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PRE-RELEASE

Chennai

Project Opportunity

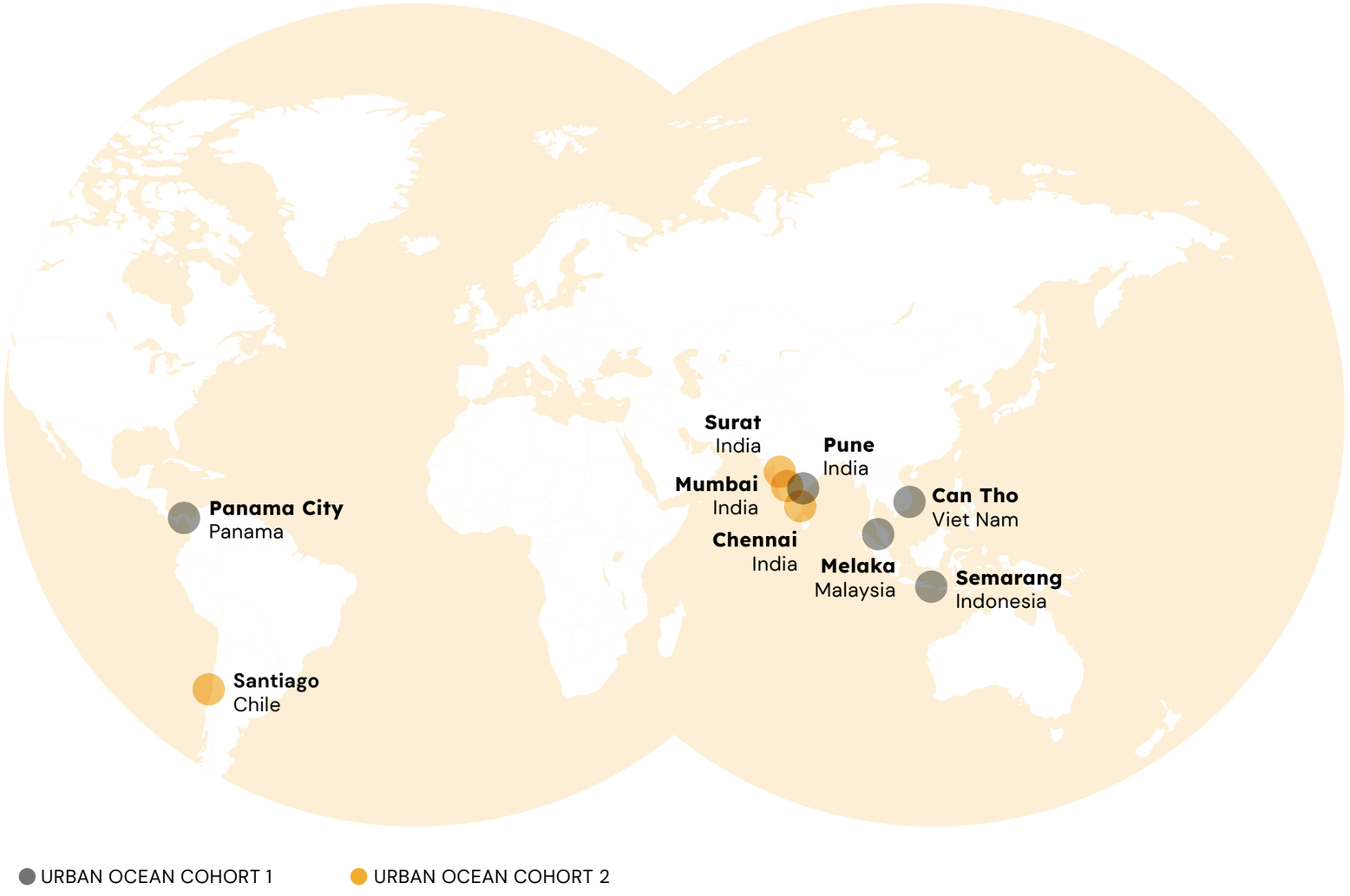
Introduction

The Urban Ocean program is a partnership of The Circulate Initiative, Resilient Cities Network and Ocean Conservancy, and is designed to help member cities solve interrelated problems around materials management that can have implications for public health, environmental pollution including leakage into our waterbodies and oceans, and economic development. Can Tho, Panama City, Semarang, Pune, and Chennai are some of the other member cities of the Urban Ocean program.

