

Digital Solutions with gender lens

Sustainable Urban Development – Smart Cities II (SUDSC II)
September 2025



german
cooperation

DEUTSCHE ZUSAMMENARBEIT

Implemented by

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

Output > Output Indicator > Action Plan

Output 3 : Innovative, Data-Based Projects

3.1

Innovative, data-based projects in areas of urban governance, DRR, public space, peri-urban areas

3.2

Integration of data-based tools in partner institutions

Urban Labs Innovative, Data-Based Projects

- Circular economy / solid waste management
- Water Management
- Wastewater management
- Green public spaces
- Urban observatory
- (Climate-proofing urban planning and infrastructure)

Guwahati:

1. Supporting data-based solutions for an Inclusive GIS-based **drainage master plan**.
2. Data-based solutions for **climate-proofing urban planning and infrastructure** for Guwahati city expansion

Bhubaneswar:

1. Supporting data-based solutions for climate-proofing urban planning and infrastructure for New Bhubaneswar City.

Mangaluru:

1. Data-based solutions to optimise solid waste management with gender lens and urban water management.

Kochi:

1. Data-based solutions for setting up an Urban Observatory, including Data Governance Strategy.

Coimbatore:

1. Data-based solutions to support circular economy: solid waste management and wastewater management.
2. Development of city open data portal for tracking performance of key urban indicators.
3. Spatial mapping of solid waste management assets for pilot area in Coimbatore.

Manikonda/ Hyderabad:

1. Data-based solutions to optimise solid waste management and green public spaces.

Challenge Labs conducted; Data Sprints completed; Pilot tested and steps for integrating solutions with partners ongoing

Handover of digital solutions to NUDM / NIUA ongoing since April 2025

Urban Labs - SUDSC II - **Process for Digital Solutions**

Multi-stakeholder format for innovative, data-based solutions for cities that follow principles of **risk-informed, integrated, resilient, inclusive and sustainable urban development.**

Challenge Lab

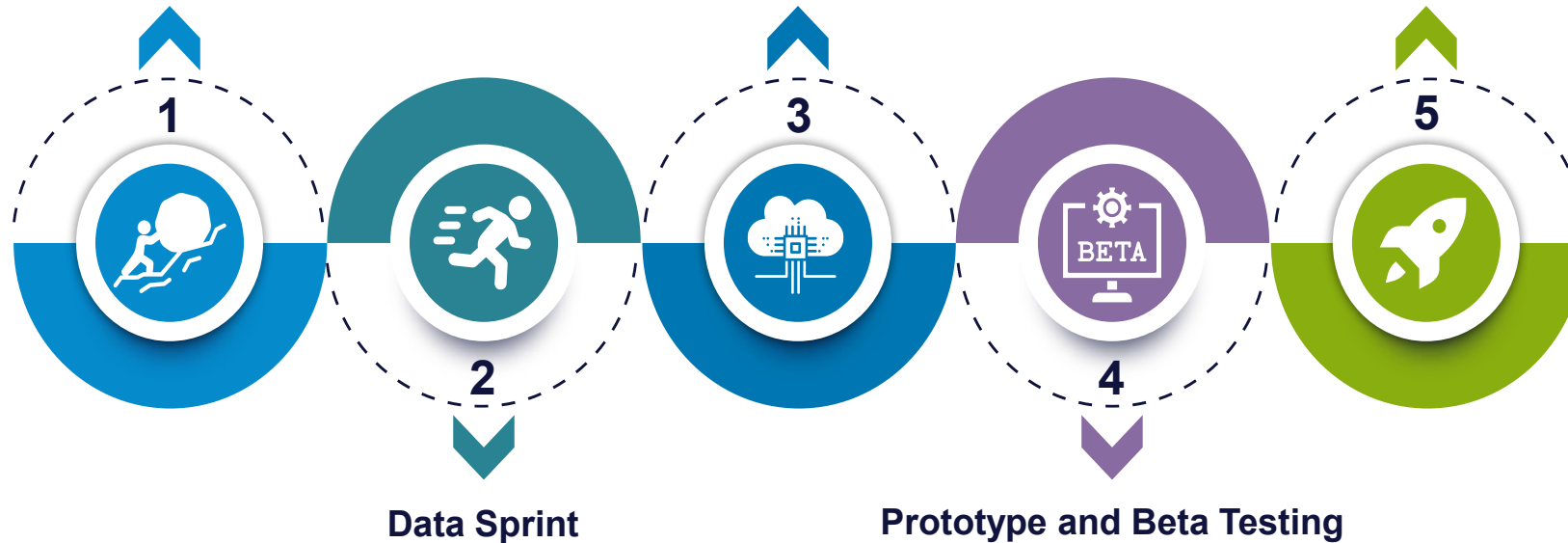
Stakeholder consultation, site visit and formulating a use case statement in discussion with city authorities and citizen representatives including women and girls

Digital Architecture

First iterations of digital/hybrid solutions presented to partners for feedback

Launch

Innovative digital/hybrid solution is launched after improvements and incorporating feedback received in previous steps



Investigate data required to develop relevant digital/hybrid solutions and where to gather it from to ensure gender disaggregated data

Solution is made available to city officials and citizens for testing, gender disaggregated data, feedback and improvement

Principles of risk-informed, integrated, resilient and sustainable urban development

Citizen Centric Governance

Design with the user and **foster citizen-centric governance**



Urban Governance

Contribute to urban governance and existing **urban planning processes**



Improving Municipal Service

Address local urban challenges and improve municipal services



Strengthening digital ecosystem

Strengthen the local economy and digital ecosystem to **enable prosperity for all**



Sustainable Development

Implement for **sustainable, climate-friendly and gender-responsive urban development** that considers **disaster risk reduction**



Transferability

Design for scale and facilitate **transferability and scaling-up** of digital solutions and processes



Data Driven

Be **data driven**, use **gender disaggregated data** and make a responsible use of data



