



# 2023-24

## Chennai Resilience Initiatives

### PROJECT UPDATE



**CHENNAI  
RESILIENCE  
CENTRE**



**Adrienne Arsht-  
Rockefeller Foundation  
Resilience Center**



**CARE EARTH TRUST**  
Biodiversity People Conservation

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### Funding & Strategy



### Research & Strategy



### Implementation & Research



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TNULM – Tamil Nadu Urban Livelihoods Mission	Former Executive Director: Ms. B. Priyanka, IAS State Mission Manager: Mr. Subash Babunath
Tamil Nadu Green Climate Company	Chief Executive Officer: Dr. S. Viswanathan
Sempulam Sustainable Solutions	Founder & CEO: Dr K Vijayalakshmi Agri-business Manager: Ms. Parimala Thirumurugan Senior Consultant: Mr. Subramanian Procurement Manager: Mr. Vetriselvan Program Assistant: Ms. Janani Sivajothi
Indo-German Centre for Sustainability (IGCS)	Visiting Faculty IIT Madras (Landuse/Urbanisation): Dr. Christoph Woiwode
Information and Resource Centre for the Deprived Urban Communities (IRCUDC)	Founder: Ms. Vanessa Peter Program Head/Lead Researcher: Dr. Nundiyny A D Program Manager/Policy Researcher: Mr. Joel Shelton
The Netherlands Enterprise Agency (RVO): Dutch Ministry of Economic Affairs and Climate Policy	Program Manager - Water as Leverage: Dr. Sandra Schoof
Pudiyador	Director of Operations: Ms. Ashwini Chidambaram
Earthonomics	Sustainability Advisor: Mr. Girish R. Visvanathan
Valmiki Nagar Association	Secretary: Mr. Santhosh
Residents of Kasturba Nagar Association (ROKA)	Executive Committee Member: Ms. Saranya Secretary: Ms. Janani Venkitesh
Kalakshetra Colony Welfare Association (KCWA)	Executive Committee Member: Ms. Bharati Sadasivam
AGS Colony Residents Association	Secretary: Ms Geetha Ganesh
Chennai Resilience Centre /Care Earth Trust/ Okapi Reasearch & Advisory Team	Founder & Managing Trustee – Care Earth Trust: Dr. Jayshree Vencatesan Chief Resilience Officer: Mr. R. Krishna Mohan Lead Researcher/Advisor: Dr Parama Roy Senior Research Associate: Ms. Akshaya Ayyangar Senior Project Manager: Mr. Ramamoorthy Programme Manager: Mr. A. Ramachandran Project Coordinator: Ms. Srimathi Balasubramani Research Associate: Ms. Ayesha Ajmal



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# Chennai Urban Farming Initiative (CUFI)

## - 2023 Highlights

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*Since 2020, Chennai Resilience Centre (CRC)'s flagship project on urban farming has been actively transforming Chennai's urban spaces, communities, and neighborhoods to become more resilient to risks related to climate change, specifically heat, food insecurity and under/unemployment. Following are some of the highlights of our journey in 2023.*

### NEW FARMS SET UP

**169**  
farms

Including 8 model farms at:

- 15 Homeless shelters
- 144 Integrated Child Development Services Centres
- 3 Resident Welfare Associations
- 6 Govt. aided schools
- 1 Resettlement Colony



Vegetable Garden at an ICDS Centre



Farm at the Anbagam Shelter for the Homeless & Mentally Ill



TNULM Residential Training Programme at the Centre for Indian Knowledge Systems (CIKS) Farms



ICDS teachers learning to prepare leaf-based biopesticide at an Advanced Capacity Building Workshop

## TRAINING & CAPACITY BUILDING

**245**

Women SHG  
Trainees

trained in Rooftop Vegetable Farming in partnership with TNULM.

**706**

Teachers,  
community  
members

from ICDS centres, government schools, homeless shelters, resident associations trained in Rooftop Vegetable Farming

**50**

Calls

for garden help across Chennai since June 2023.



Recognising that many city residents do not have time for gardening and require garden help, **CRC signed an MoU with The Tamil Nadu Urban Livelihoods Mission in 2022** to train women from Women's Self Help Groups to provide garden support. In 2023, CRC supported these women to find work and supplement their income. This project has the potential to reach 5 million women already registered with the mission across the state of Tamil Nadu.



**CRC is also providing advanced training to teachers and helpers at Integrated Child Development Service Centres (ICDS)** or day care centres run by the government in kitchen gardening. Training sessions have covered topics including advanced organic garden techniques and nurturing medicinal and herbal plants with teachers from **120 centres**. The sessions were aimed at helping the centres self-sustain their gardens in the long term.

## MAINTENANCE AND INCENTIVIZATION

Going beyond just setting up gardens, CRC has understood the importance of offering maintenance support. We are providing '**Maintenance Kits**' to all our existing beneficiaries and have set up a rigorous on-site monitoring and feedback system to provide solutions to challenges, and to motivate beneficiaries.

# 30

Best Gardener  
Certificates &

# 18

Composting  
Champion  
Certificates

have been awarded to ICDS teachers as part of the Monthly Garden Champion competition conducted by CRC. The competition sought to encourage the efforts of teachers and helpers at centres and motivate others.



Composting Champion Certificate Awardee

## Reach and achievements since 2020

*We have focused on working with vulnerable groups to create healthy, self-reliant communities by improving food security and livelihood opportunities.*



48

Homeless  
Shelters

1203  
residents 142  
Staff



267

Integrated Child  
Development  
Services Centres

11,380 children  
& their mothers+  
551 staff



3

Resettlement  
Colony

750 families



10

Govt. Aided  
Schools (incl. a  
School for the  
Deaf & Blind)

2180 children +  
staff



3

Resident  
Welfare  
Associations

10 families



3

Informal  
Settlements

220 families

## IMPACT

*The varied socio-environmental benefits of the CUFI program reinforce the need for such efforts.*



### Increases access to fresh & nutritious food

Model farms are yielding anywhere between 15kgs and 100kgs of produce in six to eight months depending on the nature of the site and level of maintenance. Produce from smaller gardens, especially in ICDS centres are directly contributing to the mid-day meals. These gardens are the only source of greens for most centres.

### Creates greener & cooler roofs

CRC is collaborating with Earthnomic Engineers to measure the impact of terrace gardens on heat mitigation and thermal comfort. Findings reveal that on an average during sunshine hours (6am to 6pm), the room directly below the garden is 2-3°C cooler than the room below exposed terrace space, with a maximum temperature difference going up to 7 °C.



### Acts as an education tool

Our kitchen gardens are serving as learning tools at the schools and ICDS centres where children are engaging in garden maintenance – watering the plants, de-weeding etc. At the ICDS centres, teachers are using the garden to teach the children to identify colours, shapes, sizes and different vegetables and greens.



## Promotes pro-sustainable behaviour in the community

Teachers and helpers at the ICDS centres are using their kitchen gardens to nudge green behaviour among the area mothers. Specifically, they are encouraging the mothers to segregate waste and make compost at home and/or bring their segregated bio-degradable waste to the centres to compost there.

## Improves mental health

Coordinators from homeless shelters with kitchen gardens report seeing improvement in emotional wellbeing and mental health of residents especially children and those with psychosocial issues.



## Creates employment opportunities

The kitchen gardens are generating employment opportunities for women from vulnerable communities as garden help for residents who have gardens but don't have the time or technical skill to maintain them.

*"Since I have started doing gardening work, I am able to earn an income and I don't need to depend on my husband. I am able to buy my kids whatever I can. Earlier, I used to fear traveling alone but after I started to work I am more confident of myself and know that I can do it.."*

- Manjuparkavi, a Madras Mali trainee and member of an SHG registered with TNULM.



## THE PATHWAY TO SUSTAINABILITY & EMPOWERMENT

In 2023 CRC launched an ambitious movement towards a **Greener & Cooler Cities Mission**, the "Grow Your Own Edible Urban Garden" awareness campaign, targeting middle to upper-income neighborhoods in Chennai. This campaign encourages residents to embrace rooftop gardening, thereby playing a pivotal role in cooling and greening their urban environment. Within this green initiative, we developed the **Madras Mali** capacity building program with the aim to foster community empowerment and environmental stewardship. Spearheaded by the Chennai Resilience Centre, in partnership with Tamil Nadu Urban Livelihoods Mission (TNULM) and Sempulam Sustainable Solutions, Madras Mali focuses on providing Women's Self Help Groups with the skills needed for urban vegetable farming and gardening. This not only furthers the cause of the Greener & Cooler Cities Mission by expanding the adoption of rooftop gardens but also opens up new livelihood opportunities for vulnerable women. By equipping them with valuable gardening skills, the Madras Mali program enables these women to enhance their personal food security while contributing to the city's overarching goals of cooling and greening. Through such initiatives, Chennai is setting a sustainable example, demonstrating how urban communities can flourish both environmentally and socially.

RWA Campaign Poster for the Greener & Cooler Cities Mission.

**Urban Thottam**

## Grow your own Edible Urban Garden!

WWW.URBANTHOTTAM.COM

Each kit is designed to be modular, portable and lightweight with crops carefully selected for local climate conditions. It's perfect for beginners!

**KIT CONTENTS INCLUDE:**

- 40kg Potting Soil Mix
- 10kg Vermicompost (Organic Fertilizer)
- 50g Neem Oil Soap (Organic Pesticide)
- 5 Varieties Greens + 6 Varieties Vegetable Seeds
- 2 Vegetable Grow Bags (12' x 12')
- 3 Greens Grow Bags (15' x 9')

**To order a DIY EDIBLE GARDEN KIT**  
**WhatsApp: +91 98400 12345**  
**Rs. 1,500/- per kit\***

Space Required per kit: 10sqft | \*Minimum Order: 2 kits

CHENNAI RESILIENCE CENTRE | CARE EARTH TRUST | Adrienne Arsht-Rockefeller Foundation Resilience Center | SEMPULAM SUSTAINABLE SOLUTIONS

Instagram Campaign Posters for the Madras Mali initiative.

