



Moving towards Climate resilient WASH services

April 2024

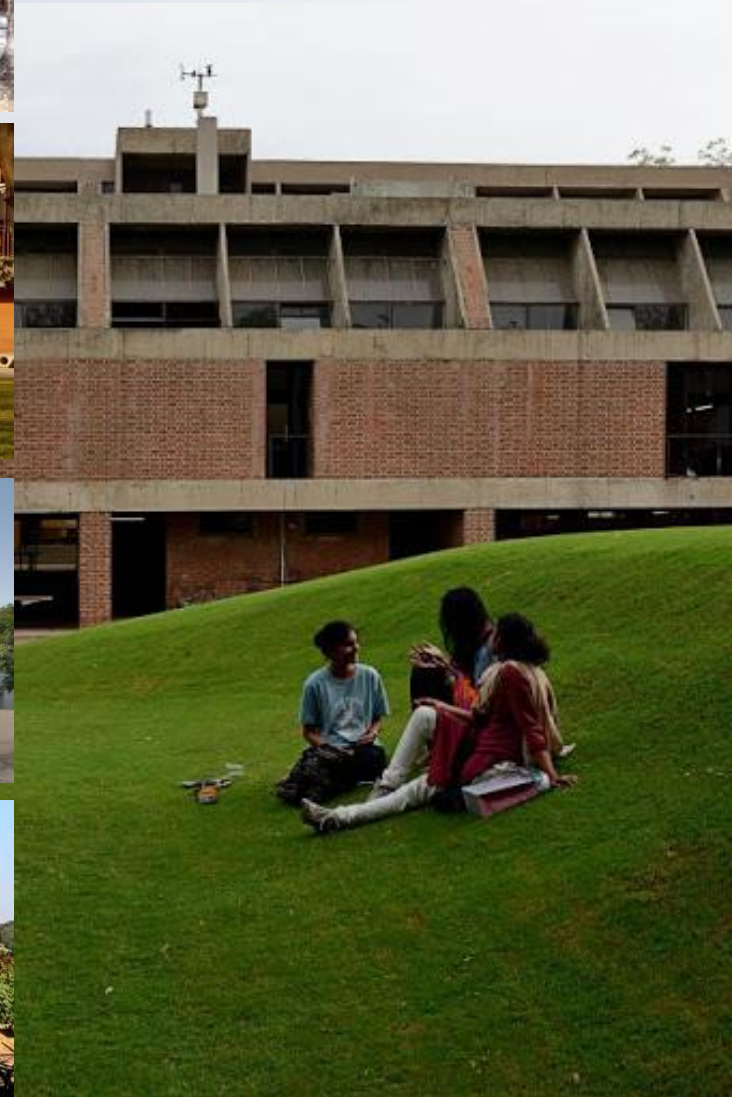


About CWAS

CEPT University's core focus is human habitat. Through its education, research and advisory activities, it strives to improve the impact of habitat professions in enriching the lives of people in India's villages, towns and cities.

CEPT Research and Development Foundation (CRDF) has been established by the University to manage their research and capacity building activities. There are nine domain-focused centers in the CRDF. The Center for Water and Sanitation (CWAS) is among the first center to be established.

CWAS began its work in 2009 with focus on improving water and sanitation services in India. It carries out activities related to action research and capacity building – working closely with city and state governments, enabling them to improve delivery of services. CWAS is closely engaged with Faculty of Planning at CEPT University. CWAS team teach and guide students of Faculty of Planning.



CWAS – Approach and areas of work . . .

Core values



Public Goods Mindset



Government Engagement at All Levels



Action-oriented Research and Innovation



Learning Culture and Academic Roots



Working At scale

Thematic areas of work



MONITORING WASH SERVICES

From Infrastructure creation to Service Delivery

Data driven decision making for improved service delivery



ACTION RESEARCH FOR SANITATION

Sanitation services in small and medium towns that are sustainable, inclusive and equitable

Action research from cities be scaled up at the state and national level



GOVERNANCE AND FINANCING

Strengthening municipal finance and governance, planning and financing urban WASH



WATER SECURITY

Water Governance, management and climate resilience

Water supply service delivery and managing water resources



EQUITY IN SERVICES

Ensuring sustainable and equitable access to safe water and sanitation at scale



CLIMATE CHANGE

Energy Transition in WASH services

Mitigation and Adaptation measures for WASH

COP GOALS OF INDIA . . .

