

City Level Reuse Action Plan for Reuse of Treated Water in Agra (Uttar Pradesh)

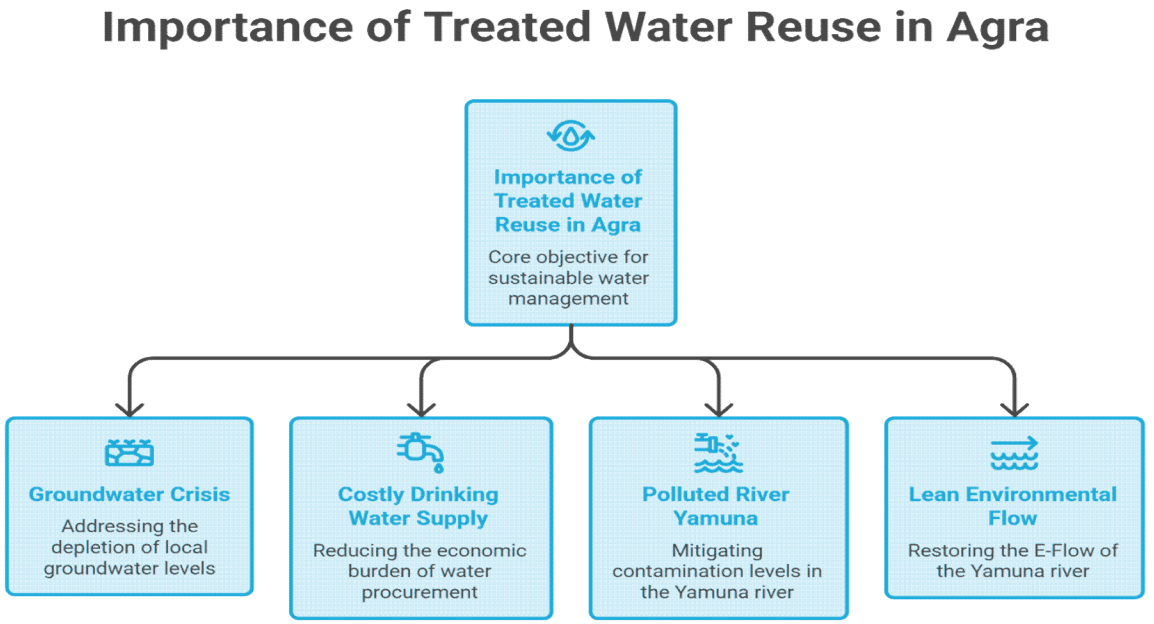
Dr Sumita Singhal
Programme Manager, Water Programme (CSE)
Email – sumita.singhal@cseindia.org

Why City Level Action Plan?