**madras mali**

Need a green thumb to help your garden grow?  
**Hire an Expert Gardener Today!**  
**WhatsApp: +91 91765 88007**

**madras mali**

**Garden Setup:**  
 Backyard / Rooftop / Balcony;  
 Traditional pots or grow bags.

**Garden Maintenance:**  
 Repotting, Pruning, Weeding,  
 Fertilizer Application

**Bio-Pest Control:**  
 Onsite bio-pesticide preparation  
 with common kitchen ingredients!

**Hire an Expert Gardener Today!**  
**WhatsApp: +91 91765 88007**

**madras mali**  
**WhatsApp: +91 91765 88007**

THE MADRAS MALI - SOWING EMPOWERMENT INITIATIVE  
 IS BROUGHT TO YOU BY:

TNULM | Adrienne Arsht-Rockefeller Foundation Resilience Center | SEMPULAM SUSTAINABLE SOLUTIONS  
 CHENNAI RESILIENCE CENTRE | Urban Thottam | CARE EARTH TRUST

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# Chennai Resilience Centre (CRC)

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The Chennai Resilience Centre (CRC) is an organization dedicated to building an **Enlightened, Just, and Integrated** Chennai. CRC is a unit of Care Earth Trust and is fostered by Adrienne Arsht-Rockefeller Foundation Resilience Center (AARFRC) and Resilient Cities Network (RCN).

CRC aims to promote resilience in individuals, communities, and institutions to address the challenges posed by rapid urbanization and climate change in Chennai. CRC's mandate is to research, develop and implement resilience-building projects for the city of Chennai. Chennai's Resilience Strategy, developed with strategy partners Dalberg Advisors and Okapi Advisory, was released by the Greater Chennai Corporation in June 2019.

The strategy consists of five pillars, 17 Goals, 86 Actions. The Five Pillars are (i) Healthy and Planned Urbanisation; (ii) Water Systems; (iii) Disaster Preparedness; (iv) Vulnerable Communities; (v) Governance Ecosystems. It identifies seven flagship projects for the city, including the 'Chennai Urban Farming Initiative' (CUFI).



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*The Resilience Strategy is available at*  
[www.resilientchennai.com/strategy](http://www.resilientchennai.com/strategy)

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# ONE VISION

To make Chennai  
*Enlightened. Just. Integrated.*



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# A. Chennai Urban Farming Initiative (CUFI)

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For greater details on CUFI visit:  
<https://urbanthottam.com>



CUFI aims to build Chennai's resilience to climate change and create healthy, self-reliant communities by improving food security and livelihoods, especially among the urban poor in the city. It was conceived with four project components which complement each other (*see alongside*).

**The objectives of the initiative are to:**

- Improve food and nutritional security amongst children and women from low-income communities;
- Provide green livelihood opportunities for women and youth from low-income neighbourhoods through targeted skill development and training programs focused on gardening;
- Make the city greener and cooler through the introduction of rooftop and, on-the-ground vegetable gardens.

The focus up to 2023 was to **a)** set up organic mobile vegetable gardens in institutions serving marginalized communities; **b)** ensure these gardens sustain in the long term; **c)** initiate larger and model gardens under the other project components, namely, School Kitchen Gardens, *Patchaimadi Thottams* and *Makkal Thottams*; **d)** upskill women as urban gardeners and support them to find jobs; and **e)** begin to understand and document primary and co-benefits such as climate adaptation potential, increased access to nutritious food and green spaces and improved mental health and general well-being.

*Project Components of the Chennai Urban Farming Initiative*

**P R O J E C T   C O M P O N E N T S**

***Greener Schools***

School Kitchen Gardens provide access to safe and nutritious food, and build environmental awareness among children from vulnerable communities.

***Green Livelihoods***

*Makkal Thottams* aim at job creation for women and youth from low-income communities through community urban farms.

***Greener & Cooler Cities***

*Patchaimadi Thottams* takes urban farming to city rooftops with the aim of cooling the city, encouraging green behaviour, managing rain/storm water better, and increasing local food production.

***Gift a Garden***

Fund raising and provision of mobile vegetable garden kits to vulnerable families.



*Mobile Vegetable Garden Kits deployed at the Perumbakkam Resettlement Colony Model Farm.*

CUFI is being implemented through a multi-stakeholder partnership led by Chennai Resilience Centre (CRC) – Care Earth Trust (CET), supported by Adrienne Arsht-Rockefeller Foundation Resilience Center. Other partners include:

- Okapi Research & Advisory
- Resilient Cities Network
- Integrated Child Development Scheme (ICDS), Government of Tamil Nadu
- Greater Chennai Corporation's (GCC) Shelter for Urban Homeless (SUH) Staff
- Tamil Nadu Urban Livelihood Mission (TNULM), part of the Tamil Nadu Women's Development Corporation (TNCDW)
- Sempulam Sustainable Solutions
- Information and Resource Centre for the Deprived Urban Communities (IRCDUC)
- Earthonomics Engineers
- Pudiyador
- RWAs including Residents Association of Kasturba Nagar (ROKA), Valmiki Nagar Association, AGS Colony Welfare Association & Kalakshetra Colony Welfare Association.

#### **COLLABORATION WITH GREATER CHENNAI CORPORATION AND INTEGRATED CHILD DEVELOPMENT SERVICES**

CRC has got a Letter of Support from the Greater Chennai Corporation - Chennai District Office of the Integrated Child Development Services (ICDS) which administers the *Anganwadis* for all its programs including the Chennai Urban Farming Initiative. This is extremely important as it highlights GCC's and ICDS' interest and commitment to support implementation of nature-based solutions including vegetable gardens to address multi-pronged issues.

# 1. IMPLEMENTATION USING THE MOBILE VEGETABLE GARDEN KIT (MVGK)

CRC is employing 'Mobile Vegetable Garden Kits' to set up gardens. The contents of each kit are illustrated below in *Figure 2*. These kits are **modular, portable, space efficient, and scalable**. The crops have been selected based on suitability to local conditions, short duration to harvest (greens) and ability to sustainably produce nutritious vegetables. Under the CUFI initiative, organic Mobile Vegetable Garden Kits have been distributed to ICDS centres or *Anganwadis*, homeless shelters, schools and low-income communities in Chitra Nagar, Besant Nagar, Ramapuram and Perumbakkam. The garden kits were mobilised through **Sempulam**

Map of Farm Locations  
<https://bit.ly/cufimap>



**Sustainable Solutions**, an organisation that is committed to promoting sustainable farming and eco-friendly technologies. At the end of 2023 we continue to support **169 gardens** in 144 ICDS centres, 15 homeless shelters, 6 schools, 3 residents welfare associations and 1 resettlement colony.

Mobile Vegetable Garden Kit Components



MVG Kit flourishing on the rooftop of a house in an informal settlement.





*TNULM capacity building workshop conducted in Nungambakkam.*

## 2. BUILDING CAPACITY

CRC provides focused in-person training on kitchen gardening to all its beneficiaries. The training includes topics such as how to set up an organic kitchen garden, benefits of organic kitchen gardening, water and pest management, composting and maintenance. In addition, CRC provides refresher and advanced training. These training sessions are conducted by the CRC team and experts from Sempulam Sustainable Solutions. (See ["Table 1. Beneficiaries of the CUFI programme since inception" on page 26](#) for number of people trained).

- **Onsite training sessions** have been conducted for all the beneficiaries supported through CUFI till date. CRC also provides **advanced kitchen gardening sessions** for beneficiaries covering topics such as **advanced garden maintenance tips, waste segregation and composting, recycling and benefits of growing medicinal plants and flowers**. Nearly **120 ICDS centres** have received and continue to receive advanced garden training.
- **Capacity building sessions** (including a residential session at Sempulam Farms) were also held with **245 women from SHGs** registered with Tamil Nadu Corporation for the Development of Women. CRC

*TNULM Residential Training Report*  
<https://bit.ly/TNULM-1123>



*ICDS Refresher Course Report:*  
<https://bit.ly/ICDS0422>



*ICDS Advanced Training Report:*  
<https://bit.ly/ICDS0823>



is supporting interested women in finding jobs as garden help through resident welfare associations and our networks. From June 2023 till Feb 2023, CRC has received more than **50 calls for our Madras Malis**.

- The CRC team has also been conducting **a) basic / refresher gardening training sessions** for school children and staff in Government schools and **b) motivational sessions** for some centres and shelters based on request. The aim of these sessions is to get school children, staff and mothers associated with the ICDS centres, and residents of the homeless shelters involved in kitchen gardening.
- The training is supplemented with **short videos** that provide detailed information on nurturing the mobile vegetable garden kits. These videos are being periodically shared with our beneficiary groups via WhatsApp.

*Instructional Video Library:*

<https://www.youtube.com/@urbanhottam>



*Various capacity building sessions conducted for ICDS, GCC Shelter staff and women SHG members.*



## MOU WITH TAMIL NADU CORPORATION FOR THE DEVELOPMENT OF WOMEN (TNCDW)



An MoU was signed with **TNCDW** to conduct capacity building sessions for women from local SHGs on kitchen gardening through the **Tamil Nadu Urban Livelihoods Mission (TNULM)**. So far **245 women** have been trained over two years and from the last two batches, around **25 women** have been provided with kitchen gardening kits to first experiment with gardening in their own homes before providing help to others. Through this MoU CRC will also include SHG women who are interested in offering their services as garden help, on the [urbanhottam.com](http://urbanhottam.com) website. **This MoU provides us reach to 100,000 women in Self-Help Groups within Chennai, and 5 million women across the state of Tamil Nadu (relevant for any women-centric initiative, even beyond CUFI).**

On 14th August, 2023, CRC was honoured by Minister Udhayanidhi Stalin and TNULM for Empowering Self-Help Groups through Kitchen Gardening Training. A significant highlight of the function was the conferment of a certificate of appreciation to CRC, for its efforts to train women in Kitchen Gardening (from the inception of the program) and connecting them to potential customers.