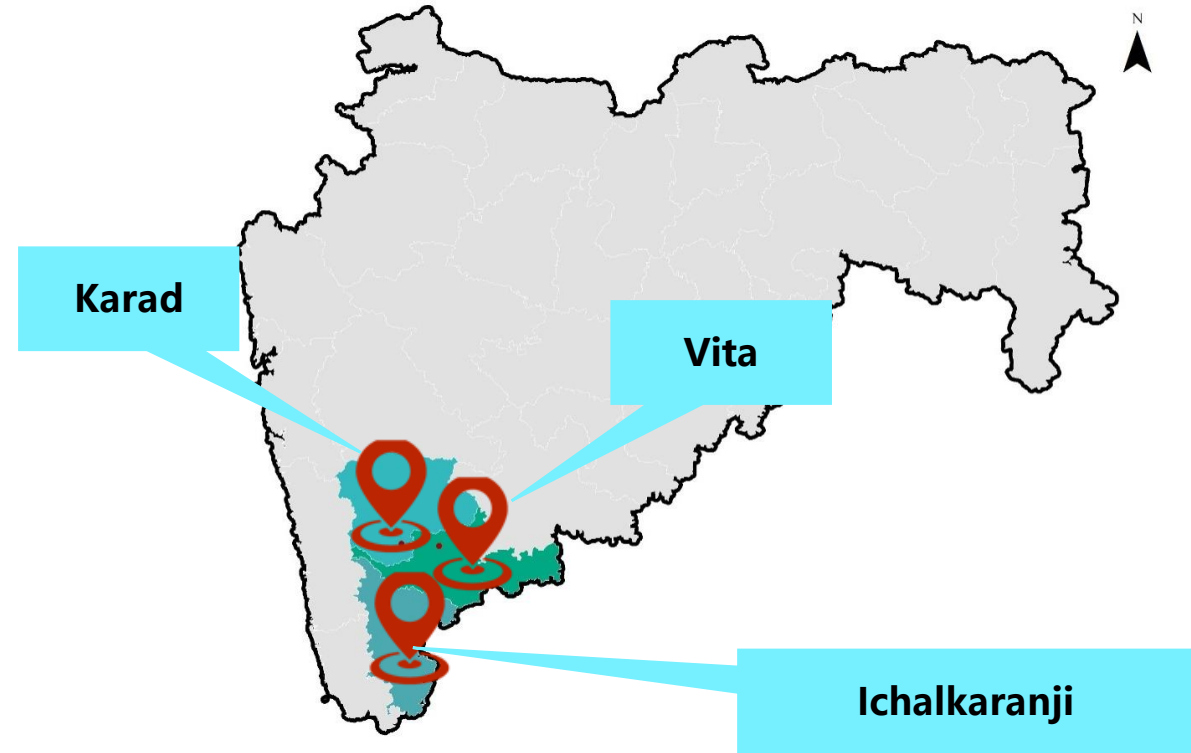


- 1 India will achieve *NET-ZERO* emissions by 2070
- 2 India will bring its non-fossil energy capacity to *500 GW* by 2030
- 3 India will bring its economy's carbon intensity down to *45%* by 2030
- 4 India will fulfil *50%* of its energy requirement through renewable energy by 2030
- 5 India will reduce *1 BILLION TONNES* of carbon emissions from the total projected emissions by 2030

The activities proposed under the project align to these National goals . . .

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

- 3 Small and Medium towns ranging from 50,000 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.
- These cities representative of 7400+ cities of India including census towns and LDVs.



