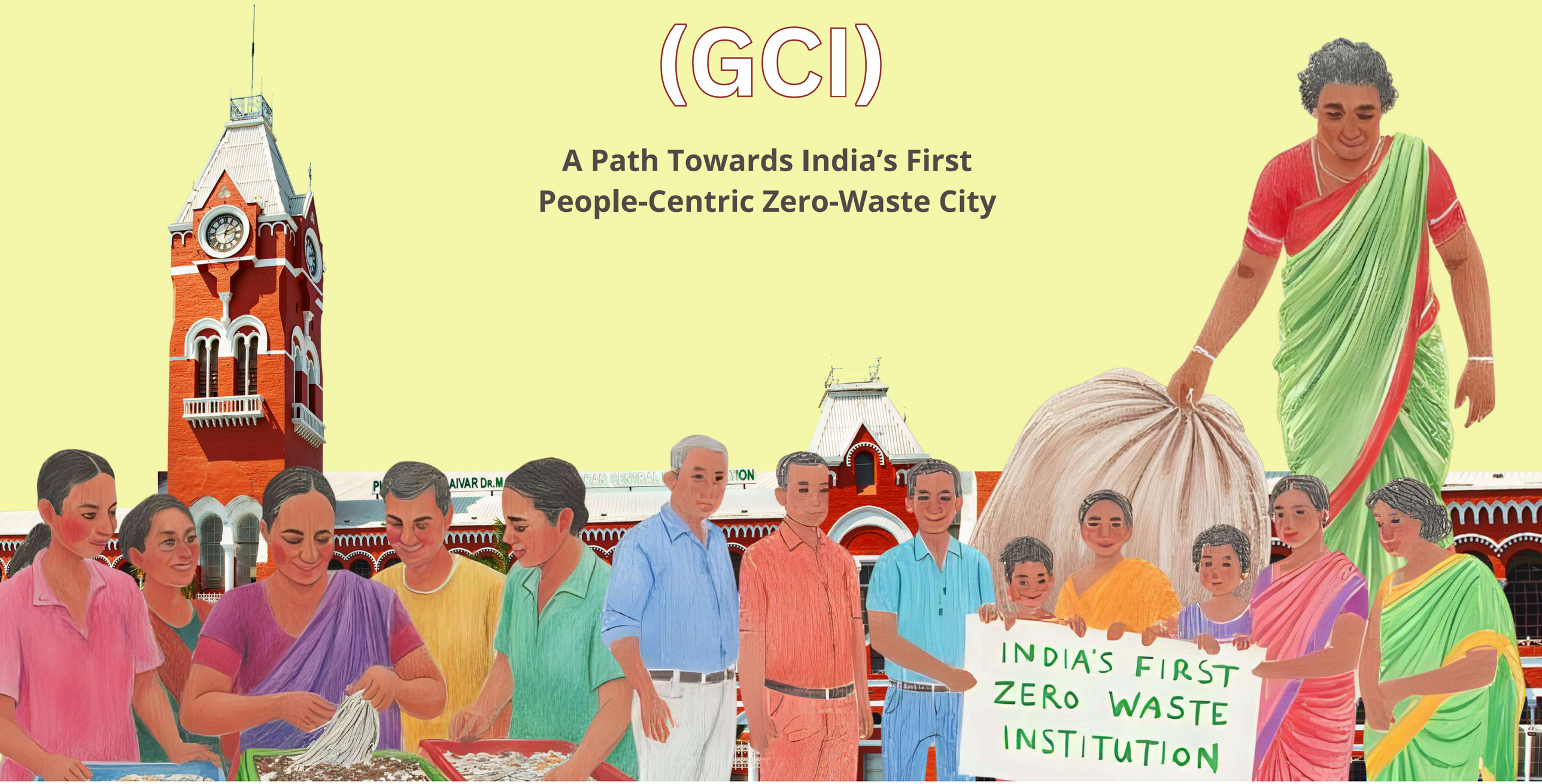
Green Chennai Initiative (GCI)

A Path Towards India's First People-Centric Zero-Waste City



A Proposal by Federation for North Chennai Residents Welfare Association

Green Chennai Initiative (GCI)

A Path Towards India’s First People-Centric Zero-Waste City

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Section 1: The Proposal

“Zeroing In” on “Zero Waste”

1

Zero waste is both a goal and a plan of action. The goal is to ensure resource recovery and protect scarce natural resources by **ending waste disposal in incinerators, dumps, and landfills etc.**

2

The plan encompasses **waste reduction, composting, recycling, reuse, changes in consumption habits, and product redesign.**

3

It is a revolution in the relationship **between waste and people. It is a new way of thinking** that aims to **safeguard the health** and improve the **lives of everyone who produces, handles, works with, or is affected by waste—** in other words, all of us.