*"The program and training I received have been a big help in boosting my income, providing valuable financial support for me as a housewife. While I had reservations initially about the training, I found the classes to be quite useful. I appreciate being a part of the community and hope that more women can benefit from this project, gaining financial independence and building their confidence!"*

- Dhanlakshmi, one of our trained Madras Malis



“அந்த மாதிரி இந்த குழந்தைங்களுக்கு தோட்ட வேலையை சொல்லி கொடுத்தா எல்லாரும் வேக வேகமா வேலை செய்ராங்க. எங்களை எந்த வேலையமே செய்ய

விடல. குழந்தைங்க கிட்ட ஆர்வத்தை வர வைச்சது முழுமையாக வேலை செஞ்ச பீல் கொடுத்தது.”

*“When we taught the children how to sow seeds, they were so excited and so fast. All of them wanted to do the work, they did not allow us to [prepare the soil and sow seeds]... I helped to bring this interest to them and that makes me very happy and very proud of myself.”*

- Ramya, a trainee and member of an SHG registered with TNULM talking about her work with children in a government school.

இந்த வேலையைச் செய்வது எனக்கு மகிழ்ச்சி அளிக்கிறது, இயற்கை முறையில் உணவு மற்றும் சுத்தமான காற்றை உற்பத்தி செய்வதில் எனக்கும் பங்கு இருக்கிறது என்று உணர்கிறேன். மேலும் இந்த வேலையினால் கூடுதல் பணத்தைச் சம்பாதிப்பது தனிப்பட்ட முறையில் எனக்கு உதவுகிறது

*“I am very happy doing this work. I feel that I am one of the producers of organic food and fresh air. Earning additional money has also helped me personally.”*



- Mythili, a trainee and member of an SHG registered with TNULM.

Fertilizer preparation demonstration at a residential training workshop conducted for women from Self-Help Groups in partnership with TNULM at CIKS, Sempulam Farm.



### 3. SETTING UP FARMS

This year, CRC has continued setting up larger sized (800 to 1000 sq. ft.) farms including model farms across our existing ICDS centres, shelters, schools, resident associations and resettlement colonies in the city to:

- gather more robust data of benefits such as heat mitigation potential, yield and monetary savings;
- provide inspiration and become a source of best practices for other shelters, centers and communities in the area and;
- help showcase the potential of rooftop gardens create a favorable impression among various stakeholder groups who that can influence and inform the scalability of the project;

CRC is providing garden kits and helping to set up and maintain these farms as required. In 2023, CRC supported 8 such farms, all of which were considered model farms based on specific criteria including whether there was access to water through the year and a dedicated person to maintain the farm and keep records of yield, sowing cycles and other relevant information.

The following pages contain stories from some of the model farms.

*Model farm at Anbagam Otteri Shelter.*





## GARDEN OF SUSTAINABLE ENDEAVORS

**Location:** Valmiki Nagar, Chennai

**Size:** 1500 Sq. ft.

This Rooftop Edible garden is unique in that it also has a solar system that has been installed at a height of around 8 ft. This allows plants that require shade to be placed under the solar panels. An important measure that reduces the competition for space between solar and green roofs and allows them to co-exist. This roof top garden also boasts of a drip irrigation system and a misting system that is electronically controlled and set to water the plants at different times during the day. This reduces the quantity of water used and cools the temperature on the terrace surface via the misting system. Santosh and his wife Aarti have a great deal of interest in the garden and have been open to visits from residents in the neighbourhood and International students from the Indo German Centre for Sustainability (IITM).





## GARDEN OF COMMUNITY CONNECTIONS

**Location:** Kasturba Nagar, Adyar, Chennai

**Size:** 1500 Sq. ft.

Even before CRC stepped in to help, a rooftop vegetable garden already existed in this building, set up by two residents with a passion for gardening. Their enthusiasm and dedication prompted CRC to help them transform the space into a model for the local community to witness and visit. Further, compost from the lane compostor outside the building, set up through the Urban Ocean project, is directly feeding into this rooftop garden as much required manure.





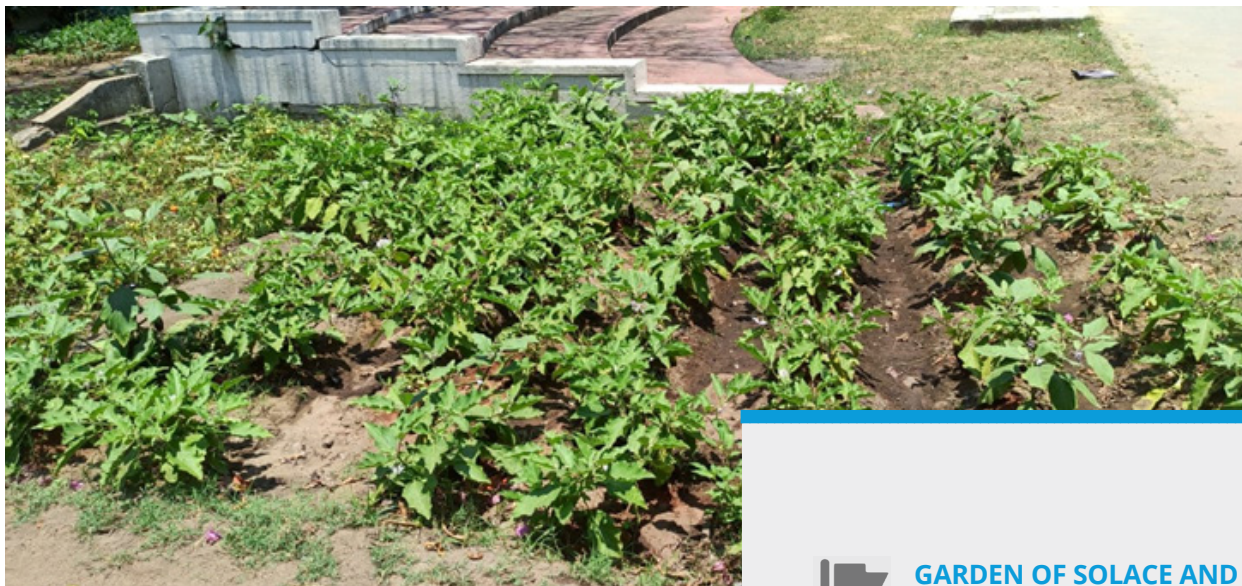
## GARDEN OF RELIEF AND WELL-BEING

**Location:** Anbagam Homeless Shelter for Women with Psycho-social disabilities, Otteri, Chennai

**Size:** 1000 sq. ft.

In January 2022, seeds were sown at Anbagam Home and the entire garden is being maintained by the residents who are rescued women with psycho-social disabilities. From January 2022 to June 2022, the Home has harvested around 100 kg of greens (Keerai) and vegetables including Red Spinach (Ara Keerai), Tropical Amaranth (Siru Keerai), Common Purslane (Parrupu Keerai), Spinach (Palak Keerai), Ladies Finger, Long Beans, Tomatoes, Radish and Flat Beans. Through this harvest they have saved nearly Rs. 9,600 in their grocery bill and have stopped buying greens from outside! More recently, from November 2023 till March 2024, the home has harvested 58 kg of Keerai and vegetables and the garden continues to flourish.





## GARDEN OF SOLACE AND VITALITY

**Location:** Andhra Mahila Sabha, Adyar, Chennai India's largest and oldest charitable organization serving senior citizens and mentally challenged children by offering health care and vocational training.

**Size:** Two gardens have been set up at the Andhra Mahila Sabha, one directly on the ground of about 2500 sq. ft. and another using grow bags covering an area of 500 sq. ft. This 500 sq. ft. garden has been created in a reclaimed space where oil cleared from a nearby oil spill was dumped.

Since the gardens were set up in August 2022, 93kg of produce have been harvested and used for cooking meals for children with physical and mental disabilities studying at the I.P.D special school on campus. These children are also being guided to water the plants in the garden.



## GARDEN OF HOPE

**Location:** Perumbakkam Resettlement Colony, Chennai

**Size:** ~1000 sq. ft.

The farm in Perumbakkam was set up in August 2022 and is being maintained by women from the community who are also selling the produce to earn additional income. More than 15 kg of fruits and vegetables have been harvested October 2023. Others in the community are slowly gaining interest in this project and the demand for the produce is increasing. The women maintaining the garden believe that this kind of project brings them hope that one day they can have several such gardens in the neighbourhood which can continue to supply enough fresh, nutritious and chemical free food to feed their families. Two additional farms are being setup over the next three months.





## GARDEN OF LEARNING

**Location:** Chennai High School, Kamaraj Avenue, Adyar.

**Size:** ~600 sq. ft.

On 27th September 2022, school staff, representatives from a local Resident Welfare Association (RWA) – Residents of Kasturbanagar Association (ROKA) and CRC got together to sow the first seeds on the school's rooftop. Since then, (despite the school being shut for periodic breaks through the year), nearly 25 kg of Keerai and vegetables have been harvested and used for the mid-day meals.

The science teacher is also enthusiastically engaging students from class 6, 7 and 8 for de-weeding, harvesting and general maintenance regularly.



## 4. MAINTENANCE

Through the implementation of the CUFI programme, the importance of offering maintenance support has been understood and the team is providing 'Maintenance Kits' to existing beneficiaries.

- The Maintenance Kit contains all the components that are in the Garden Kits, except the grow bags, and includes an added component of organic

fertilizer – *Panchakavya* – concentrate.

- A more rigorous on-site monitoring and feedback system has been put in place to provide solutions to challenges being faced and to also motivate through continuous exchange of information on new techniques and practices.

*Maintenance efforts by beneficiary teachers and students at different ICDS centres*



From the top, clockwise:

- (i) Students at a government school displaying red spinach harvested from the model farm maintained at the school;
- (ii) Residents of a homeless shelter working in their garden;
- (iii) Garden expansion in progress at a government school;

*"I usually don't like greens. When my mother cooks greens, I ask why she is serving me food that only cows and goats eat. But when I ate the greens that we harvested I really liked it!"*

- a child from a low-income community



## 5. INCENTIVISATION

As the team monitors, it is recognising the need for incentivising program beneficiaries, specifically ICDS teachers and school staff.