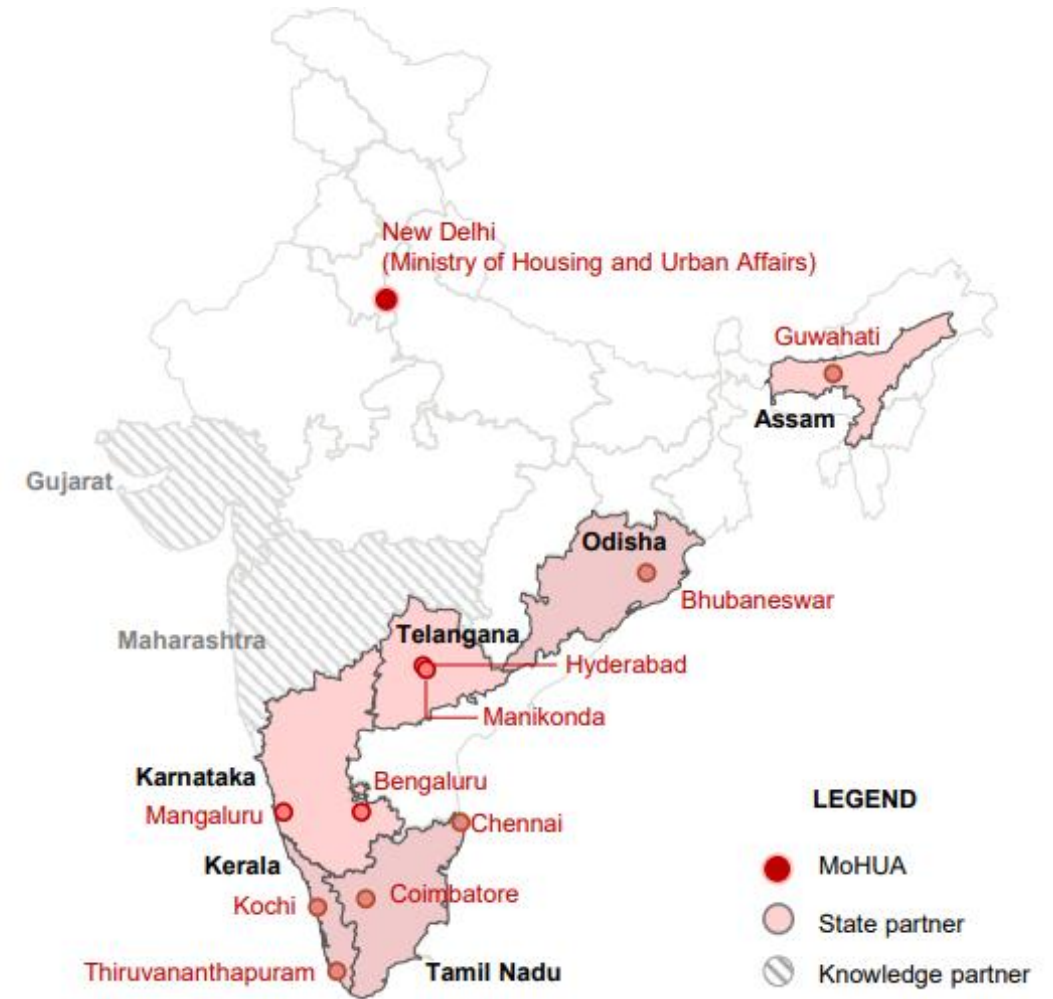
Open Source

Prioritize **open source**



Overview of urban labs with gender-responsive approaches

City	Innovative, Gender Responsive; Data-Based Projects
Guwahati	Climate proofing gender responsive city master plan and inclusive green spaces
Mangaluru	Municipal solid waste management with gender lens and urban water management
Kochi	Gender Responsive Urban Observatory and Management of green open spaces
Bhubaneswar	Climate proofing city expansion for promoting gender-responsive urban development
Coimbatore	Circular economy principles for solid waste management and wastewater management using innovative gender responsive digital solutions
Manikonda (Peri urban area of Hyderabad)	Solid waste management with gender lens and green open spaces

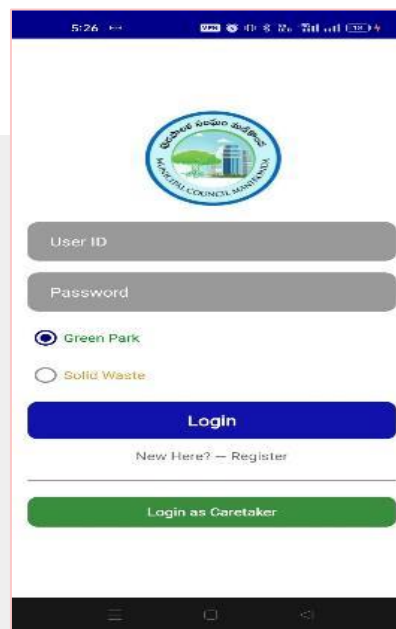
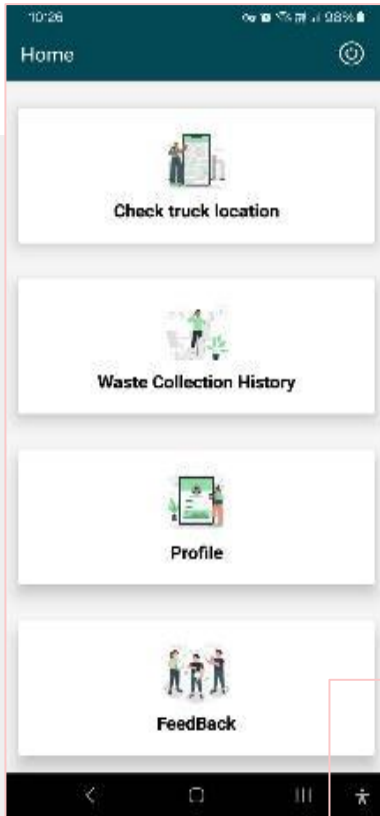


Upscaling Digital Initiatives



Digital solutions for 6 partner cities

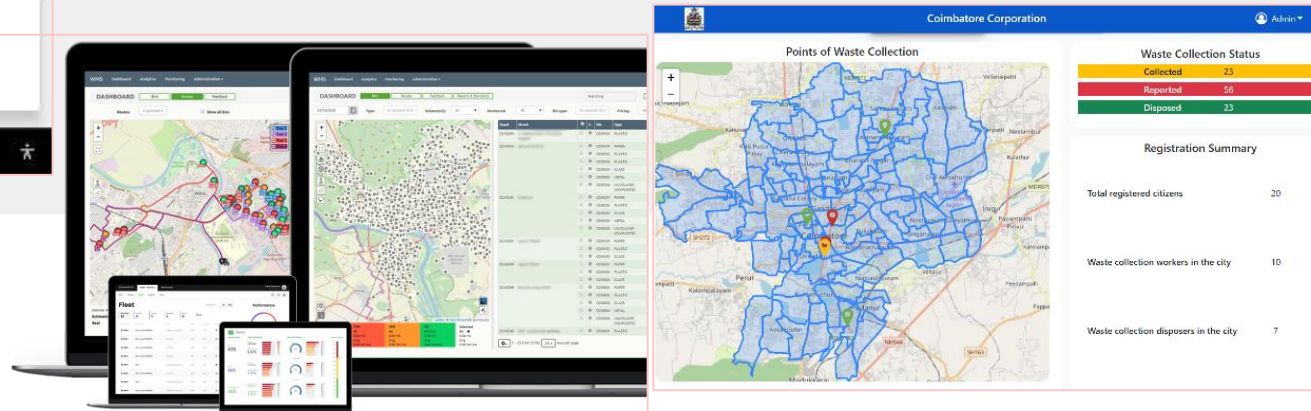
All the solutions will be handed over also to NUDM / NIUA and can be scaled up Pan-India



Support to tackling challenges in:

- Circular economy / solid waste management
- Wastewater management
- Green public spaces
- Urban observatory
- Climate-proofing urban planning and infrastructure

Focuses on disaggregated data for women and gender responsive approaches



Output 3 – Innovative, data-based projects

Challenge Lab – Defining Problems



Data Sprint (Manikonda)

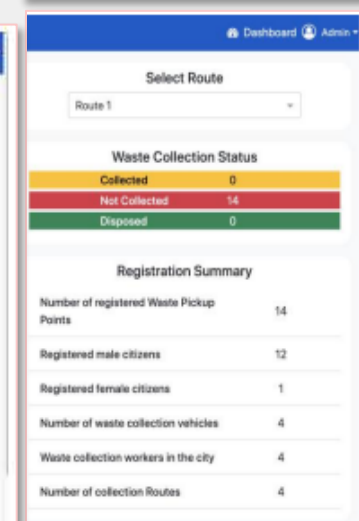
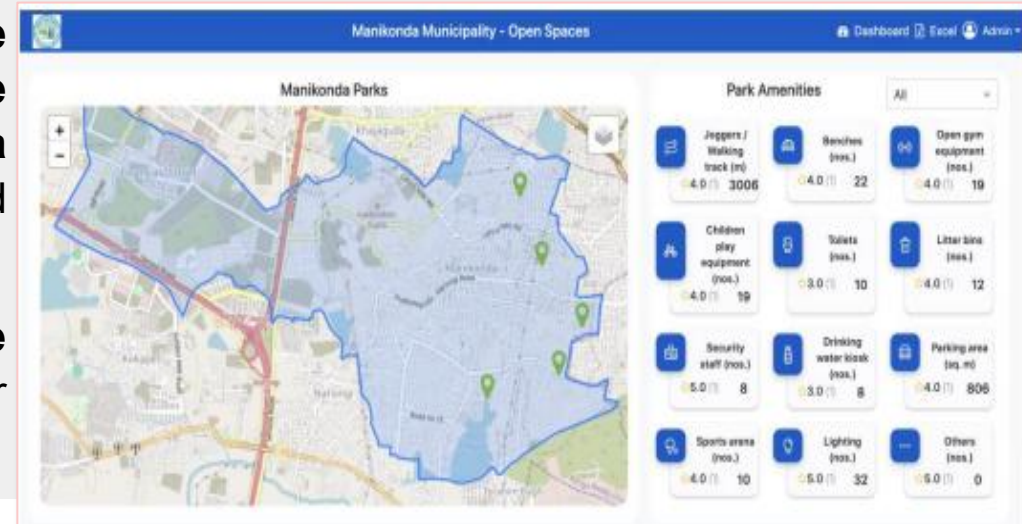
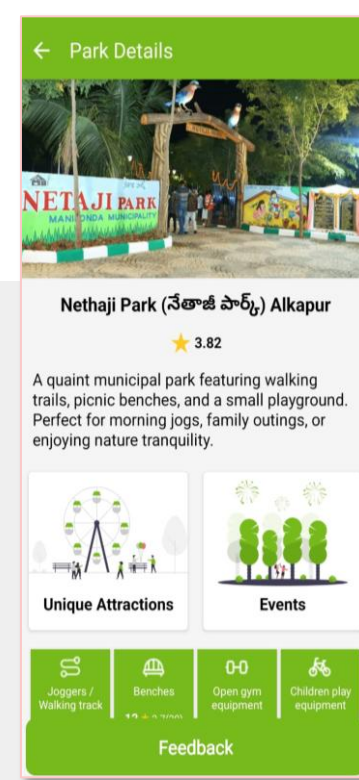
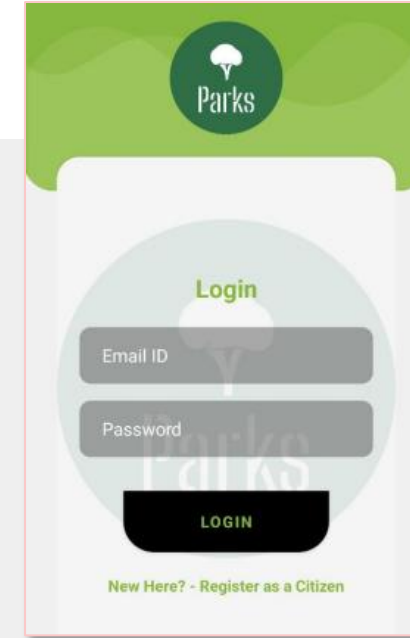
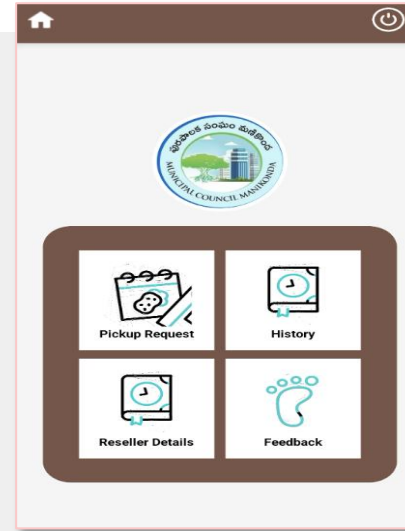


