A 3-part series on Reimagining Reuse of Treated Wastewater in Agriculture in India: Technology, Finance and Governance Perspectives

Webinar 1

Reuse and Applications of Treated Wastewater in Agriculture:

Mapping the India Story and Insights from Israel

October 27th, 2020
4:00 – 6:00 pm
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<th>Sl. No</th>
<th>Agenda item</th>
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<th>Speaker</th>
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<td>1.</td>
<td>Welcome and Setting the Context</td>
<td>4:00 pm – 4:15 pm</td>
<td>- Kavita Sachwani, State Program Coordinator, 2030 WRG, Maharashtra&lt;br&gt;- Sagi Itcher, Head of Economic and Trade Mission, Consulate General of Israel</td>
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<td>2.</td>
<td>Insights from Israel: Innovations and partnerships for Wastewater Reuse in Agriculture</td>
<td>4:15 pm – 4:25 pm</td>
<td>- Oded Distel, Chief Executive Officer at Tal-Ya Agriculture Solutions, Israel</td>
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<td>3.</td>
<td>WBCSD Perspectives on Wastewater and Resource Circularity</td>
<td>4:25 pm – 4:35 pm</td>
<td>- Tom Williams, Director-Water, World Business Council on Sustainable Development</td>
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<td>5.</td>
<td>Panel Discussion 1: Reuse of Treated Wastewater in Agriculture – Current Status and Implementation challenges</td>
<td>4:45 pm – 5:15 pm</td>
<td>Moderator: Dr. Mahesh Patankar, Senior Advisor, 2030 WRG&lt;br&gt;Panelists: - Shilp Verma, Researcher, International Water Management Institute&lt;br&gt;- Vishwanath S, Director, Biome Environmental Solutions Ltd.</td>
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<td>7.</td>
<td>Closing Remarks</td>
<td>5:45 pm – 6:00 pm</td>
<td>- K P Bakshi, IAS (Retd.), Former Chairman, MWRRA</td>
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</tbody>
</table>
Insights from Israel: Innovations and partnerships for Wastewater Reuse in Agriculture

Oded Distel, Chief Executive Officer, Tal-Ya Agriculture Solutions, Israel
Necessity is the mother of Innovation

If it ain’t broken don’t fix it
WATER DECOUPLING

Estimated population water demand, Total Water and Fresh Water Supply 1961-2010

Type One Decoupling water resources and population water demand decouple

Type Two Decoupling Blue water and total water resources decouple. The trend is enhanced ten years after starting

Virtual Water predominantly bridges gap between population water requirement and national supply

Source: Decoupling dependence on natural water, Gilmont M., 2014
Water Supply in Israel
According to sectors - 2018

- **Natural water refill**: 1170 MCM (per year)
- **Water consumption**: 2330 MCM (per year)

- **Agriculture**: 1170 MCM (50%)
- **Domestic & Industry**: 1010 MCM (43%)
- **Neighbors - PA & Jordan**: 130 MCM (6%)
- **Nature**: 22 MCM (1%)
- **Recycled, Brackish and Flood**: 760 MCM
- **Potable**: 410 MCM

Natural water refill: 1170 MCM (per year)
Water consumption: 2330 MCM (per year)
Wastewater and Effluent Sector Qualities and Quantities

544 million m³ → 93% treated → 86% reused
Sewage from the Greater Tel Aviv area – 125 MCM/Y
Large-scale WWTP – secondary and tertiary treatment quality
Six infiltration fields
Over 150 production and monitoring wells (quality permitted for “occasional drinking”)
90km pipeline to Negev
32 pumping stations, operational storages (0.51 MCM) and seasonal storages (17.2 MCM)
Perspectives on Wastewater and Resource Circularity

Tom Williams, Director – Water, World Business Council of Sustainable Development
Major reports on scale and urgency

80% of wastewater is discharged into the environment untreated.

The world is not on track to meet the SDG 6 Targets.

In regions downstream of heavily polluted rivers, GDP growth is lowered by a third.

The estimated annual cost to eliminate industrial wastewater pollution is 87.4 Billion USD.

10% of companies reported risks linked to pollution.

