wastewater reuse infrastructure solutions in selected towns and cities has been taken up.

# 6. Policy Actions:

## 6.1. Institutional Set up for Implementation, Monitoring and Management:

- State Level High Powered Committee should be constituted under the Chairmanship of the Chief Secretary to Government of West Bengal alongwith the other members – the Additional Chief Secretary/Principal Secretary/Secretary from the Departments of Health & Family Welfare, Environment, PHED, MSME, Water Investigation, Irrigation & Water Ways, UD & MA, P&RD and Commerce & Industry, for overall supervision, monitoring and policy advice.
- A State Level Steering Committee should be constituted under the chairmanship of Principal Secretary/Secretary, UD & MA Department alongwith the representatives of Health & Family Welfare, Environment, WBPCB, PHED, P&RD, MSME, Water Investigation, Irrigation & Water Ways, UD & MA and Commerce & Industry, for supervising the regular implementation and monitoring of wastewater treatment and its use.
- Urban Development & Municipal Affairs Department should act as Nodal Department for implementation of Treated Wastewater Re-use Policy and its action plan.
- State Urban Development Agency under UD & MA Department should act as Nodal Agency for implementation of Treated Wastewater Re-use Policy and its action plan.
- A State Level Waste Water Management Cell with sufficient experts should be established at SUDA for day to day monitoring and technical advisory.
- Technical support in implementation should be provided by Municipal Engineering Directorate. If required, professional technical agency may be engaged.
- The primary responsibility of Urban Local Body is to aware the citizen and industries towards treatment of wastewater and its reuse implementing all legal provisions, even imposition of fine for non treatment. In this connection, ULBs will get strong support from WBPCB.
- The Development Authorities/Unnayan Parishads should be responsible for implementation and O&M of large Sewage Treatment Plants, whereas the Urban Local Bodies should be responsible for implementation and O&M of small Sewage Treatment Plants and decentralized wastewater treatment plants.
- The Urban Local Bodies should promote establishment of decentralized wastewater treatment plants and rain water harvesting technologies encouraging the citizen through incentives.
- ULBs and Development Authorities should constitute Task Force for implementation and monitoring of treatment of wastewater & its use in their jurisdiction.
- Requirement of manpower resource gap in ULBs/Development Authorities should be addressed by way of filling up the vacant posts or engaging outsourced agency.

## 6.2. Development and Maintenance of Information Base and planning:

A Comprehensive Database Development and appropriate Management Information System utilizing GIS platform should be established for regular assessment of water demand, wastewater generation and reuse of treated wastewater in several sectors and mapping the requirement/location of centralized and decentralized treatment plants. For this following steps should be adopted:

- Develop coordination between UD & MA Department, Environment Department, PHED and Water Resource Investigation & Development Department
- Develop coordinated information sharing mechanism between water promotion departments like UD&MA, PHED and Water Resource Investigation & Development Department, and ULBs/Development Authorities
- Develop GIS enabled Management Information System for the cities.
    i) Preparation of Geo-referenced City base Map
    ii) Conducting Technical Surveys like Plane Table, Contour Survey
    iii) Conducting Study on 'as is' situation of underground water, surface water, water lines, sewer lines etc.
    iv) Conducting Socio-Economic Survey and Development of Management Information System

v) Integration of Spatial Data with the information of abovementioned surveys/studies to create GIS enabled MIS.
vi) Establishment of Central Data Monitoring Centre

