Climate Resilient WASH Service Delivery in Karad

A case study of climate friendly WASH initiatives

Vulnerability in India has increased due to climate change . . .

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

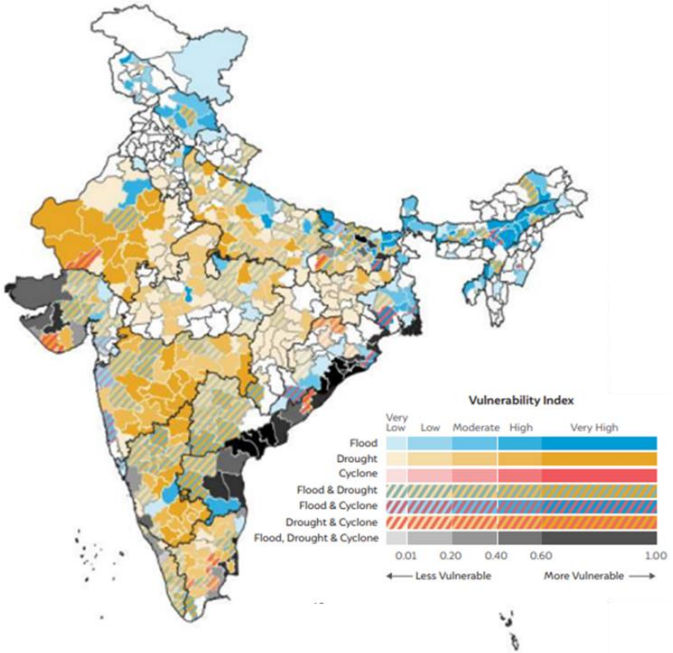
Uttarakhand, 2023 - Cloud burst destroys city infrastructure and services

Chennai floods, 2021 and drought, 2019

Kerala floods, 2018 – Access to sanitation facilities

Latur, 2016 - Water delivered through trains during drought

- 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



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.

2,953 Mt CO_2e overall emissions

Energy sector the largest contributor

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

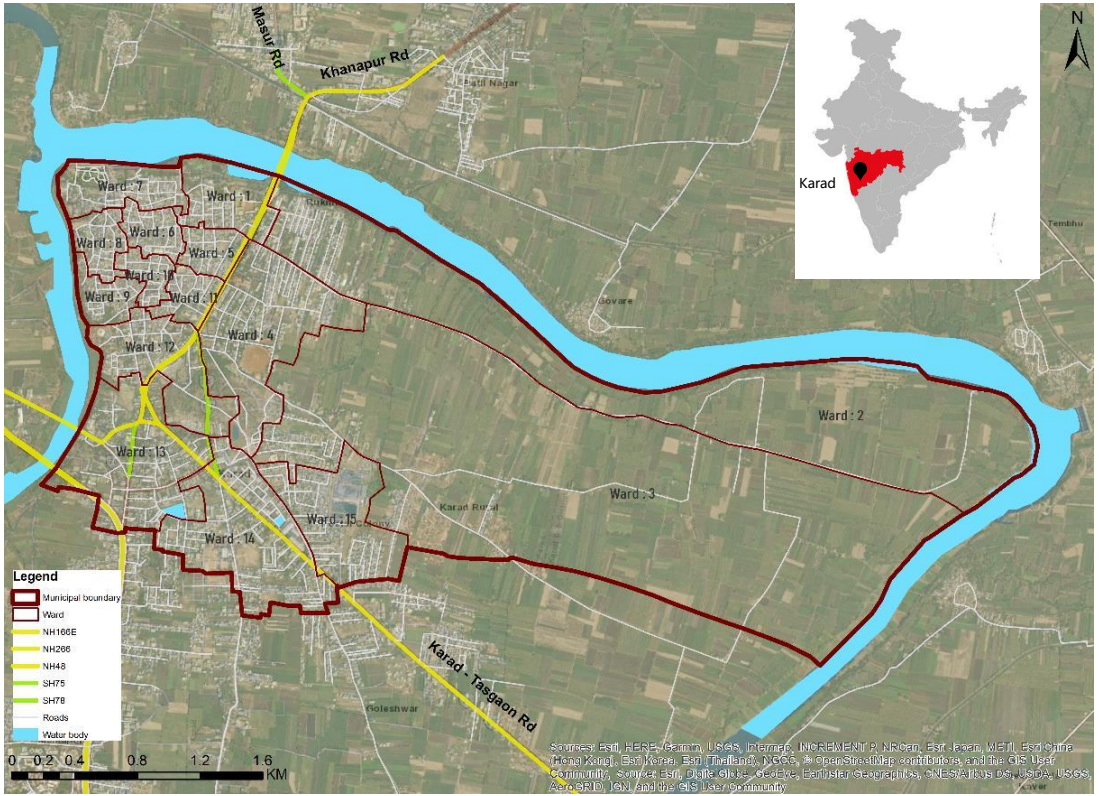
Sector specific targets for all action and strategies