Comprehensive Green Chennai Initiative Roadmap

1 Zero waste goes *beyond recycling programs and prioritizes the redesign of products.* If it cannot be reused, composted, or recycled, it just should not be produced in the first place!

2 Separate collection of waste into *"Red, Green and Blue" bins* followed by *decentralised processing of organics* is the key to complement the recycling efforts which ensures a stream of clean, high-quality material which in turn enables the *creation of useful products* (compost and biogas) from the largest fraction of municipal waste and also improves the dry waste recycling rate.

3 Non-recyclable or *non-biodegradable waste has no place* in the "zero waste" plan and should be *phased out* from production rapidly.

Characteristics of MSW in Chennai

MSW (Municipal solid waste) in Chennai

7,600 TPD[1]

Biodegradable waste (5,160 TPD) 68%[2]

Kitchen Waste

Garden Waste

Soiled Paper

House Sweeping Dust

Coconut Shells etc.

Non-biodegradable waste (2,280 TPD) 30%

Paper

Glass

Metal Objects

Plastic

Rubber etc.

Domestic hazardous waste & E-waste (160 TPD) 2%[3]

Paint Drums

Pesticide Cans

CFL/LED bulbs

Used Batteries

Used Needles & Syringes etc

Sector-wise Breakdown

of Waste Generators

- Roughly *68% or about 5,160 tons of garbage* produced in Chennai is from residential areas, including individual homes and apartment complexes. [4]

- This is followed by *16% or 1,200 tons* of waste from commercial establishments, such as malls, bus stands, markets, and amma canteens, as well as *1,060 tons (14%)* of waste from educational institutions, marriage halls, and *2% (151 tons)* of waste from industries. [4]

68%
5,160 tons

Residential areas, including individual homes & apartment complexes.

16%
1,200 tons

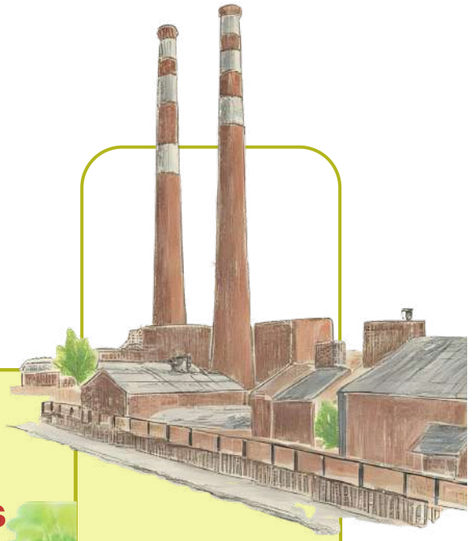
Commercial establishments such as malls, bus stands, markets, and amma canteens.

14%
1,060 tons

Educational institutions, and marriage halls

Industries

2%
151 tons



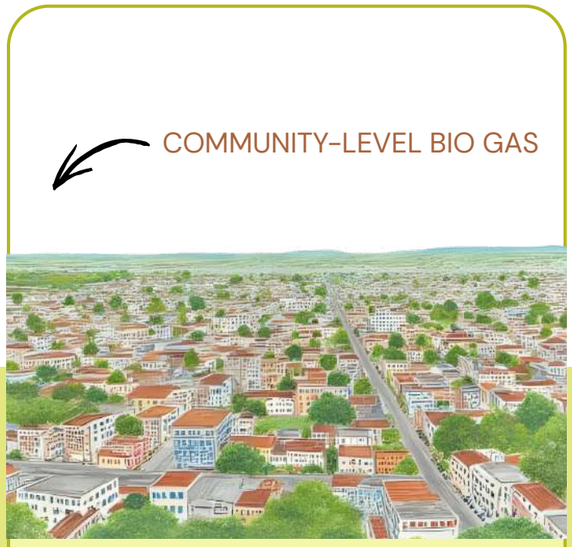
Sector-wise Waste Management

- Zero waste relies on using such *micro-level data for strong community action* to *determine the type of waste management programs* for each of these sectors.