- Develop coordination between UD & MA Department and Land & Land Reforms Department for updation of Land Records of the cities and development of Land Bank for plants.
- Provision of manpower & development of physical infrastructure for maintaining database development & management system in the concerned Departments especially in UD & MA Department, Development Authorities, Unnayan Parishads, and Urban Local Bodies.
- Preparation of Urban Water Resource Management Plan alongwith Wastewater Resource Management Plan by each ULB: Traditionally, water authorities have managed their water supply, sewerage and storm water drainage systems as separate entities. Integrated urban water resource planning is a structured planning process to evaluate concurrently the opportunities to improve the management of water, sewerage and drainage services within an urban area in ways which are consistent with broader catchment and river management objectives. Catchment management impacts directly and indirectly on all three components of the urban water cycle, having effects on drinking water quality, wastewater treatment and storm water management.
- Each waste water treatment plant should have a physical and financial pre feasibility study alongwith environmental impact assessment
- Planning for establishment of water testing laboratory in affordable location regionally should be developed.
- Each ULB/implementing organization should develop a plan for commercialization/marketing of treated waste water involving citizen and private actors.
- DPR of STP should include effective plan for reuse of treated water, long term operation & maintenance and commercialization i.e. pricing of treated water, and the DPR implementing agency should ensure that.
- Management of STPs should be effectively planned involving user groups.
- Management of ETPs/CETPs should be efficiently monitored by ULB/DA/WBPCB on regular interval and in planning of ETP/CEPT establishment by the industry, mandatory provisions should be there to include the purpose of use of treated water.
- Local or regional storage facility of treated waste water and network plan for supply for reuse shall be developed through a systematic study.

## 6.3. Comprehensive Land Use Planning:

New Land Use Development and Control Plan for West Bengal specifically for the Statutory Towns, other Census Towns and upcoming Growth Centres are very much required for systematic planning of wastewater treatment plants both for centralized and decentralized plants.

## 6.4. Legislation and Guidance Documents to follow:

- Environment (Protection) Act, 1986
- The Environment (Protection) rules,1986
- The West Bengal Trees (Protection and Conservation in Non-Forest Areas) Act, 2006
- Water Bodies Conservation Act
- The East Kolkata Wetlands (Conservation and Management) Act, 2006/2008
- The West Bengal Ground Water Resources (Management, Control and Regulation) Act, 2005/2006
- Manual on Sewerage and Sewage Treatment Systems, 2013 of CPHEEO
- The water (Prevention and control of pollution) Act,1974
- The water (Prevention and control of pollution) Amended rules, 2011
- The water (Prevention and control of pollution) Rules, 1975
- National Urban Sanitation Policy 2008
- National Water Policy 2012
- West Bengal Municipal Act and Municipal Corporation Acts
- Quality standards suggested by Central Pollution Control Board and West Bengal Pollution Control Board.

- Standards set by Bureau of Indian Standards (BIS)
- Effluent Quality guidelines for health protection measures in aquaculture use of waste water
- Quality guidelines for health protection in using human wastes for aquaculture.
- Service Level Benchmarks Fixed By Ministry of Urban Development

## 6.5. Legal Issues:

- Imposition of legal provision to the respective stakeholders for installation of STP/ETP/CETP.
- The legal rights over the sale and revenue issues of reclaimed water is an emerging issue and being addressed by the State Government separately.
- ULB/Industry should reuse, recycle, & resale the effluents, sewage, septage water to the end users within or outside the jurisdiction of the ULB.
- West Bengal Municipal and Municipal Corporations Acts should be amended incorporating the provision for treatment of waste water in centralized & decentralized manner and reuse of the same.
- Ground water extortion shall be mandatorily prohibited, especially for agriculture, industry & construction sectors, and instead of that use of surface water and treated waste water should be imposed.
- Mandatory provisions shall be made for bulk user of water like Fire Brigade, Industrial Clusters, Metro rail, Indian Railways, road wash, Infrastructure Projects, Construction Sectors, Agriculture & Agriculture Extension sectors, Bus Depots and Public Works Department to use treated waste water.
- Imposition of fine on the Industries for not establishing Effluent Treatment Plant/Common Effluent Treatment Plant and non reuse of that water.
- State level treated waste water specifications and standards shall be amended (to be encouraged to adopt as per IS and ISO standards) to include and ensure a safe reuse and to produce high economic return products.

## 6.6. Technology Options for Wastewater Treatment:

The coverage of waste water treatment should be the application of appropriate waste water treatment technologies in both the centralized and decentralized models having low cost & user friendly to operate; both in capital and in operation & maintenance. The centralized models should have commercial value of cost recovery.