To keep up engagement levels, a '**Monthly Garden Champion**' competition was introduced in 2022 and a '**Composting Champion**' Competition in 2023 for the ICDS centres. Under the Monthly Garden Champion competition, best performing centres each month were awarded with a monthly garden champion certificate; **30 teachers** have been awarded in this competition in which the criteria for selection varied every month. For instance, for one month, the centres were selected based on the extent to which teachers engaged children in the gardens. In the following month, centres had to show case how they had expanded their gardening efforts and so on.

In 2023, to encourage and direct efforts towards sustainability, a Composting Champion Competition was conducted where centres had to compost for a minimum of three months and motivate their area mothers to assist in their efforts and segregate waste at home. Teachers and helpers from **18 centres** have been awarded thus far.

Both the competitions have motivated the teachers and helpers to garden more enthusiastically and is nudging the larger community of mothers and families into more sustainable behaviours. They have also increased peer to peer learning on the WhatsApp group.

Garden Champion certificates were provided to staff of a Government school (one of our model farms) to encourage them to continue their maintenance efforts.

*From left, clockwise: (i) Adyar School Certificate presentation by Mr. N. Thirumurugan, Executive Engineer and Zonal Officer (in charge), Zone XIII (Adyar), Greater Chennai Corporation; (ii) Best Gardener Champion certificate awardees; (iii) Composting Champion certificate awardees;*



**TABLE 1. BENEFICIARIES OF THE CUFİ PROGRAMME SINCE INCEPTION**

Year	Type of Beneficiaries	No of centres/ shelters / families	Total Kit Beneficiaries	People Trained
2020	Pudiyador families	65	260	
	Homeless Shelters	55	2,795	
	Perumbakkam		750	
	<b>Total for 2020</b>		<b>3,805</b>	
2021	ICDS	226	10,619	43
	Homeless Shelters	46	1,277	72
	Pudiyador	100	400	10
	Chitra Nagar	30	120	10
	Semmanchery	10	40	40
	Govt. Aided Schools	6	1,328	
	<b>Total for 2021</b>		<b>13,784</b>	<b>175</b>
2022 <sup>1</sup>	ICDS	120	5,057	81
	Homeless Shelters	27	1,112	30
	Pudiyador	78	312	10
	Chitra Nagar	30	120	
	Perumbakkam		15	
	Govt. Aided Schools	8	2,150	100
	TNULM Women		25	160
	Valmiki Nagar Residents			30
	<b>Total for 2022</b>		<b>8,791</b>	<b>411</b>
2023 <sup>2</sup>	ICDS (existing)	103	4,343	
	ICDS (new)	41	1,312	41
	Homeless Shelters	15	417	
	Perumbakkam		15	15
	Govt. Aided Schools	6	585	20
	Domestic Workers			10
	TNULM Women		85	85
	RWAs	3	10	
	Residents		194	194
	<b>Total for 2023</b>		<b>6,682</b>	<b>365</b>
	<b>Grand Total (2020 to 2023)</b>		<b>33,062</b>	<b>951</b>

Please Note: (i) This table includes direct, measurable beneficiaries only. The program's true impact, like the ripple effects of ICDS centers on communities, extends beyond these figures. Such intangible benefits, though not quantifiable, are central to our goals. Please consider the wider, transformative effects beyond these statistics (ii) Reduction in annual beneficiaries is due to a strategic shift towards supporting those ready for self-driven growth, aiming for deeper, sustainable impact over sheer numbers.

<sup>1</sup> Up to 31st March 2023

<sup>2</sup> From 1st April 2023 to 31st Jan 2024

*"Earlier, we were focusing only on growing plants. Now that we have started solid waste management and composting in our centres, we are involving children and teaching parents about it. We advise parents to start their kitchen gardens at home. Looking at the Anganwadi centres, we see parents of children planting gardens and managing them at home. It gives us great pleasure when our community also works with us together."*

– an ICDS Teacher

*"At the centre, the teachers gave me Pasala keera and explained its benefits. I did not know about it but because they gave me some, I made it at home in the form of a dry vegetable and kootu which is made along with dal. It was very tasty. My daughter loved the kootu and she kept asking for more."*

– parent of an ICDS centre

*"It helps to distract the residents from addictions that they have. It removes stress, and removes physical tiredness and they [residents] feel refreshed doing gardening together. Corona related lockdown and job losses has caused a lot of stress for the residents. Gardening has allowed them to improve their emotional and physical health."*

– Shelter Coordinator  
(North Chennai)

## 6. MONITORING AND EVALUATION

Monitoring and Evaluation is critical for the team to understand the impact we are having on the ground, improve, course correct and scale our programme. We use a combination of tools to measure parameters including yield, impact on general physical and mental wellbeing, impact on heat mitigation, innovations and challenges.

- **Surveys** were conducted earlier into the program to understand kitchen garden practices, challenges faced and the impact of kitchen gardening on physical and mental health.
- **Focused Group Discussions (FGDs)** in Tamil have been conducted to gather in-depth information on the experience of beneficiaries in gardening, garden practices, yield, challenges faced, possible impact of kitchen gardening on physical and mental health and involvement of the community in the gardens.
- **WhatsApp Engagement:** The CRC team has created WhatsApp groups to track progress and monitor the participation of all our beneficiaries including homeless shelters, ICDS centres, women SHG members. While the number of posts each day varies on an average the team receives up to 50 messages on certain groups. Participants regularly post updates on the group by sharing images of their gardens, highlighting progress, celebrating harvests, and clarifying doubts.
- **Visits and rating:** CRC team is visiting around 3-4 centers/shelters every week to understand on-the-ground intricacies and build a rapport with the beneficiaries. These centres/shelters are being rated based on certain criteria

M&E Report:

<https://bit.ly/ME-0922>



Alongside, from the top:

(i) Focus Group Discussion with ICDS helpers

(ii) Site visit to an ICDS centre

(iii) Discussions with Pudiyador youth leaders in Urur Kuppam;



including current state of the gardens, interest shown by staff, and problem-solving ability. The ratings allow CRC to select the centers and shelters that can be provided with further support for the future.

- **Heat Monitoring:** CRC has been working with Earthnomic Engineers to monitor heat mitigation impact of one of our 1000 sq ft. model farms since 2022. Additionally towards the end of 2023, CRC decided to study the impact, costs and benefits of different types of popular cool roof solutions such as high albedo white paint and tarpaulin covers. The purpose of this exercise is to compare impact, costs and benefits of these popular options to present to policy makers.

At the 1000 sq ft garden, heat related parameters were analysed and interpreted for the period – April 1st to June 6th 2022. Key findings reveal that, on average, during sunshine hours (i.e. 6am to 6pm), the room below the rooftop garden is 2-3°C cooler than the room below the exposed terrace space with the maximum temperature difference going up to 7°C.

Preliminary results from the other sites are as follows:

- Roof painted with high albedo paint: Surface temperature on the roof painted with high albedo paint is around 6°C cooler than a roof without any coating during the peak times of the day.
- Roof with tarpaulin cover: Temperature in the room below is ~7°C cooler and the number of AC units consumed drops by eight units when the roof is covered with tarpaulin.

In 2024, we hope to carry out similar assessments in other edible rooftop gardens with the aim of contributing scientific evidence needed to trigger policy support for rooftop vegetable gardens as a heat mitigation tool.

*Heat Analysis Report:*  
<https://bit.ly/heat1022>



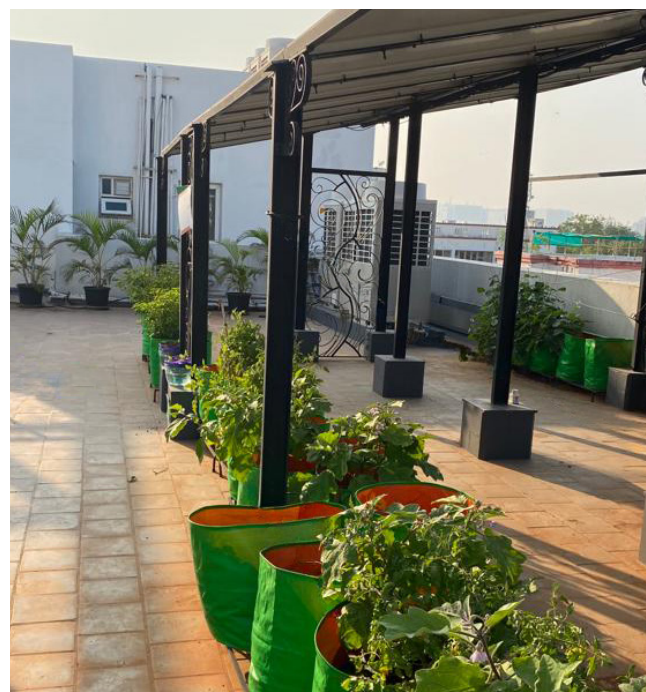
Alongside, from the top:

(i) A Mobile Vegetable Garden being set up under solar panels at the Valmiki Nagar model farm.

(ii) Heat monitoring sensor installed at the Otteri Women's Shelter.



*Focus Group Discussion Report:*  
<https://bit.ly/FGD1023>



## 7. GREENER AND COOLER CITIES MISSION – RWA CAMPAIGN

In January 2023, CRC launched a campaign to encourage residents of middle and upper middle-class localities to set up roof top kitchen gardens. For the campaign CRC is collaborating with resident welfare associations (RWAs) including Residents of Kasturbanagar Association (ROKA), Valmiki Nagar, Radhakrishnan Nagar, Gandhi Nagar, AGS Colony. The campaign used existing relationships that the RWAs had with residents in their locality to promote urban kitchen gardens on the roofs, balconies, and backyards. The campaign offered to deliver mobile vegetable garden kits to residents' doorstep at a cost and link them to support systems such as water proofing services, drip irrigation vendors etc. to help them set up their kitchen gardens. The campaign also seeks to nudge 'green behaviour' through the provision of a discount if vegetable garden kits are booked through a registered RWA. The campaign was viewed by over **67,000 residents**.

As a follow up to the campaign, a series of **five online workshops** on how to grow and nurture an organic, home vegetable garden was held between March and July 2023. A total of **169** people participated in these sessions. In August 2023, CRC held an **in-person training session** in our Model Farm at Valmiki Nagar for **25** interested residents.