Data Sprint (Coimbatore)



Urban Lab Manikonda -Telangana

- Digital solutions for management of solid waste and public parks through a participatory process .
- Provides **real time monitoring** of the public green spaces and solid waste operations integrated with a dynamic **citizen interface**.
- **Separate Modules** for each user type with secured login credentials
- Mobile app & web-based dashboard has features **Gender-disaggregated data collection, service delivery data, citizens feedback, employee work reporting frameworks with data analytics** helps in informed decision making and improved service delivery
- **Digital solutions are endorsed by the state municipal administration department** for upscaling to other Urban Local Bodies



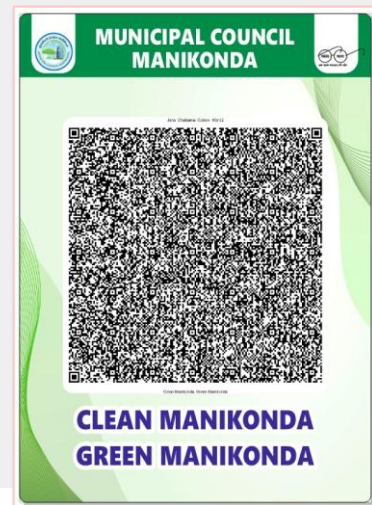
Participatory approach

Co-design and development

- ULB officials
- Academia
- Resident Welfare Associations

Training and IEC – Pilot scale

- Hands on training for the field staff
- Installation of QR codes
- Dissemination of app to citizens
- Feedback on user experience
- Apps presented at state department



Stakeholder Testimonial

It is very positive step. The parks application helps us to provide our feedback on the amenities, and this would help us in raising the concerns on upkeep of parks

– *Santosh, resident of Rain tree apartment, Alkapur, Manikonda*



The applications pilot tested in Manikonda Municipality are very useful for the urban local bodies to improve service delivery and for citizen feedback. The park application provides a good database of amenities available in each park and information is accessible for citizens. We will explore the possibility of replicating in all the ULBs across the state soon. – *Commissioner & Director Municipal Administration, Govt of Telangana*

Contribution towards SDGs:



The application empowers Manikonda's

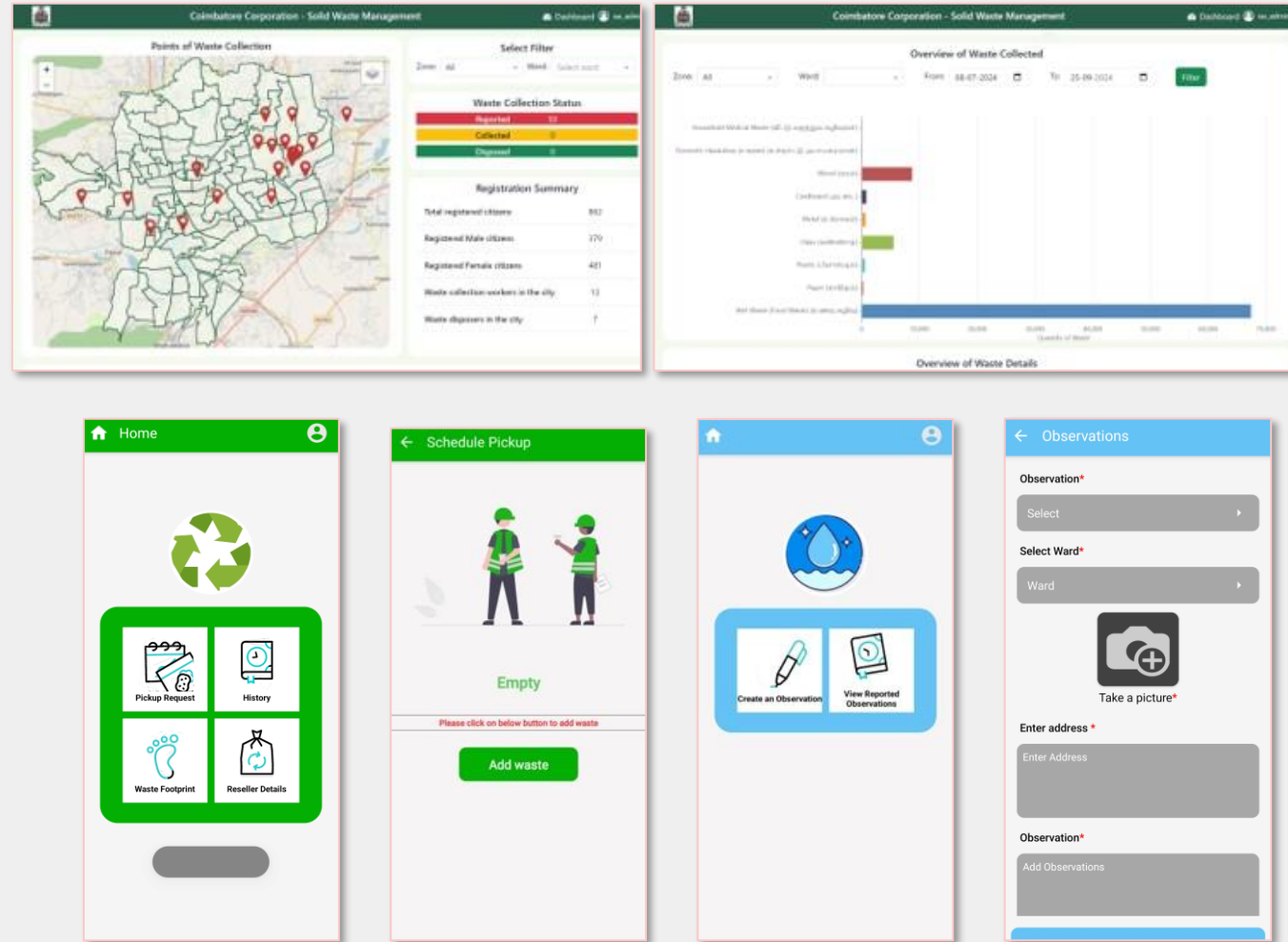
250620

residents

The implementation of the solid waste management digital solution forms the basis for the further digital transformation and efficient urban service delivery with a gender-responsive approach. The application is considered for potential upscale in the other ULBs of the state by the authorities.

