

CDD INDIA | ANNUAL REPORT

# WATER | PEOPLE | NATURE

2024-2025

## Preface

Water connects lives, livelihoods, and landscapes. It sustains communities, nurtures ecosystems, and anchors resilience in the face of uncertainty. Yet, across India, growing climate risks, rapid urbanization, and ecological degradation continue to test our ability to manage water and sanitation sustainably.

This Annual Report captures **CDD India's journey in 2024–25**—a year of scaling solutions, deepening community partnerships, and pioneering nature-based approaches that bridge people, water, and the environment. From **reviving traditional ooranies in Tamil Nadu** to **strengthening rural water security in Karnataka**, from **innovating faecal sludge management solutions** to **designing climate-resilient sanitation plans for coastal towns in Maharashtra**, our efforts reflect a common thread: building systems that are inclusive, adaptive, and rooted in local ownership.

At the heart of this work lies collaboration. Communities, governments, corporates, and knowledge partners have stood alongside us, reinforcing the belief that resilience cannot be built in silos. Together, we are creating pathways where safe water and sanitation are not temporary interventions but lasting assets that secure both people and nature.

As you turn the pages of this report, you will see stories of impact and innovation—grounded in science, guided by people, and aligned with the urgent call for climate action. These are not just projects; they are steps toward a future where every community is equipped to thrive amidst change.

We invite you to journey with us, reflect on what has been achieved, and join hands in shaping what lies ahead.

## FROM THE PRESIDENT'S DESK

The year has been a testament to what collaboration, perseverance, and innovation can achieve in the face of mounting challenges. Across India, climate change continues to reshape the way communities live with water—testing the resilience of systems, institutions, and people alike. At CDD India, we have responded not with isolated interventions, but with integrated, nature-based, and community-driven solutions that place people and ecosystems at the heart of change.

From strengthening rural water security in Kalyana Karnataka to rejuvenating historic ooranies in Tamil Nadu, from pioneering decentralized wastewater management in schools and institutions to advancing faecal sludge management as a driver of circular economies, our work this year reflects both scale and depth. We helped more than 1.4 lakh people gain access to safer water and sanitation services, while our collaborations and partnerships with governments, academic institutions, and corporates ensured that these outcomes are sustainable and replicable.

Our initiatives in climate-vulnerable coastal towns of Maharashtra underline the urgency of building resilience where it matters most. By combining science—through climate risk assessments and water quality analysis—with the lived realities of communities, we have created actionable pathways that safeguard public health and strengthen local governance. At the core of all these efforts is a simple belief: that resilience cannot be built by technology alone, nor by communities in isolation. It requires bridging knowledge with practice, policy with grassroots, and institutions with people. This is where CDD India's role has been unique—serving as a catalyst, connector, and knowledge partner in shaping sustainable futures.

As we look ahead, our commitment remains unwavering: to champion inclusive, climate-resilient water and sanitation solutions, and to ensure that every community we work with is not just a beneficiary but an empowered steward of its resources.

On behalf of the Governing Board, I thank our partners, funders, communities, and team members for their trust and collaboration. Together, we are not only addressing today's challenges but also laying the foundations for tomorrow's resilience.

### **PRESIDENT**

Tejas Kotak



# FROM THE CEO'S DESK

This year at CDD India has reaffirmed a core truth: water and sanitation are not merely services, but foundations of resilience, dignity, and sustainability. As climate change intensifies and urbanization accelerates, our work has been to reimagine solutions that are not just technical, but ecological, inclusive, and deeply rooted in community ownership.

We have expanded our footprint across geographies and themes—strengthening **rural water security in Kalyana Karnataka**, reviving **heritage waterbodies in Ramanathapuram**, and piloting **nature-based wastewater treatment systems in schools, institutions, and industries**. Our projects have collectively reached **over 1.4 lakh people**, bringing safer water, improved sanitation, and renewed ecosystems to communities that need them most.

Equally significant has been our work in **climate-vulnerable coastal towns of Maharashtra**, where science, governance, and community voices came together to shape **Climate Resilient Sanitation Action Plans (CRESAPs)**. These efforts are building a blueprint for towns to adapt to rising seas, changing rainfall, and mounting public health risks.

Behind these numbers lies a story of partnerships. From government collaborations that scale impact, to CSR-driven models that demonstrate replicability, to academic and technical exchanges that push innovation—our strength has been the diversity of allies who share our vision. Importantly, our internal investments in **research, laboratory excellence, and capacity building** continue to position CDD as a knowledge partner for systemic change.

Looking ahead, our focus remains clear: to strengthen water security and sanitation through **decentralized, nature-based, and climate-resilient solutions**, while fostering institutions and communities that can sustain them. The journey is far from complete, but each step this year has brought us closer to a future where people, water, and nature thrive together.

I extend my heartfelt thanks to our partners, donors, communities, and the dedicated CDD team. Your trust and collaboration fuel our mission and inspire us to keep pushing boundaries for a more resilient and sustainable tomorrow.

**Chief Executive Officer**  
Harshvardhan





## WATER SECURITY

“

In her world, water is the real grind.”



Youth's early lessons,  
Water's worth, a cherished bond,  
Savings bloom with time.

#WATER #SECURITY

**1,23,000**

Villagers accessed safe drinking water throughout the Project .

**25,500**

Households now enjoy improved access to safe drinking water.

**43**

Villages achieved better drinking water security through source-strengthening initiatives.

**7**

Villages in Dakshina Kannada benefited from water quality improvements through iron contamination reduction.

**1,060 Youth & 879 Government Officials**

Trained in hygiene and sanitation.

**16,415**

Women, adolescent girls, and children were sensitized on hygiene and menstrual health

**350**

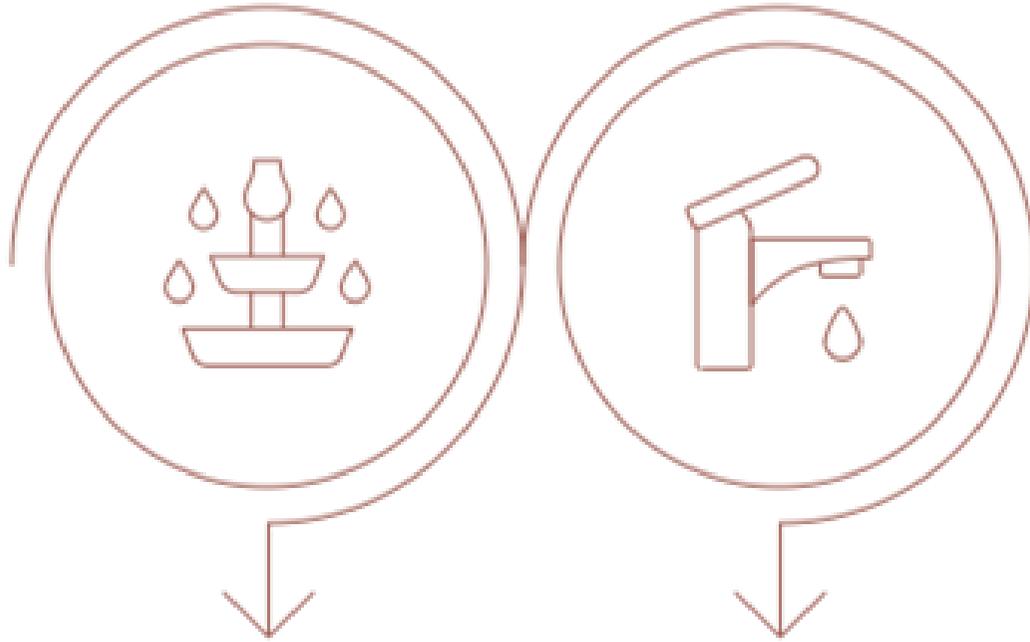
Volunteers were trained in the operation and maintenance of water systems.

**268**

Toolkits were distributed to Gram Panchayats for system upkeep.