In January 2024, CRC launched another campaign, coinciding with the planting season to promote and encourage creation of edible rooftops on residential buildings, hiring CRC trained women gardeners for garden help and adoption of kitchen gardens at our ICDS centres, homeless shelters and schools. The campaign utilized search ads, YouTube videos, and display ads across Google's networks resulting in approximately **893,000 views** leading to **57,500 clicks**. These results indicate a positive response from the community and the potential for growth in sustainable urban gardening practices.

### Campaign Overview:

<https://bit.ly/RWA-EUG23>



Alongside, from the top:

(i) Cover page of *The Edible Urban Garden Beginner's Guide* - a free resource designed by the Chennai Resilience Centre;

(ii) *The Edible Urban Garden Campaign* on Instagram;

(iii) *The Madras Mali initiative* social media promotion



## 8. CUFI FUTURE PLANS AND ASPIRATIONS

Since its inception, CUFI has been focused on linking climate resilience to empowerment of vulnerable communities – by providing access to nutritious food to children from government or government-aided schools and day care centres, by offering skill development training for women from low-income communities, teachers from ICDS centres, and by working with homeless shelter residents with multiple social and

psychological vulnerabilities. After **169 farms** including **8 models farms**, more than **40 training sessions**, **951 people skilled**, for CUFI to achieve the next level of development, there is need for building broader participation and buy-in from all sections of the society and multiple sectors including the government and the corporates. This is what CUFI 2024 plan will focus on.

### IDENTIFYING KEY LEVERS OF CHANGE GOING FORWARD:



#### Food, Jobs, and Relief from Heat - Served together!

Chennai experiences three seasons - hot, hotter, and hottest! Citizens, especially the vulnerable, exposed to the negative impact of increasing heat, therefore fail to recognize it as a threat. While the city's summers have been soaring past 40°C in recent decades, with heat waves becoming more intense, in the hierarchy of needs among the urban poor, "protection from extreme heat" continues to rank low compared to food, clothing, housing, earning a livelihood, etc. But what if such "top-of-the-mind" community needs of food and work can be offered while mitigating urban heat?

CRC's CUFI program is doing just that, by placing access to fresh and nutritious food and livelihood at its core, while contributing to urban cooling. To achieve city-wide impact on heat mitigation and energy savings, however, CUFI intends to build scientific evidence and garner greater government, community, and corporate support in the coming year.

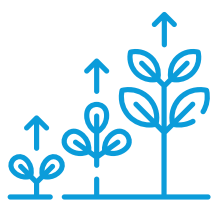


#### Creating an ecosystem of jobs for city gardeners leveraging CUFI's RWA campaign and TNULM skilling program

Recognizing the demand for garden help among the middle/upper middle-income residents of Chennai and the need of jobs amongst the urban poor, CUFI program introduced two critical dimensions to the program last year that can together create an ecosystem of job opportunities for city gardeners:

- i. CUFI is training women from self-help groups (SHGs) registered under the Tamil Nadu Urban Livelihood Mission (TNULM) to become professional gardeners and;
- ii. CUFI is leveraging RWA campaign in middle/upper-middle income neighbourhoods to encourage residents to set up their own rooftop gardens and connecting those in need of gardening help with CUFI's trained gardeners. In 2024 dedicated effort to build and strengthen this program will be critical. The vision is to facilitate development of a social enterprise of city gardeners for the women from TNULM SHGs.
- iii. CUFI will introduce Banana sapling bags and a channel for selling organic garden related products via Madra Malis.

## IDENTIFYING KEY LEVERS OF CHANGE GOING FORWARD:



### **Integrated Child Development Centres (ICDS) or Anganwadis – CUFI’s Champions**

Around ten percent of all ICDS centres in the city are supported by CRC and these ICDS centres stand out as clear champions of the CUFI program – not just benefitting from the program but also proactively contributing to it. The enthusiastic involvement by teachers and the local mothers in gardening and sustainable ancillary activities such as water conservation, segregation, and composting has set an example, highlighting how urban gardening can bring about transformative behavioural change. Empowering the ICDS teachers and mothers and leveraging their inspirational story will remain a priority for CUFI.



### **Reaching out to Corporates**

CUFI work since 2021 has shown that involving/sustaining the program in institutions (like shelters, day care centres, schools etc.) has been easier than involving individual citizens. Corporates not only provide another such space of institutional intervention to green thousands of acres of concrete rooftops, but also open doors to thousands of employees. CUFI intends to tap into CSR by setting up rooftop edible gardens within corporate campus while building capacity and interest among the employees directly (to set up individual gardens) or indirectly (to volunteer at CUFI garden sites).



### **Building Evidence**

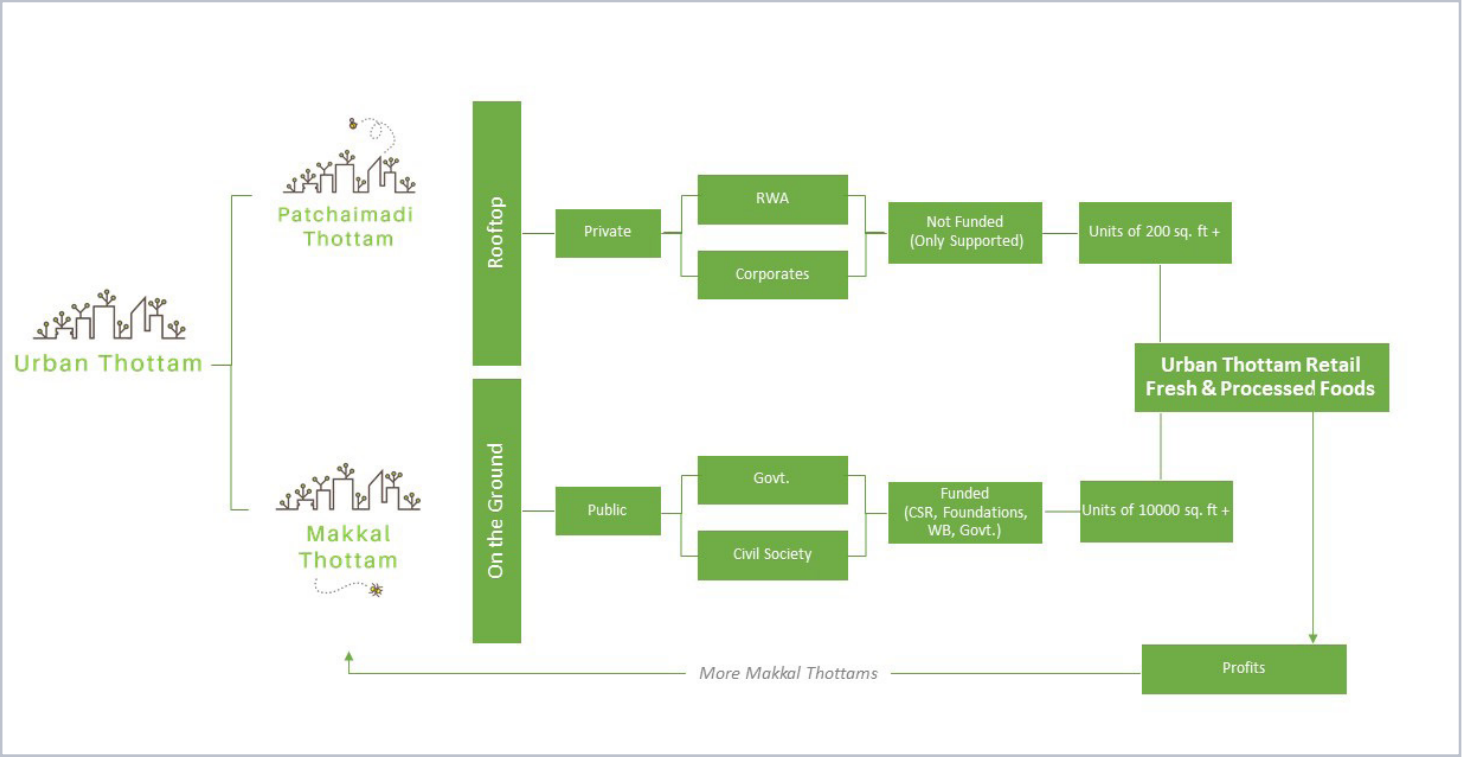
While global scientific literature and development programs emphasize on the socio-environmental benefits of urban farming, evidence from specific types of initiatives (like decentralized rooftop edible gardens), and evidence from local geographies, especially from Indian cities, is lacking. As such continuing doubt amongst public officials, citizens, present challenges for scaling CUFI like programs.

The focus in 2024 will be on influencing public policy and community practice to include urban farming as a resilience-building strategy by leveraging robust and scientific evidence from CUFI work focused on production, heat mitigation/energy savings, and job creation.

While our journey in this respect has begun in 2023, this needs to be an incremental and a progressive journey to achieve greater government support and community uptake of urban gardening efforts and that is where CRC team will put their energy in the coming year.

*How to make Banana Sapling Growbags*  
<https://bit.ly/3J6VZWk>





Above: Future Aspirations: Creating a social enterprise - the Urban Thottam Retail Ecosystem for Green Livelihoods.  
Below: Example packaging design for products made by Women's Self Help Groups from produce grown on rooftop or in community gardens.