Urban Lab Coimbatore

- Developing context specific digital solutions, through an iterative and participatory process ensuring the outcomes are **inclusive, integrated and sustainable**.
- Solutions emphasize on **Circular Economy** with a focus on solid waste management and wastewater management.
- By integrating **gender perspectives** into every relevant aspect of the tool development process, from design to implementation, the application ensures inclusivity and access to services, resources and **opportunities for women within the circular economy framework**.
- With features including, **gender-disaggregated data collection**, digitizing the waste value chain to understand waste generation, collection and processing patterns, the application is positioned to improve operational efficiency, promote informed decision making and **challenge gender stereotypes in waste management and recycling**.



Urban Lab Coimbatore

App dissemination and awareness

Training programs for government officials, academia, RWAs, women community leaders and self-help groups

- **Number of registered users 4140**
- **Number of females 2291**
- **Number of males 1849**
- **Requests recorded >2100**

Pilot program to determine:

- User experience, usage patterns data analytics and review functionalities for further improvements

Current Status

- Development of additional modules and revision of process flows, and UI based on feedback underway
- Ongoing efforts to integrate toolkit onto existing city/state digital infrastructure



Pilot outcomes

Solid waste management

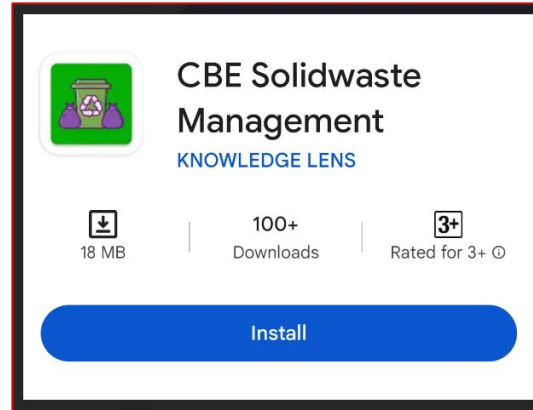
Comprehensive waste profile for the city generated
68% Organic waste and 26% recyclable waste

Wastewater management

Targeted mapping of vulnerable hotspots related to flooding, sewage spill, pipe leakage and overflows

Urban Lab Coimbatore

Digital solutions for improvement of solid waste management for citizens and city administration.



Contribution towards SDGs:



The application empowers Coimbatore's

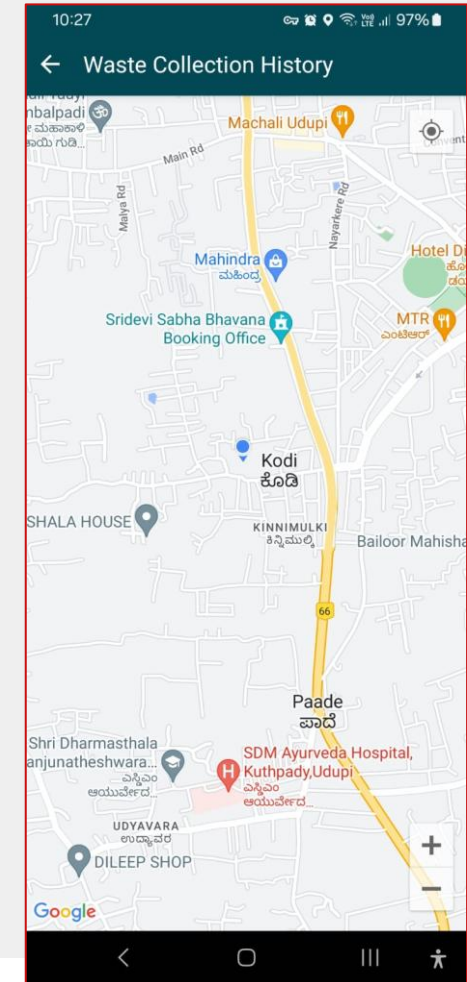
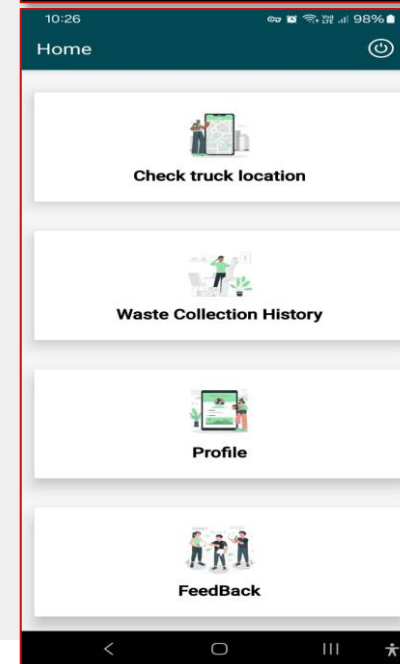
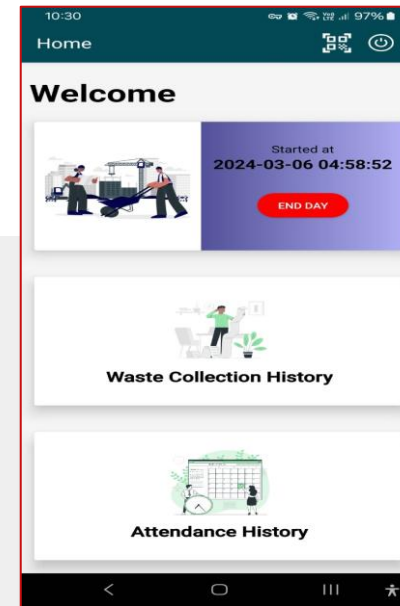
22,88,042
residents



The digital solution addresses key aspects of waste management by involving citizens, gathering disaggregated data for women, streamlining collection processes, and ensuring efficient waste disposal with a gender-responsive approach. It actively engages residents in the waste segregation process, promoting the separation of waste into biodegradable, non-biodegradable, and hazardous categories.

Urban Lab – Mangaluru

- The Urban Lab supports **risk-informed, resilient, and innovative data-based approaches** for **sustainable urban development** through multi-stakeholders' consultation.
- The solutions being designed to address the challenges of **Urban water** and **Solid waste management** with **gender lens**.
- **The gender disaggregated data** would enable city governance to **design a policy or activities** that is **gender-responsive**, compliments **gender differences**, enables systems to be **sensitive to gender**.
- The Urban Lab activities fosters **community participation, equal access** to essential services which contributes to **risk free, resilient and sustainable urban living**.



Urban Lab – Mangaluru

“I’m grateful for corporation’s efforts and the app that’s making waste collection easier for us all”

– Poornima S Kotian, resident of Mannagudda ward, Mangaluru, Karnataka



“The Solid Waste Management (SWM) and Urban Water Management (UWM) applications piloted in Mangaluru City Corporation are useful in enhancing municipal service delivery. The SWM application, with features such as real-time GPS tracking, route optimization, and vehicle monitoring, enables both the Corporation and citizens to track waste collection vehicles and ensure timely, efficient services. The UWM application helps monitor household water usage and supports better management of water supply systems. These applications will be scaled across all city wards and could be replicated across other Urban Local Bodies (ULBs) in Karnataka.”

– Commissioner & Town Planning Officer, Mangaluru City Corporation, Govt. of Karnataka

Contribution towards SDGs:



The application empowers Mangaluru’s

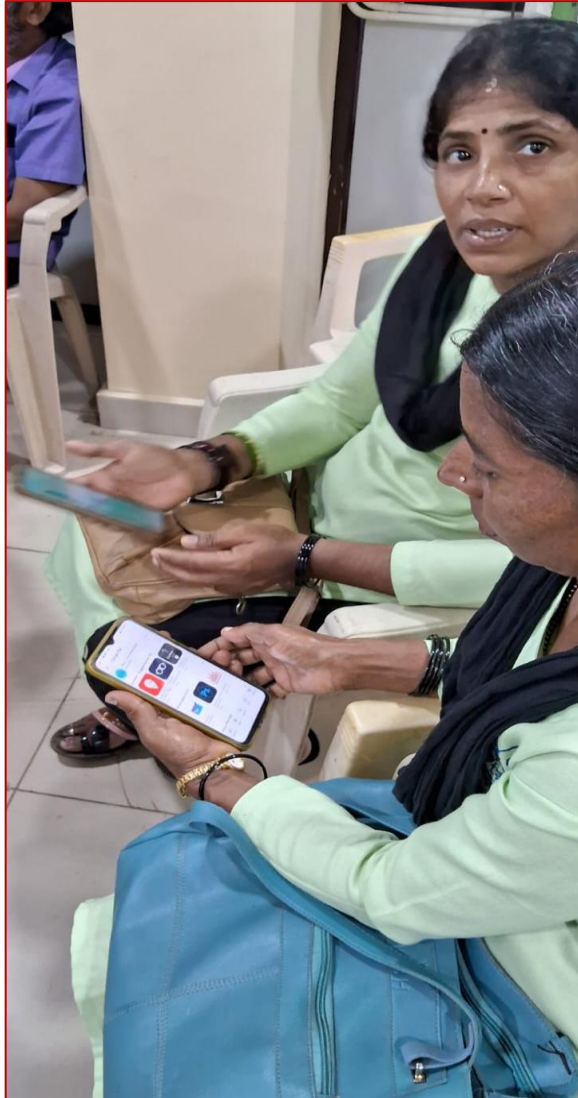


623,841
residents

“In Mangaluru City Corporation, the solid waste management digital solution has set the stage for enhanced urban service delivery and digital transformation with a focus on gender inclusivity. Authorities are planning its expansion to cover the entire city”

Urban Lab – Mangaluru

Digital solutions for improvement of solid waste management for citizens and city administration.