# KALYAN KARNATAKA & DAKSHIN KANNADA

SPREAD

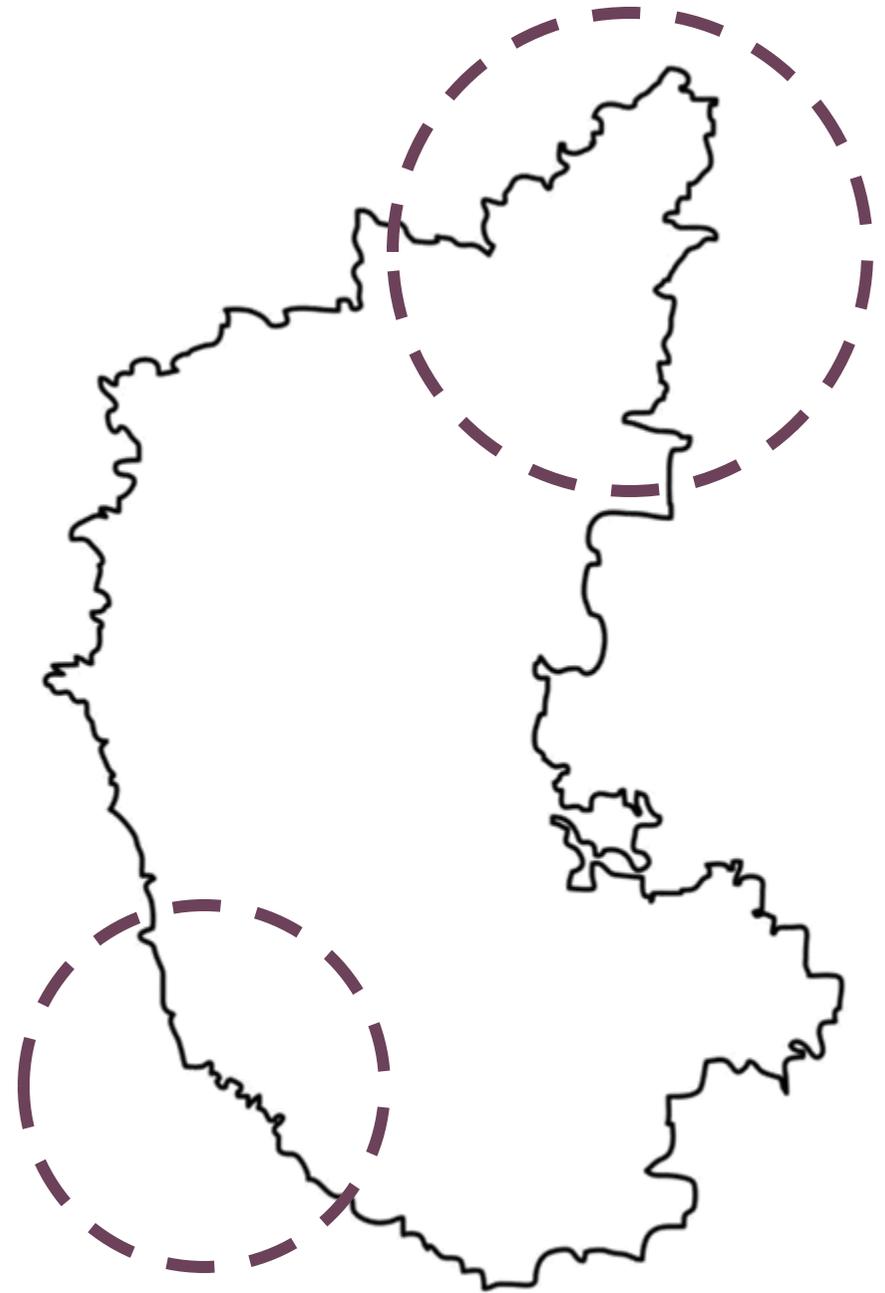


## Kalaburagi and Bidar

Focused on groundwater recharge and source strengthening in the Kalyana Karnataka Region.

## Dakshina Kannada

Addressed iron contamination issues found in drinking water sources.

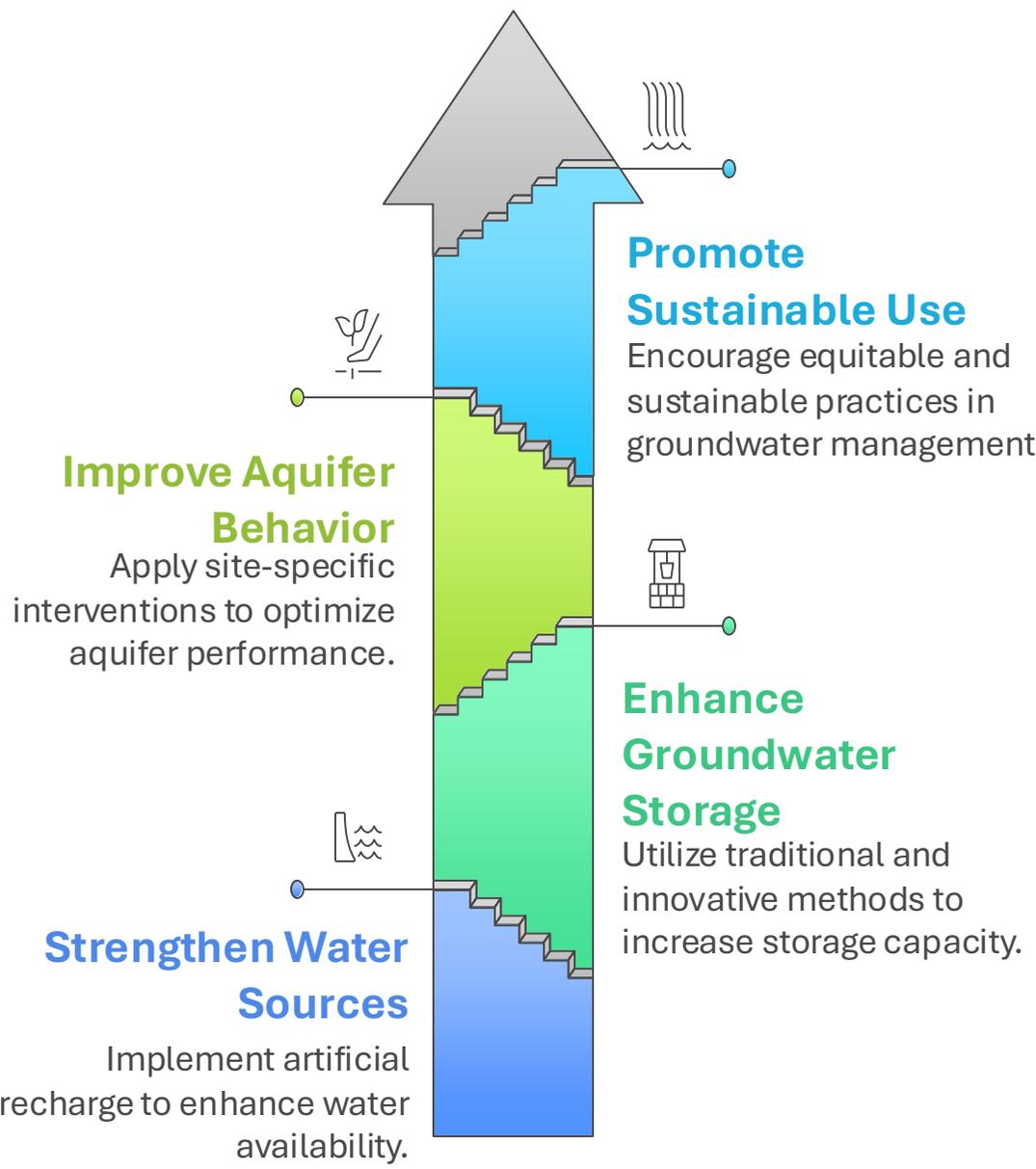




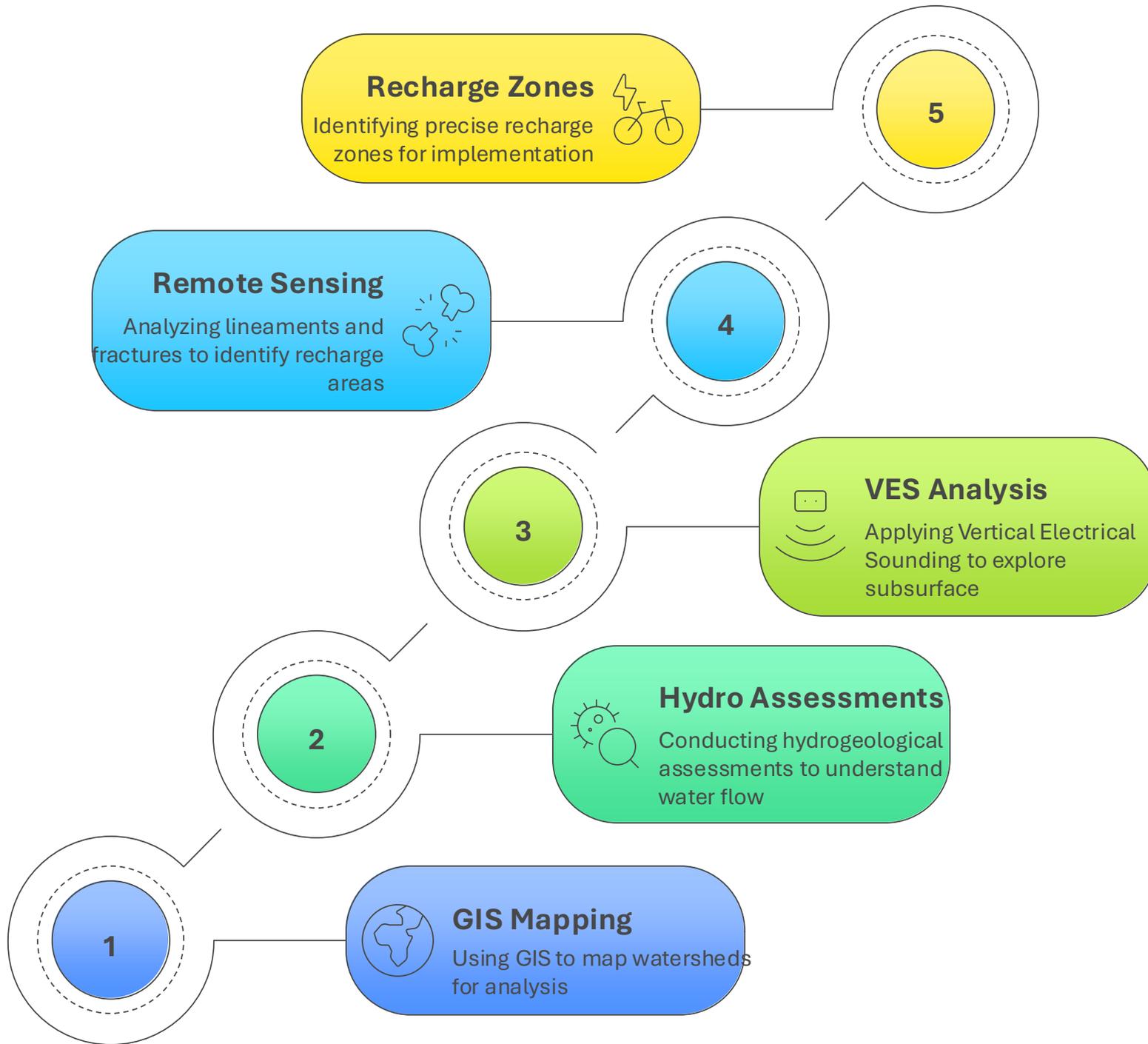
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**A community's collective consciousness is mirrored in the state of its water; building awareness and capacity ensures resilience and lasting change.**