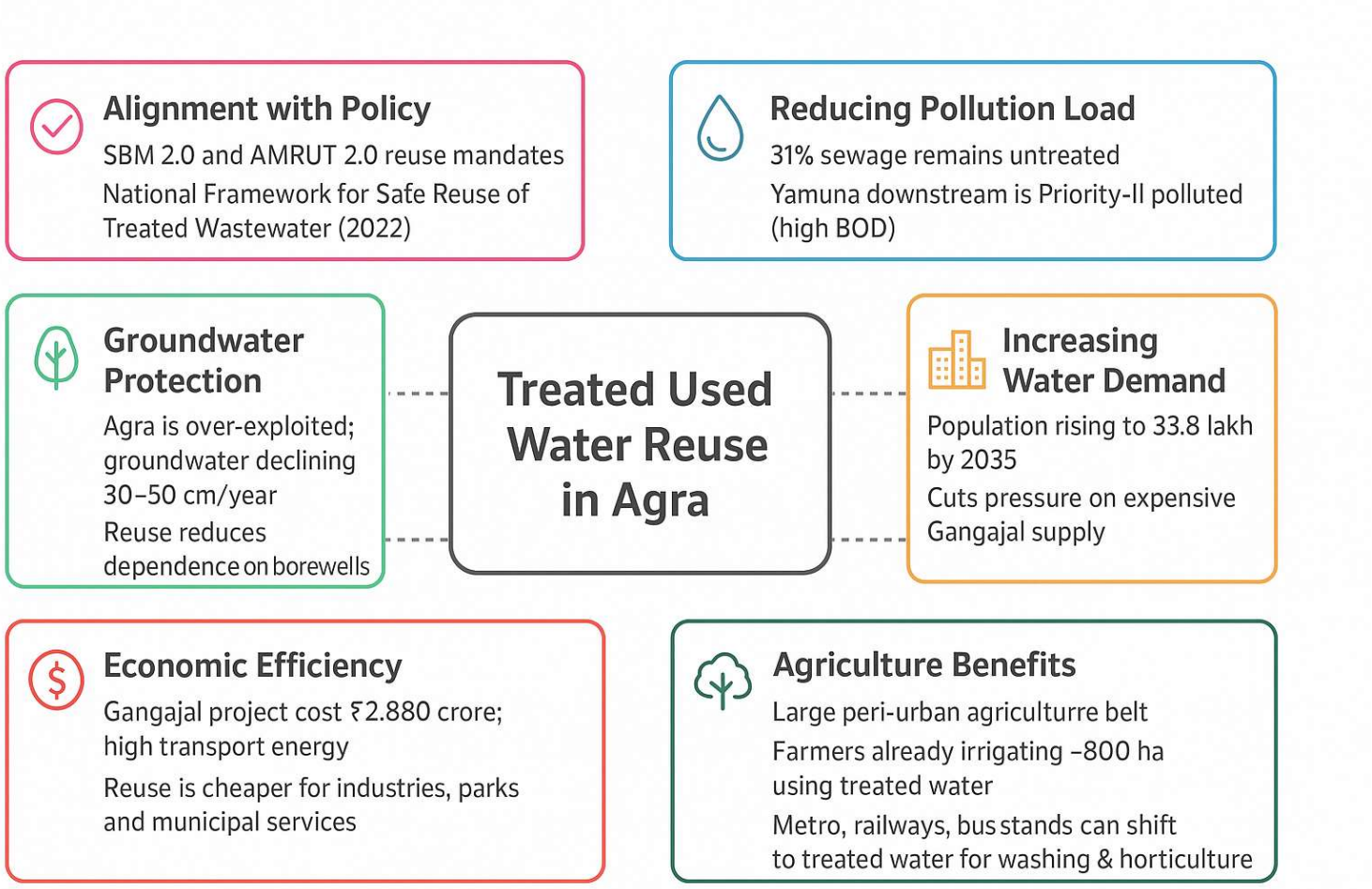
VISION

"To establish Agra as a **water-resilient city** by promoting the safe and sustainable reuse of TUW, considering **equitable distribution, reduced freshwater dependency, and integrated water management planning**."

Treated used water is a resource, not a liability, and must be leveraged to meet the growing demands of the resource.