Vita



Karad



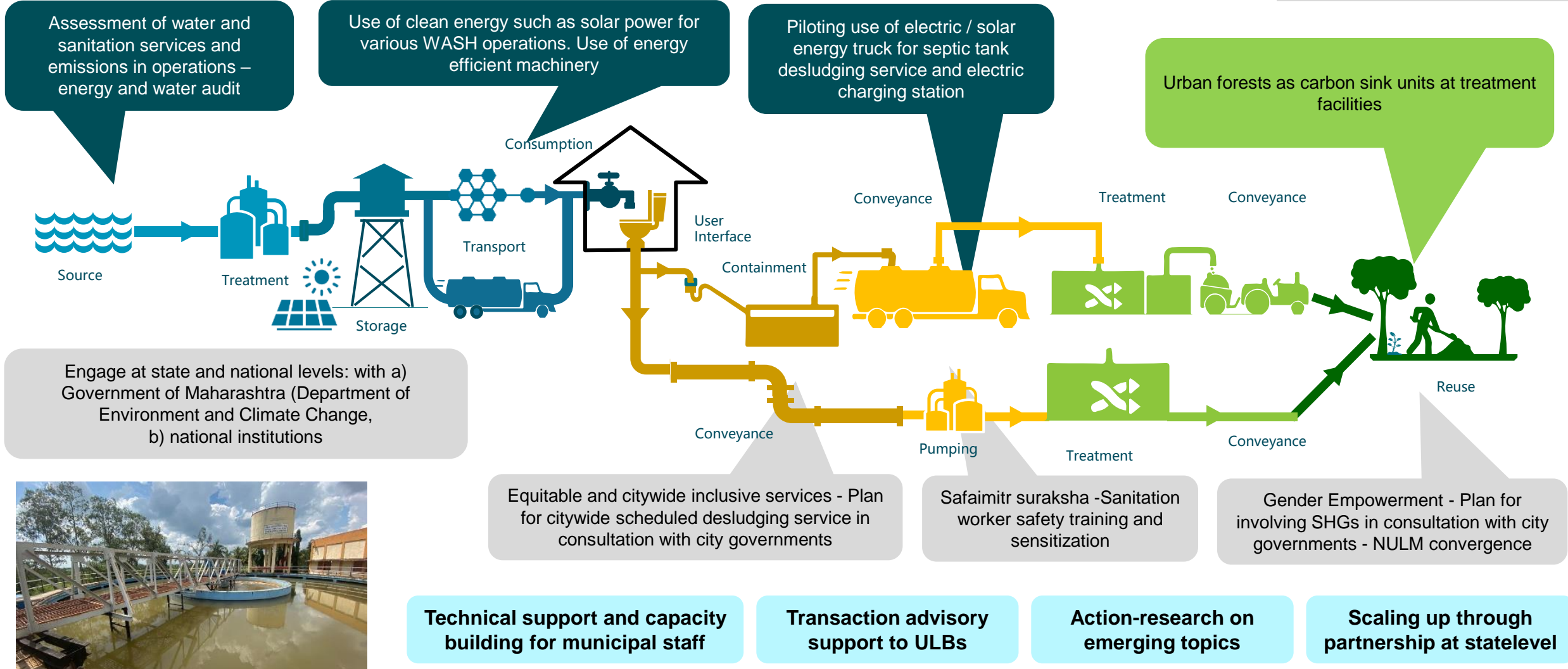
Ichalkaranji

Climate Inclusive WASH services . . .

Energy Transition

Nature Based Solutions

Inclusive services



Energy transition at city level infrastructure will help reduce 4500+ tons of CO2 emissions over 25 years . . .



