Reuse of Treated Waste Water
Water Account - Haryana

Haryana is having a water deficit of 14 BCM, thus there is urgent need of rainwater harvesting and adoption of water efficient practices to bridge the gap.
Groundwater Depletion And Rising Trends

Year 2000

Year 2010

Year 2020
# Groundwater Categorization & Decadal Fluctuations

Villages showing rising and decline trend of last 10 years data i.e. June-2010 & June-2020

| Depth to water Table Ranges (metre) | Categories                                      | Colour | No. of Villages | Decline rate 0-1m/yr | Decline rate 1-2m/yr | Decline rate >2m/yr | Rising >0.01m/yr |
|------------------------------------|------------------------------------------------|--------|----------------|-----------------------|-----------------------|----------------------|-----------------|
| 30.01 to more                      | Severely Ground water stressed villages          | Red    | 1948           | 1010                  | 825                   | 86                   |                 |
| 20.01 to 30.0                      | Moderately Ground water stressed Villages        | Pink   | 1093           | 936                   | 110                   | 0                    |                 |
| 10.01 to 20.0                      | Potential Ground water stressed villages         | Light green | 1903    | 1677                  | 18                    | 0                    |                 |
| 5.01 to 10.0                       | Good Ground water Potential villages             | Green  | 1304           | 1029                  | 0                     | 0                    |                 |
| 3.01 to 5.0                        | Buffer Zone for water logging villages           | Yellow | 618            | 330                   | 0                     | 0                    |                 |
| 1.51 to 3.0                        | Potential water logged villages                   | Purple | 333            | 0                     | 0                     | 212                  |                 |
| 0.0 to 1.5                         | Severely water logged villages                   | Blue   | 88             | 0                     | 0                     | 0                    | 75              |
| Total                              |                                                  |        | 7287           | 4982                  | 953                   | 86                   | 287             |

## Groundwater Categorization & Decadal Fluctuations

This is one of its kind initiatives of State Government towards water conservation and it will help in planning strategies and taking remedial action for water depleted and waterlogged areas.
Utilization of Treated Waste Water (STPs)

• Only 7 districts are using 15.09% (62.16 MCM or 6,216 crore litres or 170.30 MLD) for non-potable purposes in agriculture, horticulture, construction and industrial sectors. The remaining 15 districts are not utilizing any of its treated wastewater instead it is being discharged into the drains.

• Haryana is using predominant technologies in the STPs based on Sequencing Batch Reactor (SBR) and Moving Bed Biofilm Reactor (MBBR). All the STPs are meeting the level of treatment of collected sewage as per prescribed standards of HSPCB i.e. BOD<30.

**STPs: Domestic Wastewater Generation And Its Reuse**

| Sr. No. | Name of Department | No. of STPs Constructed | Treatment Capacity (MCM) | Waste Water being Treated (MCM) | Present Reuse of TWW (MCM) |
|---------|--------------------|-------------------------|--------------------------|-------------------------------|---------------------------|
| 1       | PHED               | 120                     | 345.62                   | 224.20                        | 6.21                      |
| 2       | HSVP               | 17                      | 84.24                    | 42.49                         | 8.11                      |
| 3       | ULB                | 12                      | 99.28                    | 64.86                         | 7.67                      |
| 4       | GMDA               | 6                       | 141.62                   | 79.57                         | 39.42                     |
| 5       | MCG (decentralized STPs) | 41          | 0.77                     | 0.77                          | 0.77                      |
| Total (MCM) |                     | 196                     | 671.53                   | 411.89                        | 62.16                     |
| Total (Crore Litres) |                   |                          | 67153                    | 41189                         | 6216                      |
| Total (MLD) |                   |                          | 1839.81                  | 1128.47 (61%)                 | 170.30 (15%)              |

Source: PHED
## Utilization of Treated Waste Water (CETPs)

| S.No. | Name of Department | No. of CETPs Constructed | Treatment Capacity (MCM) | Present Generation of TWW (MCM) | Present Reuse of TWW (MCM) |
|-------|--------------------|--------------------------|--------------------------|-------------------------------|----------------------------|
| 1     | HSIIDC             | 13                       | 32.78                    | 17.61                         | 4.89 (28%)                 |
| 2     | GMDA               | 1                        | 20.8                     | 16.43                         | 3.29 (20%)                 |
| Total (MCM) |                   | 14                       | 52.85                    | 34.03                         | 8.17 (24%)                 |
| Total (Crore Litres) |                   |                          | 5285                     | 3403                          | 817                        |
| Total (MLD) |                 |                          | 144.79                   | 93.23                         | 22.38                      |