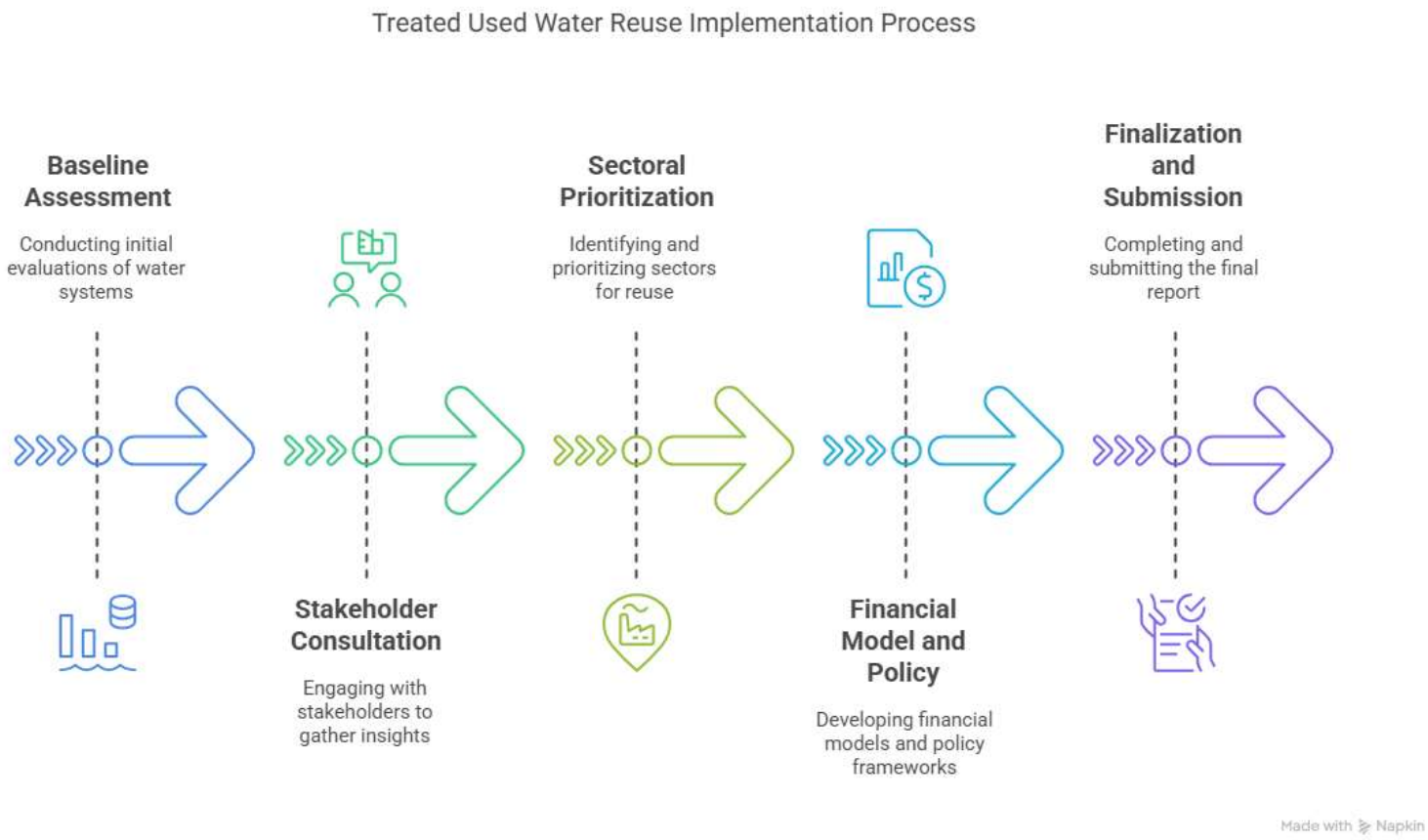


Rationale for Reuse of Treated Water



Methodology

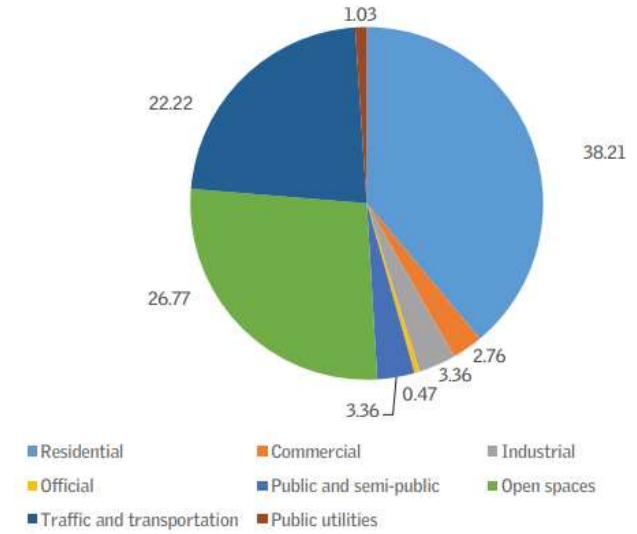
The study followed a structured approach comprising of below mentioned steps:



About Agra



- Located on the west bank of the Yamuna River in Uttar Pradesh, Agra
- The city lies approximately 363 kilometers west of Lucknow, the state capital, and 200 kilometers south of New Delhi, the national capital.
- Population (2011) of 15.85 lakh (8.45 lakh males and 7.39 lakh females) across 2.67 lakh households, current- 23.78 lakhs
- The Agra covers a total of 60,935.59 hectares
- 38,509.10 hectares comprise open spaces, agricultural land, barren land and other non-urban uses.



Land use share of Agra (percentage)

Water Supply and Demand - Status

Current Water Supply: 381 MLD (309 MLD Ganga + 72 MLD treated groundwater via MBBR).