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

Karad, a small town representing 4000 + small and medium towns, with prone to flooding instances . . .



89,725 Population

13,965 Households

10.55 Area (sq. Km)

15 Election Wards

1,853 Slum Population (2021)

275 Slum Households (2021)

Karad is a city in Satara District Indian state of Maharashtra, governed by a Municipal Council.

Last mile connectivity and household level initiative assisting in tackling water scarcity . . .

100 % coverage of household level tap water connection

City serving drinking water outside city limit, reducing dependency on ground water at household level

Addressing space constraint through group water connections

Reducing the vulnerability of poor associated to basic services during hazards

2500 + houses have installed RWH structures

All institutional building have installed rainwater harvesting structures

Ground water recharge structures installation at flooding points in the city is under exploration

Closing the Water loop to address water security and other additional initiatives . . .

Treated wastewater assisting in fulfilling agricultural water demand since 1974

100 % metering assisting in NRW reduction

Ensuring access to safe sanitation services with zero open discharge . . .

93 % IHHT coverage and providing state and national subsidy to achieve 100 % IHHT

100 % coverage of sewer network

5 Pumping stations

Bio enzyme liquid

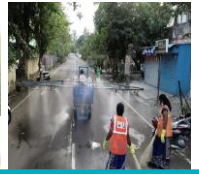
Farmers, at the carbon sinks and commercialized by council

Treated Sludge

STP (MMBR technology)

7 % dependency on CT/PT

Ensuring inclusive sanitation in CT/PT for women by providing MHM facilities



Agricultural fields, watering carbon sinks & washing roads, medians and garbage vehicles

Treated wastewater

** MMBR – Multi Media Bio Reactor*

Sustainable SWM services and citizens evolvement ensuring resource recovery . . .

Resource recovery facility center at the SWM treatment plant

Two wet waste treatment plant (capacity of 10 TPD and 9 TPD)

Segregation of dry waste before bailing process


MAHARASHTRA POLLUTION CONTROL BOARD

100% processing of biological solid wastes occurs by **Karad Hospital Association**

Compost as well as plastic benches as resource recovery from solid waste

Carbon sinks assisting in emission reduction . . .

SHGs engagement in management of carbon sinks providing employment opportunities at local level

7 Carbon sinks

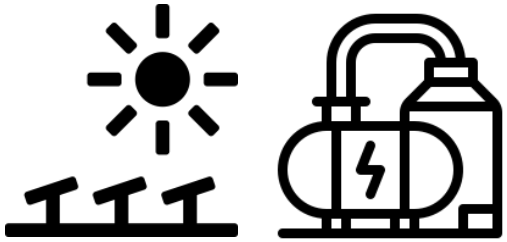
32,000 sq. mt. area

28,500 plants

47,000 tons CO2 sequestering to happen over 25 years

20 ML of freshwater is saved by using treated wastewater which is used to fulfil carbon sinks water requirements

Action taken for facilitating the climate friendly initiative at local level . . .