The United Nations World Water Development Report 2017

WASTEWATER THE UNTAPPED RESOURCE

CLEAN WATER AND SANITATION

Sustainable Development Goal 6
Synthesis Report on Water and Sanitation

ACHIEVING ABUNDANCE: UNDERSTANDING THE COST OF A SUSTAINABLE WATER FUTURE

WORLD RESOURCES INSTITUTE

CLEANING UP THEIR ACT

Are companies responding to the risks and opportunities posed by water pollution?

QUALITY UNKNOWN
THE INVISIBLE WATER CRISIS
Wastewater Zero – Raising ambition towards SDG6.3

Wastewater pollution impacts climate and nature leading to negative social, environmental and economic outcomes

WASTEWATER
Globally, an estimated 80% of wastewater is discharged without treatment directly into the environment.

CLIMATE CHANGE
Improper management of industrial wastewater contributes to GHG emissions and impedes adaptation to climate change.

SDGS
A lack of progress on eliminating wastewater pollution significantly impedes the attainment of SDGs.

ECONOMY
The cost of action – to eliminate industrial wastewater pollution – is significantly cheaper than business as usual.

BIODIVERSITY LOSS
Pollution from industrial wastewater contributes to impacts that lead to freshwater biodiversity loss.
An action framework and policy asks

- **CIRCULARITY**: Incorporate principles of circularity throughout the organization.
- **TARGETS & METRICS**: Establish targets and metrics based on science and context.
- **VALUE CHAIN**: Increase and support value chain partners.
- **LOW-CARBON TREATMENT**: Improve low-carbon wastewater treatment.
- **DISCLOSURE**: Improve disclosure beyond compliance.
- **VALUING WATER**: Value water to minimize negative externalities and incentivize reuse.

**STANDARDS**
Establish clear guidelines, based on the best available science, for effluent discharges and wastewater reuse.

**REGULATION**
Establish the means to monitor and enforce regulations.

**VALUE**
Support and require businesses to internalize externalities arising from water pollution.

**PARTNERSHIPS**
Enable partnerships between public sector bodies and the private sector.

**INCENTIVIZE**
Incentivize the recycling of water by industry and the trading of reused water.
Agriculture and fashion are priority sectors for action.
Wastewater reuse in agriculture – **scale and costs**

10% of the world’s population relies on food grown with contaminated wastewater (*WHO / FAO*).

20 million hectares of crops worldwide (7% of total cropland) are irrigated with untreated or partially treated wastewater (*Jiménez, B. & Asano, T*).

Highly saline water negatively impacts crop yields globally by 11.0 to 13.5% (*World Bank*).

A 2013 study on the impact of industrial water pollution on rice production in Viet Nam estimated that water pollution caused a **yield reduction of 12%**.

A 2018 study by researchers at MIT looked at 63 industrial sites in India identified by the government as “severely polluting” and estimated the costs of their pollution for downstream agriculture. They found that on average, there was a **9% reduction in yield** compared with a corresponding district immediately upstream of the same site in the same year.
Impact of wastewater reuse in food system
Water circularity metrics for business

Close the loop
- % circular inflow
- % circular outflow
- % water circularity
- % renewable energy
Water circularity **metrics** for business

**Main indicators**

\[ WCM = \% \text{Water Circularity} \]
\[ = \frac{\% \text{circular water inflow} + \% \text{circular water outflow}}{2} \]

- **% Circular water inflow**
  \[ = \frac{Q_{\text{total circular water withdrawal}}}{Q_{\text{total water withdrawal}}} \times 100\% \]

- **On-site circulation (reuse & recycle)**
  \[ = \frac{Q_{\text{water use}} - Q_{\text{total water withdrawal}}}{Q_{\text{total water withdrawal}}} \]

- **% Circular water outflow (discharge, restore)**
  \[ = \frac{Q_{\text{total circular discharge}}}{Q_{\text{total water withdrawal}}} \times 100\% \]

**Supporting indicators**

- **Nutrient recovery**
  absolute
  (to be factored into CTI
  % circular outflow)

- **Energy recovery**
  absolute
  (to be factored into CTI
  % renewable energy)
Insights into the Draft National Wastewater Reuse Policy