1 RESIDENTIAL

It begins with **residents** actively **participating in the programs** and the government facilitating it with **policy incentives** and **subsidies** for consuming sustainably, minimizing waste, separating discards, and composting at home.

2 COMMUNITY/STREET WARD



This is followed by composting and biogas production at the community/street/ward level.

3 HOTELS, HOSPITALS, & FUNCTION HALLS

Followed by larger Compressed Biogas Units to process waste from bulk waste generators, such as hotels, hospitals, and function halls.

Wet Waste Management

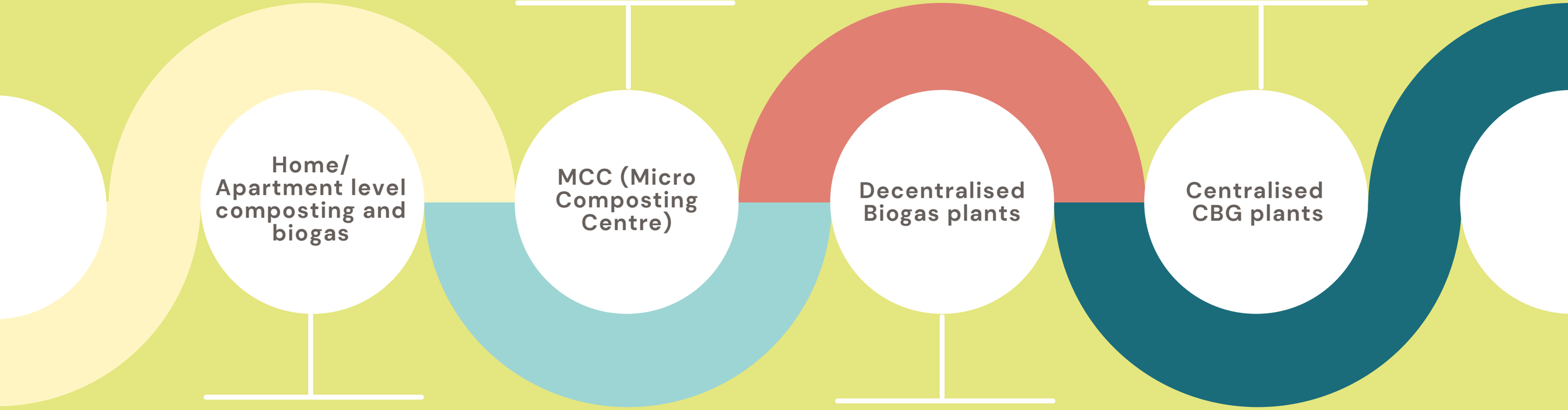
at the Core of Green Chennai Initiative

Waste handled by MCC (Micro Composting Centre) with 302 units of 5 tons each - 1510 TPD

1510 TPD

Waste managed by 20 centralised CBG plants of 100 tons each - 2000 TPD

2000 TPD



1050 TPD

Waste handled at residential level @ 30% of wet waste from residences (via incentivising and subsidising individual home/apartment level composting and biogas) - 1050 TPD

600 TPD

Waste handled by decentralised Biogas plants through 120 units of 5 tons each - 600 TPD

Total wet waste managed - **5,160 TPD**

Dry Waste Management

- Once the wet waste management is in place, new opportunities for the efficient management of dry waste emerge.