Technological options for waste water treatment plants should be based on treatment standard, quantum of sewage inflow, BOD level, location of plants or utilization of recycled waste water etc., details of the design considerations and operating requirements for a variety of technologies suitable under different conditions has been explained in Chapter 7 of part A of Manual on Sewerage and Sewage Treatment Systems (2013) of CPHEEO.

It shall be ensured that old STPs should be upgraded and new STPs confirm to such standards so as to enable utilization of treated waste water directly by the users as far as possible.

Effluent Treatment Plants and Common Effluent Treatment Plants of Industries should confirm to such standards so as to enable utilization of treated waste water directly by them or other users as far as possible.

Decentralized wastewater treatment models should be showcased before the citizen in several public places like parks etc. and should be promoted for bulk waste generators.

Accessible and affordable water quality testing arrangement should be in place locally or regionally.

The developers should use innovative/conventional/generic technologies developed by IITs/NEERI and other Institute of repute while implementing the projects.

The choice of technology should have low requirement of space, power and efficiency.

For each project, conducting environmental impact assessment and social impact assessment are mandatory, alongwith technical and financial feasibility analysis.

## 6.7. Technology Reforms:

Government intends to propagate and extend new cost-effective, energy efficient and eco-friendly technologies. For this following issues should be considered.

- Promote Research & Development relating to alternate treatment technologies as well as energy conservation practices involving Technological Institutes/Universities/ Science & Technology Department of West Bengal
- Technological Institutes/Universities/ Science & Technology Department of West Bengal, shall be requested to develop economically viable wastewater treatment decentralized models.
- Technological Innovation shall be worked out for protecting flora & fauna and also human settlements from man-made and different kinds of natural & man-made disaster.
- Government would facilitate the creation of quality testing facilities for water across the State for ensuring quality control. The existing facilities in technological institutions would also be utilized.

## 6.8. R&D for Technology and its Commercialization:

A technology fund shall be set up under UD & MA Department in order to Research & Development (R&D) for appropriate cost effective and geographically suitable technologies for wastewater treatment. This shall also include identification and innovation of proper models. Products developed through this R&D will be commercialized through supermarket, retail outlet, mart, urban technology parks etc.

## 6.9. Reuse of Treated Water:

Wastewater is a huge resource that should be harnessed properly, it can bring a lot of health and economic benefits, increase food production, enhance fishing, tourism, rural and urban livelihoods. Following areas of reuse of treated water should be followed:

- Irrigation and Agriculture: Storm water, urban runoff and effluent from animal farms can be captured for irrigation and other farming needs. This kind of wastewater is usually high in nutrients (nitrogen, phosphorus, potassium, micronutrient and organic matter). It saves fertilizer cost and also preserves surface and underground water that they would have otherwise used. The sludge from treatment sites can be used in composting sites and sent to agricultural fields.
- Energy and Construction: The waste materials (sludge) collected from a treatment plant can be biodegraded in a controlled environment and then combusted (burnt at high temperatures) to release Methane (A gas similar to natural gas). This can be used in boilers at homes and in buildings, as well as for cooking and heating purposes. This digester kind of biodegrading can contain contaminants and so the process has to be done properly. The sludge from treatment plants can also be combusted to produce electricity.
- There are different types of sludge. Sludge could be fecal (from human and animal poop flushed down the drains) and regular sludge, from rubbish and garbage that get into drains and sewage systems. Fecal sludge is high in contaminants and must be treated well before discharge.
- Water used in the kitchen can be collected and used to gardens and lawns. A couple of gallons each day means a significant saving on water by the end of the year. Families can also reduce the amount of wastewater they produce by using of bathrooms.
- Community Latrines and Toilets washing, road cleaning, construction activities, pisciculture, Car Washing, maintenance of parks gardens & developing urban landscaping, rejuvenation of ponds, lakes, rivers, and emergency purpose for fire brigade
- Rainwater Harvesting: It should be mandatory to reuse the rain water in sanitary activities and groundwater recharging.
- Industries should reuse their treated water and sludge and minerals to be sold out for appropriate use. Further industries within 30 km of a Sewage Treatment Plant should use treated water in place of fresh surface/ground water.
- Bulk users of water like Fire Brigade, Industrial Clusters, Metro rail, Indian Railways, road wash, Infrastructure Projects, Construction Sectors, Agriculture & Agriculture Extension sectors, Bus Depots and Public Works Department should use treated waste water.
- The excess amount of treated waste water may be used for ground water recharging.