Innovative Gender Inclusive Digital Strategy for Solid Waste Management



Digital Solution
Optimizes waste collection process



Improved Recycling
Increases material recovery rates



Data Visualisation
Enables informed decision-making



Efficient Scheduling
Streamlines collection logistics



Enhanced Tracking
Monitors waste distribution effectively



The digital solution provides end-to-end tracking of waste from reporting to collection and disposal. The solution ensures that waste is monitored at every stage, providing transparency and accountability in the entire waste management process with gender lens. This comprehensive tracking system helps in identifying bottlenecks, improving efficiency, and ensuring that waste is disposed of properly.

Urban Lab Bhubaneswar

- Supporting data-based solutions for climate-proofing urban planning and infrastructure for Bhubaneswar New City, a greenfield development.
- Provide advice, recommendations and strategies to the Bhubaneswar Development Authority (**BDA**) on:
 - Integrated & inclusive urban planning for Bhubaneswar New City
 - Gender responsive urban planning & development
 - Disaster resilient/ climate change responsive urban infrastructure
 - Integration of digital tools and technologies in the city plan

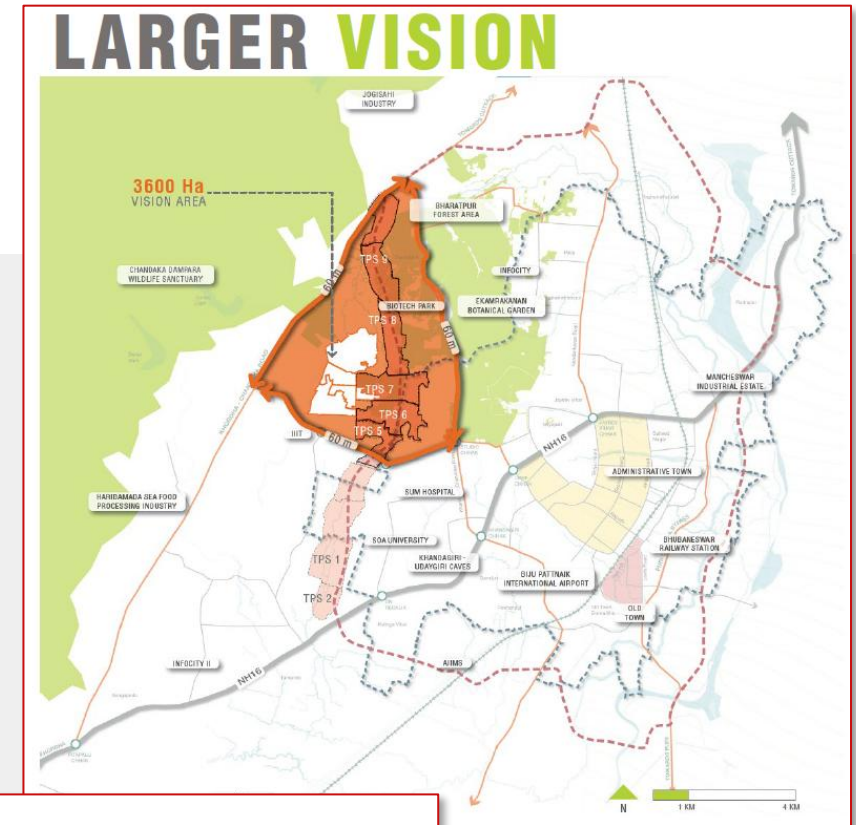


Photo Credits: © BDA

Urban Lab Bhubaneswar

Progress Till Date

- Stock-taking & Analysis
- Stakeholder Liaison & Technical Support to BDA
- Report on Review of Existing Urban Planning Framework for Master Planning and Zoning Regulations
- Report on Recommendations and Strategies for Integrating Gender Responsive Planning Principles in Planning for the New City
- Capacity Building Workshop on Strategies for Promoting Gender-Responsive Urban Development

Upcoming Deliverables

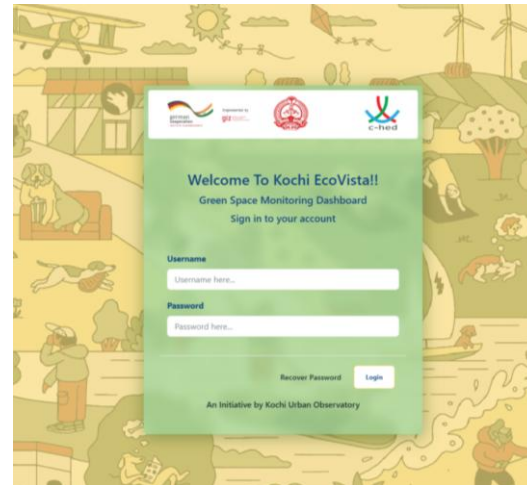
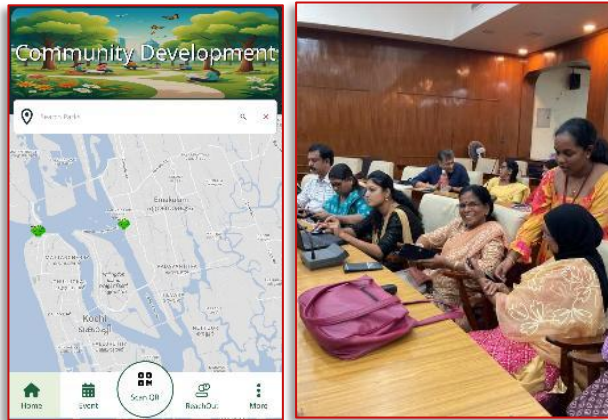
- **Urban Planning Framework for the Master Plan and Zoning Regulations in alignment with sustainable development goals**
- Recommendations and strategies for integration of digital tools and technological innovations in urban planning processes with focus on the New City
- **Recommendations and strategies for economic development and financial investment for the New City – Financing Structure for Convention Centre**
- Smart, Efficient and Resilient Urban Infrastructure Planning based on Net Zero / Circular Infrastructure Principles for the New City
- **Recommendations and strategies for economic development and financial investment for the New City – Financing Structure for New City**
- Recommendations and strategies for attracting key national / international players and marketing of the New City



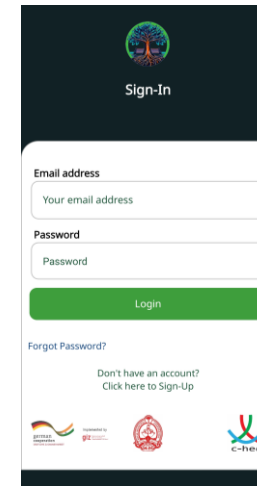
Photo Credits:©GIZ India

Urban Lab Kochi

A digital toolkit developed, and pilot tested to jointly identify, design, operate & maintain public green open spaces in Kochi through continuous citizen feedback.