Using principles of circular economy and focusing on plastics, the program works in two phases:

Phase I involves gap assessment using a specific methodology, the Circularity Assessment Protocol (CAP), developed in the Circularity Informatics Lab (CIL) at the University of Georgia. This assessment maps challenges, risks, and vulnerabilities within material management systems and helps to develop a unique, integrated picture of the materials and circular economy related challenges and opportunities faced by cities.

Phase II involves opportunity assessment to identify potential opportunities that can be leveraged to design practical and fundable solutions for addressing a city's waste management challenges.



Chennai Project Statement

This project statement is the result of over 18 months of work and dedication by the Chennai City Urban Ocean team and trusted partners to develop specific actions that present opportunities to address waste management challenges in the city. It is based on a rigorous CAP assessment process[1] including several stakeholders' interviews and capacity-building sessions that helped the city to formulate data-driven and holistic recommendations and actionable ideas to implement locally.

Chennai's Context

Chennai is a rapidly urbanizing city (with population of 9 million and a growth rate of ~2.4% [2]) in coastal Tamil Nadu that currently generates 5400MT/day of waste, according to the Greater Chennai Corporation [3]. Despite local and state level policy interventions, local infrastructure, and government intent to prioritize sustainable solid waste management (SWM), a significant quantity of waste generated in the city makes its way to the city's two dump yards – Perungudi and Kodungaiyur. A substantial amount also leaks into the environment including into the three rivers (Adyar, Coum, and Kosasthaliyar), canals, and the innumerable lakes that are part of Chennai's landscape.

Some of the key challenges associated with poor solid waste management in the city are common to many other Indian cities. The Chennai Urban Ocean project recognizes that hidden within these challenges are opportunities to strengthen the current solid waste management system in the city and leverages these to design actionable solutions for fostering a more circular waste management system. Following are the key challenges and opportunity areas that the city will focus on.

Source: Okapi Research & Advisory

Challenges

Use and production of plastics: Policies such as the SWM Rules 2016, The Plastic Waste Management Rules, 2016, the Framework for Extended Producers Responsibility (EPR) Guidelines 2022, GCC's SWM Byelaws, 2019, provide a strong regulatory framework for restricting use and production of plastic waste. However, implementation and enforcement on-the-ground remains challenging.

Low segregation rates: The household segregation rate in the city is low. Contrary to official estimates, most solid waste management stakeholders in the city suggest that segregation rates are likely in the range of 20-25 percent. This is due to a combined effect of poor citizen awareness, difficulty in finding easy options for recycling, lack of trust between general public, government, waste collectors and recyclers in the solid waste management process including post collection processing, lack of incentivization and poor enforcement of rules.

Low recycling rates: Unsegregated waste poses challenges for recycling, efficient processing of wet and dry waste for generating compost, energy etc. resulting in all or most of the waste being dumped in the dump yards. In fact, the Greater Chennai Corporation data suggests that nearly all of the waste collected in the city is dumped in the city's two dump yards [4]. Very little (~ 10-12 percent) is recycled, largely by the informal sector and private waste managing companies.

Leakage into the environment: While the Chennai Urban Ocean Circularity Assessment Protocol report [5] suggests that litter density is low compared to other cities, a substantial percentage of the waste is still dumped on streets and into the waterbodies. This is evident from the amount of waste that is collected during coastal clean-up drives, post-flooding events, and by the trash booms set up along Adyar and Cooum rivers to catch floating waste. This leakage into the environment is a threat to public health and to the ecosystem.

Inefficiency in processing dry waste: Due to low levels of source segregation in the city, the performance of the Material Recovery Facilities (MRFs) and Resource Recovery Centres (RRCs) also remain constrained. Many of these facilities remain empty or significantly under-utilised, as they do not get enough segregated waste to process while other RRCs and MRFs get mixed material that is beyond their capacity to process and ultimately send it to the landfills.

Vulnerabilities of the informal waste workers: Informal waste sector plays a critical role in recycling. However, they remain largely unorganized and work under poor working conditions risking their health and safety, with little to no social-economic protection.

Most of these challenges bring with them some potential opportunities to strengthen the current SWM system in the city.

Opportunities

Extended Producer Responsibility (EPR): The EPR policy has created a market for high and low-value plastics and plastic recycling. The Chennai Circularity Assessment Protocol [6] report reveals that the packaging of top brands of biscuits, beverages, chips/snacks, candies and tobacco sold are also amongst commonly littered items. Therefore, EPR policy implementation can be strengthened to encourage multi-national and local Fast Moving Consumer Goods (FMCG) companies to invest in alternative product design and packaging and work in collaboration with private waste companies, communities, and informal waste workers to develop efficient waste management systems.