2300 TPD

Dry waste handling at Dry waste collection, sorting and aggregation facilities with forward linkages to recycling centers through 46 units of 50 tons capacity each - 2300 TPD

160 TPD

Domestic hazardous waste handled through 15 hazardous waste management facilities - 160 TPD

Total dry & domestic waste handled -

2,460 TPD

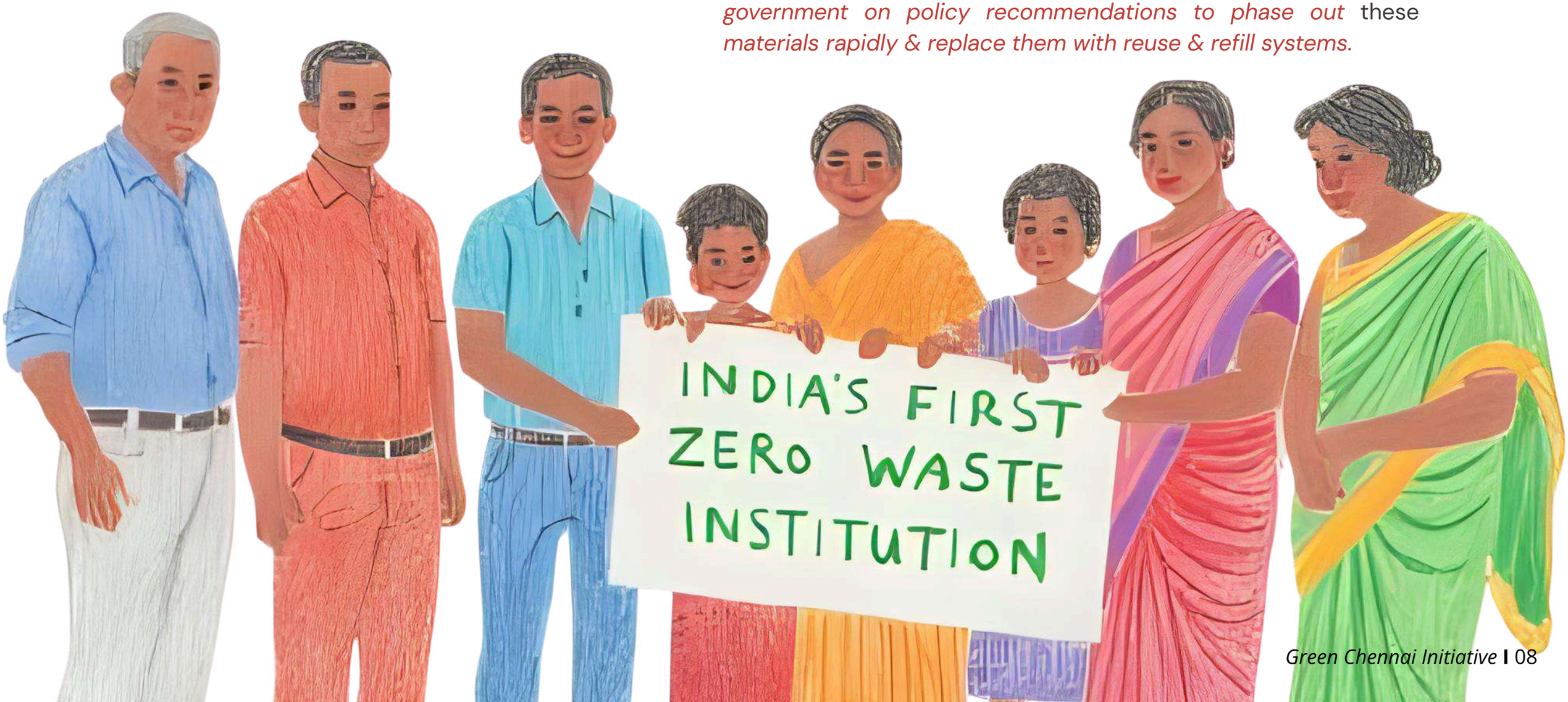
India's First

"Zero Waste Institute"

Chennai can show leadership in the establishment of *"Zero Waste Institutes (ZWI)"* that produce research and policies to push businesses and manufacturers to sustainable production processes.

- The *residual fraction*—that which is left over because it is either too toxic to be safely recycled or is made out of non-recyclable materials—becomes evident, and *product design mistakes and inefficiencies can be studied and corrected*.