A GIS Based Web Application- establishing green open space information system- Users: KMC Officials (Engineering / Accounts / RTP); c-hed officials (Superadmin, KUO Manager, KUO Officer)



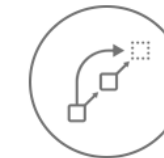
A GIS Based Mobile Application Users: Citizens; c-hed officials (Supervisor, Staff)



Designed with the user and foster **citizen-centric governance**



Data driven, use **disaggregated data for women** and make a responsible use of data



Designed for scale and facilitate **transferability and scaling-up** of digital solutions and processes



User Acceptance Testing (UAT) kick-off session conducted- representation from across **diverse user-groups** including **decision-makers** (Municipal Councillors and Chairpersons), **technical personnel** (Corporation Engineers, c-hed technical team), **resource groups** (NGO- age friendly city, RWA), **women self-help groups** (Kudumbashree, Harithakarma sena) and **citizen user-groups** including **youth and elderly citizens**. – **more than 50% representation of women**.

Urban Lab Kochi

Kochi Urban Observatory (KUO)- a central data repository and data governance strategy-comprehensive framework handed over to Kochi Municipal Corporation (KMC).



Key Highlights

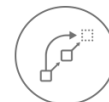
- A **big storage place** of all kinds of city data- a **single access point** for various government data and insights.
- Uses special tools to **analyse** the **data** and help make **fair decisions**- planning for the future by doing smart research and creating **better policies for all**.
- Adopts **data feminism** and **Leave No One Behind (LNOB)** principles and identifies innovative **use cases** to **solve city problems**.
- Provides **gender disaggregated data** that also considers other factors of identity and helps create **fair and informed policies and decisions**.
- Uses tools and technology to **improve online government services** and makes sure **public services** work well.
- A platform, where **city** authorities and **citizens** team up to **shape public policies**- as a community hub.



Designed with the user and foster **citizen-centric governance**



Data driven, use **disaggregated data for women** and make a responsible use of data



Designed for scale and facilitate **transferability and scaling-up** of digital solutions and processes

KUO has been collectively shaped by citizens with input from diverse stakeholder groups.



Challenge Lab conducted to develop a granular understanding of **city's needs and priorities, challenges and enablers**, defined the necessary framework conditions for KUO.



Exposure visit by Kochi city delegation to the **India Urban Observatory (IUO), MoHUA** and participation in the inspirational exchange, helped gain valuable insights for shaping KUO.



Strategic Workshop further brainstormed on the future-ready institutional structure of a gender-responsive KUO- using data as a game changer for decision-making

Photo Credits:©GIZ India

Urban Lab Guwahati



**SUSTAINABLE
URBAN
DEVELOPMENT
SMART CITIES II
(SUDSC II)**



**GUWAHATI URBAN
LAB**



PROGRESS SO FAR



AUGUST 2025



Photo Credits: ©GIZ India



Outputs of Guwahati Urban Lab Dashboard

Innovative Databased Projects (Output 3) of SUDSC II provides context to launching of the Guwahati Urban Lab Dashboard.

It envisaged three **outputs**:

Digital Tools

*Digital tools for cross-sectoral spatial planning are integrated into innovative projects for informed decision-making. **Urban Lab Dashboard** is the main platform*

Databased Projects

*Participatory, inclusive and gender-responsive, **data-based projects** are implemented in the areas of disaster risk management, public spaces, urban green spaces and peri-urban space*

Capacity Building

Technical capacity building and training of GMC, GMDA and PWD staff. Capacity building of Self- Help Groups on community participation and gender inclusion

Progress achieved so far



Stakeholder consultations

Consultations across departments and communities completed

Key drainage and flooding issues identified and agreed upon



Dashboard design

ArcGIS based “Go Live” Dashboard completed

Feedback from stakeholders integrated

Google Earth Engine finalized for satellite imagery data analytics

Hardware and software requirements finalized



Capacity building

Five series of flood and drainage related capacity building programs discussed and finalized.

“Hands on” training completed for stakeholder departments and community representatives



Dashboard operationalization

First set of user orientation completed on the utility of the Dashboard

Dashboard is fully ready to launch

Hardware and Software to be procured by T&CP

Backstopping to be provided by GOPA Tech between October to December 2025

Unique features of GUL Dashboard



First-of-its-kind integrated platform in Guwahati combining **hydrology, climate, urban, and demographic data.**



Real-time and historic insights on rainfall, flood, drainage, wetlands, land-use, and infrastructure.



Uses **multi-source datasets** (ArcGIS enterprise/online, google earth engine, census, master plan, and field data).



AI & geospatial analytics enabled for predictive flood and climate risk assessment.



Interactive, user-friendly dashboards for engineers, planners, and decision-makers.




Custom-built for Guwahati with local datasets (stormwater drainage, ward boundaries, historical inundation).





Scalable architecture – can be extended for future projects (water supply, pollution, transportation).


Benefits for Guwahati


 **Early warning & preparedness** supports flood prediction and hotspot identification.

 **Evidence-based planning** helps GMDA, GMC, and WRD make data-driven investments.

 **Ward-level vulnerability mapping:** easy prioritization of high-risk areas.

 **Infrastructure monitoring:** assesses performance of drains, pumps, culverts.

 **Supports smart city & AMRUT 2.0:** aligns with national urban missions.

 **Community resilience:** indirect benefit to citizens through better planning & reduced flood damage.


 **Capacity building:** provides government engineers hands-on GIS tools for future projects.



Photo Credits: ©GIZ India

Value added Impact of the Dashboard



1

Bringing multiple actors (GMC, GMDA, PWD and T&CP) on a unified platform for enhanced data analysis and information management

2

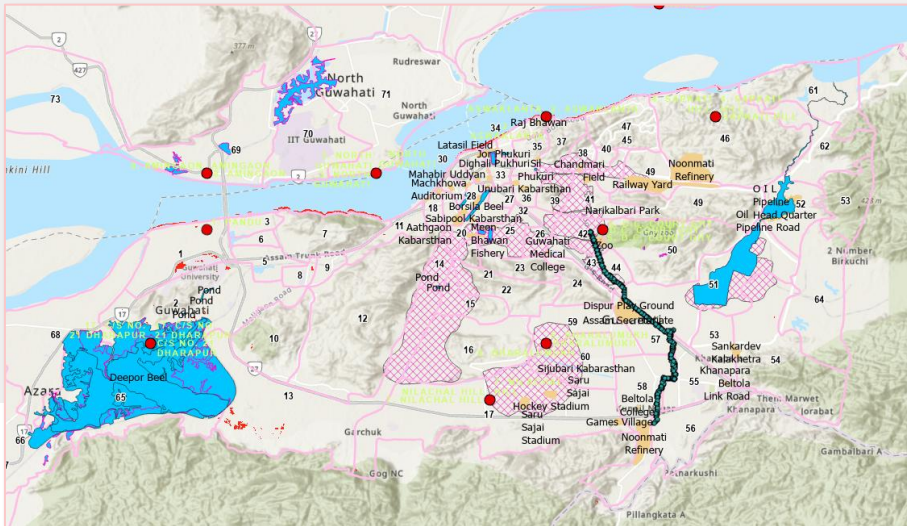
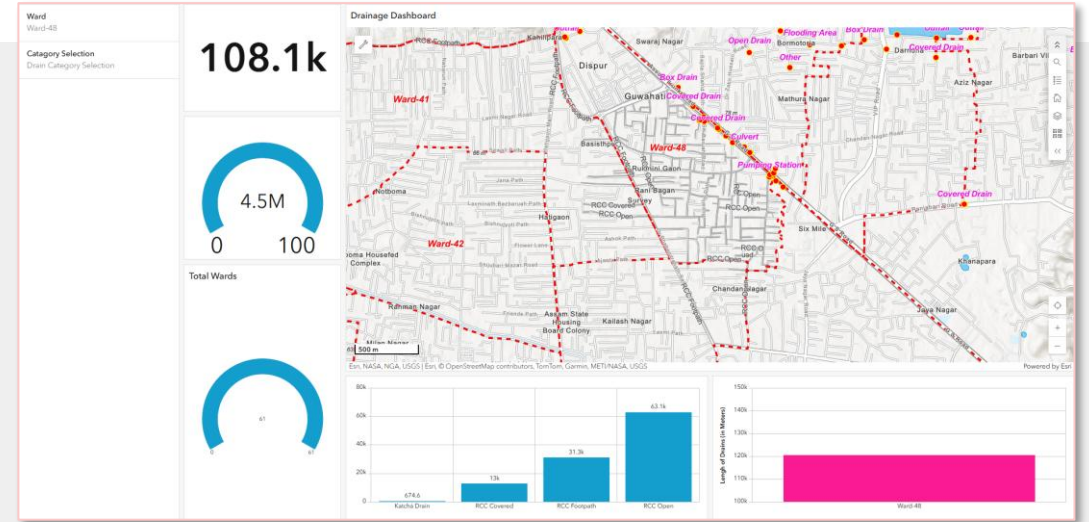
Transiting from “solo” and disintegrated approach to “unified” and “integrated” drainage infrastructure planning and improvement

3

Placing “community and gender friendly” approaches at the core of storm water drainage infrastructure development



GUL – Dashboard Screenshots



Government of Assam

giz Guwahati Urban Lab (GUL)

Home Why Report and KB Data Dashboard GEE

The Urban Knowledgebase and Dashboard System

Building Urban Resilience in Guwahati

The Guwahati Urban Lab (GUL) supports the Department of Housing & Urban Affairs (DoHUA) in promoting sustainable and inclusive urban development in Guwahati. It facilitates seamless coordination among key organizations—GMC, GMDA, and PWD—for evidence-based, gender-responsive, and climate-informed drainage management. By fostering collaboration, GUL ensures participative and well-coordinated urban services to address the city's complex drainage challenges effectively.