Citizen behaviour and awareness building: Sustained awareness and trust building campaigns to change citizen behaviour with respect to waste generation, segregation and recycling and to win their confidence on the municipal waste management system can go a long way in achieving higher rates of source segregation.

Leveraging existing innovations/technologies and building collaborations: There are ample examples from Chennai and beyond that highlight innovative efforts by citizen groups, private entrepreneurs, waste management and recycling companies, NGOs and academia to address a range of issues around solid waste management. There is huge potential in tapping into the strengths and experiences of these innovative organizations and develop collaborations across them.

Building efficiency in existing technology and infrastructure: GCC already has in place a decentralized waste processing system (a network of ward level Micro Composting Centres, MRFs, and RRCs) that, if properly maintained can yield much better results than they currently do.

Leveraging informal sector waste workers: Given the significant role of informal waste sector including informal waste pickers and waste aggregators in the city's solid waste management, it is critical to integrate them into the city's formal system. Private waste companies, Resident Welfare Associations (RWAs) and the public sector can tap into this labour pool while also reskilling and empowering the informal waste workers.

Way Forward

Based on the identified challenges and opportunities, the Chennai Urban Ocean Project Statement presents some strategic recommendations and two pilot project ideas.

Strategic Recommendations: The strategic recommendations call for city-level and/or medium to long term actions by local and state government, corporates, RWAs, NGOs and academia.

Strengthen EPR policy and enforcement: This is already underway as Tamil Nadu Pollution Control Board (TNPCB) has created a new Plastic Waste Management Cell. More targeted efforts can for instance include,

- TNPCB encouraging companies to conduct research on alterative packaging and establish systems to take back recyclable and problematic packaging material directly from municipal waste processing centres (MRFs/RRCs).
- TNPCB developing targeted plans with multi-national and local FMCG companies to collect and process plastic waste by introducing buy-back schemes or drop-off centres to encourage citizens to deposit recyclables.
- TNPCB creating a dynamic webpage which is updated regularly with information on what materials are banned and what sort of buy-back or drop off schemes are available within the state.

Formalizing and empowering informal waste pickers: To establish and strengthen the connection between solid waste management, livelihood and health, and circular economy, informal waste workers need to be integrated into the formal solid waste management system. For this, a seven-point action plan is suggested to facilitate the formalization process based on learnings from inspiration cities like Pune and Bangalore where the municipal government, local NGOs, and informal waste pickers are working together.

Implement a sustained (6 – 12 months) city-wide awareness and capacity building campaign to achieve higher segregation at source: A training for trainers can be held with existing solid waste management collection team who can then create awareness for domestic workers and residents as they collect waste on a day-to-day basis. Active members of local RWAs can also help. The awareness building sessions will teach citizens why and how to segregate, make them aware of hazardous, banned, and problematic waste, and inform them of correct methods of disposing off different streams of waste.

Incentivize segregation at source: Both negative (e.g. user fees, penalties, not collecting unsegregated waste, mention on resident WhatsApp groups) and positive incentives (e.g. awards such as cleanest neighbourhood or building) need to be used to bring about citizen behaviour changes over a period of time.

A Green Loop Database: Greater Chennai Corporation (GCC) in partnership with relevant knowledge partners can create and maintain an updated database of private waste managers who aggregate and recycle different streams of waste – this will be an important resource for all interested Chennai residents, commercial establishment, institutions like schools and colleges to identify who can be contacted for diverting particular streams of waste.

PILOT PROJECT

An Area-based Pilot: Building Near-Zero Waste Neighbourhoods

OVERVIEW

This pilot will attempt to reduce the waste derived from a specific area (Kasturba Nagar, Adyar) to near-zero waste (i.e. maximum resource recovery), achieve high segregation and recycling rates, while leveraging the strength of collaboration between GCC, a local resident group, private waste management companies and informal waste workers. This pilot will involve the following linked, yet independent components:

We Segregate: a door-to-door and sustained awareness campaign to achieve near 100% segregation at source.