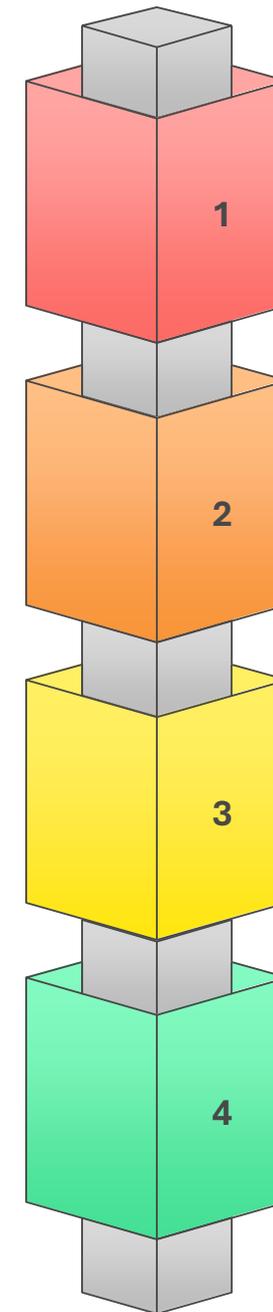
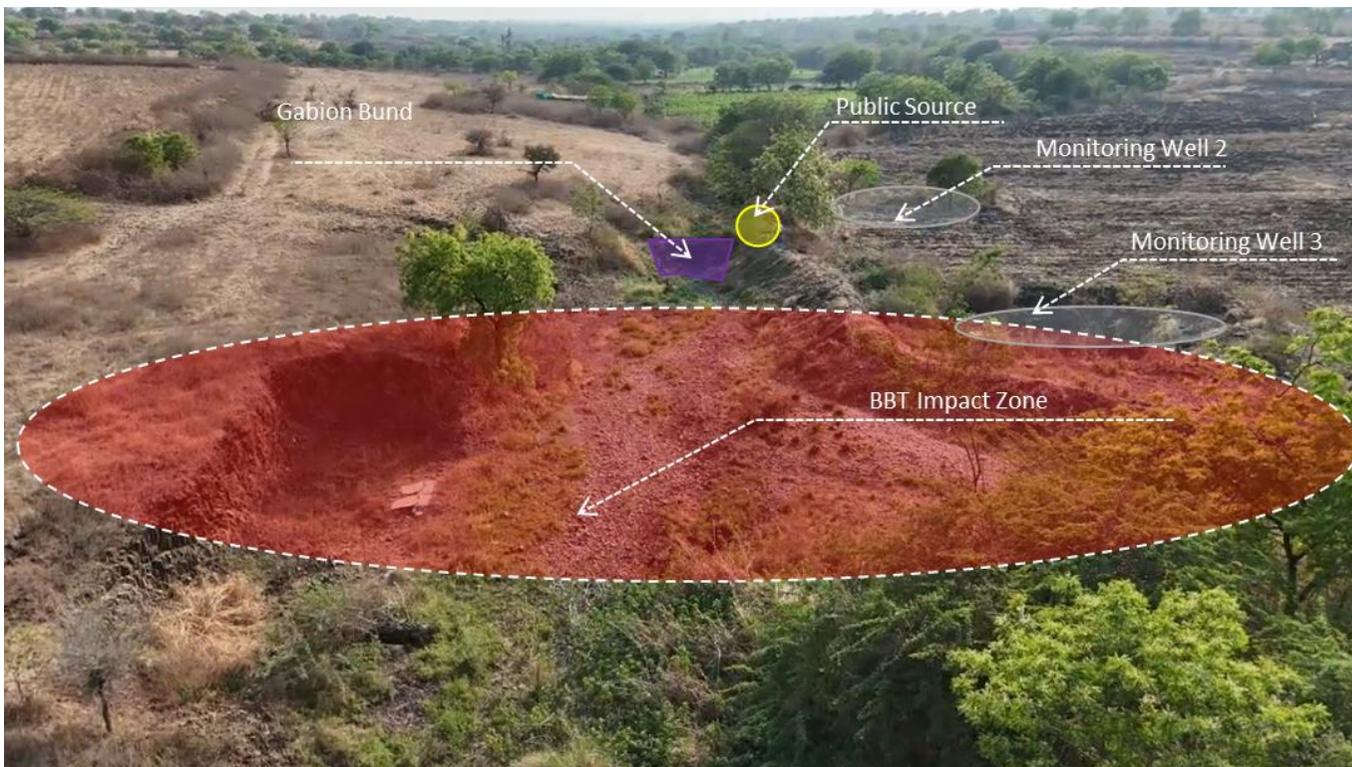
### Achieving Safe Drinking Water



Identifying Recharge Zones



## Enhancing Water Resources



### Bore Blasting

Artificial fracturing to enhance aquifer storage in hard rock formations.



### New Water Source

Creation of a new water source to supplement the existing piped network.



### Gabion Bund

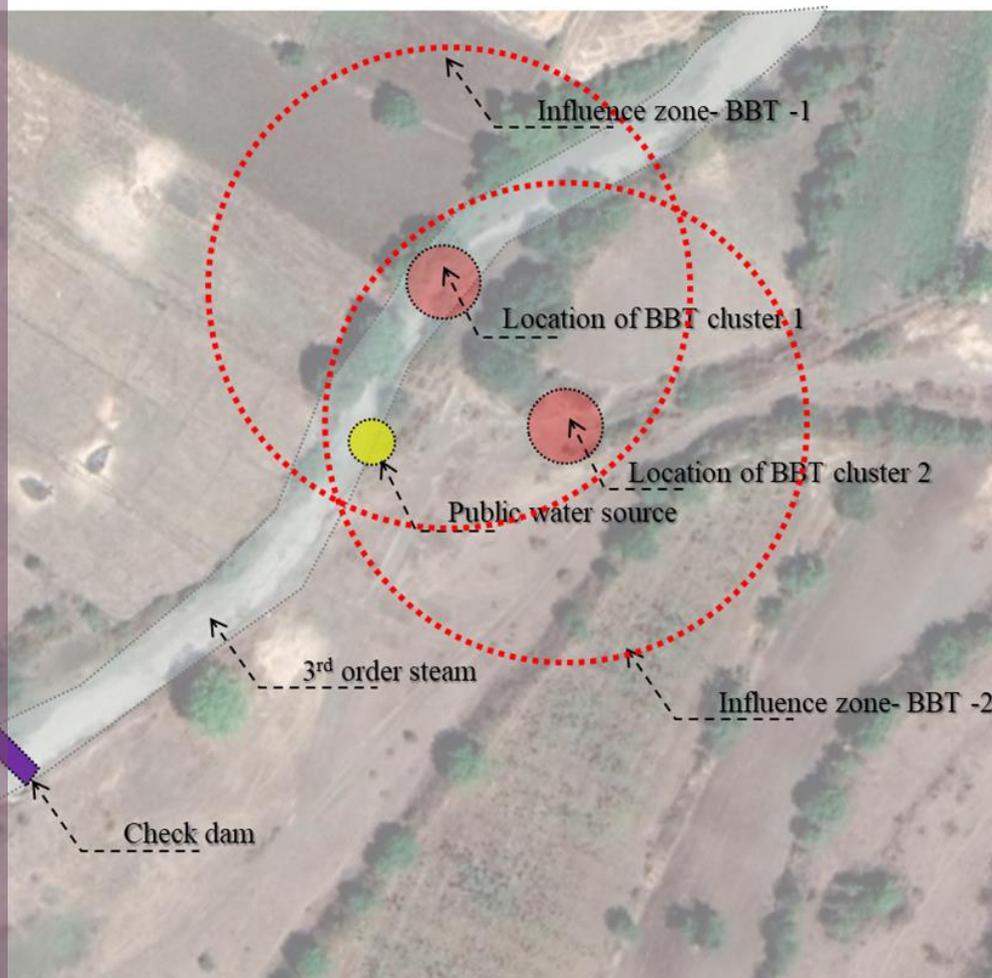
Construction of a gabion bund to slow runoff and enhance local recharge.



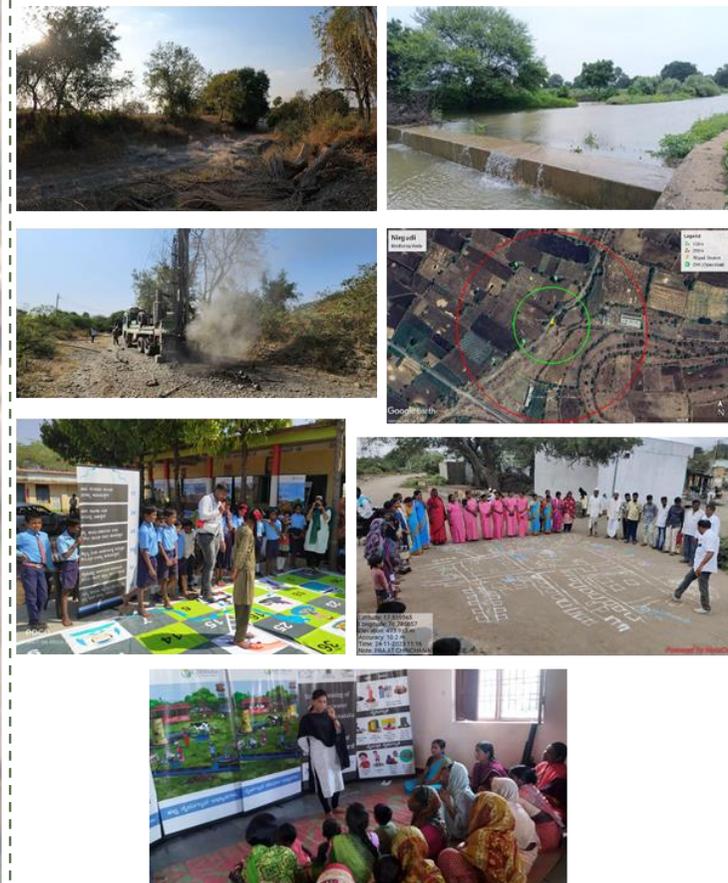
### Monitoring

Monitoring of water levels and community access post-intervention.