Jeremy Bird, Senior Water Policy Expert, India EU Water Partnership / GIZ
Formulation of a National Policy on Safe Reuse of Treated Water (SRTW)

Meeting of the Water Resources Group, 27 October 2020

Jeremy Bird, Girija Bharat and Krishna Chaitanya Rao
Drivers for SRTW

➢ Address water scarcity – augmenting freshwater
  ▪ water resources are already very stressed
  ▪ increasing irrigation, urban and industrial demand
  ▪ price rises for bulk freshwater supply

➢ Improve environment and health
  ▪ burden of disease from poor water services
  ▪ high pollution load into water bodies: 38,000 MLD sewage is untreated (63%)
  ▪ IUWM – scope to recharge lakes and wetlands

➢ Seize economic opportunity – waste is a resource
  ▪ circular economy - reuse provides a revenue stream for WW treatment
  ▪ complementary recovery of nutrients reduces import of fertilizer
States are adopting SRTW Policies:

- Chhattisgarh
- Gujarat (2018)
- Haryana (2019)
- Jammu & Kashmir (2017)
- Jharkhand (2017)
- Karnataka (2017)
- Madhya Pradesh (2017)
- Maharashtra (2019 draft)
- Punjab (2019)
- Rajasthan (2016)
- Tamil Nadu (2019 draft)
- Uttar Pradesh (2018 draft)

Perceptions are changing

New business models are being developed:

Complementary national processes

- National FSSM Policy
- New National Water Policy
- National Urban Sanitation Policy (being drafted)
- Industry – Zero Liquid Discharge
- AMRUT
- Swachh Bharat Mission
- Jal Jeevan Mission
- ...
14 December 2019: At a meeting of the National Ganga Council, the Prime Minister of India highlighted the need to:

‘reuse and recycle solid and liquid waste and develop suitable revenue models and State policies thereby promoting long term sustainability’.

The Ministry of Jal Shakti (MoJS) requested the National Mission for Clean Ganga (NMCG) to coordinate the process.

Support provided by the India-EU Water Partnership (IEWP) and the GIZ Support to Ganga Rejuvenation Project.
SRTW within a wider policy environment

- complements a river basin approach

Legend
- Potable water
- Used water
- Non-potable water
- Apna Jal – Our Water

Policy
- NEP, 2006: National Environment Policy
- NWP, 2012: National Water Policy (under revision)
- NUSP, 2008: National Urban Sanitation Policy (under revision)
- SRTW (draft): National Policy on Safe Reuse of Treated Water

Programmes
- AMRUT: Atal Mission for Rejuvenation and Urban Transformation
- SBM: Swachh Bharat Mission
- J JM: Jal Jeevan Mission
- NMCG: National Mission for Clean Ganga
- NRDWP: National Rural Drinking Water Programme

Standards and Compliance
- CPCB, SPCB: Central / State Pollution Control Board(s)
- CPHEEO Manual: Central Public Health Environmental Engineering Organization
- NGT: National Green Tribunal (oversight)
Like in EU, the SRTW Policy will need to accommodate diversity across States in India.

Sources of used water for reuse covered by the SRTW Policy

- Wastewater generated by households and commercial enterprises in both urban and rural settings
- Not industrial wastewater – covered under a separate initiative on Zero Liquid Discharge
- Special consideration needed where industrial wastewater is mixed with municipal wastewater

Potential areas of Reuse

*Priorities to be defined by States depending on prevailing demand and viability*

- industry (including industrial estates, power generation and railways)
- agriculture (including forestry and horticulture) and aquaculture
- municipal uses (e.g. landscaping, parks, toilet flushing, construction, fire fighting, ...)
- environment, including discharge into surface water bodies and maintenance of wetlands and environmental flows
- aquifer recharge (subject to stringent controls and discussion with CGWB)
- construction
- on-site use within STPs, including desludging
- others?
‘Apna Jal’ (Our water)

The Vision of the Policy is for widespread and safe reuse of treated wastewater in India that reduces the pressure on scarce freshwater resources, reduces pollution of the environment and risks to public health, and achieves economic benefits by adopting a sustainable circular economy approach.
The SRTW Policy aims to:

- set out **principles and guidance** to incorporate in the planning of SRTW projects – both urban and rural;

- identify the **commitments and actions** at central level to underpin, support and facilitate implementation of SRTW across the country; and

- provide a **model framework** for States to consider in the development and enhancement of their own policy, regulatory and implementation frameworks, allowing flexibility to adapt them to their own contexts and priorities.
Objectives

The Policy will:

➢ Move India on a **pathway of mainstreaming SRTW** by 2022 by encouraging States to adopt the necessary enabling environment and actively promoting its implementation.