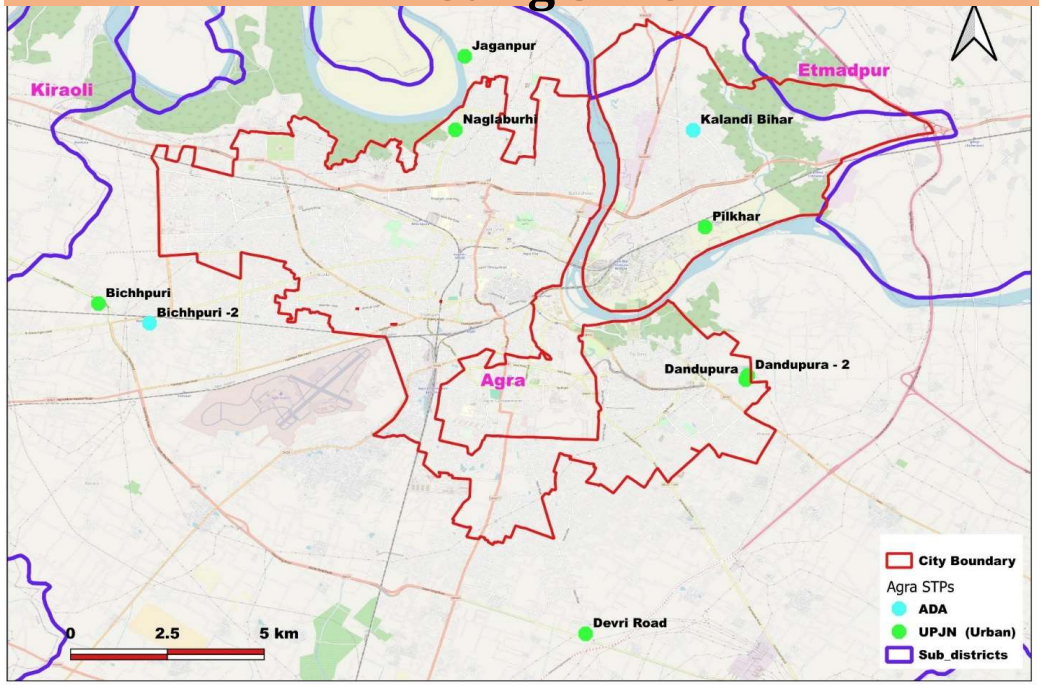
Water Demand: Total demand (2020) = 361 MLD.

Current Reuse of Treated Water -

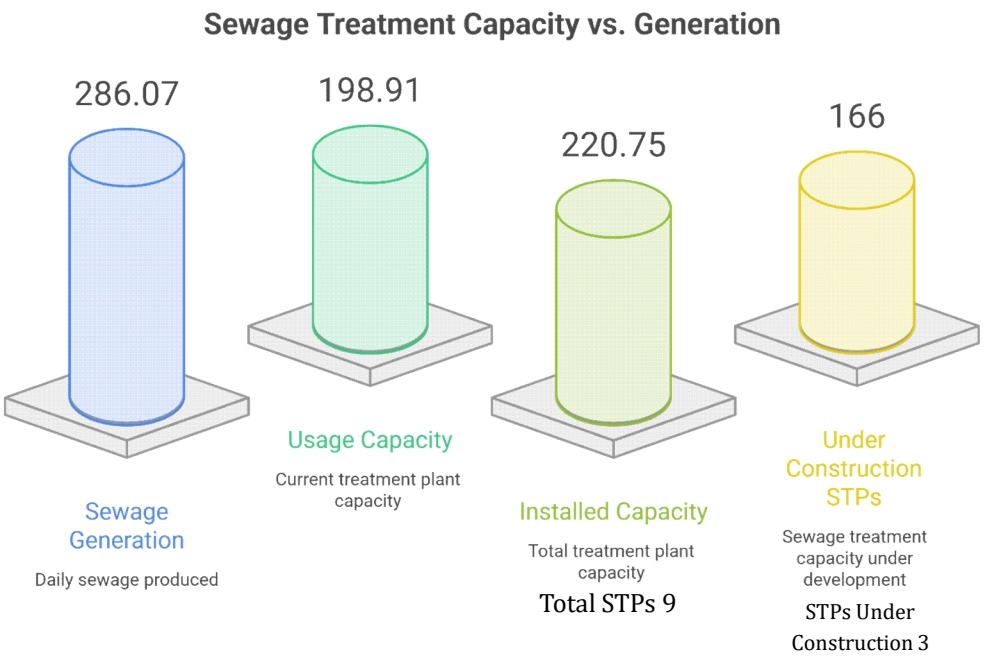
- Jaganpur Dayalbagh STP 14 MLD in agriculture
- Peelakhar STP 5 MLD waste to energy

S.No	STP Location	Capacity (MLD)	Technology	Treated MLD)
1	Jaganpur Dayalbagh	14	UASB	14.00
2	Budi Ka Nagla (Naglabudi)	2.25	WSP	2.25
3	Dhandhupura	78	UASB	72.05
4	Peelakhar	10	WSP	10.00
5	Deori Road	12	UASB	9.42
6	Dhandhupura -2	24	UASB + EA	21.10
7	Bichpuri	40	UASB	33.59
8	Bichpuri -2	36	SBR	32.00
9	Kalindi Vihar	4.5	UASB	4.27
	TOTAL	**220.75**		**198.68**