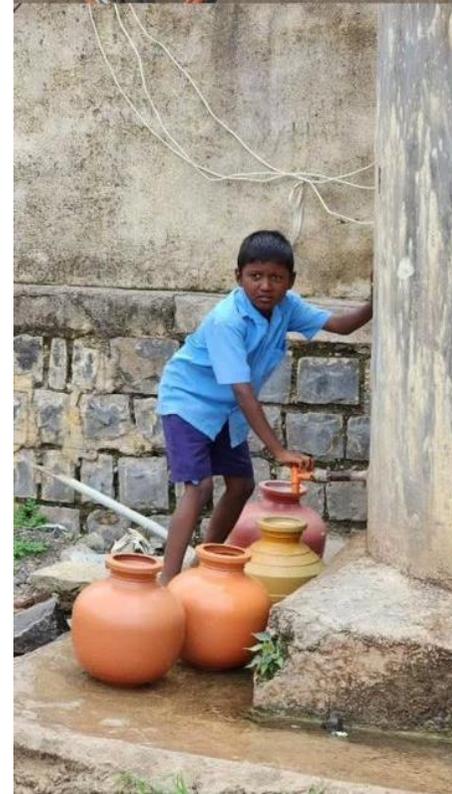
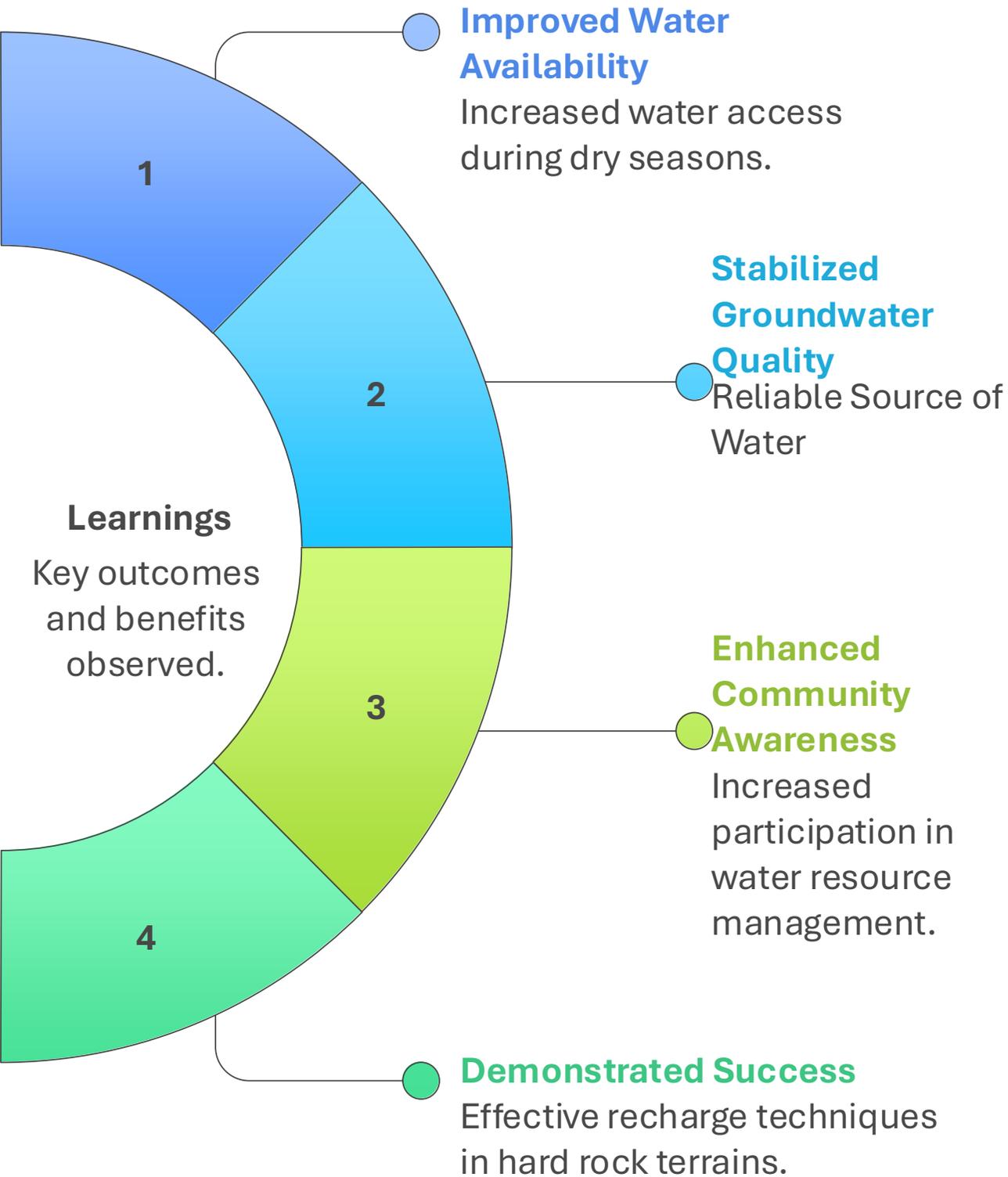
Nirgudi Village |  
Nirgudi GP |  
Aland Taluk |  
Kalaburagi  
District | KA  
(Population:  
3,109)



Overall activities in Nirgudi Village



- Existing sources (2 borewells, 1 open well) were insufficient, especially in summer
- Village relied on tankers during dry months
- Interventions included:
  - Expansion of check dams
  - Bore blasting (artificial fracturing) to enhance aquifer storage
  - Construction of recharge wells and subsurface dykes
  - Establishment of a secure and sustainable drinking water source
  - Ongoing monitoring to assess recharge effectiveness



# Sustainable Groundwater-Based Water Management Through Artificial Recharge Techniques: A Case Study from Kalaburagi District, Karnataka, India

## Sustainable Drinking Water Management Initiative

- **Implemented by:** CDD India
- **Location:** Kalaburagi, Bidar & Bagalkot (Karnataka)
- **Context:**
  - High dependence on groundwater
  - Over-extraction & declining water quality
  - Drought-prone conditions
- **Intervention:**
  - Source strengthening through **rainwater harvesting & artificial recharge**
  - Techniques adapted to **basaltic terrain of Kalyana Karnataka Region (KKR)**
- **Demonstration Site:** Nirgudi village, Aland Taluk





“

## CDD India's Impact in Kalaburagi

Through **nature-based solutions** and a **community-driven approach**, CDD India has enabled safe and sustainable drinking water access in **43 underserved villages**. By engaging diverse stakeholders and building local capacities in **water conservation, sanitation, and menstrual hygiene**, communities are now not only beneficiaries but also **owners of the assets** that secure their future.

“Last year, during peak summer, my borewell dried up completely. I had no water for the cattle. I had to sell two of them to avoid further losses. If we didn’t receive this support for groundwater recharge, I would’ve lost my entire livestock.”





## Used Water Management

“

Used water is not waste—it's a resource waiting to be reclaimed.





**9KLD**

Co-Treatment of FS in the state of Punjab

**1.3 MLD**

DEWATS / Used Water Management System DPRs Submitted I  
Manipur

**110 KLD**

DEWATS under implementation stage in Telangana State

**125 KLD**

DEWATS Operational (Karnataka)

**1.4 MLD**

DEWATS under implementation Stage (Karnataka)

**8.7 MLD**

DEWATS DPR Submitted (Karnataka)

**151 KLD**

FSTP DPR Submitted (Karnataka)

**10 TPD**

Solid Waste Management DPR Submitted (Karnataka)

**5**

Waterbody Rejuvenation DPR Submitted (Karnataka)



 **DPRs for Rejuvenation** – Developed plans for **5 waterbodies across Karnataka**

 **Shikaripalya Lake Revival** – Implemented bypass drain & rainwater recharge, restoring lake health

 **Nature-Based Solutions** – Designed & executed NBS for storm drains at **Nallurahalli Lake outlet**

 **Integrated Lake Management** – Framed a holistic used water plan for the **Bommasandra-Chandapura lake series**



 **DPR Development** – Material Recovery Facilities (MRF) designed to manage **5 TPD dry waste** in Malavalli & Moodubidre each day

 **Zero-Waste Campus** – Implemented in **5 schools**, creating models of sustainable waste practices in Malavalli & Moodubidre



✅ Successfully delivered **Analytical Method Validation project for Merck**

🏆 **NABL Accreditation (ISO/IEC 17025:2017)** – 3rd onsite assessment completed with minimal non-conformities

🔄 **NABL Accreditation Renewed (2024–2026)** – reinforcing technical competence & compliance