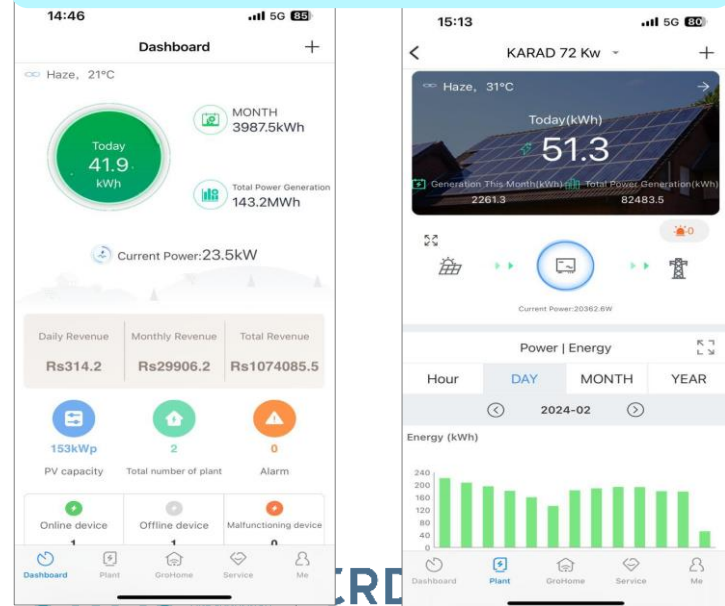
Installation at
Water Treatment Plant

Karad : 72 Kw
Ichalkaranji : 81 Kw
Vita : 22 Kw and 8Kw

Water pumping stations

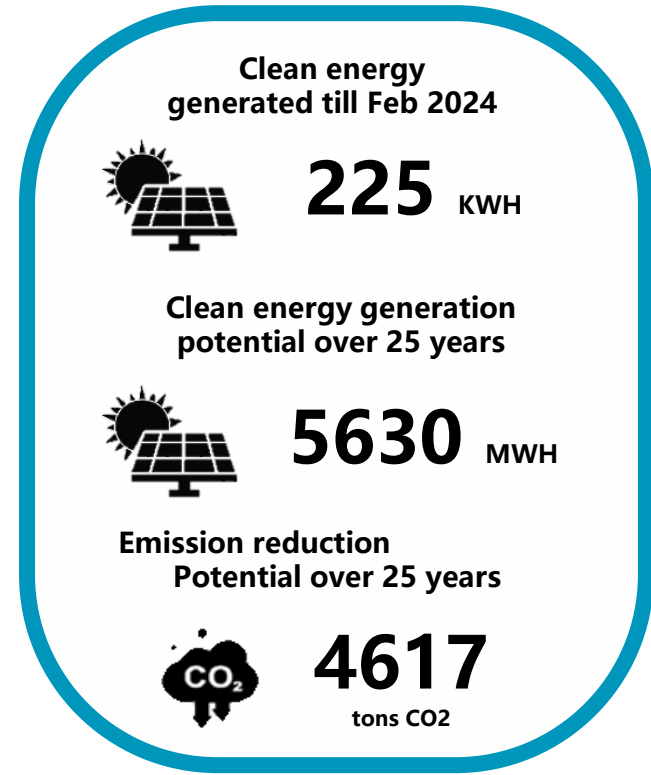
Centralized Wastewater Treatment plant

Online monitoring system



Through our pilots

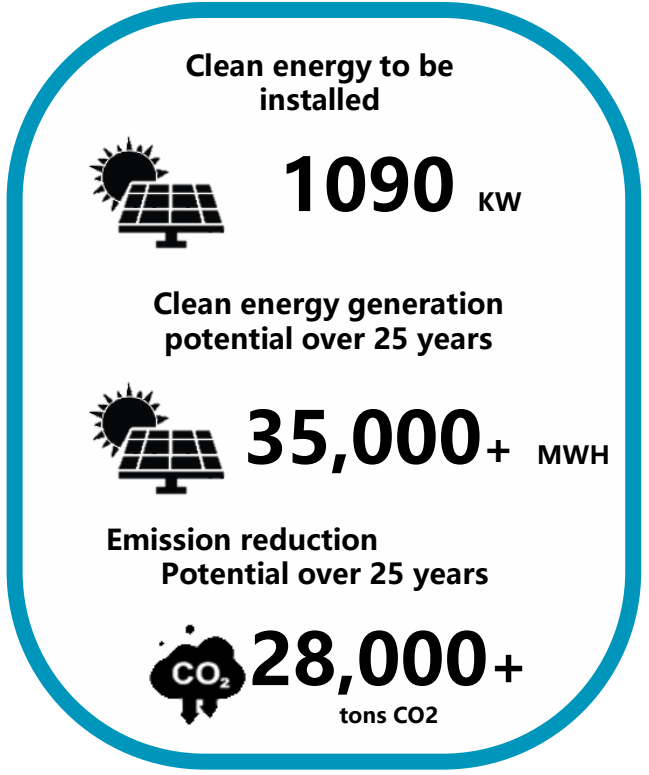
16% reduction in dependency on conventional energy source of municipal services as per current usage.



