Climate responsive WASH initiatives in small and medium towns in India

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Vulnerability of WASH services in India has increased due to climate change . . .

Delhi Floods, 2023 – Water Treatment plants are dysfunctional; sewage mixing with flood water

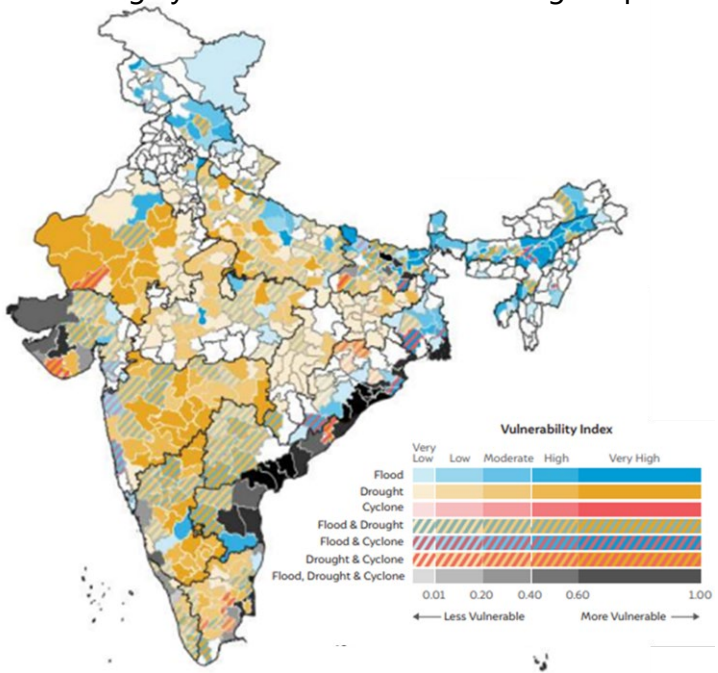
Uttarakhand, 2023 - Cloud burst destroys city infrastructure and services

- Climate change impacts seen more on developing countries - **90 %** human losses reported from developing countries
- India is **7th** most vulnerable country to the climate hazard
- **27** out of **36** states are highly vulnerable to climate change impact

Chennai floods, 2021 and drought, 2019

Kerala floods, 2018 – Access to sanitation facilities

Latur, 2016 - Water delivered through trains during drought



Source: IPCC, 2023: Summary for Policymakers. In: Climate Change 2023: Synthesis Report. A Report of the Intergovernmental Panel on Climate Change. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, 36 pages. (in press) https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf ; ;Mohanty, Abinash, and Shreya Wadhawan. 2021. Mapping India's Climate Vulnerability – A District Level Assessment. New Delhi: Council on Energy, Environment and Water.

Emissions, mitigation and India's NDCs . . .

India is 3rd largest GHG emitter among all the countries.

1. Reduce the emissions intensity of its GDP to 45% below 2005 levels by 2030.
2. Achieve about 50% cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030.
3. Create an additional carbon sink of 2.5-3.0 billion tonne of carbon dioxide equivalent through additional forest and tree cover by 2030.
4. Propagate a healthy and sustainable way of living based on traditions and values of conservation and moderation, including through a mass movement for 'LiFE'– 'Lifestyle for Environment' as a key to combating climate change.