Existing STPs



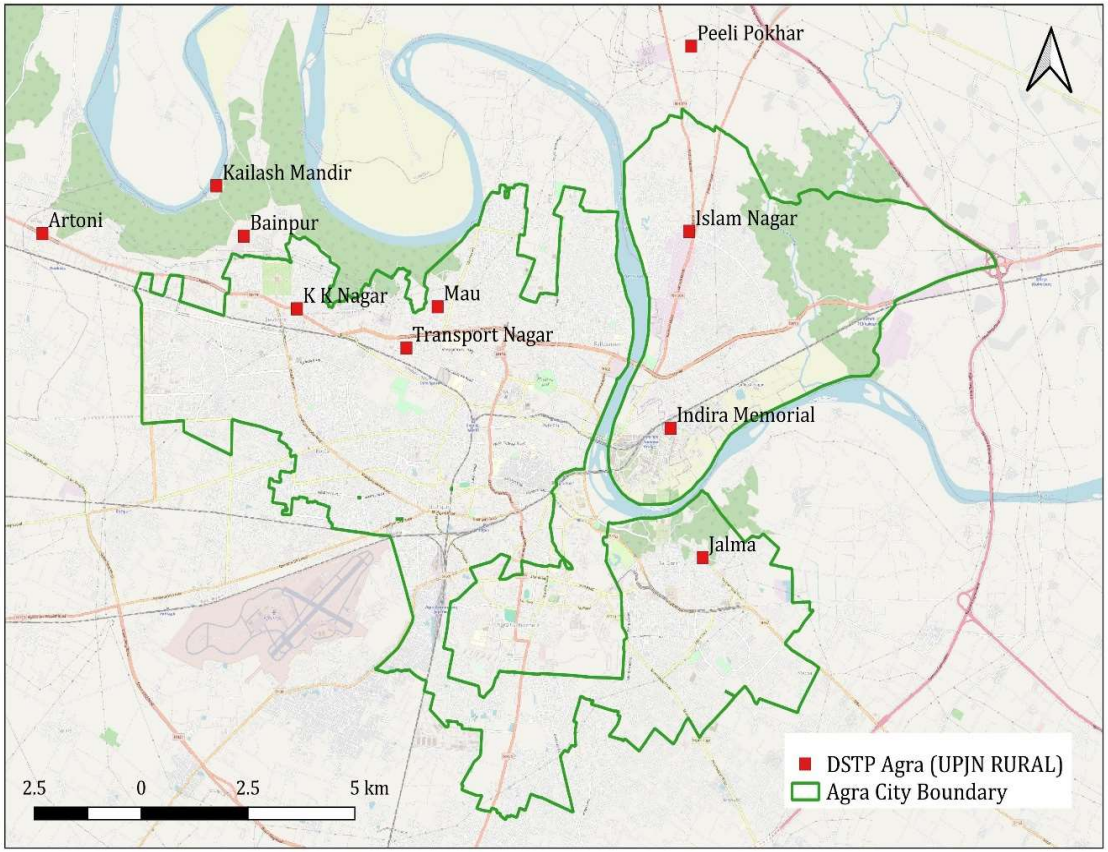
Treatment Capacity and Utilization



Total Sewage Generation: 286.07 MLD (2024)

Dhandhupura and Bichpuri clusters together account for **178 MLD → 80.63%** of total installed capacity