➢ View SRTW as part of the **water cycle** encouraging multiple cycles of use-reuse

➢ Contribute to the Government’s **commitment to sustainability** including achievement of SDG 6.3 on improving water quality through increased recycling and safe reuse.

➢ Define the **roles and responsibilities** of various government entities and agencies and of other key stakeholders such as industry and other parts of the private sector, local government, civil society organisations and citizens.

➢ Establish new **funding mechanisms** and support synergies among relevant Central Government programs such as SBM, AMRUT, Jal Jeewan Mission, National Water Mission Goal 3, Service Level Benchmarks, etc.

➢ Adopt a **precautionary approach** while progressively adopting improved water quality standards, and the need for an incremental approach based on available resources and time to build necessary infrastructure, institutional and human resource capacity.
Outline for the SRTW Policy

Message/Foreword/Preface

1. Terminology
2. Introduction (Existing situation, Need for the Policy, Challenges, International experience, Guiding principles)
3. Objectives and scope (Vision, objectives, scope, milestones)
4. Expected outcomes
5. Legislative and regulatory context (related laws and policies, State policies and regulations)
6. Roles and responsibilities
7. Water quality standards and environmental considerations (standards for defined groups of users, groundwater recharge, surface water bodies, lakes/wetlands)
8. Implementation approach (National level, State, ULB, Rural, Basin)
9. Business models (pricing, guidance on model selection and private sector engagement, managing risks)
10. Financing (national programs, State programs, incentives)
11. Monitoring, Evaluation, Surveillance and Review (principles and responsibilities, information systems, periodic review)
12. Capacity Building and Awareness Generation

Annexes

State SRTW Policy Framework; business models; technology options;
eligibility for funding; no-freshwater zones
➢ Priority sectors for reuse to be determined by each State
➢ Pricing regime to consider ability to pay and alternative sources of water
➢ SRTW projects to:
  ▪ address prior use of untreated wastewater in agriculture, e.g. in peri-urban agriculture
  ▪ explore mutually beneficial outcomes for prior/customary users
➢ Food safety standards – importance for both domestic and export market
National:

- Ministry of Jal Shakti - the responsible agency for facilitating and coordinating the Policy, including financial support to States, public awareness campaign and monitoring implementation
- Ministry of Housing and Urban Affairs - coordinating implementation in States and providing technical support
- Proposal to establish a National Council and State Councils on SRTW for inter-agency coordination
- CPCB / CPHEEO roles to establish end-use water quality standards for different uses

State:

- State responsibility to formulate and implement State Policy on SRTW - develop Strategy and Action Plan, including mandatory usage targets, no-freshwater zones, changes to existing regulatory frameworks
- ULB and *Panchayati Raj Institutions* responsible for on the ground implementation
- SPCBs regulatory role in monitoring and compliance of water quality standards
- Industries – proactive engagement on planning SRTW projects
Main points:

- Standards to be ‘fit for purpose’ based on the different types of reuse – need to agree on the process and timeframe for new standards
- Need to follow a risk-based approach - take into consideration nature of contaminants, including ‘emerging contaminants’, depending on the intended purpose of reuse
- Requires greater compliance with discharge parameters from existing STPs
- Reuse in agriculture/aquaculture should meet standards for specific crops/aquatic species and consider food safety standard requirements for public health and trade
- Quality for reuse in industry is very site specific – financial responsibility for treatment above discharge norms (i.e. secondary treatment) rests with the industry
- Precautionary approach for discharge into aquifers – emphasis on ensuring compliance
- Consider consequences of pandemics and risk with pathogens
Proposed policy provisions