**CETPs: Industrial Wastewater Generation And Its Reuse**

- At present, **13 Common Effluent Treatment Plants (CETP)** have been installed by Haryana State Industrial and Infrastructure Development Corporation (HSIIDC) and 1 CETP is installed by Gurugram Metropolitan Development Authority (GMDA) with a collective capacity of 52.85 MCM.
- The present generation of TWW from CETPs is 34.03 MCM and out of which **only 24% (8.17 MCM)** is being reused for Construction and Horticulture activities.
### Proposed Interventions For Water Saving In 2 Years (2023-25)

| Proposed Interventions                                      | 2023-25 Water Saving |
|-------------------------------------------------------------|----------------------|
|                                                             | MCM | Crore Litres |
| Micro Irrigation (Acre)                                     | 1194| 119384       |
| Modernization of Channels and Water Courses (No.)           | 622 | 62194        |
| Crop Diversification (Acre)                                 | 1056| 105642       |
| Direct Seeding of Rice (Acre)                               | 518 | 51762        |
| **Reuse of Treated Wastewater (MCM)**                       | 437 | 43687        |
| Groundwater Recharge/ Pond Rejuvenation/ Check Dams/ Roof top recharge/Others (No.) | 681 | 68117        |
| Varietal Interventions (Acre)                               | 478 | 47816        |
| Conservation Tillage (Acre)                                 | 1182| 118155       |
| Green Manuring/ Dhaincha (Acre)                             | 357 | 35715        |
| Vegetable/Horticulture (Acre)                               | 177 | 17675        |
| Natural Farming (Acre)                                      | 270 | 26958        |
| **TOTAL**                                                   | 6971| 697104       |
| **Water Saving (in %) for FY 2023-25**                      |      | 49.7%        |

Reuse of TWW holds 6.25% of water saving in Integrated Water Resources Action Plan.
Highlights of Reuse of Treated Wastewater Policy 2019

• Maximizing the collection and treatment of sewage.
• Promote treated wastewater as an economic resource.
• Treatment of collected sewage as Per prescribed standards by HSPCB.
• It targets 100% treatment of collected sewage.
• Progressively increase the reuse rate to 50% by 2025 and thereby to 80% by 2030.
The State of Haryana endeavors to use the available TWW to the maximum to substitute freshwater.

Potential non-potable uses of treated wastewater prescribed in the policy are as follows-

- Thermal Power Plants
- Industrial Units
- Construction activities
- Dual water supply system in Houses/Offices/Business Establishments
- Large commercial or institutional users
- Municipal Corporations/Municipalities/Wards/Gram Panchayat Uses
- Agriculture/Irrigation
Importance of TWW in Irrigation

**AGRICULTURE**
Agriculture accounts for highest percentage of the annual freshwater withdrawals amongst all activities

**WHY TWW?**
Falling groundwater levels and stressed freshwater resources

**REDUCES AGRICULTURE RUNNING COST**
TWW has naturally high nutrient content, which reduces the need for expensive chemical fertilizers

**CULTIVATE DEGRADED LAND**
Increase area under cultivation since vertical expansion not possible

**WATER SECURITY**
Strategically investment in reusing treated wastewater for water recycling
Progress Made In Introducing TWW In Micro-Irrigation

OVERVIEW
Hon’ble CM, Haryana has approved scheme for use of TWW from 170 STPs having cumulative capacity of 1985 MLD having targeted CCA of 2.5 Lakh Acre which is to be taken up in phased manner.

DEADLINE
31/03/2025 is the completion date of the project.

PHASE - I (Short term)
35 STPs were approved out of which 27 STPs having cumulative capacity of 339.50 MLD were found feasible.

PROGRESS
Total 20 tenders have been approved & Work on 20 STPs has been started.