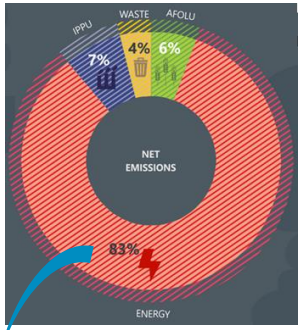
5% incentive on property tax for solar and 1 % on installation of household level biogas plant

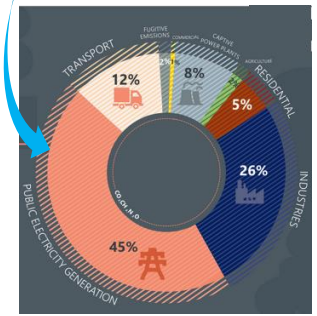
Incorporation of rainwater harvesting in building permission plan approval process

Continuous behavior change campaigns and using festivals as medium of message communication

Mitigation – Electricity consumption plays a big role

Sectoral contribution

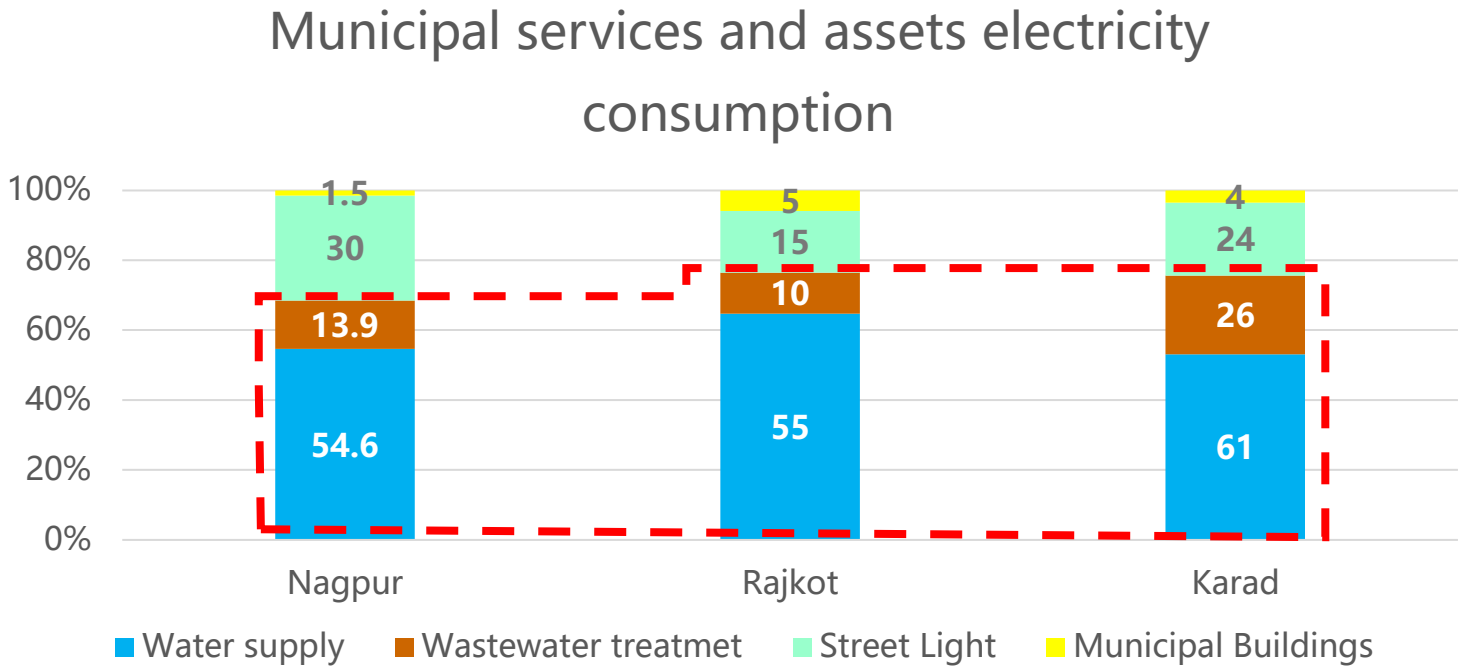




Source : GHG Platform India

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

Curbing GHG emissions through use of renewables energy sources . . .