- All States adopt a State SRTW Policy by end 2022
- States with existing policies review them by end 2022 to ensure eligibility for national funding support
- Targets for treating and safely reusing wastewater:
  (i) where collection and treatment capacity already exists – 100% reuse by 2025
  (ii) where collection and treatment capacity does not yet exist
       50% reuse by 2030
       100% reuse by 2045
Proposed policy provision

- Establish a National Fund for incentivizing uptake of Safe Reuse of Treated Water
- Financial allocations from existing programs
- Criteria for the Fund include:
  - Adoption of SRTW Policy by the State
  - State has defined clearly roles and responsibilities for regulation, implementation, monitoring and compliance
  - In AMRUT towns/cities, funds will be applied only for tertiary treatment and distribution networks
  - In towns/cities outside AMRUT, funds may also be used to establish STPs
  - Funds are available to cities that meet specified service level benchmarks on sanitation defined by MoHUA
  - Minimum cost recovery principles are attainable
  - Project will not be eligible if other GOI funding program is already approved for the reuse components
  - States need to typically demonstrate 50% funding from own sources or private sector with lower contributions from those that are eligible for additional subsidy (e.g. NE States, Hill States etc.)
  - There will be a maximum total amount that any one State can utilize from the Fund to ensure the Fund’s effectiveness to incentivize SRTW across the country.
Thank you
Panel Discussion 1: Reuse of Treated Wastewater in Agriculture – Current Status and Implementation Challenges

Moderator: Dr. Mahesh Patankar, Senior Advisor, 2030 WRG
Shilp Verma, Researcher, International Water Management Institute
Vishwanath S, Director, Biome Environmental Solutions Ltd
Wastewater Reuse for Irrigation in India
Towards a ‘Smart Design’
India’s Urbanization Challenge...

India Urbanization (1950 - 2020)

Wastewater Generation: 61,754 MLD
WW Treatment Capacity: 23,270 MLD
Wastewater Actually Treated: ?? MLD

Million+ Cities: 15,644 MLD
Class I Cities: 35,558 MLD
Class II Cities: 2,696.7 MLD

51% 8,040 MLD
32% 11,553 MLD
08% 233.7 MLD
Wastewater Irrigation is not new...

US and UK were leaders in making sewage farms, Paris known to supply vegetables and fruits to London.
Wastewater irrigation can convert ‘waste into resource’ and ‘farmlands into wetlands’

ITP field studies:
- 57,000+ Ha irrigated in 17 locations
- Favourable Econ; cost as a driver
- Better yield, improved produce quality
- Some awareness on (direct) health impacts;
- Preference for municipal WW, not industrial
- Varied institutions and business models
- No coherent policy

Shah et al. 2016
Gujarat’s ‘Wastewater Institutions’ Heritage

https://www.youtube.com/watch?v=qZUxptX1018
How we ‘treat’ wastewater is a function of how much households / government is able and/or willing to pay for it.

Treating municipal wastewater to tertiary level, robbing it of its nutrients, and then re-using it doesn’t make any sense.

Rather than ‘by default’ wastewater irrigation, if this is done ‘by design’, municipal wastewater can become an efficient and super reliable ‘surface irrigation system’

- Avoid mixing industrial wastewater
- Simple precautions for (direct) impacts
- Simple local treatment practices
- Intelligently select crops for use
- Promote institutional innovations
- Invest in research on (indirect) impacts
Thank You...

Shilp Verma [shilp.verma@cgiar.org]
Anushri Tiwari [a.tiwari@cgiar.org]
Formalizing the informal

Transition of wastewater reuse in agriculture

S.Vishwanath
Biome Environmental Trust
zenrainman@gmail.com
Key points

• In many inland cities, there is already an embedded agricultural reuse of wastewater, with large investments made by farmers.

• Wastewater policies will need to take into account this pre-use before diverting to other uses.