💡 **Hybrid Technology Demonstration** – Pilot-scale STP at Beedi Workers Colony

🌱 **Natural Coagulants Study** – In-house chitosan production & application for FS dewatering

📊 **National FSTP Performance Study** – Structured assessment of NSS systems for quality execution across India

♻️ **Piloting of Composting Units** – Partnership with GIZ

🧪 **Advanced Disinfection Testing** – UV/Ozone unit trials

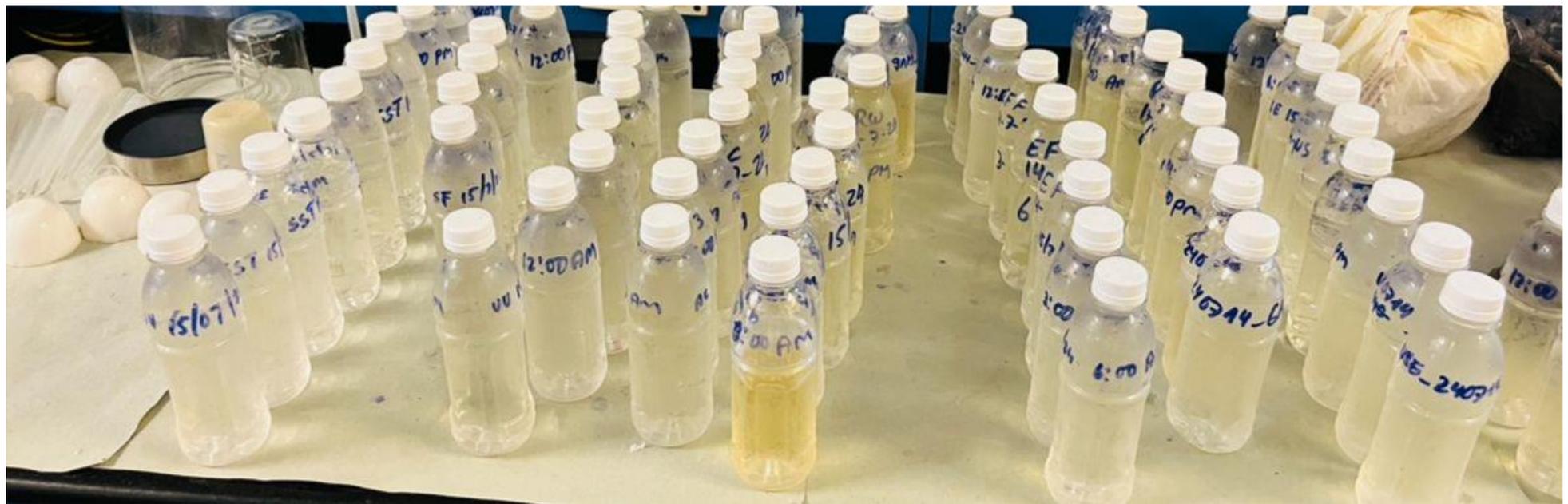
## Used Water Management

Our objective is to design, and scale integrated, environmentally restorative solutions that strengthen public health and ecosystem resilience. Using systems-based approaches, we address the entire waste management chain—from generation and collection to treatment, reuse, and safe disposal. By combining nature-based processes with advanced technologies, we aim to boost resource efficiency, cut pollution, and help communities manage waste sustainably.

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**At CDD, our in-house laboratory and ongoing research empower us to drive innovations that create practical, sustainable solutions.**

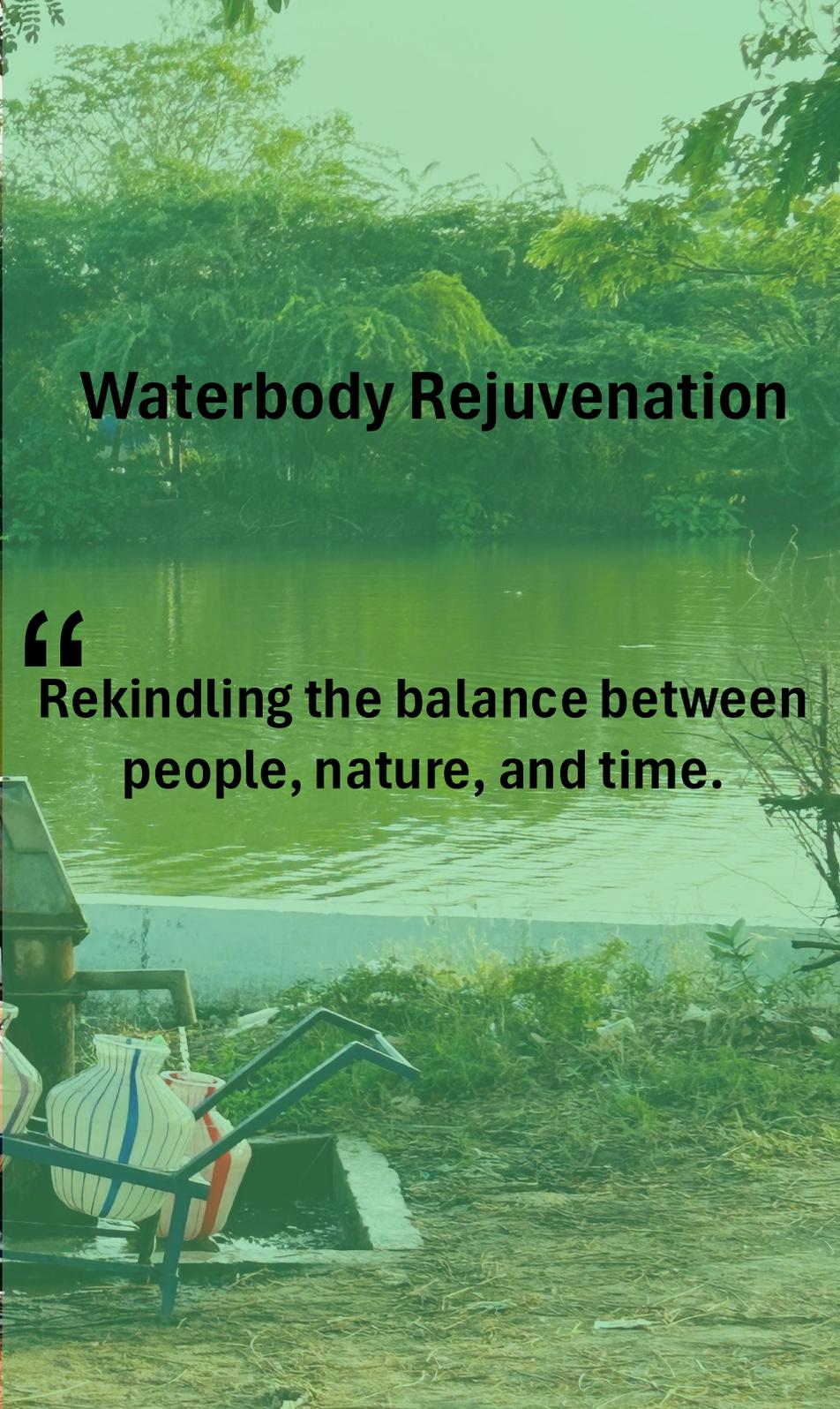


Eawag Project – Samples received for environmental water quality testing: Nutrient and microbial analysis of wastewater and groundwater from Sterling Terrace, Bangalore.



## Waterbody Rejuvenation

“  
Rekindling the balance between  
people, nature, and time.”



# 23

## Waterbodies in Ramanathapuram Municipality for Restoration, Development, Interlinking and Protection



The project restores and protects 24 traditional ooranies in Ramanathapuram, Tamil Nadu—reviving these historic waterbodies to strengthen water security and ecology. Supported by KfW Development Bank and TNUIFSL, the initiative addresses urbanization-driven degradation and re-establishes ooranies as vital community assets.





**Legend**  
Ooranie  
Municipal Boundary

0 0.17 0.35 0.7 Kilometers



From stakeholder consultations to on-site reviews with the Commissioner, Revenue, and WRD team—collaborative action is driving the revival of Ooranies



Together, institutions and communities are shaping a resilient water future for Ramanathapuram.



**From drones mapping the skies to communities testing water on the ground, technology and people unite to restore Ramanathapuram's Ooranies. Together, they are transforming heritage water bodies into living systems of resilience and hope.**





## **CLIMATE RESILIENT COASTAL CITIES**

**Climate resilience along our coasts begins with safe water and sanitation—protecting communities, restoring ecosystems, and securing a sustainable future.**



“

In coastal cities, resilience is woven into daily life—where people rise with the tides, adapt with the storms, and turn vulnerability into strength against a changing climate.

## Building Climate-Resilient Coastal Towns in Maharashtra

Maharashtra's coastal towns—**Malvan, Guhagar, and Dahanu**—stand at the frontline of climate change. Erratic rainfall, flooding, and stressed sanitation systems are everyday challenges for communities. To respond, **MoHUA, SBM (Maharashtra), ISC-FICCI, HSBC India, and CDD India** joined hands to strengthen WASH systems and build climate resilience where it is needed most.

### **Listening to Communities, Grounding in Science**

The initiative began with **household climate perception surveys, water and wastewater testing, GIS mapping, and rainfall analysis**. These insights shaped **Integrated Climate Risk & Vulnerability Assessments (ICRVAs)** and **Climate Resilient Sanitation Action Plans (CRESAPs)**—tools guiding resilient strategies for each town.



## People at the Heart

Change was rooted in participation. **School programs, SHG mobilization, street plays, and murals** turned communities into active partners, ensuring climate resilience is built from within.