Inspite of these, Government intends the following:

- Commerce & Industry Department should make a voluntary target for treated wastewater to comprise 20% of the total state-wide industrial water use by 2020
- In compliance with the Government of India's recently revised Power Tariff Policy (2016), Department of Power, Government of West Bengal should coordinate partnerships of thermal power plants with urban centres within 50 km radius for off-take of all Wastewater treatment available; and facilitate operational sustainability of wastewater treatment plants

## 6.10. Awareness Generation:

Government intends to promote awareness among all the stakeholders for achieving the goal of 'Re-use of treated wastewater'. For the said purpose, Government is directing the development actors to promote the awareness considering the following issues.

- Awareness should be generated regarding different Government Programmes to reach & sustain the benefit upto the end beneficiary.
- Awareness should be generated regarding several Policies, Acts and Laws related to Water resource and wastewater management & reuse.
- Awareness should be generated regarding Environment Protection.
- Awareness should be generated widely on good quality and cost effective centralized & decentralized technologies of wastewater management systems.
- Awareness should be generated for providing service charges, user fee and fine
- Awareness should be generated regarding maintenance of created assets and also for developing environment friendly & hygienic city
- Multiple channels like media (social, print, broad cast etc.), advertising, flyers, brochures, booklets, road shows, rallies, public addressing, etc. should be used.
- Techniques for Community Mobilization to be adopted
    i) Involving community in their own development process
    ii) Growing interest of Community through Cultural & Healthy Recreational facility
    iii) Educating community on Human Rights
    iv) Preparing IEC materials according to community need
    v) Display Programme, Activity & Achievement Charter
    vi) Display success story in different places
    vii) Disseminating/ Displaying Literal & Visual Documentation
    viii) Fair
    ix) Involving Media.
- A system of incentives and penalties should be devised to encourage greater participation among residents, compliance by service providers and better performance of ULBs.
- Reward system may be developed for high performing ULBs/citizens.
- Government shall issue appropriate guideline for community mobilization and awareness generation.

## 6.11. Capacity Building and Training:

Capacity building is crucial in achieving and sustaining wastewater management and its use. Focus on capacity building, exposure visit and training of concerned staffs of State/Regional/District level agencies/departments, ULB level officials and elected representatives, Community based organizations and other stakeholders shall be made.

i) Capacity building of the personnel should be coordinated by ILGUS involving the State Training Agencies, Institutes of Private & Public Bodies and Technology Universities.
ii) Specialist institutions shall also be involved so that the knowledge development on newer approaches and technologies is quickly made available.

iii) The State Agencies/ULBs/Private Actors shall take assistance from National and State level resource organizations in consolidating and applying the existing and new knowledge in a 'learning by doing' framework and building capacities of a range of personnel from different kind of backgrounds.
iv) State shall give an effort to create new posts and fill up the vacant posts for the promotion of these activities.
v) State shall give an effort to develop institutional infrastructure of all the related State / District / Regional / Sub-Division / ULB level Departments / Agencies / Resource Centres to promote wastewater treatment and its reuse.

**Capacity building will comprise:**

- Bulk training/workshop/exposure visit for a range of municipal and other stakeholder personnel - right from start of the campaign in the ULB.
- Differentiated and specialized training on a demand-basis to personnel over the period of the Plan implementation.
- For Technical assistance, the State shall arrange for bulk and specialised training of State/Regional/District/ULB level personnel, assisting State Agencies/ULBs by procuring and deploying/ managing service providers (study consultants and NGOs, technical resource agencies), and providing coordination support to city-wide communications, planning and implementation management.