Focusing on Carbon capture usage and storage technologies

Sector specific targets for all action and strategies

Focus on research and innovation towards clean fuel technologies

Focus on international cooperations and financial credit flows

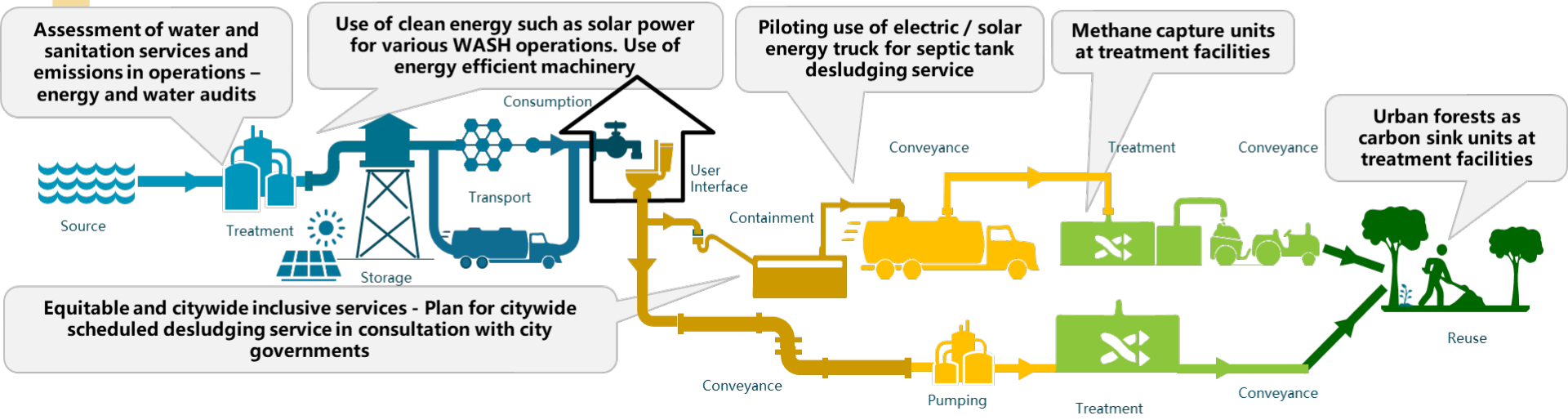
Source: https://pib.gov.in/PressReleasePage.aspx?PRID=1876119

Small and Medium towns of Maharashtra acting as "Urban laboratories" for building climate responsive WASH services...

- 7 Small and Medium **towns ranging from 40,000 to 4 lakh population** setting up examples of building climate responsive WASH services.
- Towns are **located in different climate conditions** facing drought as well as flood situations
- All towns have **different WASH services context in terms of services provision both onsite and offsite water and sanitation services**.
- Initiatives taken up in towns provide **cross sectoral impacts.**

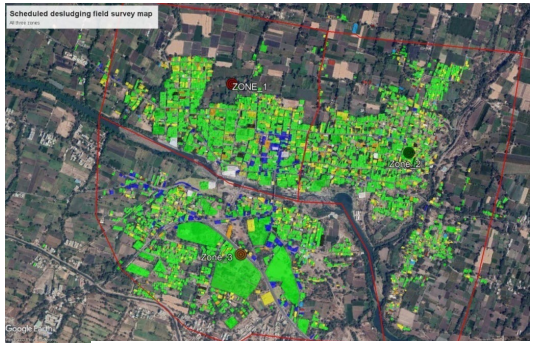
Emissions and mitigation potential across WASH chain demonstrated in these cities . . .

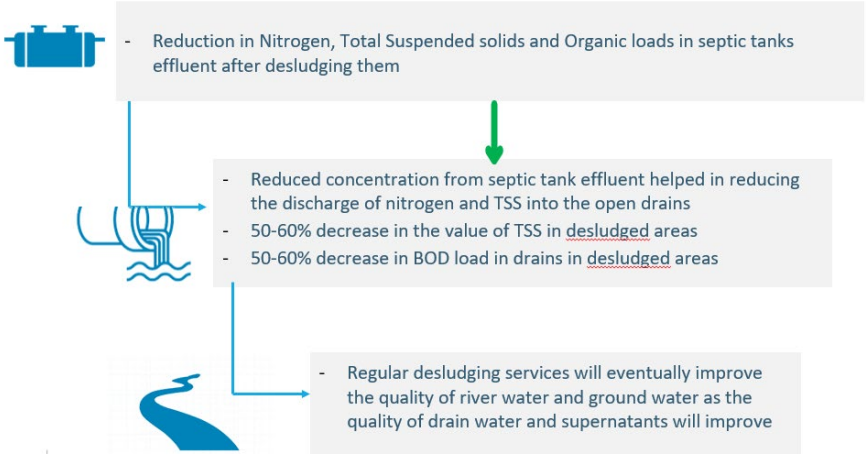
GHG emission estimates across the WASH service chain



Scheduled desludging leading to multidimension positive impact...