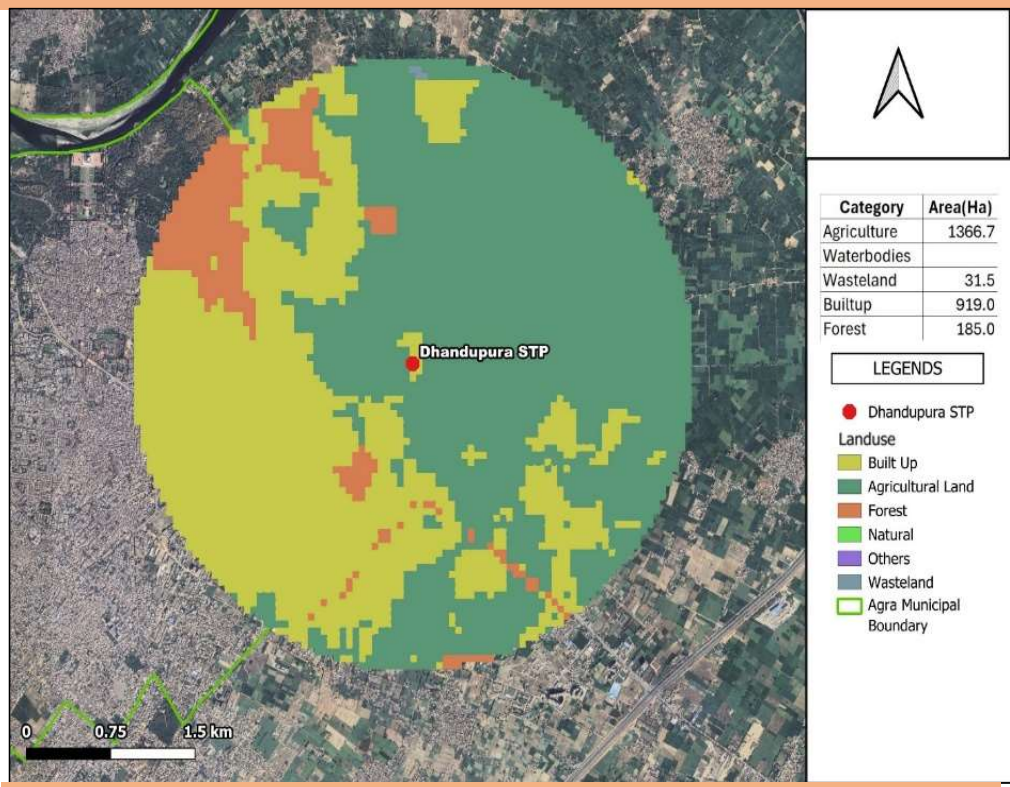
Upcoming DSTPs



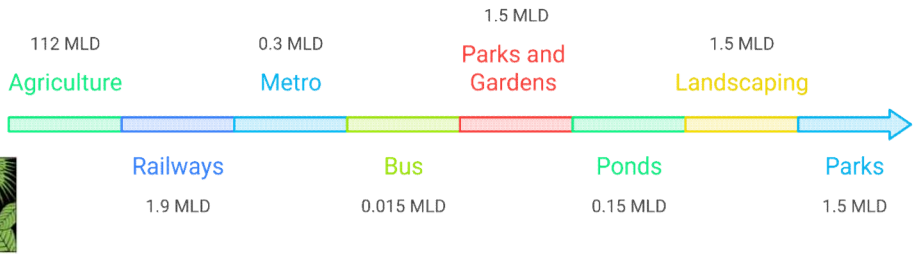
Field Analysis and Interpretation - Dhandupura STP



Nearest Railway station and Bus Stand



Land Use Land Cover Map



Total Demand (MLD)	**118.87**
Total Water Available (MLD)	**202**
Reuse Potential	**59%**

Final Prioritization of reuse of treated water across sectors

Potential Supply Centers	Agriculture (MLD)	Landscaping / Urban Forestry / Public Greening / Parks (MLD)	Lake/Pond Revival (MLD)	Transportation (MLD)
Dhandupura (102 MLD + 100 MLD proposed) **Total = 202 MLD**	112 (4)	1.5 (2)	0.15 (3)	2.21 (1)
Bichpuri (76 MLD)	149 (3)	0.57 (2)	20.3 (1)	–
Jaganpur (14 MLD + 31 MLD proposed) **Total = 45 MLD**	105 (3)	1.7 (2)	0.08 (4)	0.39 (1)
Peelakhar (10 MLD + 35 MLD proposed) **Total = 45 MLD**	21 (1)	–	–	–
Deori Road (12 MLD)	69 (1)	0.03 (2)	0.04 (3)	–
Kalindi Vihar (4.5 MLD)	30 (3)	0.03 (2)	0.07 (4)	0.04 (1)

Other reuse opportunities

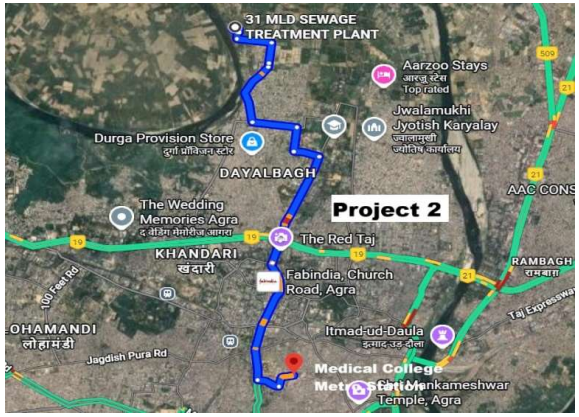
1. **Dust suppression**
2. **Construction activities**
2. **Road cleaning and medians**
3. **Fire-fighting**
4. **Wasteland**

Analysis of the highest priority projects

Based on a comprehensive assessment of Agra city, incorporating both secondary research, stakeholder consultation meetings and primary field studies, the following projects have been identified as top priorities for inclusion in the action plan:







Project 1- Dhandupura STP to Agra cantt railway station (Approx. 13 km)

Project 2- Jaganpur STP to Medical College Metro Station (Approx. 9.5 km)

Project 3- Bichpuri STP to Keetham Jheel (Approx. 20 km)