## Smarter, Stronger Infrastructure

- Malvan:** Solid Waste Management facility retrofitted with climate-resilient features.
- Guhagar:** Faecal Sludge Treatment Plant revived with an innovative **Solar Greenhouse Sludge Drying Bed**.

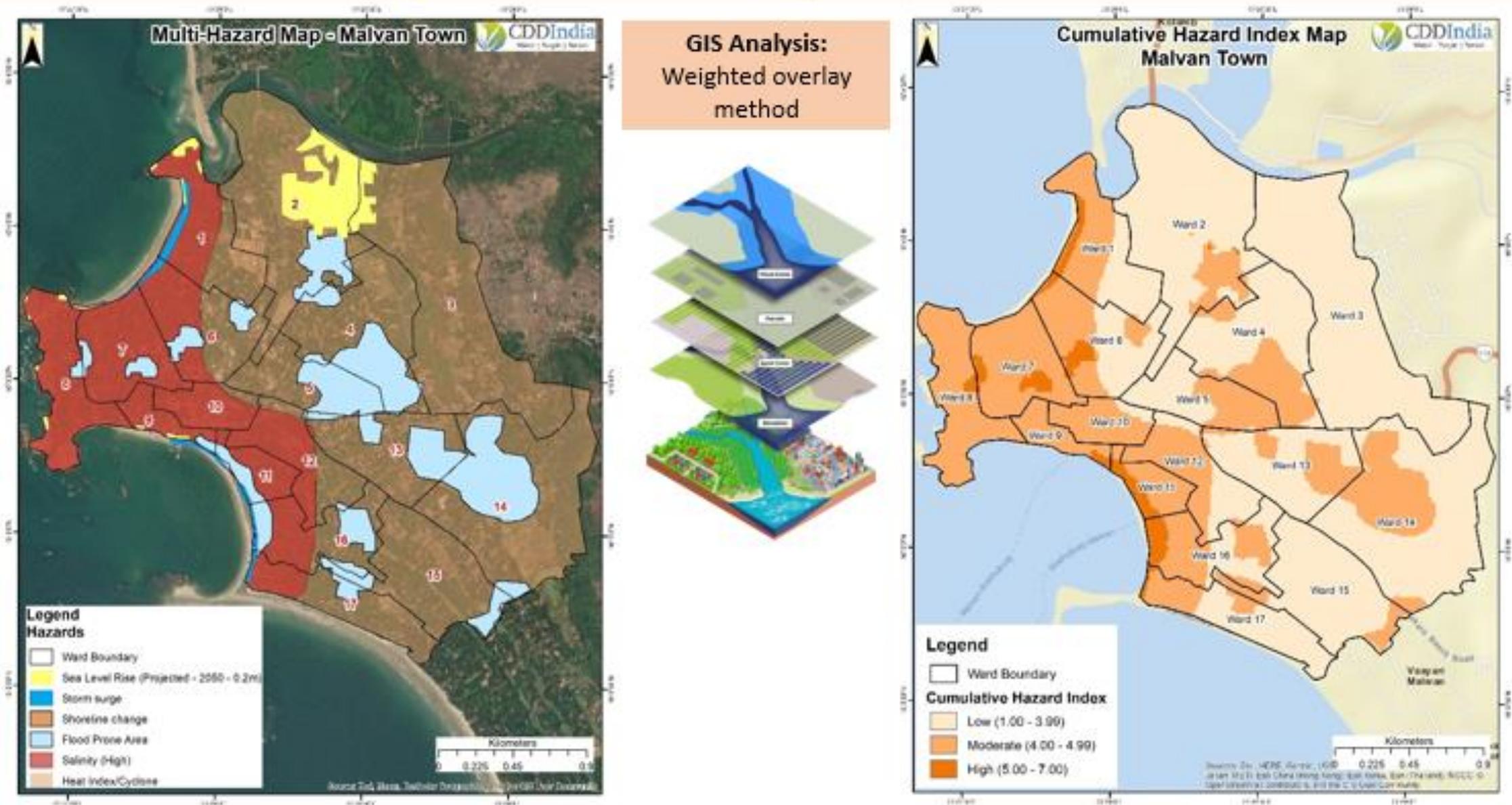
## Strengthening Institutions

Through **ULB conclaves and exposure visits**, municipal leaders gained capacity to sustain and replicate resilient sanitation solutions.

## Impact

This collaboration is **laying the foundation for resilient, inclusive, and climate-ready sanitation along Maharashtra's coastline**. By uniting science, people, infrastructure, and institutions, it proves that even climate-vulnerable towns can move toward dignity, sustainability, and security.





One Key Outcome of the ICRVA In Malvan, a ward-level Multi-Hazard Map (left) overlays different climate risks in GIS, revealing Wards 1, 9, and 11 as the most vulnerable—facing multiple hazards at once. The Cumulative Hazard Map (right) reinforces these findings through a weighted hazard index, highlighting high-risk zones that can guide climate-resilient urban planning.



 At the stormwater outfall in Dahanu, a CDD team member crouches by the shoreline, collecting a murky sample of untreated wastewater rushing into the sea. What was once a simple rainwater drain has now become a channel of sewage and runoff—pouring toxins into coastal waters, threatening marine life, and endangering the health of nearby communities. This single sample tells the larger story of why climate-resilient sanitation is no longer a choice, but a necessity.



👥 At CDD India's campus in Bengaluru, a group of Urban Local Body officials from Maharashtra walked through treatment modules, observed live demonstrations, and exchanged experiences. The capacity-building workshop was more than a training—it was an immersion into how climate-resilient WASH systems and decentralized wastewater solutions (DEWATS) can transform coastal towns. For many participants, it was the first time seeing practical, low-energy solutions in action, sparking ideas they could take back and implement in their own municipalities.



In Malvan, a CDD community mobiliser sits with women from two Self-Help Groups, opening a dialogue on safe menstruation, hygiene, and household waste segregation. For many, it is the first time such issues are spoken of openly—turning silence into awareness, and awareness into the first steps toward healthier, empowered communities.



## **Kerala Solid Waste Management Project**

**“**

**Clean communities start with  
mindful waste choices.**





**90+**

Officials Trained- Dumpsite Remediation

**40+**

Participants went for exposure visit to PMC & PCMC

**30+**

Participants went for exposure visit to GWMC

Activity	Participants / Reach
Dumpsite Remediation Training (3 Batches)	90+ officials trained
Exposure Visit to PMC & PCMC	40+ participants
Exposure Visit to GWMC	30+ participants

When Kerala set out to transform its waste management systems, it recognized that infrastructure alone would not be enough—capacities had to be built, skills had to be sharpened, and knowledge had to be shared at every level of governance.

The Kerala Solid Waste Management Project (KSWMP) responded by developing **42 structured training modules**, carefully woven into **8 thematic areas** that mirror the entire lifecycle of municipal solid waste management. These themes span from **project management and procurement** to **environmental and social safeguards, SWM technologies, communication and behaviour change, ULB capacity building, and monitoring & evaluation**.

More than just technical manuals, these modules became a **blueprint for learning and leadership**—equipping ULB officials, engineers, administrators, and local stakeholders to not only manage waste, but to reimagine it as part of a cleaner, more sustainable Kerala.



As part of the exposure visit, participants stepped into the field to see waste management in action.

At the **Manohar Parrikar Integrated Solid Waste Management Facility in Cacora**, guided by GWMC officials, they observed first-hand how complex systems can be run with efficiency and purpose. The visit moved beyond theory—offering **practical lessons, proven practices, and a clear vision of what effective solid waste management can look like on the ground.**



During the exposure visit, participants sat down for an **interactive dialogue with the Commissioner and officials of Pune Municipal Corporation.**

The exchange offered a window into the **city's evolving Solid Waste Management system**, where challenges and solutions were discussed candidly. For the participants, it was an opportunity to gather **practical insights from a city leading the way**, and to carry those learnings back to their own contexts.





## CDD India at the 8th ISC Sanitation Conclave

At FICCI, New Delhi, CDD India showcased the **Integrated Climate Risk and Vulnerability Assessment (ICRVA) framework**—a core tool from the Climate Resilient Coastal Cities project. Presented by **Mr. Irfan Ulla Sharif** and **Ms. Kaivalya Kunkala**, the session highlighted how ICRVA identifies high-risk zones, strengthens WaSH resilience, and integrates climate adaptation into town-level planning.

**Impact:** Positioned as a **scalable, data-driven model** that bridges macro climate risks with community-level insights—shaping national conversations on climate-resilient sanitation.



## FAECAL SLUDGE MANAGEMENT

“

Proper faecal sludge management is the silent guardian of public health and resilient communities.