COVERAGE
The targeted CCA is 43380 Acre

FUNDING
The estimated cost of the project is Rs 500 Cr. of which 314.30 Cr has been sanctioned by NABARD.
Way Forward Using TWW Through Micro Irrigation

**PHASE -3 (Long Term)**

Remaining 78 STPs to be covered
Targeted capacity is 1118 MLD
Targeted CCA is 143000 Acre
Estimated Cost is 2000 Cr.
Likely date of start is 01.06.2024
Likely date of completion is 31.12.2026

**PHASE 2**

It is in initial stage as feasibility of using TWW from these STPs is being checked. Once feasibility report of Ghaggar Action Plan and Yamuna Action Plan is received from field, detailed project report will be submitted to Government for approval.

**OVERVIEW**

Total 57 STPs to be covered
Targeted capacity is 528 MLD.
Targeted CCA is 67500 Acre.
In these projects, small ponds will be constructed within the premises of STP where TWW is stored and then pumped into the nearby fields through underground pressurized pipelines.

**FUNDING**

The estimated cost of the project is Rs 960 Cr.

**TIMELINE**

Likely date of completion is 30.06.2025

**DISTRICTS**

A total of 14 districts are being covered under Phase-2
Commissioning of a Project In Nuh From GMDA STP Behrampur

- 10,000 Acre Non-Command Area of Taoru block can be irrigated by precise irrigation i.e. Micro Irrigation.

- Augment Nuh Distributary (D/S RD 48300 having 60 Nos. outlet) creating more irrigation potential and filling up Kotla Lake in lean period.

- Augment Indri Distributary (D/S RD 15000-34 O/L having 34 Nos. outlet)

- Revival of Indori Nadi Creek (21 Km.) originating from Aravali hills of Taoru Block to Pataudi area.

- To make available 10 Cs. TWW to proposed Jungle Safari for maintaining the green cover of the forest area.
Line Diagram from STP Behrampur to Command Area of Nuh through MI
Promotion of Micro Irrigation in Taoru Block, District Nuh

- Non-command Area of 10,000 acre identified in 27 Nos. villages in Taoru block for community tank based Micro irrigation.

- No land acquisition required, Gram Panchayats are providing the sufficient land for reservoir, water tanks and pump houses etc.

- Proven efficiency as year-round available water source to intensify and diversify agriculture practices.

- Check the fast depletion of underground water table due to extraction of water by Tube wells.
Augment Canal Supply

Scarcity of Canal Water In D/S Tail Portion can be Augmented by Linking the System With Nuh & Indri Distributary.

60 Nos. of O/L of Nuh Distributary having around 18000 Acre CCA and 34 Nos. Outlet Of Indri Distributary having 10,000 Acre CCA will get partially benefited.

During the Lean Period Treated Wastewater will be used for Filling of Kotla Lake Through Existing Network of Nuh Distributary and then used for irrigation as per demand.
Revival of Indori River

Indori River originates from Aravalli Hills of Taoru Area and Flow Towards Pataudi. Presently In Dry Condition due to Less Rainfall.

Recharging will be done from Village Jaurasi Bund (Taoru) to Baspadmka (Pataudi) In A Width of 8 KM and length of 21 KM.

In Lean Period TWW will be released Into Jaurasi Bund for Revival of Indori Nadi.

Small Ponds will be developed In Nearby 18 Nos. Villages for Water Storage which will be used for Irrigation & Recharging.
Challenges and Risks of TWW

- Desired Quality of Treated Wastewater for Agricultural Reuse
- Efficiency of Water Treatment Plants
- High Capital and Operational Investment
- Dual Pipeline system for Storm Water and Sewerage
- Monitoring and Evaluation of Treated Water Quality
- Public Perception for reuse of Treated Waste Water
Institutional Strengthening

- Incentivizing Local-Level Participation (VWSCs and Gram Panchayats)
- Assigning Responsibility and Accountability at Panchayat Level
- Effective Functioning of Water User Associations (WUAs)
- Information, Education, and Communication (IEC)
- Interdepartmental Collaboration and Cooperation
- Formation of Cross-Sectoral and Inter-Departmental Committees for monitoring and assessment
Do you have any questions?
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"हरियाणा के हर बूंद का सम्मान, पुनः उपयोग से जल का संरक्षण और विकास का आधार।"
("Respect every drop in Haryana – Reuse treated wastewater for conservation and sustainable development.")