S. No.	Name of STP & Capacity	Projects Identified	Distance from STP	Water to be Reused (MLD)	Reuse Efficiency	Proposed Budget
1	Dhandhupura STP (102 MLD)	Supply to Agra Cantt, Agra Fort, Idgah Railway Station, and 11 Metro Stations, green spaces, bus stand, 5 star hotels	15 km	5 MLD	5%	₹22.08 Cr
2	Jaganpur STP (14 MLD Existing + 31 MLD Proposed)	Supply to 10 Metro Stations, 1 Park, 1 Lake, and 1 Railway Station	9.5 km	14 MLD (existing use) + 2 MLD (proposed) = 16 MLD	36%	₹15.82 Cr
3	Bichpuri STP (76 MLD)	Lake rejuvenation and pond rejuvenation	20 km	21 MLD	28%	₹55.13 Cr
Total				**42 MLD**		**93.03 Cr**

Stakeholder Meeting 1 : 14 July 2025



Stakeholder Meeting 2 : 05 September 2025

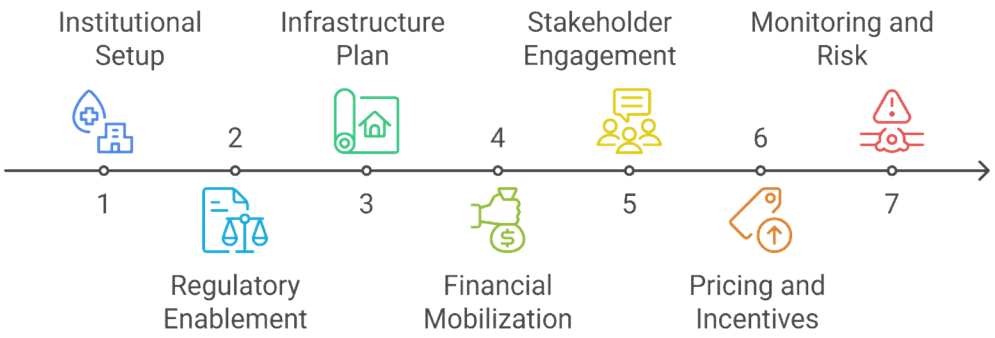








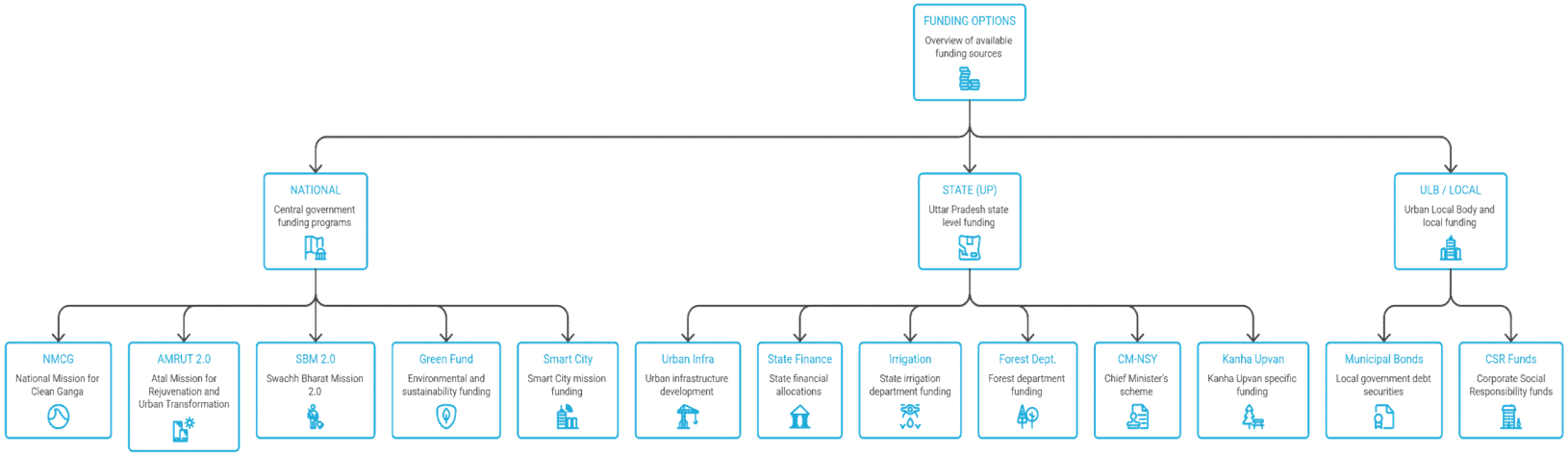
Implementation Framework



Way Forward

- The integration of these three pillars—assessment, prioritization, and financing—creates a robust action plan. The city should now:
- **Institutionalize reuse planning**- align Jal Kal Vibhag, UPJN, and municipal departments under a reuse cell.
- **Develop DPRs for priority projects** to refine cost estimates and secure funding.
- **Strengthen effluent quality** to meet NGT reuse standards.
- **Pilot multi-sector reuse projects** to build confidence and visibility.
- Capacity building of the key stakeholders' like government officials, private entities, farmers, etc.
- **Scale gradually**, ensuring that technical, financial, and social aspects evolve together.