- For example, Materials such as single-use paper cups lined with plastics & the Multi Layered Plastics (to name a few) need to be phased out, & the *ZWI will provide feedback to the industry* & the *government on policy recommendations to phase out* these *materials rapidly & replace them with reuse & refill systems.*



Green Jobs & Startups Potential

WET WASTE MANAGEMENT

Job created per MCC unit	8
Total jobs created by 302 MCC centres	2,416
Min no. of Green Startups created	100
Job created per biogas plant	5
Total jobs created by 120 biogas plants	600
Min no. of Green Startups created	40
Job created per ton of waste managed at residential level	2
Total jobs created with 1050 TPD wet waste at residential level	2,100
Min no. of Green Startups created	70
Jobs created per CBG centre	20
Total jobs created by 20 CBG plants	400
No of Green Startups created	20
Min no total new jobs created in wet waste management	5,516
Total no of Green Startups in wet waste management	230

DRY WASTE MANAGEMENT

Job created per MRF facility	15
Jobs created by 46 MRF facilities	690
No of Green Startups created	46
Jobs created per hazardous waste management facility	10

Jobs created by 15 hazardous waste management facilities	150
No of Green Startups created	10
Total new jobs from dry waste	840
Total new start-ups from dry waste	56

Total jobs created by Chennai's ZWI: **6,356**

Total new startups created by Chennai's ZWI: **286**

Other Key Benefits of

GCI Model

1 CLIMATE

1.3 **tons of CO2**

offset/year and equivalent generation of carbon credits1 (via avoidance) [5]

2 ORGANIC MANURE PRODUCTION

3,39,012

tons of organic manure/year [6]

3 WASTE REDUCTION

Per capita waste reduction of at least

15% [7]

4 DIRECT BENEFITS FOR

2 **million people**

and overall improvement of public health for all Chennaites. [8]

5 SAVINGS

Saving 1,000-1,400 rupees per ton of waste handled, translating to a savings of

277-388

crore rupees per year for the GCC [9]

Section 2: The Roadmap

Green Chennai Initiative Principles Fulfilled

Pathway for Chennai to Become

India’s first Zero Waste City

Launch a “zero waste app” for Chennai

Enhancing communication in schools, colleges and to the public via awareness videos, advertisements and “zero waste toolkit” booklets distrubution.

Leverage India’s first Zero waste Institute to make policy interventions for phasing out problematic and single use plastics prioritising circularity of materials.

Use AI for process efficiency

Convert each MCC & MRF centre into a public space for learning & training on waste management.

Encourage public participation via green ambassadors program and enroll volunteers @ 15 ambassadors/ ward.

Zero Waste Day’s celebration every month.

Integration of waste pickers

Tap the funding from EPR, CSR, and various central government schemes such as SWM, Smart cities Mission etc.

Section 3: The Dangers of WTE

Why No to WTE?

1 They pollute air, water, and soil by **releasing SOx, NOx, PM 2.5, PM 10, HCL, heavy metals, dioxins, furans, etc.**

2 Waste burning is primarily responsible for **high PM2.5 chloride** and subsequent haze and fog formation, impacting AQI in Delhi.

3 **Health Impacts:** The health impacts of WTE incineration include respiratory problems, asthma, headaches, skin ailments, cancer, & the particular vulnerability of children & the pregnant womb.

4 The four WTE incineration plants in Delhi emit CO2 equivalent to the emissions from approximately **30 lakh passenger cars**. The climate action plans of major cities in India, including Chennai and Mumbai, have clearly recommended against WTE incineration.

5 The proposed WTE in Kodungaiyur falls in **an identified wetland** with over 52 species of documented birds.

6 Creates a **"lock-in" period of 25 years,** making waste reduction and minimisation goals impossible.

Economic, Legal and Operational Challenges

Operational Inefficiency: CSIR-NEERI report submitted to the National Green Tribunal (NGT) points out that high moisture content and low calorific value are unsuitable for mass incineration

Economic Burden: the highest setup cost and operational cost compared to any other waste management system for the corporation. Also, it is the costliest electricity generated.

Legal Violations: CPCB, NEERI, NYT – Emission and permit violations.

Compliance Failures: CPCB 2025 – None of the existing 21 WTE plants in India comply with the emission parameters of CPCB. (Including Hyderabad and Delhi WTEs)

Global Rejection[12]

1

Livelihood Disruption: the least job creation and 40 times fewer jobs compared to the “zero waste” program

2

Urban Heat Islands: WTEs create urban heat islands due to the emissions of heat and chemical fumes, exacerbating heat waves.