# Liquid Waste Management for Rural India

## Policy

### Formulation & State FSM Cluster Mapping

Creating supportive regulations and pathway for infrastructure

## Ministerial Engagement

Securing government commitment



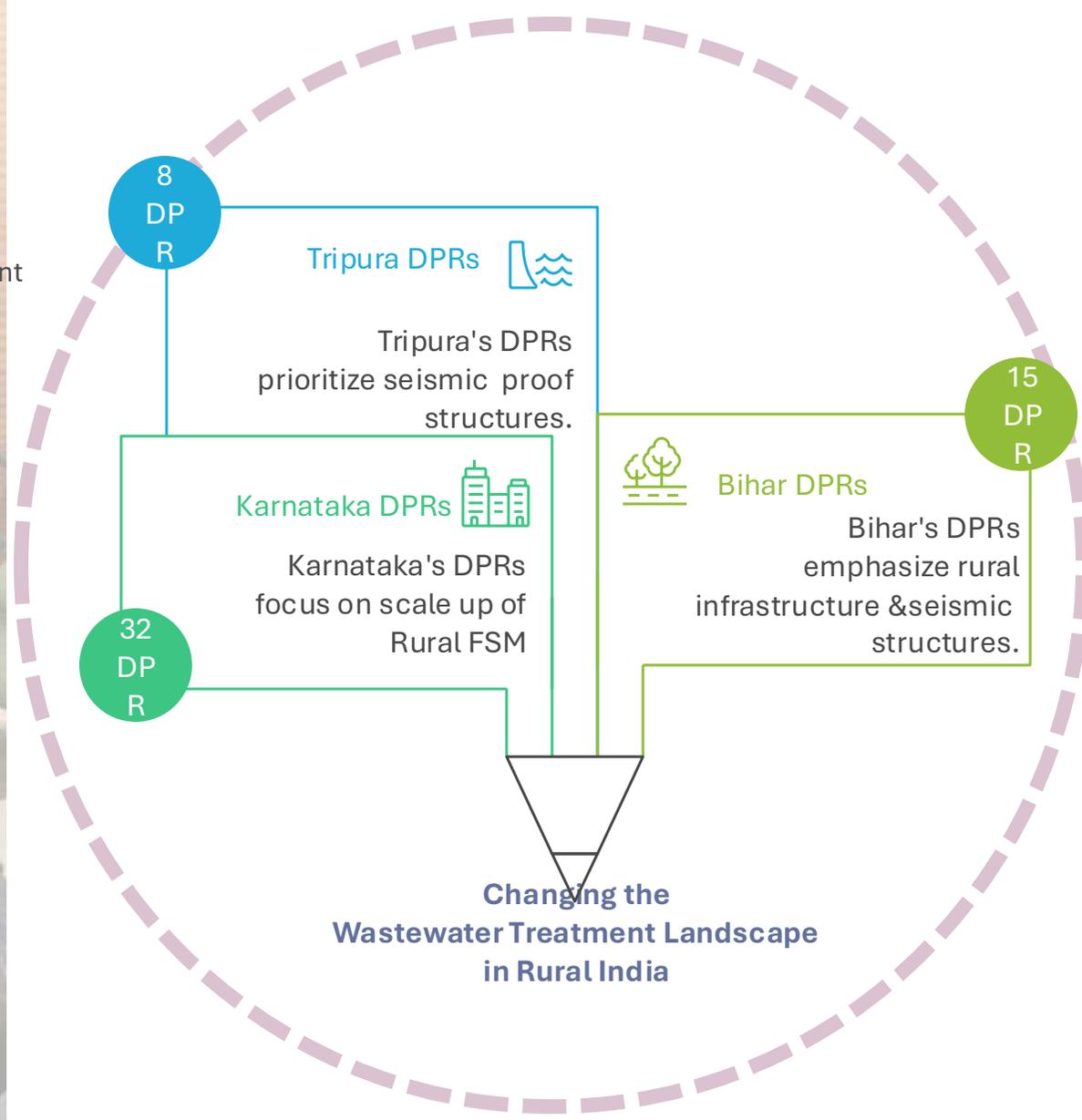
## DPR Preparation

Planning for effective treatment



₹  
**~66 Crores of Government Funding Unlocked**

**Clusters have ~9.5 Million Population**



**Strategic Support**

Presenting clustering approach to the Ministry

**Alignment with National Objectives**

Ensuring alignment with national goals

**Central-Level Engagement**

Facilitating engagement at the central level

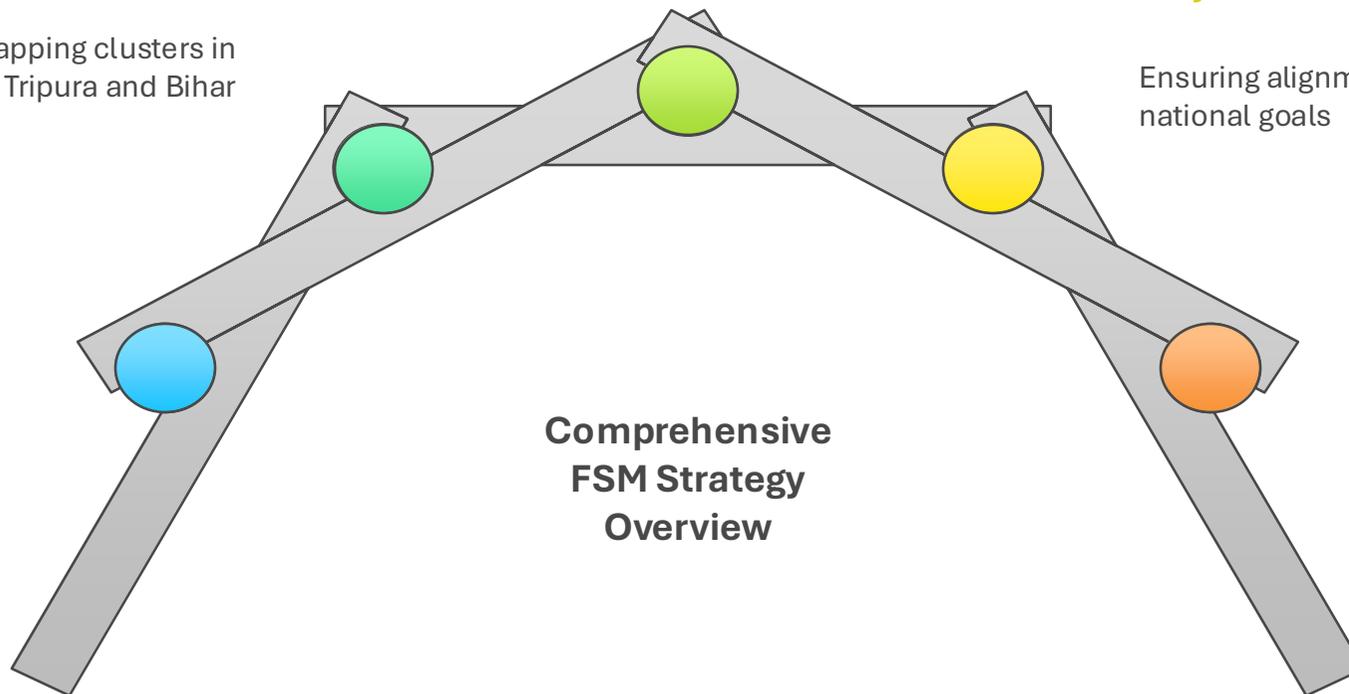
**GIS-Based Cluster Mapping**

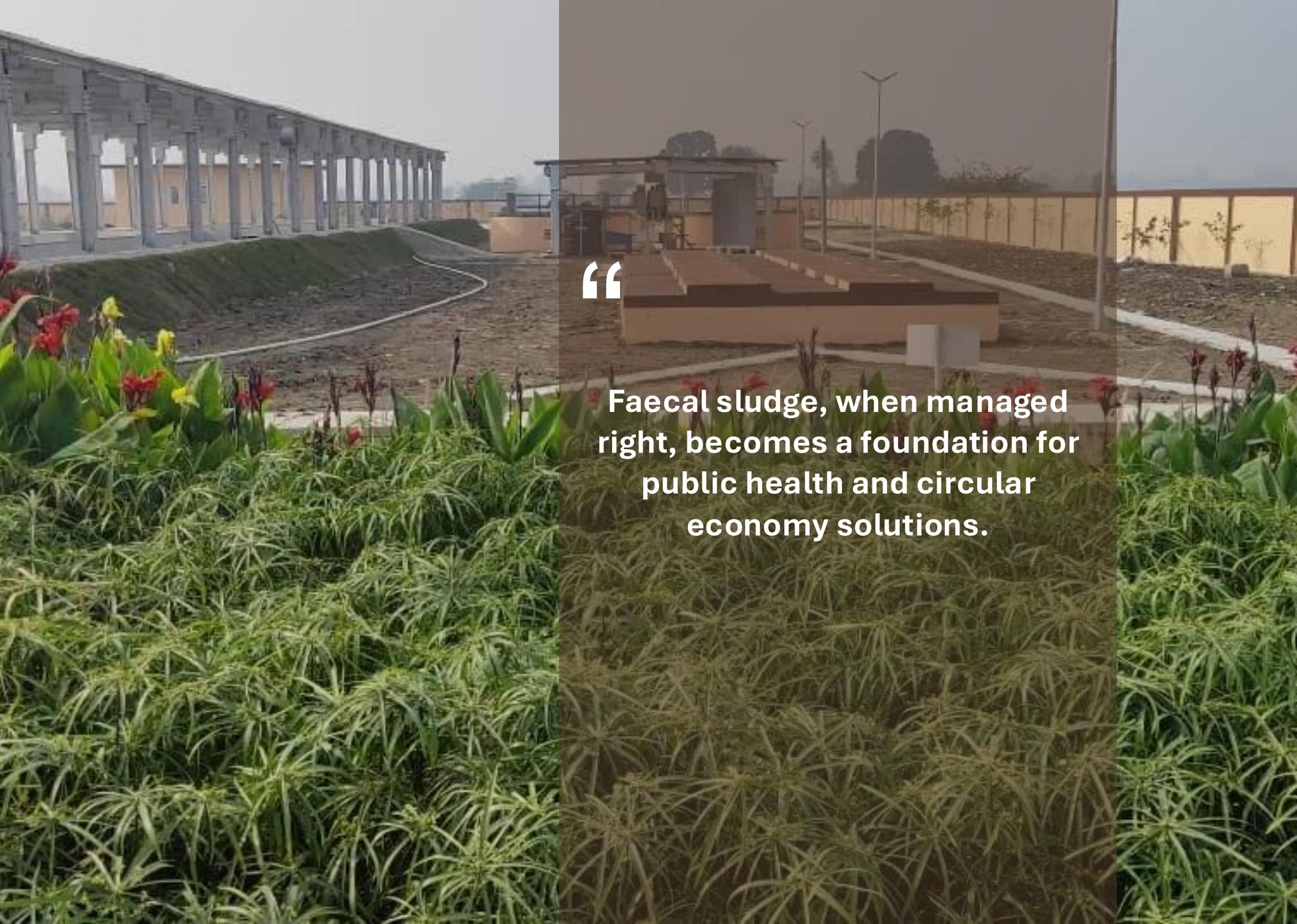
Mapping clusters in Tripura and Bihar

**State-Level FSM Policies**

Development of policies for all three states

**Comprehensive FSM Strategy Overview**





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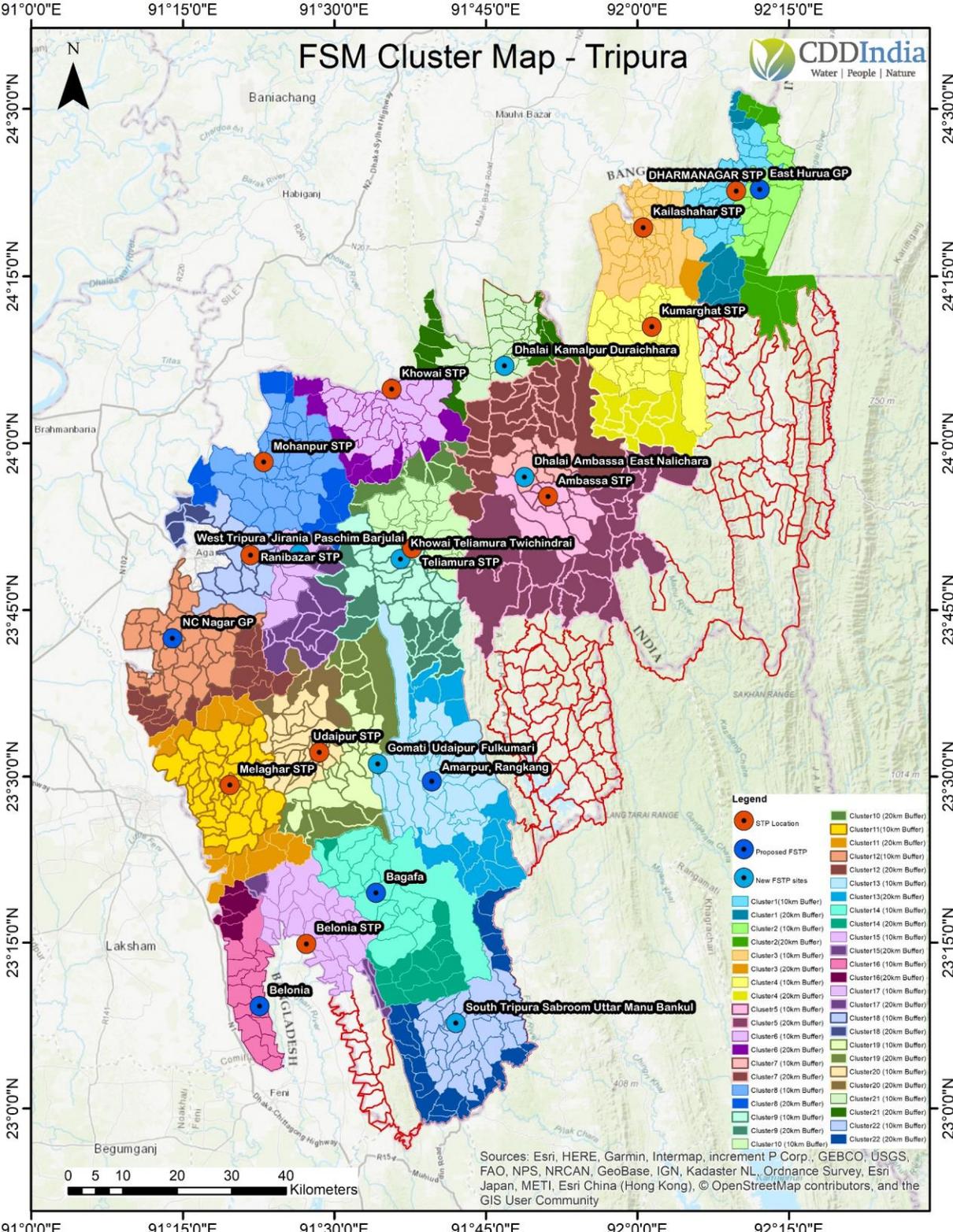
**Faecal sludge, when managed right, becomes a foundation for public health and circular economy solutions.**

# GEOSPATIAL ANALYSIS AND CLUSTER APPROACH- TRIPURA

**22**  
Clusters

**11**  
STP Clusters

**11**  
FSTP Clusters



# Circular Economy Approach to Composting

## Initiative Highlight: Safe Composting from Waste

### Bengaluru (Aug 2024)

Study launched to co-process **treated faecal sludge (TFS)** and **municipal wet waste (MWW)** into safe, nutrient-rich compost.

### Innovation at Devanahalli FSTP

- 4 composting methods piloted
- Improved nutrient recovery
- Pathogen reduction achieved
- Compost met agri-standards

### Capacity Building

- 50+ farmers trained in safe compost use
- Awareness extended to schoolchildren

### Scale-Up Framework

- RFP developed to guide municipalities under **Integrated Waste Management** frameworks

# Water Conservation at KMF Campus

Partner: KMF (Nandini) × CDD India × CSR by Kotak Mahindra Bank

Location: 20-acre Bengaluru campus

## Interventions

-  Rainwater Harvesting – Rooftop & surface runoff collection (300 KL storage)
-  Groundwater Recharge – 10–15 recharge structures, infiltrating 100+ KL/day
-  Wastewater Reuse – Recycling canteen wastewater for landscaping

## Impact Snapshot

-  ~14 million litres saved annually
-  INR 60,000 annual savings from reduced pumping
-  Strengthened water resilience, offering a scalable model for large institutional campuses

## DEWATS™ for Institutional Campuses

 **Location:** Azim Premji Foundation (APF) Schools, Rajasthan & Karnataka

### Highlights

- **26 KLD DEWATS™ commissioned at APF School, Sirohi (Rajasthan)** – onsite treatment & reuse for toilet flushing (June 2024).
- **Third successful system for APF schools, after Kalaburagi & Yadgir (Karnataka).**
-  **Performance Evaluation (Oct 2024):** Confirmed reliable treatment & safe reuse.
- **26 KLD DEWATS™ under construction at APF School, Tonk (Rajasthan)** – for flushing & irrigation (commissioning FY 2025–26).

### Impact

- **Low-energy, scalable wastewater solutions for institutional campuses.**