Funding Options



AGRA – CITY LEVEL ACTION PLAN FOR SAFE REUSE OF TREATED WATER

CITY PROFILE
Population
15.85 Lakh
Area
60,935.59 ha
River
Yamuna River

WATER SUPPLY
381 MLD
(309 MLD Ganga + 72 MLD treated groundwater – MBBR)
64 Tubewells

EXISTING STPs
9 STPs
Installed Capacity
220.75 MLD
Utilized Capacity
198.68 MLD

UPCOMING STPs
3 New STPs
Additional Capacity
166 MLD

CURRENT REUSE
- Jaganpur STP – 14 MLD (Agriculture)
- Peelakhar STP – 5 MLD (Waste to Energy)
- Parks – Tanker Reuse
- Informal Canal Irrigation (Dhandupura, Peelakhar, Deori Road)

PRIORITY REUSE PROJECTS

S. No.	STP & Capacity	Projects Identified	Distance	Water to be Reused (MLD)	Reuse Efficiency (% of STP Capacity)	Proposed Budget (Capital & O&M)
1	Dhandupura STP (102 MLD)	• Agra Cantt • Agra Fort • Idgah Railway Station • 11 Metro Stations (Transportation / Municipal Use)	15 km	5 MLD	5%	₹22.08 Cr
2	Jaganpur STP (14 MLD Existing + 31 MLD Proposed)	• 10 Metro Stations • 1 Park • 1 Lake • 1 Railway Station (Mixed Urban Use)	9.5 km	16 MLD (14 MLD existing + 2 MLD proposed)	52%	₹15.82 Cr
3	Bichpuri STP (76 MLD)	• Lake Rejuvenation • Pond Rejuvenation (Environmental / Ecological Use)	20 km	21 MLD	28%	₹55.13 Cr
TOTAL				42 MLD		₹93.03 Cr

FUNDING OPTIONS (AT A GLANCE)

NATIONAL
- Namami Gange (NMCG)
- AMRUT 2.0
- SBM 2.0 Urban
- Green Climate Fund / DFI
- Smart Cities Mission

STATE (UP)
- Urban Infrastructure Fund
- State Finance Commission
- Irrigation / Minor Irrigation Dept.
- Forest Department
- Mukhyamantri Nagar Srijan Yojana (CM-NSY)
- Kanha Upvan Yojana

ULB / LOCAL
- Municipal Bonds / ULB Budgeting
- Corporate Social Responsibility (CSR) Funds

OTHER REUSE OPPORTUNITIES

- Dust suppression
- Construction activities
- Road cleaning and medians
- Fire-fighting
- Wasteland

POTENTIAL SUPPLY CENTERS (AT A GLANCE)

Supply Center (Capacity)	Agri (MLD)	Landscaping / Parks (MLD)	Lake / Pond (MLD)	Transport (MLD)
Dhandupura (202 MLD)	112(4)	1.5(2)	0.15(3)	2.21(1)
Bichpuri (76 MLD)	149(3)	0.57(2)	20.3(1)	–
Jaganpur (45 MLD)	105(3)	1.7(2)	0.08(4)	0.39(1)
Peelakhar (45 MLD)	21(1)	–	–	–
Deori Road (12 MLD)	69(1)	0.03(2)	0.04(3)	–
Kalindi Vihar (4.5 MLD)	30(3)	0.03(2)	0.07(4)	0.04(1)
TOTAL DEMAND	486 MLD	3.83 MLD	20.64 MLD	2.64 MLD

GRAND TOTAL REUSE DEMAND (ALL SECTORS) = 513.11 MLD

FROM WASTE TO RESOURCE



END USERS: Railways · Metro · Power Plants · Parks & Gardens · Lakes & Ponds · Agriculture

REDUCE FRESHWATER DEPENDENCE | RESTORE & REJUVENATE WATER BODIES | COST-EFFECTIVE WATER MANAGEMENT | SUPPORT URBAN DEVELOPMENT & LIVABILITY | PROMOTE CIRCULAR WATER ECONOMY

Source: CSE Assessment

THANK YOU

Dr Sumita Singhal
Programme Manager, Water Programme (CSE)
Email – sumita.singhal@cseindia.org