• A prioritization of wastewater reuse, on the lines similar to water rights, domestic, agricultural, ecological, industrial/urban is called for.
Tumkur: Population 300,000
• A 25 million litres per day aeration pond
• Treated and untreated wastewater fill three lakes
• Flourishing agriculture with these waters of a wetland medicinal crop called Baje. Annual turnover Rs 40 million. 200 farmers. 5000 farm workers.
• Farmers allowed STP with a promise to make available treated wastewater
• Farmers need – crop choice, best cultivation practice, drip irrigation systems and an assurance on availability of treated wastewater
Vijayapura: Population 40,000
Value addition
What farmers want

• Assured wastewater
• Better drip irrigation systems
• Assistance with the right crop choice
Bengaluru: Population 13 million (Informal)
What farmers want

- No industrial effluent in wastewater
- Assured flows
- Crop choice with market
- Advice on irrigation practice
- On farm improvement of wastewater quality
Formal transfer of 1100 mld of treated wastewater ongoing to drought prone districts to fill lakes
Aquifer recharge and irrigation
Key Observations

• A vast hinterland of wastewater agriculture provides livelihoods and employment in the city
• No formal institutional mechanism exists to monitor and manage this
• Farmers have made huge investments in pumping the wastewater into their fields
• Fit for purpose treated wastewater to be made available
• Farmers need technical assistance to manage soil and crops better
• A risk management approach using the Sanitation Safety Plan developed by WHO can be adopted.
Panel Discussion 2: Building Climate Resilience through Wastewater Reuse – Live case study from Marathwada

Facilitated by: Dr. Anjali Parasnis, Technical Consultant and Kavita Sachwani, State Program Coordinator, 2030 WRG, Maharashtra

• Eknath Dawale, IAS, Secretary, Agriculture, Government of Maharashtra
• Astik Pandey, IAS, Commissioner, Aurangabad Municipal Corporation, Government of Maharashtra
• Anil Hadgaonkar, SDAO, Project on Climate Resilient Agriculture, Aurangabad
• Farmer(s) / WUA of Zalta Gram Panchayat, Aurangabad
Building Climate Resilience and Circular Economy through Treated Wastewater Reuse

Live Case Study from Marathwada
Zalta, Aurangabad
Farmers of Zalta Village pump untreated water directly from river

Farmers need alternative source of perennial safe water for irrigation

Ground Zero Aurangabad

Drought prone district in Marathwada region

Zalta STP has capacity to treat 25 MLD water –upto secondary level. Only 6-9 MLD gets treated and released into Sukhna river

Treated wastewater released in the Nallah

Aerial View of the STP Plant at Zalta

Key Facts

<table>
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<tr>
<th>Location</th>
<th>Zalta, Aurangabad District, Maharashtra</th>
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<tr>
<td>Distance from nearest town</td>
<td>12 Km to Aurangabad</td>
</tr>
<tr>
<td>Total Geographical Area</td>
<td>537 Hectares</td>
</tr>
<tr>
<td>Population</td>
<td>2,304</td>
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<tr>
<td>Primary Source of Livelihood</td>
<td>Agriculture</td>
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<td>Capacity of STP</td>
<td>35 MLD</td>
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Collection / Testing of Samples

Collection/Testing of Soil, Water, Foodgrain, Milk samples: *Kumbhephal*, Aurangabad

Presence of Heavy metals like Cadmium, Mercury and Lead detected in samples tested by IIT-B. Bioaccumulation of pollutants in food chain. Use of sensors developed by IIT-B would be useful.

Collection / Testing of Soil, Water samples: *Zalta* farms and open source stream, Aurangabad

High salinity, electric conductivity observed. Open source water is found to be unfit for irrigation.
Innovative Solutions Using Multi-stakeholder Approach

**Formation of Wastewater Reuse Association Zalta**

**Multi-stakeholder Approach**
- Aurangabad Municipal Corporation
- PoCRA – PMU Mumbai, Aurangabad
- MWRRA
- Zalta Gram Panchayat and Farmers
- Zalta STP
- 2030 WRG

**Agreement by Farmers to pay for water, electricity for pumping water**

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<th>Season</th>
<th>Rate for Rgtd Users</th>
<th>Individual Benes</th>
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<td>Kharif</td>
<td>3.38</td>
<td>4.50</td>
</tr>
<tr>
<td>Rabi</td>
<td>6.75</td>
<td>9.00</td>
</tr>
<tr>
<td>Hot Weather</td>
<td>10.13</td>
<td>13.50</td>
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**Approval given by Aurangabad Municipal Corporation to lift 2 MLD of Water for Farmers**