₹ **USD 200K** saving Over 25 years

Through leveraged projects

- **280 Kw Solar park at Karad STP** : 230,000 USD
- **800 Kw PPP Solar installation** at water and wastewater plant at Ichalkaranji under discussion : 500,000 USD
- **10 Kw solar at Water pumping station** in Vita : 12,000 USD



₹ **USD 3 Million** saving Over 25 years

India's first prototype of Electric desludging truck . . .

A revolution for improving sanitation services without cost to the environment

Developing prototype for electric desludging truck

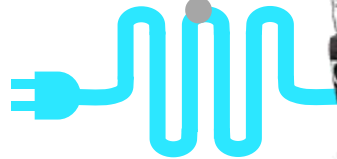
- ✓ Partnership with leading automotive industry for developing prototype

Exploring options for solar charging

Need arises from increased number of trips with scheduled / regular desludging of septic tanks leading to increased fuel costs / indirect emissions

Impacts on the entire trucking industry

- ✓ Driving energy transition through innovation in technology
- ✓ Clean energy in large freight category
- ✓ Prototype will be developed for all categories of desludging truck from light duty truck to heavy duty truck
- ✓ Reduction in overall pollution caused due to transport industry



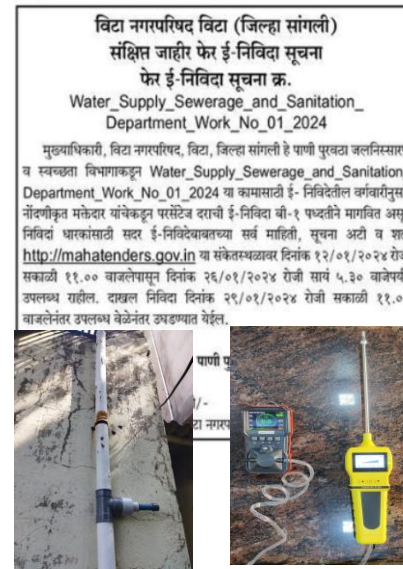
240 Kw Charging station being setup at IMC STP for charging electric truck for desludging and SWM vehicles.

Nature based solutions through carbon sinks in cities to help sequester 2000+ CO2 eq over 25 years . . .

- **Scheduled desludging through PPP is going to be implemented** in both Ichalkaranji and Vita which will help **reduce pollutant load** coming out in drain and provide inclusive services to 4.5 lakh people
- Studies suggest **reduction in methane emissions at onsite sanitation systems due to regular desludging**. CWAS is carrying out studies to assess methane emissions from onsite systems
- **1 lakh+ litres of fresh water saved by using** of treated water from STP of irrigating **4,000+ sq.m urban forest in Karad with 1471 trees of 10 different species and 2000 sqm of urban forest is being developed in IMC**
- Urban forest to help **Sequester about 2,385 tons over 25 years.**

Activities leveraged:

- **Urban forests of around 30,000 sqmt developed in all three cities with 25,000+ trees planted during project period**



Women empowerment through engagement in WASH-Climate responsive activities . . .



Women SHGs formally engaged for

Urban Forest (Carbon Sinks)
Operations and maintenance

More than 8,000 Sq.mt of urban forest maintained by women SHGs



Operations and maintenance of
MHM facilities in community and
public toilets

16 CT/PTS catering to more than
2000 vulnerable population will
be benefited.



Women SHGs have been formally engaged by ULB through an 'SHG only' tender
SHG friendly contracts
Training and hand holding support has been provided

Orientation and sensitization on gender inclusivity for ULB staff in all three cities . . .



Training on Gender Inclusivity

For HODs and staff of all departments

45 HODs and **130** staff trained



Sessions on basic definitions-
Concepts on gender, prevention of Sexual Harassment at work place (POSH 2013) and
Gender and social inclusivity in WASH

Ensuring safety of sanitation workers while providing inclusive services . . .