## 6.12. Monitoring and Evaluation:

- To establish the strong monitoring and evaluation system involving community, State shall endeavour to engage independent/ external Monitoring & Evaluation Agency for Third Party Quality Monitoring and time to time evaluation of the projects/progress parallel with the abovementioned monitoring mechanism.
- West Bengal Pollution Control Board shall monitor the water quality of the treated plants (centralized or decentralized) to ensure compliance with quality standards required for different reuse categories.
- An effective Grievance Redressal mechanism should be developed at State/ULB and Development Authority level.
- State shall also institutionalize Social Audit System to involve community in monitoring & evaluation system.

## 6.13. Welfare Measures:

At the time of implementing this policy, large financial investment will be observed, which will create large employment opportunity for different classes of people and will provide sufficient water to all sections of the society. Realizing the fact Government intends to imply the welfare measures particularly for the poor. They will get an opportunity of getting employment in this sector. To provide benefit to the poor Government shall take the following measures.

- Training infrastructure shall be developed for skill development of the workers to be engaged in this Sector.
- With increasing growth in urban sector, different kinds of employment opportunities will come up for the poor (for both male and female) that should be promoted with the help of several livelihood promotion departments and private agencies. Their skills shall be developed providing training to them (after market assessment on soft skill, security guard, computer operation, repair etc.) and loans shall be provided from different Government Programmes for entrepreneurship development.
- National Skill Development Mission should be dovetailed for skill development in this sector.
- Several welfare measures for them like support for house construction, education for their children, provident fund, coverage under Health & Life Insurance, social security schemes etc. shall be implemented converging development programme of several departments.

## 6.14. Involvement of NGO/Private Sector:

Government shall encourage the development actors to engage NGO/Private Agency in the following areas for promotion of waste water treatment and its reuse

- Capacity Strengthening of ULB & Community Level Staffs
- Planning
- Research & Development
- Piloting innovative projects
- Community Mobilization
- Mapping Job Potentiality
- Private Public Partnership Projects
- Operation & Maintenance
- Facilitating in Social Audit
- Quality Assurance
- Evaluation

## 6.15. Source of Funding:

In this rapid urbanization stage, to reuse of treated waste water in Urban West Bengal, Government wants to develop some innovative financial instruments to meet up the demand for investment. Financing should be arranged in following ways.

- Central and State Finance Commission Funds
- State Budget for this purpose
- Available Programme funds
- Leveraging similar fund of several Departments
- Pooled Fund of West Bengal Municipal Development Fund Trust as loan
- Externally Aided Funds
- Provide incentives to the financial institutions, Micro finance institutions, mutual funds, corporate sectors, trusts and foreign institutional investors for investing in treatment of wastewater.
- Promoting well designated Public-Private Partnership
- Inviting Corporate Social Responsibility
- Inviting Foreign Direct Investment developing a mechanism for direct investment from Non Resident Indians and Persons of Indian Origin.
- Imposing service charge on wastewater treatment
- Imposing penalty on ULB/Industry for non treatment of waste water and not developing provision for reuse of that water
- Imposing user charge on treated wastewater use and also commercializing the use of treated water i.e. revenue generation from selling of treated water.

## 6.16. Targeted Timeline:

- To reach 50% coverage of collection of sewage and its treatment as per prescribed standards in all ULBs by 2023
- To reach 75% coverage of collection of sewage and its treatment as per prescribed standards in all ULBs by 2026
- To reach 100% coverage of collection of sewage and its treatment as per prescribed standards in all ULBs by 2029
- To reuse 25% of treated wastewater within 2022 for non potable/other purpose
- To reuse 50% of treated wastewater within 2025 for non potable/other purpose
- To reuse 80% of treated wastewater within 2030 for non potable/other purpose

## 6.17. Expected outcome of this Policy:

- New social and economic opportunities and avenues emerge where wastewater is recycled and reused based on cost recovery and profit generating business models.
- Augmented capacities across institutions (State & ULB level) that could possibly be replicated in other sectors.

## 6.18. Interpretation and Amendment:

- Any issue or doubt regarding this policy shall be referred to Department of UD & MA, GoWB whose decision will be final and binding on all concerned.
- Department of UD & MA, GoWB may from time to time amend the provisions as contained in this policy as considered necessary.
- Department of UD & MA, GoWB shall have the power to issue guidelines and instructions from time to time to operationalise this policy.