## 9. KEY ENGAGEMENTS

CRC has been interacting with multiple government, private, civic and academic stakeholders via varied forums with the intention of **a)** seeking financial and non- financial support; **b)** sharing knowledge and disseminating learnings; and **c)** developing potential collaborative links. Many of these engagements have involved face to face or virtual meetings between CRC team members and organizations like **GCC, TNCDW, Tamil Nadu Horticulture Department (TANHODA), State Planning Commission, Resilient Cities Network Cities, WRI, Rocky Mountain Institute (RMI), Microsoft and WIPRO**. In addition, the CRC team has made formal presentations and submitted grant proposals including:

- A grant proposal for **Bill and Melinda Gates Foundation's Accelerating Catalyzing Solutions for Climate Change's Impact on Health, Agriculture and Gender** was submitted in the end of January and results are awaited.
- A grant proposal to WRI for the **WRI Ross Centre Prize for Cities 2023-2024** was submitted in the end of Jan. The Chennai Urban Farming Initiative (CUFI), was chosen for further assessment by the Prize's evaluation team from a highly competitive global pool that got an overwhelming response from 148 cities worldwide. Unfortunately we did not make it to the list of 5 finalists.
- A CSR grant proposal was sent to **Grundfos** to set up a rooftop garden on the terrace of their corporate office and to encourage their employees to volunteer in / adopt an ICDS centre or homeless shelter.
- CRC presented the CUFI program at the **Food Systems Resilience Webinar organised by RAUF and the Milan Urban Food Policy** on 26th June 2023.
- CRC participated in a **stakeholder consultation** conducted by Government of Tamil Nadu to develop a framework for implementing kitchen gardens in all government schools in the state.
- A case study on CUFI has been published in an **IIHS Compendium on Urban Agricultural Practices** in India, titled '[Sowing Cities](#)'.
- Submitted a grant proposal for **NITI Aayog's LiFE Global Call for Ideas & Papers**;
- Hosted **IIHS Urban Fellows** from their Urban Fellowship Program -22-23 to showcase CRC projects.
- CRC presented CUFI at a workshop on '**Nurturing vegetation in our city: Community based adaptation in vulnerable neighbourhoods**' organised by Brihannmumbai Municipal Corporation (BMC), World Resources Institute (WRI), Tata Institute of Social Sciences (TISS) and Youth for Unity and Voluntary Action (YUVA);
- The CRO was invited to speak about CUFI at the **Global Heat Resilience Service (GHRs) workshop** organised by the **Group on Earth Observations (GEO)** in partnership with the **World Meteorological Organization (WMO)** in Geneva. The project received positive feedback at this meticulously organized event, with tangible outcomes anticipated.



Previous page: The CRO at the GHRS workshop in Geneva  
(Photo credit: © GEO Secretariat)

This page, from the top, clockwise:

- (i) Dr. Parama presenting at the College of Agriculture, Kerala
- (ii) IGCS student interaction at AMS;
- (iii) IGCS student interaction at an ICDS Centre;
- (iv) Meeting with Masters students of Disaster Management, University of Copenhagen.
- (v) Ms. Gold Hood, FULL Green Tech's visit to a Daycare Centre;



# B. Other CRC Initiatives

## I. WATER AS LEVERAGE FOR RESILIENT CITIES ASIA (WAL)

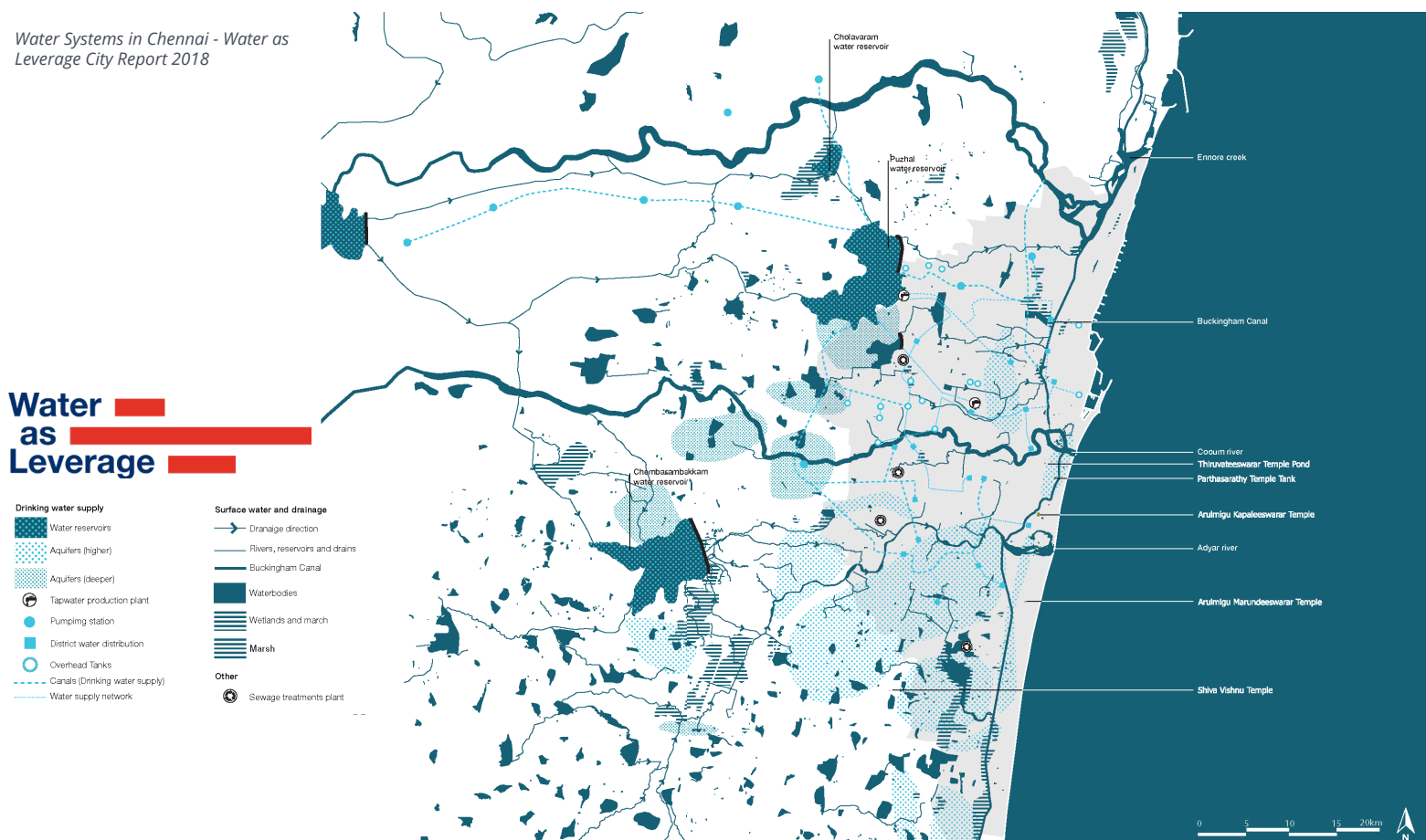
Water as Leverage for Resilient Cities Asia (WaL) is an initiative of the Netherlands Government to bridge innovative financing, inclusive design, and government collaboration in the development and implementation of projects that mitigate the impacts and adapt to the effects of climate change.

The Water as Leverage programme was led by the Hon'ble Henk Ovink, Special Envoy for International Water Affairs for the Kingdom of the Netherlands. In

Chennai, and the WaL programme is implemented by Care Earth Trust, Chennai Resilience Centre, IIT Madras, Govt of Netherlands, RISE Chennai & 1000 Tanks Teams. The following projects are under the purview of the WaL initiative in Chennai:

1. **Water Balance – NBS showcase project at Little Flower Convent**
2. **Neithal Muttukadu**
3. **Mylapore Heritage Programme**

Water Systems in Chennai - Water as Leverage City Report 2018





NBS Showcase Little Flower Convent © City of 1000 Tanks | OOZE

## 1. Water Balance – NBS showcase project at Little Flower Convent



The City of 1000 Tanks team has created a closed loop, nature-based water treatment system (both black & grey water) which establishes a sustainable water balance model at the Little Flower Convent, a school for 500 visually and hearing impaired children. Through an innovative design of multi-functional spaces, the team has created detention zones which effectively recharge rain water during the monsoon thereby further strengthening water balance model at the Little Flower Convent (LFC).

The nature based system at Little Flower Convent is currently treating 27,000 litres of water benefiting 300 hostel dwellers directly. The project has also stopped the perpetual problem of sewage backflow and has improved water balance on site resulting in reduced water stress

during summer and enhanced rain water management during the monsoons. Further, the project has increased green cover on site, resulting in a positive impact on the children and has created new venues to engage with the differently abled children on campus.



*Video on LFC-NBS Showcase*  
<https://bit.ly/lfc-chennai>

*Water Chemistry Results*  
<https://bit.ly/LFCH2O>



## 2. Neithal Muttukadu

This Water Basin Level project seeks to improve water management for the Muttukadu-Kovalam basin to reduce flood-risk and improve water availability by deploying a hinterland-to-coast-approach. It uses the SIPCOT industrial estate, Siruseri as an anchor to revitalize the waterscape including rejuvenating upland reserve forests, local rivers or tanks and restoring channels interconnecting these water bodies with Buckingham canal. The project will also showcase how blue-green and grey infrastructures can complement each other to increase water resilience of the region. This project has the potential to provide security from floods and drought for the industries and residents living in the Muttukadu Basin.