Training on Safe work practices

For sanitation workers and their supervisors

More than 500 sanitation workers trained

Model contract clauses for safety of san workers shared with cities



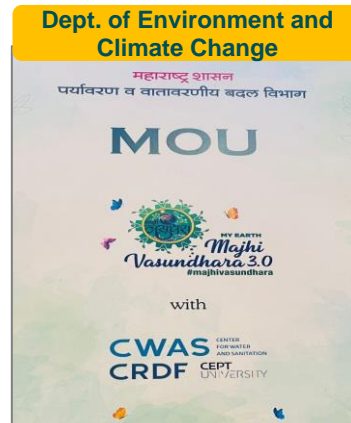
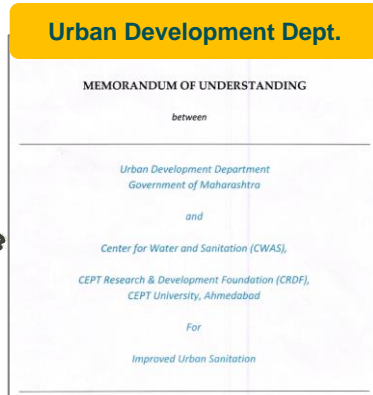
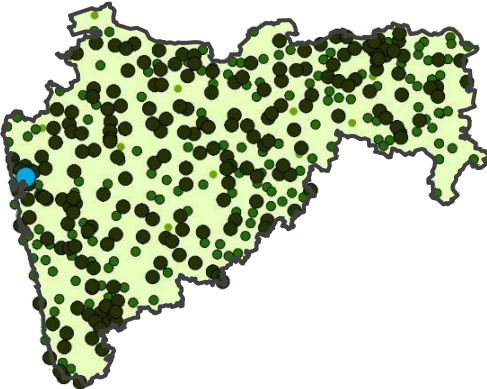
Key objective of the workshop –
Sensitize sanitation workers towards the occupational hazards and create awareness for the usage of PPEs.

Scaling up initiatives at statelevel in Maharashtra through Majhi Vasundhara and Swachh Bharat Mission . . .



Focus areas under Majhi Vasundhara

- **Bhumi {Earth}**
 - Conservation & Enhancement Of Green Cover & Biodiversity
 - Solid Waste Management
- **Vayu {Air}**
 - Air Quality Monitoring And Air Pollution Mitigation
- **Jala {Water}**
 - Water Conservation
 - Rainwater Harvesting And Percolation
 - Cleaning & Rejuvenation Of Water Bodies/River
 - Treatment Of Waste Water
- **Agni {Energy}**
 - Promotion Of Renewable Energy
- **Akash {Enchanement}**
 - Awareness On Environment Improvement & Protection
 - Pledge Taken Up By The Citizens For The Observance Of One Green Act



Mission convergence of SBM-NULM-Majhi Vasundhara at statelevel in Maharashtra

Summary of Impacts: Making WASH services Climate resilient

Energy Transition



183 Kw solar pilots at various WASH infrastructure helped **leverage 1000+ Kw of Solar projects** from cities for various WASH infrastructure



40,000+ MWH* of Clean Energy will be generated



30,000+ tons* of CO2 reduction



Savings of 3 Million* USD for cities in their electricity cost.



India's first prototype of Electric desludging truck being developed

Nature Based Solutions



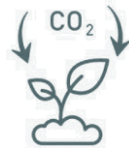
6000 sqmt of Urban forests as **carbon sinks** at WW treatment facilities has helped **leverage 30,000sqmt** of Urban forest



100,000 litres of fresh water saved by using of treated water from **STP for urban forests**



25,000+ trees planted during project period



Urban forest to help **Sequester about 2,385 tons*** of CO2 .

Inclusive services



Scheduled desludging through PPP to be implemented , to provide **inclusive services to 450,000 people**



Women SHGs formally engaged for **O&M** of of the urban forest

MHM facilities catering to **2000+ vulnerable population** through CTs/PTs in these cities **managed by SHGs**



Gender inclusivity sessions with **180+ ULB staff**



Safety of 500+ Sanitation workers ensured through **trainings** and **model contract clauses**

STATEWIDE SCALING UP

MoU with Government of Maharashtra **Department of Environment and Climate Change** for scaling up initiatives at State level

Partnerships and Collaboration to attain Scale . . .



Government of Maharashtra

**एकच लक्ष्य
शहरे स्वच्छ**
स्वच्छ महाराष्ट्र अभियान (नागरी) २.०



CWAS CENTER FOR WATER AND SANITATION

CRDF CEPT RESEARCH AND DEVELOPMENT FOUNDATION

CEPT UNIVERSITY

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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