- A total of **10272 septic tanks** are desludged in **these cities**. With Wai completing 1st cycle of scheduled desludging.
- Leading to reducing 60 % organic load in drains and **improving river water quality.**
- Safely **collecting 65 + million liters of faecal sludge** and transporting it to treatment facility.





Eco-sensitive Treatment plants setup in these cities...

Wai, India

Capacity: 70 KLD Commissioned - 2018

24 Million litres of FS treated*

*FS treated from 2018 to 2023

Sinnar, India

Capacity: 70 KLD Commissioned : 2019

30 Million litres of FS treated**

Capacity: 60 KLD Commissioned : 2021

~ 12.5 Million litres of grey water treated**

**FS treated from 2019 to 2023

Closing the loop through Resource Recovery in these cities. . .

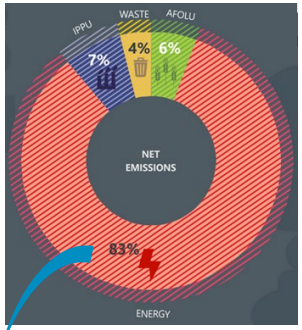
- **22,000 square** meters of urban forest and landscaped area in midst of barren land
- **8356 trees of 25+ species** planted
- Treated **water** is used for **watering the plants** through a **drip irrigation system**
- **Sludge used as fertilizers at the urban forest or taken away by farmers.**
- The **quality** of the treated products are **regularly monitored** through testing the samples.
- **SHGs engaged** for maintenance of garden and urban forest through a contract and paid on a monthly basis.
- **Attracting bird species and butterfliers** – previously not seen

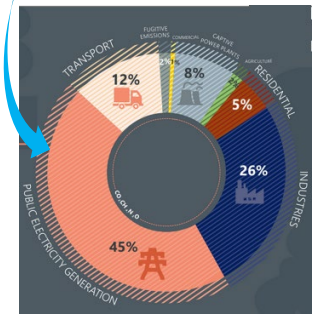
75 million+ litres water reused

13,537 tons over 25 years sequestered

Mitigation – Move towards clean energy plays a big role . . .