1 – 1.5 K.W solar panels installed for self sustain energy requirement of 5 CT/PT facilities

72 KW solar panels installed at STP to have energy transition to renewable energy

5 TPD bio methanation plant installed at the SWM treatment plant site to generate energy for wet waste and energy to run street lights at SWM site

Generating 20 units of electricity daily

78 KW renewable energy installation

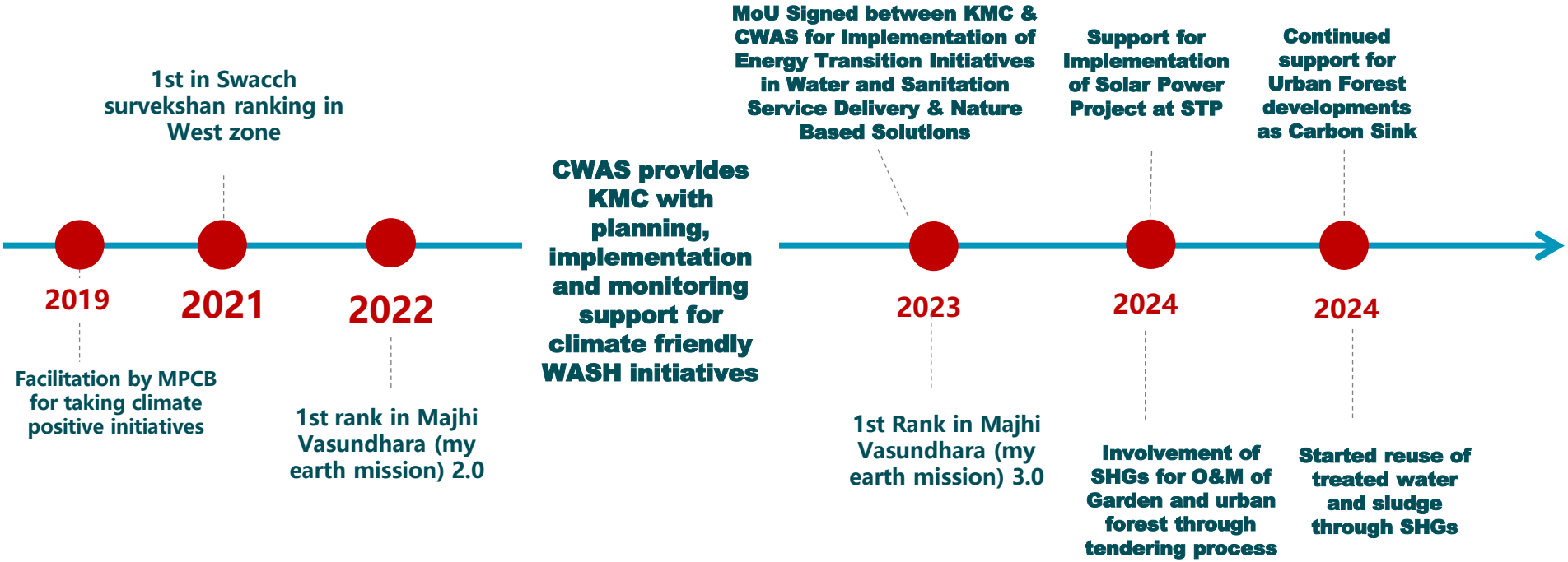
2,888 Mwh clean generation potential over 25 year

2,368 tons CO_2 emission reduction over 25 years eq. to ~ 3800 teak trees

* Note : Only solar installation at the WASH services and utilities is considered

Initiative scaling up under planning stage at STP and WTP site.

Karad Municipal Council (KMC) – CWAS, CEPT Partnership



KMC has an MoU with CWAS to support Karad for climate friendly WASH initiatives

Recognition and Achievement . . .

Green building certification 2022 - 2025

1st Rank in Majhi Vasundhara (my earth mission) 3.0, 2023

3-star garbage free city under SBM 2.0, India

1st rank in Majhi Vasundhara (my earth mission) 2.0, 2022

Facilitation by MPCB for taking climate positive initiatives, 2019

1st in Swacch survekshan ranking in West zone, 2021

Way Ahead

Exploring the Carbon credits for the initiatives taken up, Moreover looking at energy generation for wastewater.

* MPCB – Maharashtra state pollution control board


THANK YOU