3

G**lobal Rejection:** No new WTE has been built in the US since 1995, and more than half of the WTEs shut down in the last 30 years. All the subsidies and funding for WTEs stopped in the EU because of pollution and climate concerns.

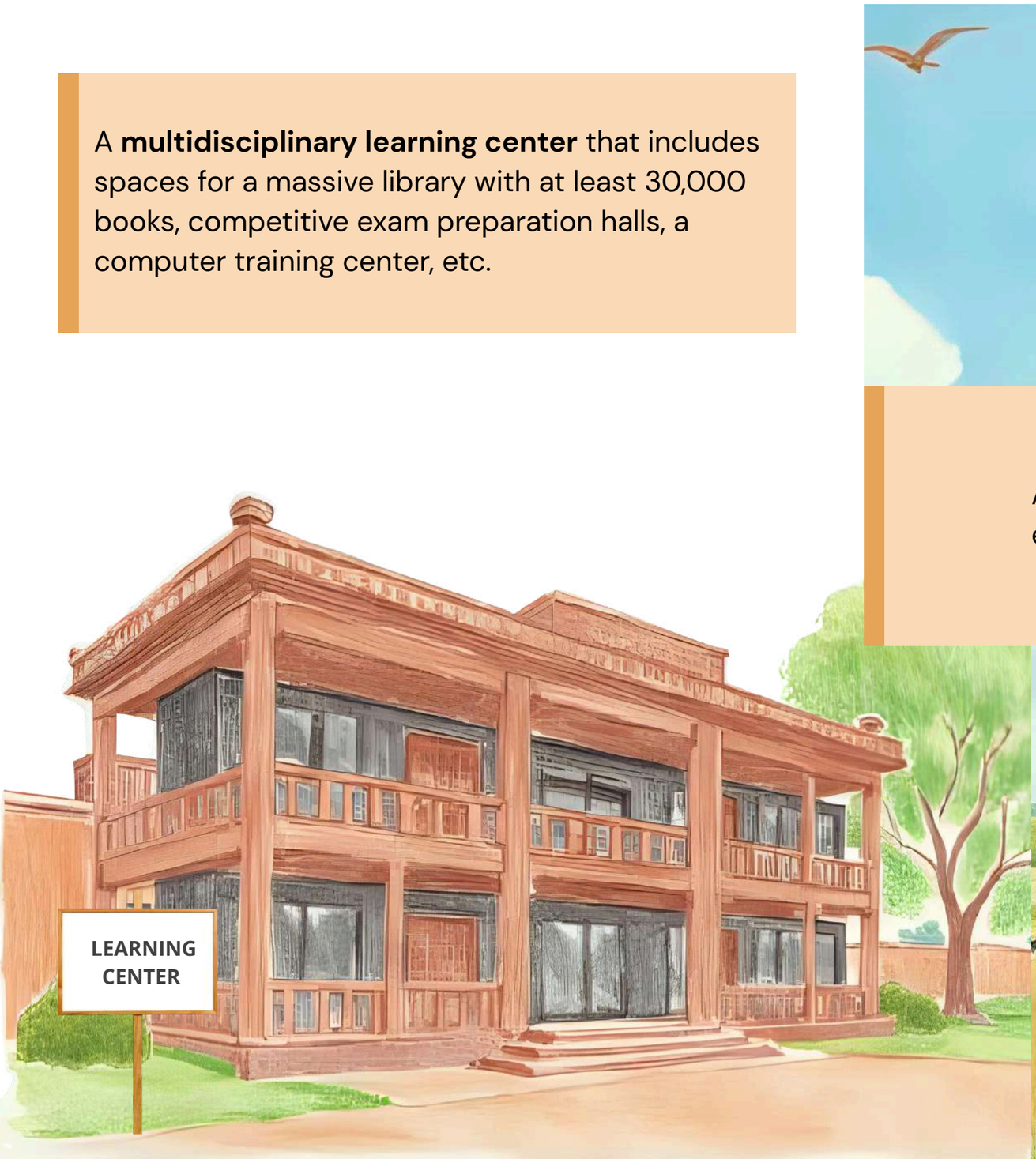
Section 4: A New Chapter

Kodungaiyur- India's First Just Transition Model