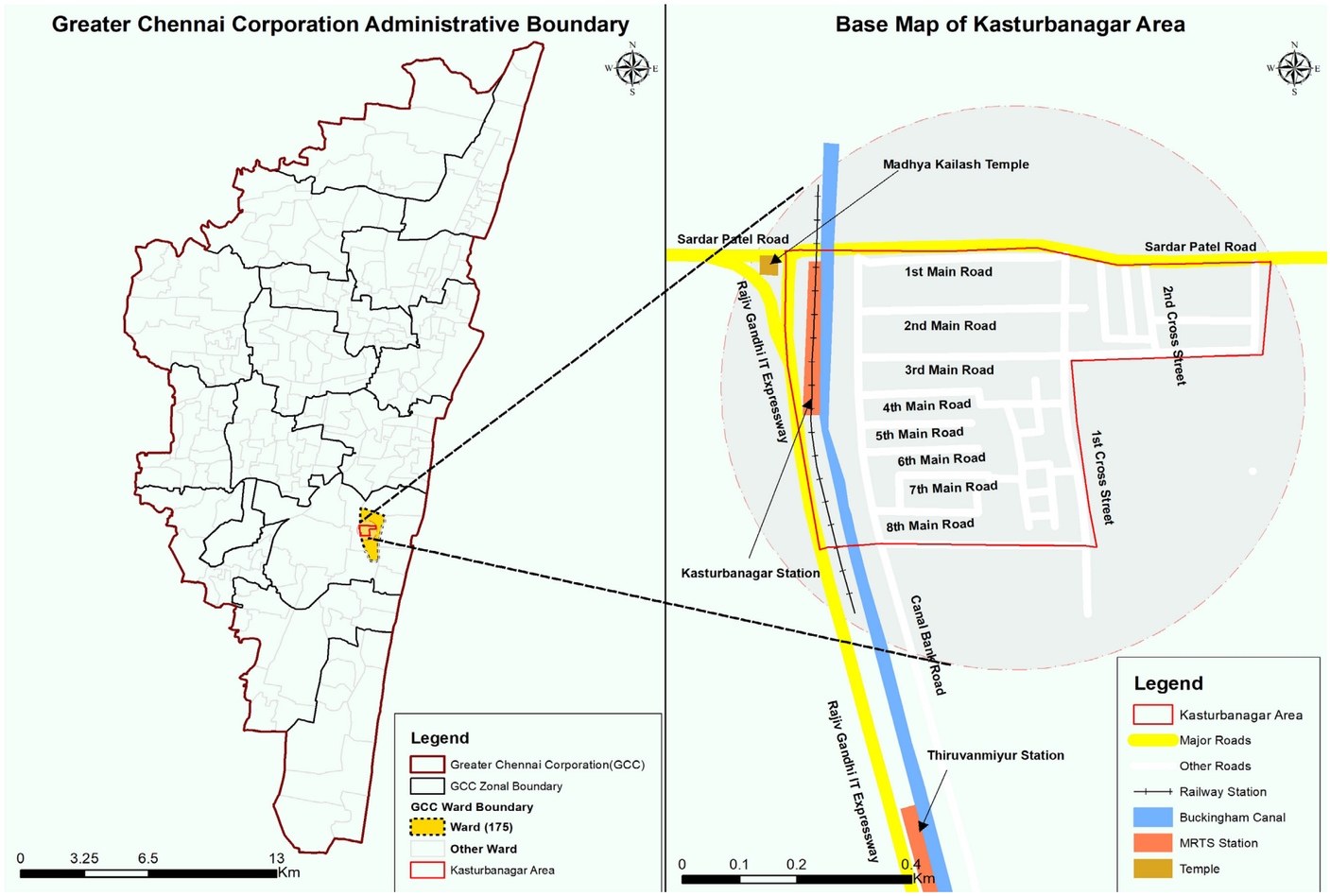
Lane composters: set up on the street to divert the organic waste away from bins and raise citizen awareness about value of the waste they generate.

Waste collaborative: Corporate EPR funds, private waste management company, and informal waste pickers will collaborate to manage/recycle dry waste in the local GCC-owned MRF.

Raising Ecowarriors: Local RWA and NGOs will run capacity building programs at local schools to encourage sustainable lifestyles.

PadCare: Recycle sanitary napkins collected from schools.

Recycle Cloth Bits: 100kgs of cloth waste will be diverted from dump yards per week by connecting 100 Tailors in Ward 173 to an aggregator.



Source: Okapi Research & Advisory

PILOT PROJECT

Clean Waterscape for Healthy Cities

OVERVIEW

This second pilot is focused on Chennai's valuable waterbodies and on strengthening the current system to trap waste using trash booms in the rivers.