- **Strengthens reuse & water resilience in education facilities.**

- 1. Sustainable Groundwater** - Based Water Management through Artificial Recharge Techniques: A Case Study of Kalaburagi District, Karnataka, India Presented at a Water Congress, authored by Sandhya Haribal, Gopi H., and Clinson Chacko (CDD India).
- 2. Community** - Led Drinking Water Security in Rural Kalyana Karnataka, India – A Case Study from Kalaburagi District Authored by Sandhya Haribal and Raghav Kotabagi (CDD India), published on July 25th, 2024.
- 3. Journal paper Article Title** - “Faecal sludge and Septage management in India: An overview” Authors - Aparna,U, Archana A, and Rohini.P Published at IWWA Journal July-September 2024

### Showcasing Inclusive & Climate-Resilient Sanitation on Global Platforms

#### At ADB Headquarters, Manila (2024):

- CDD India highlighted **decentralized, nature-based wastewater solutions** as transformative alternatives to centralised infrastructure.
- Presented **Alleppey Canal Rejuvenation**, placing slum communities at the center of planning—linking sanitation, climate resilience, and dignity.
- Advocated **Citywide Inclusive Sanitation (CWIS)** for resilience in high-density urban areas.

#### At UNICEF Innovation Hub, Copenhagen (2025):

- Shared pathways to **scale Nature-Based Solutions (NbS)** in WASH across community, catchment, and city levels.
- Showcased **DEWATS™, lake rejuvenation, and faecal sludge reuse** for water security, agriculture, and circular economy.
- Emphasized NbS as **climate-smart, equity-driven solutions** for vulnerable communities.

#### At IISc Bengaluru – NbS Conference (2025):

- CDD India Presented research on **FSTP effluent quality, nutrient recovery through co-composting, and sludge reuse regulations**.
- Proposed **regulatory frameworks and composting innovations** to advance circular sanitation in India.

**As we bring this Annual Report to a close, we reflect not only on the milestones achieved but also on the partnerships and communities that made them possible. From strengthening water security in rural Karnataka, to reviving traditional ooranies in Tamil Nadu, to building climate-resilient sanitation systems along Maharashtra's coast, each effort reaffirms our belief that people and nature thrive best together.**

**The past year has shown us that sustainable change is born from collaboration—between local governments, civil society, research institutions, private sector partners, and, most importantly, the communities themselves. Their ownership and resilience transform projects into living systems of change.**

**Looking ahead, we remain committed to deepening our impact—expanding decentralized, nature-based, and community-driven solutions that secure water, restore ecosystems, and safeguard public health. With every partnership strengthened and every intervention scaled, we move closer to a future where water and sanitation are not vulnerabilities, but foundations of resilience and dignity.**

**Together, we will continue shaping pathways of hope, equity, and sustainability—for people, for water, and for nature.**