in waste management sector

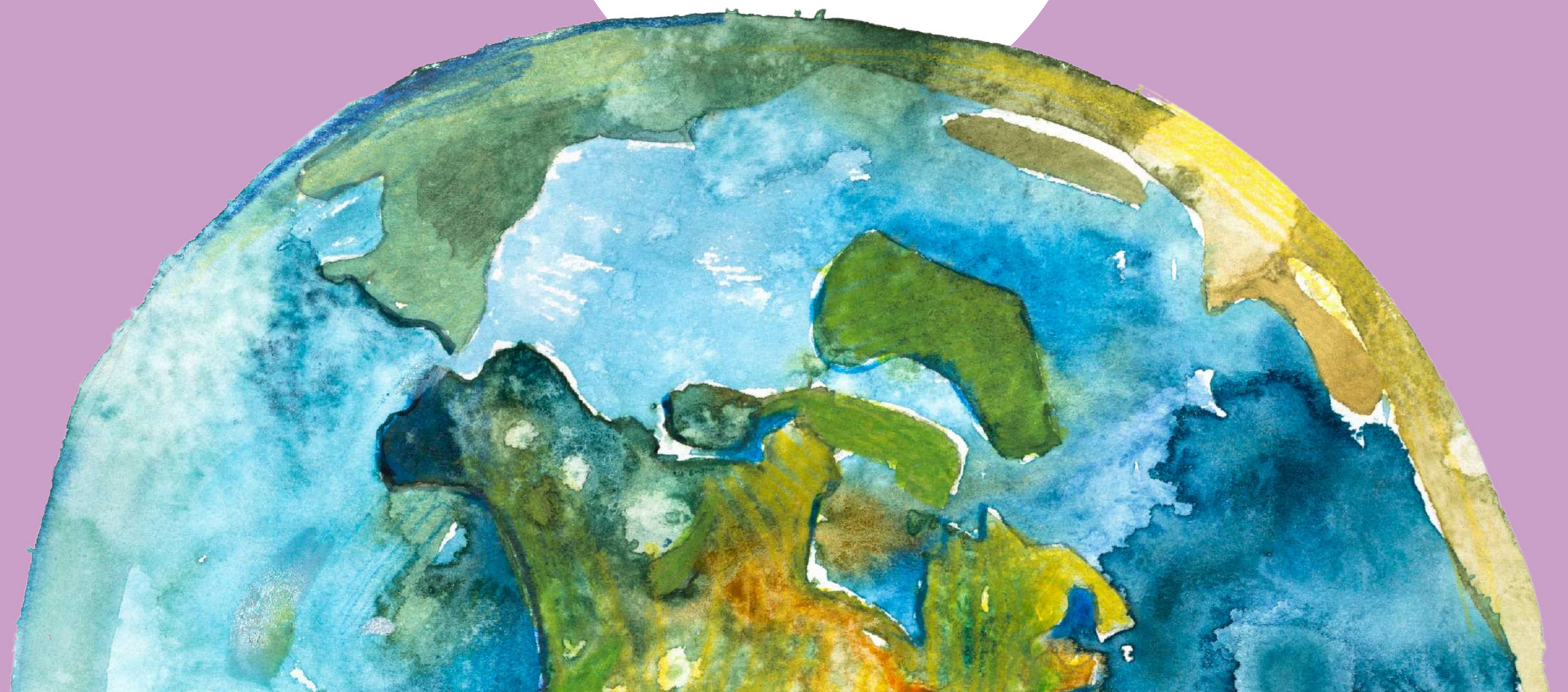
Post-biomining, we propose the following two plans to be established in that dumping ground:

A **multidisciplinary learning center** that includes spaces for a massive library with at least 30,000 books, competitive exam preparation halls, a computer training center, etc.