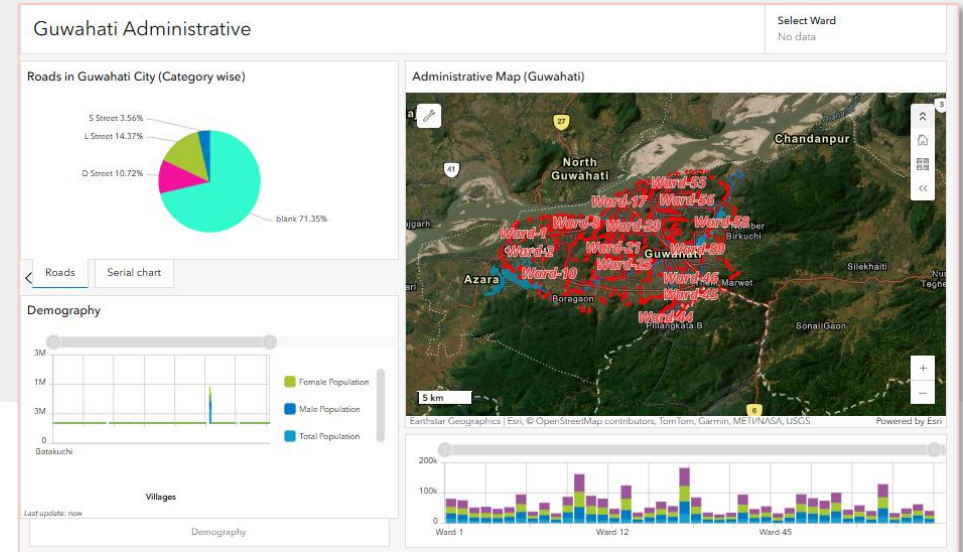
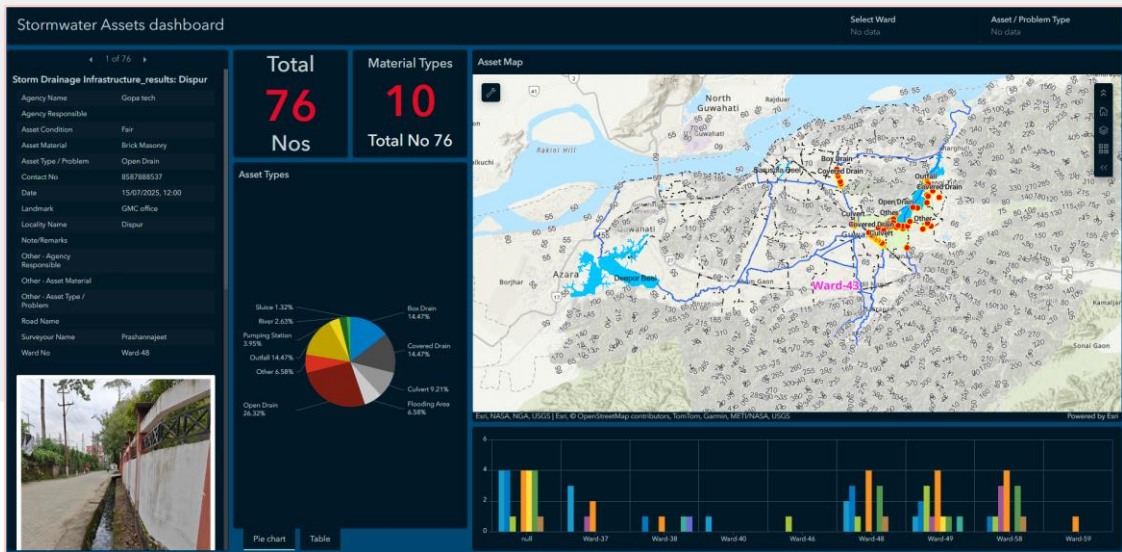
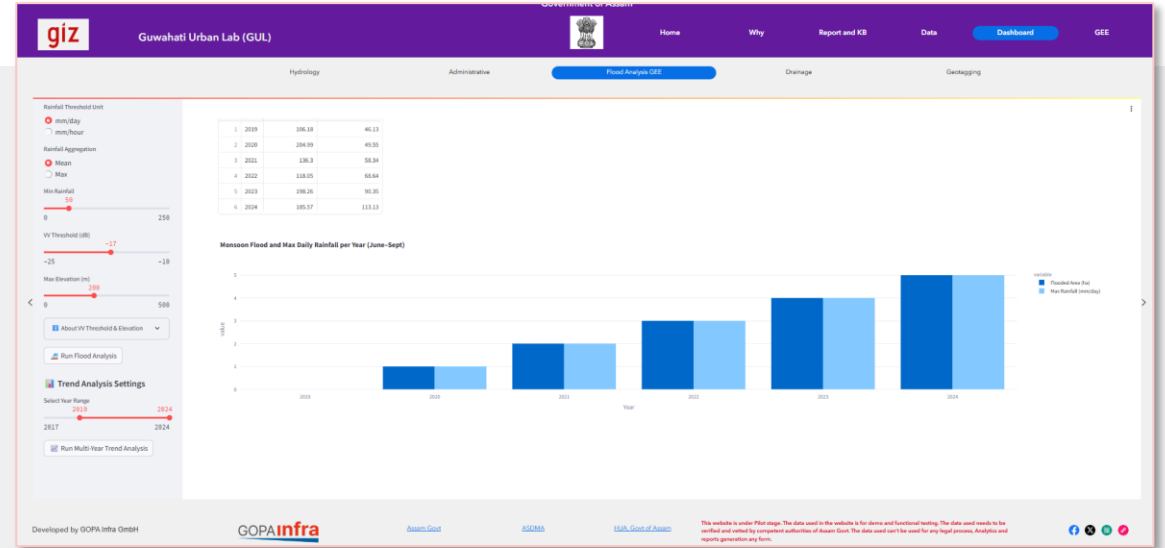
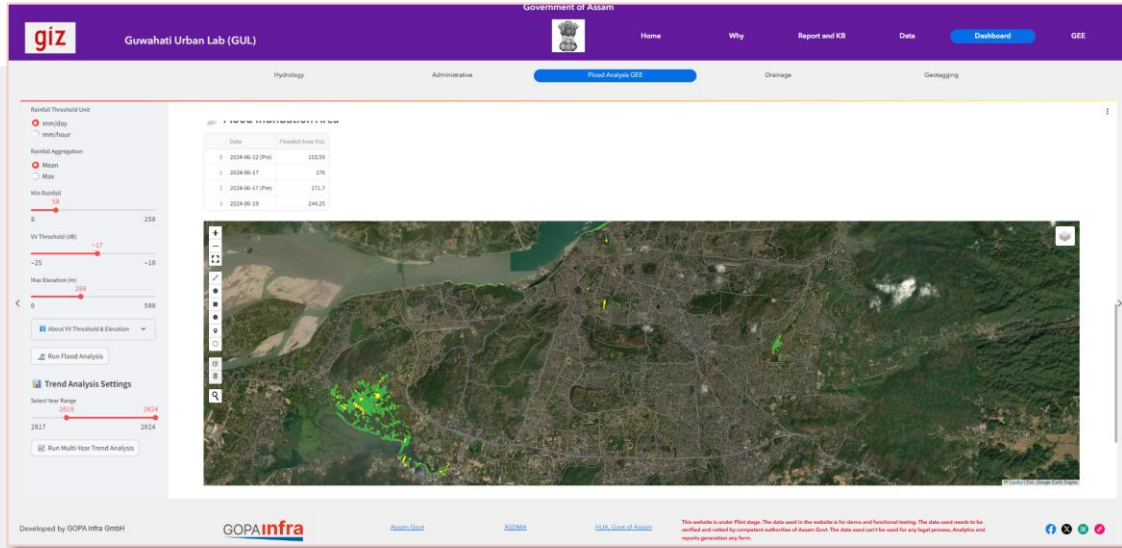
Hydrological Policy and Protocols Flood Management System