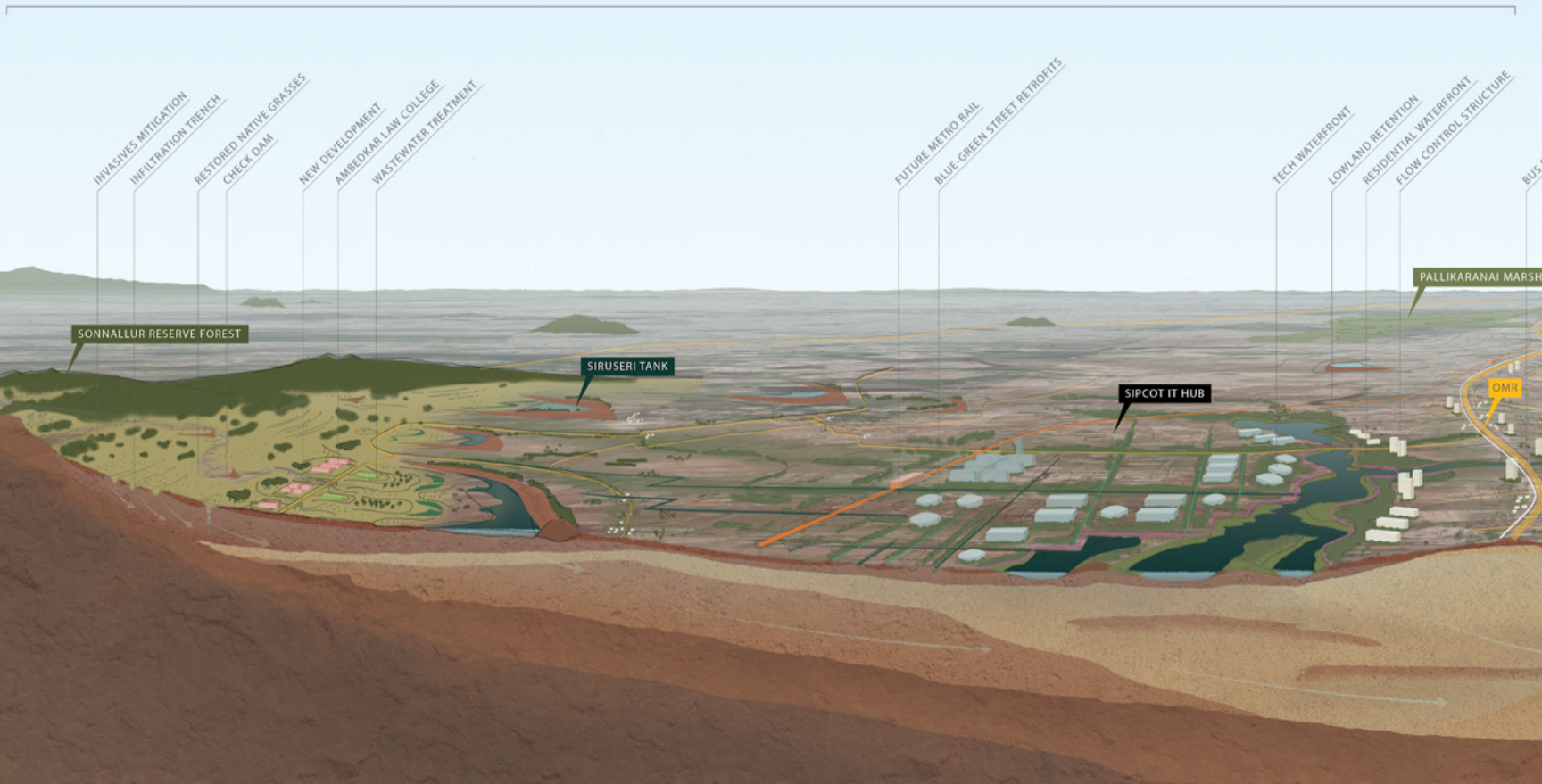
*Neithal Muttukadu - Resilient Waterscape:*  
<https://bit.ly/Muttukadu280223>



### RISECHENNAI

*Resilient Waterscape - Neithal Muttukadu © RISEChennai*

## RESILIENT WATERSCAPE



### 3. Mylapore Heritage Programme

The Mylapore Heritage Programme is a community-based water balance model, taking into account various livelihoods, vulnerable communities and public and private sector interests. Building upon the rich heritage of water management as exhibited in the temple tanks of Mylapore, this project will shift the paradigm towards local low-energy and inexpensive nature-based storage and treatment systems. This highly flexible solution can be upscaled incrementally throughout urban areas of Chennai and the region for a climate-resilient future.



*Mylapore Project Executive Summary:*  
<https://bit.ly/GCFMylapore>



*Mylapore Stakeholder Engagement Report:*  
<https://bit.ly/Muttukadu280223>



Mylapore Trail © City of 1000 Tanks | OOZE



## II. THE URBAN OCEAN PROJECT

Chennai Resilience Centre is working with **Okapi Research and Advisory** to implement the Urban Ocean project, a collaboration between the **Resilient Cities Network, Ocean Conservancy and The Circulate Initiative**. The programme helps cities identify gaps and vulnerabilities in their solid waste management system leading to plastic leakage into the environment, specifically into the waterbodies and oceans. It also helps cities to develop holistic solutions to address these gaps. The Urban Ocean Programme is linked to **Goal 6 in the Chennai Resilience Strategy** which seeks to address solid waste related challenges more effectively. Also, the program aligns with several SDGs

such as **SDG 12** (*Responsible Consumption & Production*), **SDG 11** (*Sustainable Cities & Communities*) and **SDG 14** (*Life below water*).

The project is in its third phase where Okapi and CRC have worked with multiple public and private stakeholders to develop actionable solutions to address SWM gaps identified through the research work, conducted between September and February 2022. The research report and the executive summary are available below and include implementable project solutions such as creating a **near-zero waste neighbourhood** and stopping waste from entering the ocean using **trash booms**.

*Urban Ocean - Chennai Video*

<https://bit.ly/uo-chennai>



*Executive Summary*

<https://bit.ly/UrbanOcean-ES>



*Circularity Assessment Protocol: Chennai*

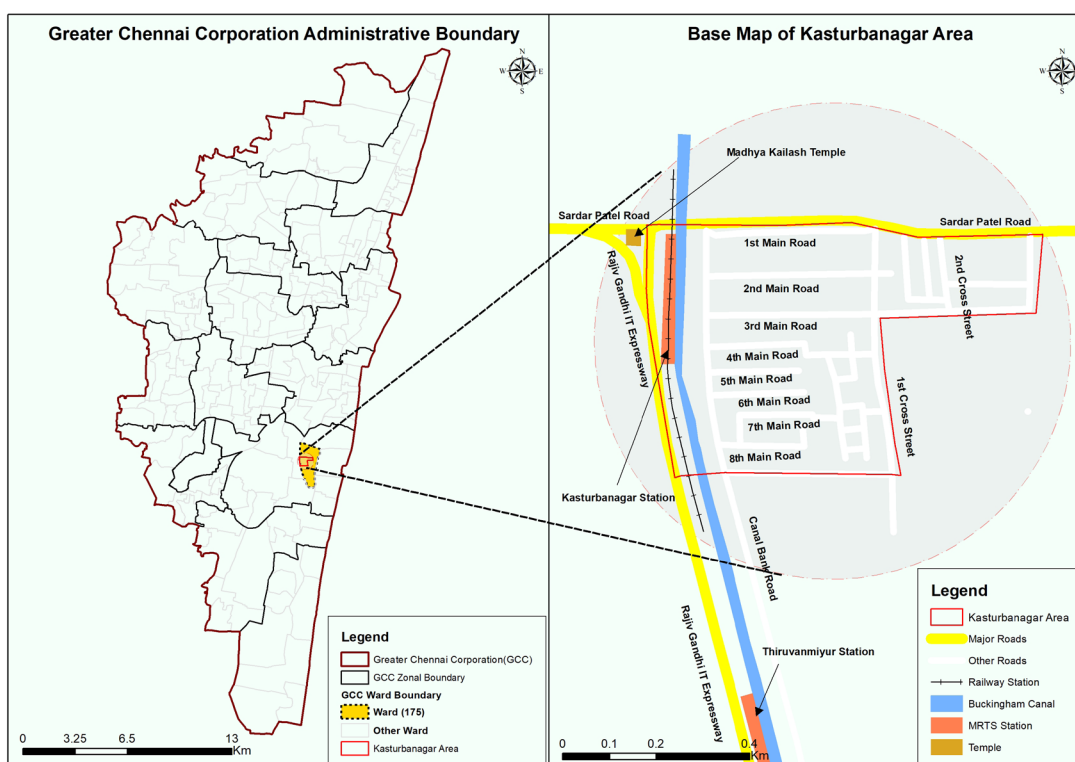
<https://bit.ly/CAP-0922>



*Otteri Nullah - a waterway in Chennai choked with waste;*



### a. Area-Based Pilot - Building Near-Zero Waste Neighborhood through Capacity Building Efforts



#### PROJECT COMPONENTS

##### We Segregate:

A door-to-door and sustained awareness campaign to achieve high segregation at source.

##### Green Loupe Database:

Share info on recyclers, drop off centers etc.

##### Recycle Cloth Bits:

100kgs of cloth waste from area tailors will be diverted from dump yards per week.

##### Lane Composters:

Diverting the organic waste away from bins and raise citizen awareness.

##### PadCare:

Recycle sanitary napkins collected from schools.

##### Raising Ecowarriors:

Capacity building program at schools to encourage sustainable lifestyle.

##### Waste Collaborative:

Leveraging public-private partnerships to better manage dry waste in the local GCC-owned Materials Recovery Facility.

#### Building a near zero-waste neighbourhood in Kasturba

**Nagar, Adyar:** This is an initiative to demonstrate how we may build a near-zero waste neighbourhood in collaboration with the Greater Chennai Corporation, Urbaser Sumeet, and ROKA, the residential welfare association in Kasturba Nagar. The project idea in its entirety aims at maximizing resource recovery and minimizing the amount of waste going into the dump yards from Kasturba Nagar by leveraging multiple project components focused on awareness building, sustainably managing/recycling different streams of waste such

as organic waste, plastics, clothes, sanitary napkins etc, developing public-private partnerships, and empowering informal waste workers.

A version of the near-zero waste project idea was recognized by Niti Aayog as one of top 75 global ideas to promote Lifestyle for Environment (LiFE) and has been published in a compendium, accessed here. A subset of this initiative, similar to the NITI Aayog project proposal is being implemented as a pilot project with ROKA.



*Mr. Mahesan, Chief Engineer (SWM and Mechanical), Greater Chennai Corporation at the launch of lane composters at We Segregate in Kasturba Nagar, Adyar | Photo Credit: Prince Frederick*

### "We Segregate"

This project aims to **improve waste segregation behaviour** in a middle/upper middle income community – Kasturba Nagar – in Southern Chennai in collaboration with the Residents of Kasturbanagar Welfare Association (ROKA), Greater Chennai Corporation, Urbaser Sumeet and Bisleri's Bottles for Change Program. Research on SWM and segregation behaviour highlights that for holistic and long-term behavioural change to take place, residents need to be targeted at the individual and community level and there is need to increase people's capabilities (e.g. awareness/knowledge) and available opportunities (e.g. infrastructure) to trigger action, both of which this project seeks to do.