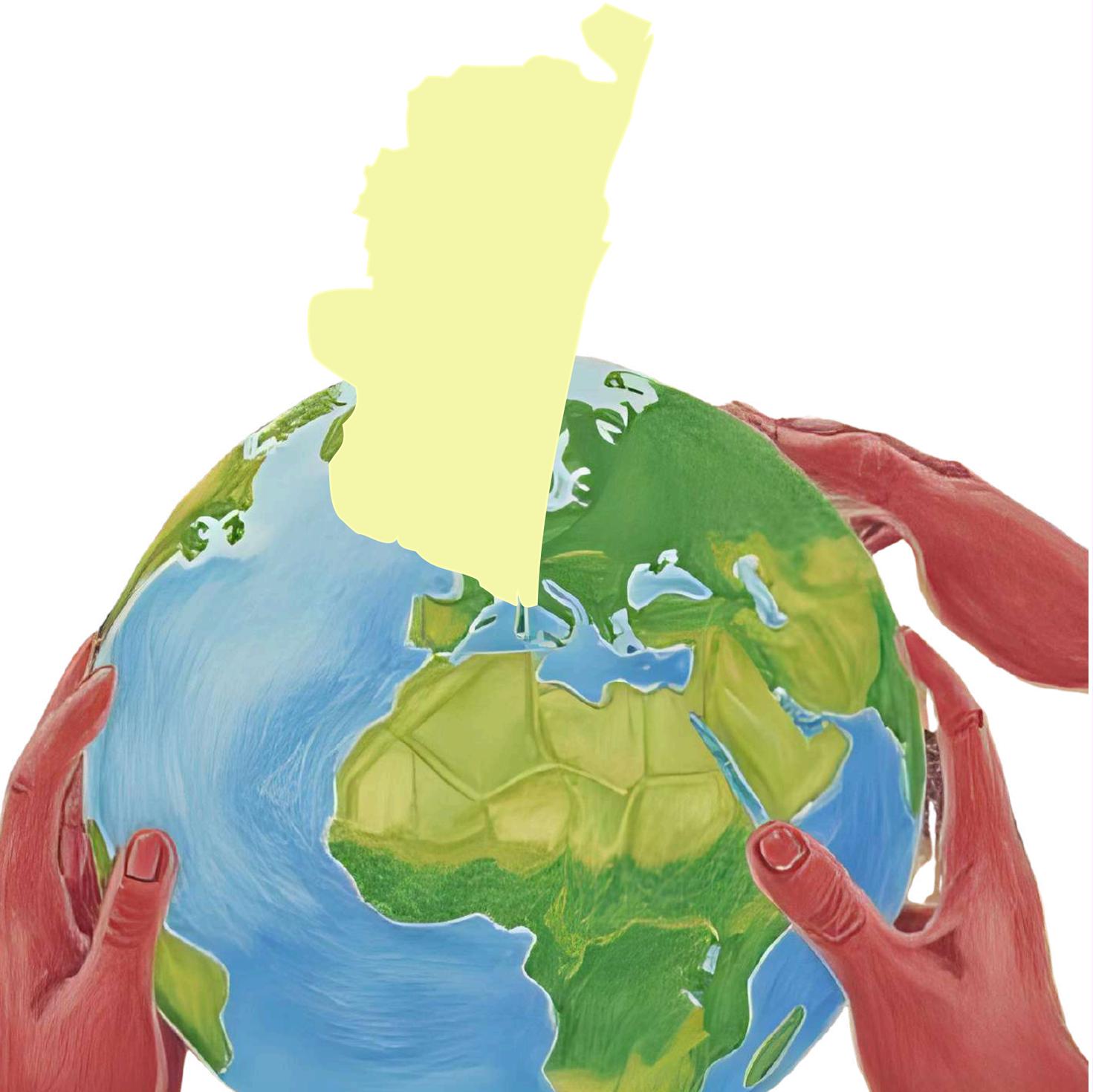


An **Eco-park** with an exclusive bird-watching site.

Section 5- Global Leader



Becoming a Global Leader



This initiative is derived from various proven and successful waste management models, and GCI possesses a national and international scope for replication and emulation.

This initiative aims to take the Greater Chennai Corporation to be one of the pioneers in the global waste management landscape and create a pathway for countries to learn lessons from the GCC.

Similarly, while the GCI aims to attain a net-zero in waste management, the proposed WTE will be a “lock-in” of capital investments for the next 25 years and make waste reduction and minimisation goals impossible.

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