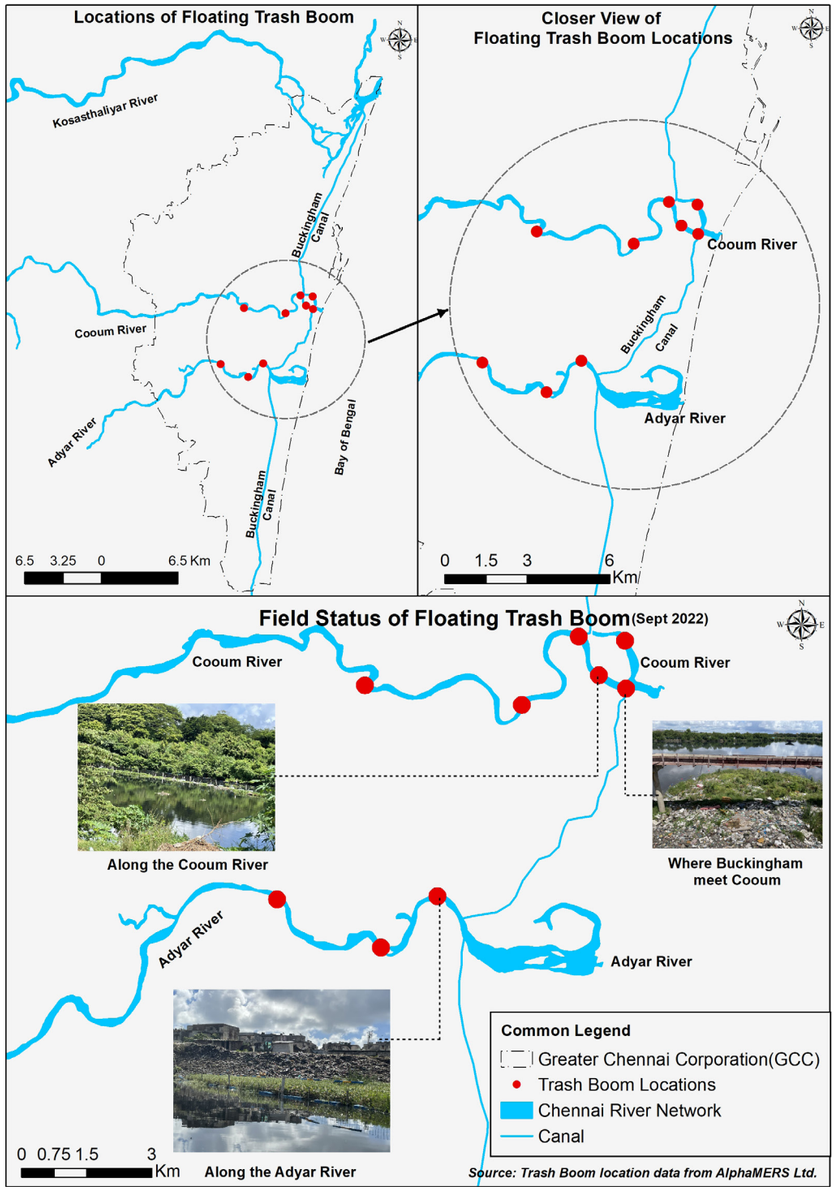
This pilot will invest in research, implementation and post implementation management and processing requirements as follows:

Introduce additional trash booms in Chennai's waterbodies (including, Buckingham Canal, lakes, any other strategic locations along the rivers)

- Requires a pre-assessment to identify ideal locations for the intervention.
- Post implementation maintenance plan is needed - dedicated funds, responsible agency(ies), regular cleaning schedule, community monitoring, bi-yearly infrastructure maintenance.

Study the waste collected from the trash booms to characterize and find best methods to process the degraded waste, avoiding disposal into dump yards.

- Encourage collaborations between research institutions like IIT Madras, Anna University and GCC to collect and study samples from multiple locations.
- Explore potential livelihood opportunities via use of waste collected like the water hyacinth.



Source: Okapi Research & Advisory

Endnotes

1 Circularity Informatics Lab. (2022). Circularity Assessment: Chennai, India. University of Georgia, Athens, GA, USA. https://resilientcitiesnetwork.org/downloadable_resources/UR/SP/2022/Urban-Ocean-CAP-Report-Chennai.pdf

2 Resilient Chennai (2019), Chennai City Resilience Strategy, https://resilientchennai.com/strategy/

3 Greater Chennai Corporation (GCC). (2021). City Action Plan. Solid Waste Management Department

4 Ibid.

5 Circularity Informatics Lab. (2022). Circularity Assessment: Chennai, India. University of Georgia, Athens, GA, USA. https://resilientcitiesnetwork.org/downloadable_resources/UR/SP/2022/Urban-Ocean-CAP-Report-Chennai.pdf

6 Ibid.

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