Therefore, the goal of the project is to create awareness on sustainable solid waste management practices in three streets of Kasturba Nagar – 2nd, 3rd and 4th Main Roads covering approximately **1000 households** and providing residents with opportunities to divert:

- a. some of their wet waste away from the dump yards by composting them using the **three lane composters** set up by the project team and,
- b. their low value plastics, specifically MLPs including single use plastic bags, through **Punch-the-Plastic (PtP)** hooks designed by Indian Institute of Technology Madras.

#### **Current Status:**

- *Gradual transformations in behaviour are visible among residents, just three months into the project with constant door-to-door interactions.*
- *From Oct 2023 to March 2024, **2699 kg of wet waste** and nearly **100 kg of soft plastics** have been diverted from the dump yard through three lane composters and punch-the-plastic hooks in apartments. The team has also harvested **780 kg of compost** and distributed to the residents and to a Government School with a CUFI garden.*
- *The local government administered by the Greater Chennai Corporation has taken a keen interest in the project and wants to replicate it in other wards as well.*
- *Additional financial support is required to cover operations, maintenance and monitoring for at least another year to ensure sustained long term success. This will also help to think about expanding the project to other localities.*



Above, left to right: (i) PtP Hook; (ii) ROKA member at the composter; (iii) Revathi Akka, a domestic help in the neighbourhood, layering the Lane Composter

Below: Rallying for better segregation in Kasturba Nagar





Above, left to right: (i) A battery operated vehicle engaged in door-to-door collection; (ii) A micro composting centre (MCC) managed by GCC @Citizen Matters; (iii) Informal waste picker at work in the city;

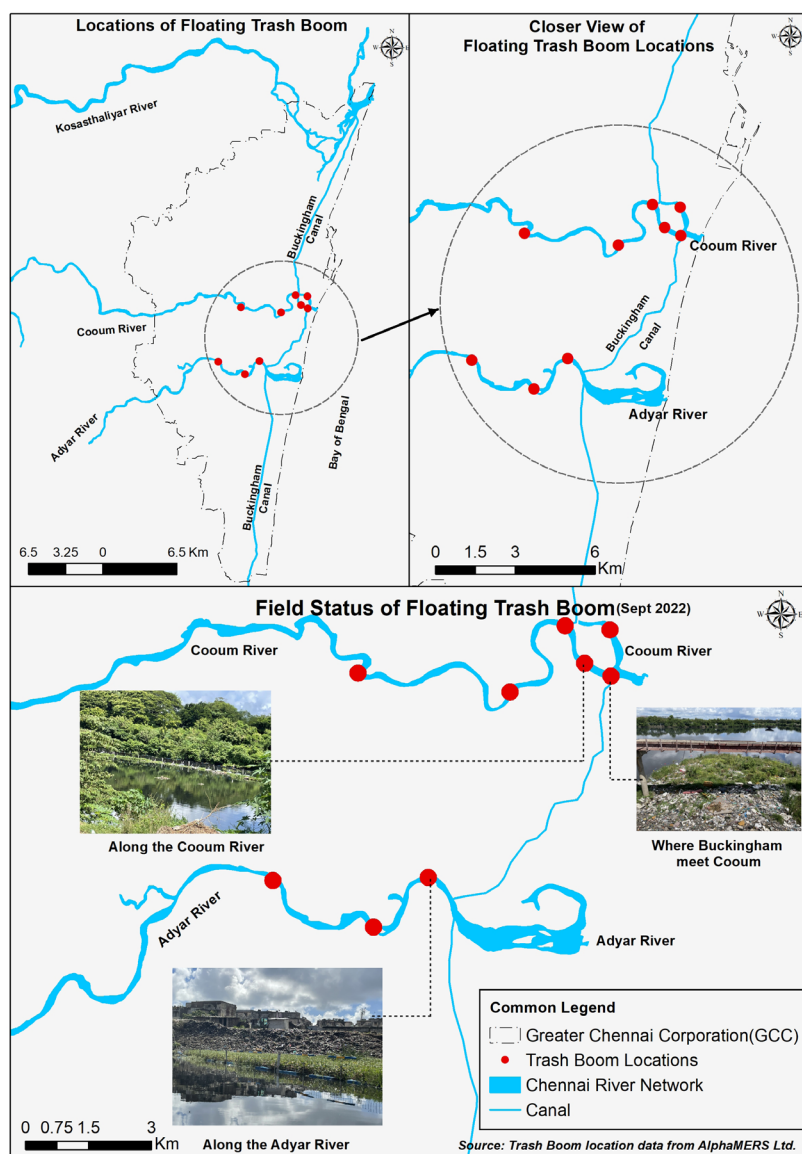
## Urban Ocean Round table

On 24th April 2023 the project team organized a Roundtable Discussion, in collaboration with the Madras Chamber of Commerce and Industries (MCCI) with corporates to explore possibilities for implementing some of the developed solutions on the ground. Ms. Supriya Sahu, IAS, Additional Chief Secretary, Department of Environment, Climate Change and Forests, Govt. of Tamil Nadu attended the event and had an open dialogue with participants regarding how the state government and Tamil Nadu Green Climate Company (TNGCC) are undertaking multiple efforts towards circular management of waste and discussed potential for future collaborations with corporates, NGOs, and RWAs to further strengthen these efforts.

Below: The Urban Ocean Round Table with MCCI members and chief guest Ms. Supriya Sahu.



### b. Pilot Project: Clean Waterscape for Healthy Cities



#### PROJECT COMPONENTS

**Introduce additional trash booms in Chennai's waterbodies** (including, Buckingham Canal, lakes); identify ideal locations for intervention; prepare a post-implementation maintenance plan (funds, responsible agencies, regular cleaning schedule, community monitoring, biyearly infrastructure maintenance)

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

**Develop a skill development and livelihood program** by engaging women from SHGs to utilize waste material like water hyacinth for producing household/craft items

**Clean Waterscapes for Healthy Cities:** This second project idea is focused on Chennai's waterbodies. It seeks to **a)** scale up the existing trash boom initiative launched by the GCC and Chennai River Restoration Trust (CRRT) in 2017 to trap the floating waste in

Adyar and Cooum Rivers and **b)** build efficiency in the operations and management of the trash booms and working towards sustainable processing of the collected waste.



*From top, anti-clockwise (i) & (ii) A site along Adyar river before (top left) and after (bottom) installation of a trash boom that helps trap floating waste and water hyacinth. (iii) Daniel Sebasitan, Project Director Urban Ocean, CRC team with Shweta Nagarkar of Resilient Cities Network inspecting the trash boom on the Adyar River.*





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## Note from the CRO

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We are at an inflection point. The forthcoming months are critical in shaping the destiny of the three projects within CRC's ambit.

The Chennai Urban Farming Initiative (CUFI) is on the brink of spearheading a city-wide movement in urban farming, aimed at enhancing Chennai's resilience to climate change. This initiative seeks to establish edible gardens that serve multiple purposes: providing access to nutritious and diverse food sources, creating improved livelihood opportunities for vulnerable demographics, and contributing to the city's greening and cooling efforts.

The CUFI's Skilling Program is making significant progress, particularly through its focus on women from Self-Help Groups (SHGs) affiliated with the Tamil Nadu Urban Livelihood Mission (TNULM). These women are being trained to become professional gardeners, under the brand name Madras Mali. This initiative is poised to connect with residents of middle and upper-middle-income neighborhoods, encouraging them to adopt edible rooftop gardening. This approach not only fosters a sustainable revenue model but also aims to develop a social enterprise of city gardeners from among the women in TNULM SHGs.

Corporate involvement presents a unique opportunity for institutional engagement in transforming concrete rooftops into verdant spaces, simultaneously reaching thousands of employees. With this segment we can explore the utilization of Hydroponics and Aquaponics for edible gardens, with the promise of better investment returns. Moreover, by demonstrating the significant energy savings through heat mitigation by green roofs, we can propel the acceptance of green roofs as a viable urban heat reduction strategy, particularly within urban industrial areas.

The dissemination of CUFI's transformative impact, especially in public day care centers/Integrated Child Development Centres (ICDS), homeless shelters, and government-aided schools, is vital. Such narratives can garner enhanced support from the Government of Tamil Nadu, crucial for CUFI's evolution and integration into government policies and programs. This, in turn, could unlock diversified funding sources. The program has the potential



*A unit of Care Earth Trust.  
Supported by Adrienne Arsht-Rockefeller  
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Resilient Cities Network.*



to extend its reach to 1,400 public day care centers (benefitting 28,000 children, 2,800 teachers and 56,000 parents), and approximately 100,000 women within Chennai, ranging to five million women across the state of Tamil Nadu through TNULM SHGs.

Moreover, two key initiatives under the Water as Leverage program in Chennai are progressing. The Muttukadu basin level water balance project will be proposed to the Department of Environment, Forest, and Climate Change, seeking government backing for a sustainable, integrated Detailed Project Report (DPR) that exemplifies Green, Blue, and Grey infrastructure projects in Chennai.

Additionally, the project focusing on urban adaptation to climate change through Ground Water Recharge and Water Balance in Mylapore, Chennai, has received approval from the Regional Office of NABARD and is under review with comments at the NABARD Headquarters in Mumbai.

Progress has also been notable in the Urban Oceans program, particularly with the ROKA project, 'We Segregate'. The forthcoming Urban Oceans Global Summit, scheduled to occur in Chennai from June 18th to June 21st, 2024, is anticipated to significantly advance this program.

So, why inflection point? Without sufficient funding and government support to sustain these projects over the next two years, there is a tangible risk of failing to fully realize their potential, thereby jeopardizing the substantial progress we have achieved through diligent effort, efficient resource utilization, and unwavering dedication.

Yet, we remain optimistic, and look forward to garnering the necessary support and funding, confident in our collective ability to advance these transformative initiatives for a sustainable and resilient future.

This note would not be complete without mentioning the unstinting support we have received from Arsht-Rock, the Resilient Cities Network, Care Earth Trust, the Netherlands Government, the Government of Tamil Nadu, Okapi Research & Advisory, and my wonderful team at CRC.

A handwritten signature in black ink, reading "Krishna Mohan". The signature is fluid and cursive, with a horizontal line underneath it.

**Krishna Mohan**

Chief Resilience Officer, Chennai

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