Sectoral contribution

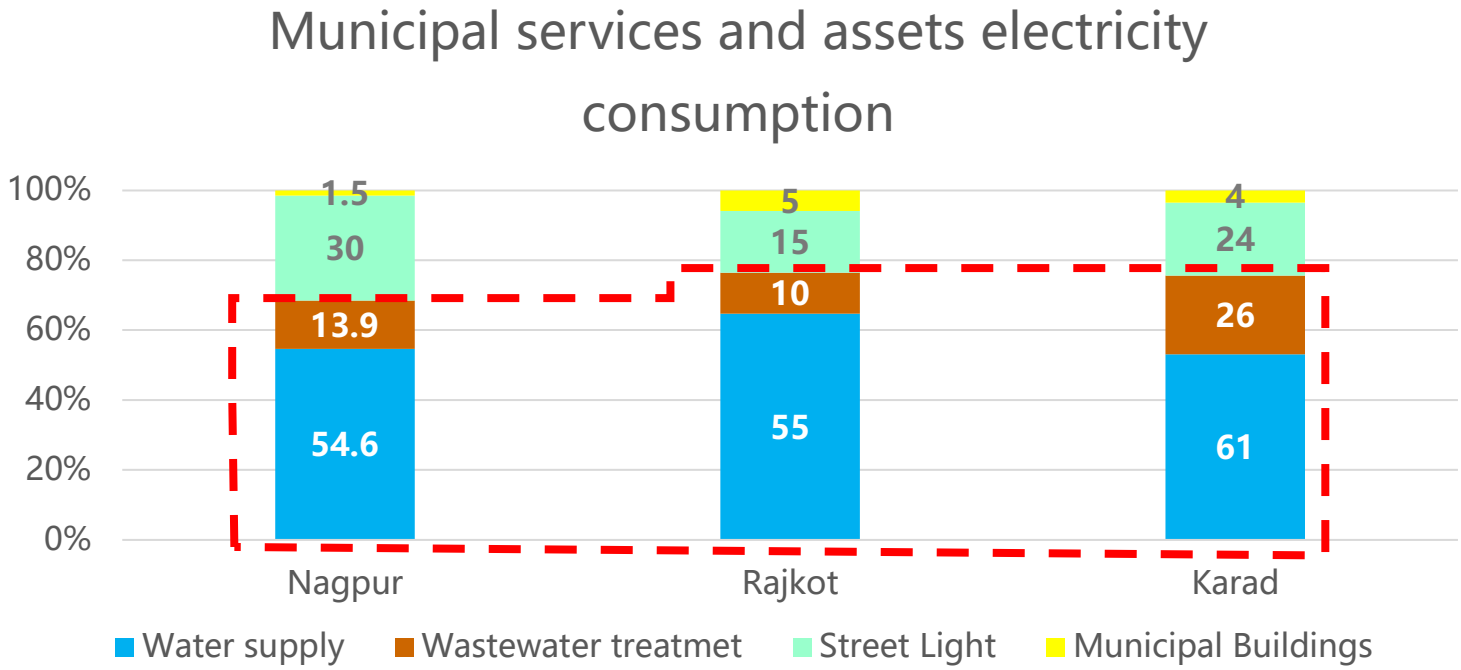




Source : GHG Platform India

2,455 Mt CO_2e emission from the energy sector

40% to 60% of the electricity bill of municipal corporations goes towards water / sewage pumping



Source : 1. https://southasia.iclei.org/wp-content/uploads/2022/04/6.-Thane-City_GHG-Emission-Inventory-2017-18-Report_v-2.0.pdf; 2. https://southasia.iclei.org/wp-content/uploads/2022/04/2.-Climate-Resilient-City-Action-Plan-Nagpur-Report-Low-Res_compressed.pdf; 3. Karad municipal council, 2023

Renewable energy - important for achieving mitigation targets

Exploring options in a cities of Maharashtra / Interlocking renewable energy with WASH sector yields benefits in terms of emissions and cost saving over long terms

- **5** cities
- **Solar Installation across WASH service value chain**
- **228 Kw** of Solar plant installed
- Installation at water, wastewater, greywater and faecal sludge treatment facility

** The selected pilot cities population ranges between 50k – 400 K*

Clean energy generation potential over 25 years

8550 MWH

Emission reduction Potential (over 25 years)

7,011 tons CO_2

Projected Overall cost saving (25 yrs)

1 Million USD.

Source :

Learnings from laboratory cities are scaled up in India and across the globe . . .

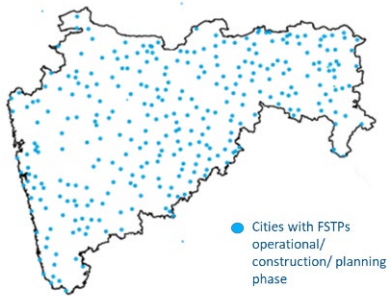
State

CWAS - Partner to the state government for implementing the SWACHH MAHARASHTRA MISSON URBAN and

MAJHI VASUNDAHRA MISSION –

400 cities

60 Million Urban population



National

Influenced

National Policies and guidelines

Global

Support to

Kabwe, Zambia for Scheduled Desludging

- '**Swachha Bharat Mission 2.0'** mandates provision of **scheduled desludging service** as a part of ODF++ protocol in India
- **1000+ FSTPs** in planning or implementation phase in **India, 300+ FSTPs** alone coming up in **Maharashtra.**
- **Resource recovery and use of clean energy -** adopted in these cities
- Cities contributing towards **achieving SDG 5, 6, 13, 11, 17.**
- **SBM-NULM-Majhi Vasundhara convergence** initiative at statelevel is also being implemented in Maharashtra.

Partnerships and Collaboration to attain Scale . . .

BILL & MELINDA GATES foundation

Government of Maharashtra

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स्वच्छ महाराष्ट्र अभियान (नागरी) २.०

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THANK YOU

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About us

The Center for Water and Sanitation (CWAS) is a part of CEPT Research and Development Foundation (CRDF) at CEPT University. CWAS undertakes action-research, implementation support, capacity building and advocacy in the field of urban water and sanitation. Acting as a thought catalyst and facilitator, CWAS works closely with all levels of governments - national, state and local to support them in delivering water and sanitation services in an efficient, effective and equitable manner.

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