Storm Water and Drainage

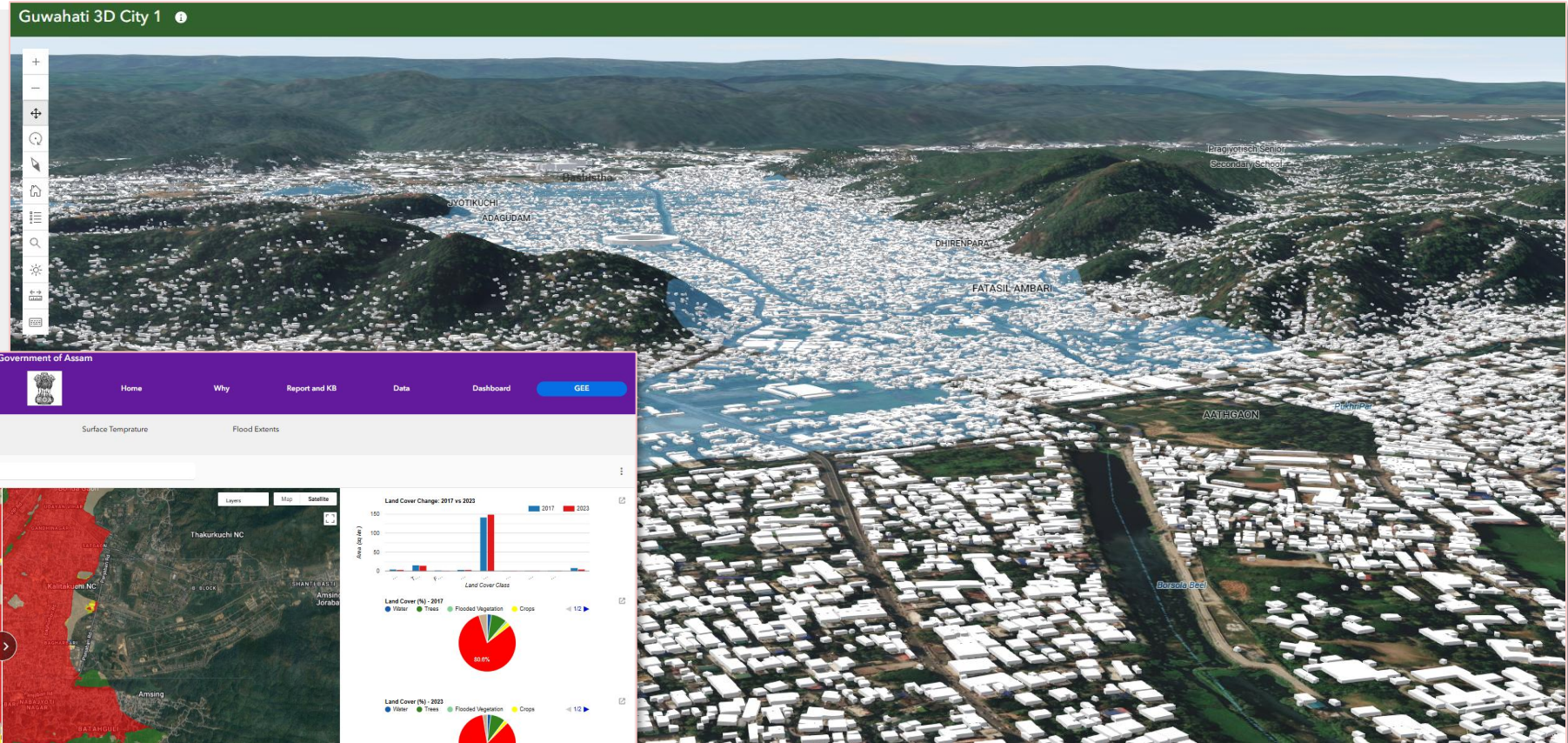
Building Climate Resilience

MITIGATION ADAPTATION

GUL – Dashboard Screenshots



GUL – Dashboard Screenshots



Government of Assam

giz Guwahati Urban Lab (GUL)

Home Why Report and KB Data Dashboard GEE

Landuse Precipitate Surface Temperature Flood Extents

Google Earth Engine Apps

Land Cover Change Analysis

Select Ward: All Wards

Analysis Mode: Land Cover Comparison

Select Years: 2017 2023

Area Statistics: Total Area (2017): 175.07 sq km

Download Land Cover Data

Land Cover Classes: Water, Trees, Flooded Vegetation, Crops, Built Area, Bare Ground, Snow/Ice, Rangeland

Land Cover Change: 2017 vs 2023

Land Cover (%) - 2017: Water (80.0%), Trees, Flooded Vegetation, Crops

Land Cover (%) - 2023: Water, Trees, Flooded Vegetation, Crops

Developed by GOPA Infra GmbH

GOPAINfra Assam.Govt ASOMA HUA, Govt of Assam

This website is under Pilot stage. The data used in the website is for demo and functional testing. The data used needs to be verified and vetted by competent authorities of Assam Govt. The data used can't be used for any legal process, Analytics and reports generation any form.

Upscaling Digital Initiatives

National Institute of Urban Affairs (NIUA)
55,507 followers
5mo • Edited •

★ We are proud to announce that Urban Platform for DeliverY of Online Governance (#UPYOG) has been officially recognised as a Digital Public Good by the Digital Public Goods Alliance (DPGA). 🌟

Developed by the National Urban Digital Mission NUDM-NIUA under the National Institute of Urban Affairs (NIUA), UPYOG provides open APIs and digital services to empower Urban Local Bodies (ULBs) with citizen-centric governance solutions. This recognition reaffirms its role in enhancing service delivery, fostering accountability, and streamlining urban administration at scale.

🔗 Learn more: <https://lnkd.in/gkyJgFX8>

#NIUA #DPG #DPGs #DigitalPublicGoods

Ministry of Housing and Urban Affairs | Dr Debolina Kundu | Manpreet Singh | Manish Sharma | Jyotish Jagannivasan | Aparajita Dubey | Shelika Arora

NEW DPG ANNOUNCEMENT

Home > DPG Registry > UPYOG

Urban Platform for DeliverY of Online Governance

UPYOG

Software DPG Verified DPG

OWNER	TYPE	LICENCE	LAST EVALUATED
National Institute of Urban Affairs	Backend, Web	MIT	27.02.2025
	ORIGIN COUNTRY	CONTACT	RELEASE DATE
	India	manpreet@niua.org	-

Description
The Urban Platform for DeliverY of Online Governance (UPYOG) is a set of Open APIs, services, and reference implementations, setup as a public good, to allow government entities, businesses, startups, and civil society to use a unique digital Infrastructure and build solutions at a large scale. Developed under the National Urban Digital Mission, MoHUA to facilitate the digital delivery of G2G, G2C, G2B services focussing on citizen centricity, UPYOG is available with customizable 14 reference modules.

Access
[Website](#)
[Source code](#)

Feature

taxes-management digital-citizenship accounting case-management

Data analysis government Registration

Scale of the Solution*

Connected members	Participated Programs	Available Languages
N/A	N/A	English

Organisations using it

The MoU has been signed with 31 States/ UTs for the adoption of National Urban Digital Mission. Implementation of one or more modules of UPYOG has been started in 18 States/ UTs. The Data aggregation on National Dashboard UMEED has been completed for 14 States / UTs. K-SMART: the smart revolution for Local Self Government Institutions has been developed on UPYOG. K-SMART aims to provide a diverse array of online urban services to individuals, as well as service providers including Akshaya centers, private-local organizations, and employees. The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), New Delhi is planning to integrate their tailored digital solution for partner cities (Manikonda, Coimbatore, Mangaluru and Kochi) with UPYOG.

* This information is self-reported and updated annually

Github insights

github.com/upyog/UPYOG 👤 209 🕒 21 ⭐ 17 🍷 106

Activity graph of the Github project

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