**Contracts between farmers and Zalta Gram Panchayat and AMC under progress**

**Meeting of Farmers convened in October 2020**

**Display of EoI by Zalta GP**
Key Milestones and Way Forward

Pre-Pilot (Nov 2018- December 2019)
1. Stakeholder Mapping
2. Filed visits to Aurangabad and Interaction with Farmers.
3. Defining Problem statement, base line and indicators
4. Dialogue with Partners
5. Qualitative testing of water, soil, crop, food and fodder samples in collaboration with IIT-B
6. Qualitative analysis of stream water and soil-in collaboration with PoCRA

Pilot Scale Project (January 2020- December 2020)
1. MSP meetings at Zalta Gram Panchayat (ZGP)
2. Formation of the 1st Wastewater Reuse Association
3. Agreement between ZGP and beneficiary groups to pay for water and pumping set up
4. Request Letter submitted to Aurangabad Municipal Corporation (AMC)
5. Request For Expression of Interest (EOI) displayed on the Notice Board.
6. A formal permission to lift 2 MLD water issued by AMC. Farmers accept ToR of AMC.
7. The first group of farmers would be reusing treated wastewater at ZGP by December 2020.

Scale Up- Long term (January 2021- December 2021)
1. Scaling up of operations.
2. Formation and registration of multiple Wastewater Reuse Associations at Zalta
3. Developing Detailed Project Report in consultation with AMC and PoCRA
4. Developing appropriate conveyance infrastructure
5. Carrying out Impact assessment- Socio Economic, Environmental, Qualitative and Quantitative parameters.
Towards Building Climate Resilience and Resource Circularity

1. Water and Wastewater Management
   - Potential to bridge the gap of 100 MLD between water demand and supply through water reuse and recycle.
   - Scope for reuse of at least 100 MLD treated wastewater for Industries, Urban areas and Agriculture.
   - Potential sludge generation- 1,572,354 Kg and Biogas production potential- 774,082 m³ (to leverage Calorific, Nutritive and Commercial value of Sludge).

2. Energy Generation and Saving
   - At STPs-Biogas Production potential is high.
   - Integration of Solar Energy for sustainability and energy conservation.

3. Comparison with National and Global Benchmarks and GHG Mitigation Targets.

Dimensions of Circular Economy Using Treated Wastewater

- Wastewater Reuse for Agriculture
- Wastewater Reuse for Afforestation
- Sludge Management- Source of Plant Nutrient and Energy
- Carbon emission Reduction- Energy and Water use efficiency
- Opportunities of Revenue Generation
- Climate Resilience Carbon neutral Water Utilities
Transcripts from the Discussion with farmers of Zalta Village, Aurangabad during the webinar

Ms. Rima Sonavane and Mr. Gajanan Surashe

• The villagers do not have an option but to use the polluted water from nearby streams and rivers. The farmers have noted degradation of the soil over the years due to the use of contaminated water.

• There are impacts of polluted water consumption on health of the people as well as on livestock. Especially in village Zalta, the increasing percentage of cancer patients is a serious concern. Similarly, there are more incidences of skin infections and vector borne diseases such as malaria.

• If the villagers and farmers could get access to treated wastewater for farming and pure potable water for households, it will positively impact the health and socioeconomic status of the villagers. The farmers would take long term crops, plant more fruit trees and cultivate fodder on large scale.
Thank you
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@wbcsd
Indian Euro Water Partnership
Israel Economic and Trade Mission
Government of Maharashtra

Hashtags

#CircularEconomy
#TreatedWastewater
#MultiStakeholderPlatform
#WaterSecurity
#ResiliencePlanning
3-part Webinar series on Reimagining Reuse of Treated Wastewater in Agriculture in India:

Technology, Finance and Governance Perspectives

Webinar 2: Wastewater Treatment Systems and Technologies : Fit for purpose – Fit for India, 26th Nov 2020
Webinar 3: Financing and Governance to Mainstream Reuse of Treated Wastewater, 17th Dec 2020

Detailed agenda to follow soon
Thank you!

Please write to us at 2030wrg_mh@worldbank.org to know more about the Webinar Series