

The UN Secretary-General's Advisory Board on Zero Waste

Closing the Loop on Textile Waste



Zero waste good practice

A flagship program of Circular Apparel Innovation Factory (CAIF)

Bangalore, Mumbai, Kochi, Kozhikode, Goa, Aurangabad, Delhi NCR, Bhopal
India

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About

Synopsis

Establishing an integrated Circular Textile Waste Management model that leverages a pan-India network of hyperlocal material recovery facilities powered by waste pickers.



Implementation
period

2022 - now

Country

India

Location

8 cities

Key Funders: H&M Foundation, IKEA Foundation, Alwaleed Philanthropies

Key Implementation Partners: Hasiru Dala, ReCircle, Green Worms, Sampurn(e)arth, EcoSattva, Saahas Zero Waste, The Kabadiwala

Recycling Partners: HSN Ecotex (Panipat), SSR Mills (Tirupur)

Connection Zero Waste

The CTL program aligns with the zero-waste approach by focusing on minimizing textile waste through circular economy principles. It aims to reduce landfill dependency by recovering, repurposing, and recycling post-consumer textile waste through an inclusive Circular Textile Waste Management (CTWM) model. The CTWM model integrates waste microentrepreneurs to establish Textile Recovery Facilities (TRF) that redirect textile waste to multiple market channels. The program builds a hyperlocal ecosystem that enables the collection, sorting, and reintegration of textiles into new products. Additionally, it fosters awareness, innovation, and industry partnerships to scale up circular solutions, ultimately contributing to a waste-free textile sector.

The initiative is therefore designed around the following key building blocks to contribute to zero-waste to environment:

- Place-based Circular Economy (PBCE Model) – the initiative is designed around waste-picker community, leveraging local resources and strengthening local economies to address the socio-environmental challenges associated with textile waste
- Solving for demand-supply asymmetry by identifying and establishing markets for secondary materials and use, and building optimal material (sorted and segregated post-consumer waste) supply chains
- Viability gap funding for establishing evidence and the business case for CTWM model - The initiative partners with reputed waste management companies and CSOs in the program locations and supports them required viability gap funding to set up, replicate and grow CTWM as an economic viable model
- Building long-term socio-economic resilience of marginalized and underserved waste worker communities by building their skills and capabilities for effectively managing textile waste
- Technology and digital deployment for accelerating scaling of the CTWM model. The initiative leverages technology applications to increase the outreach for driving awareness generation and scaling textile waste collections.

Contribution to Sustainable Development Goals

CTL has been conceptualized to solve for pressing global problems and address multiple SDGs:

- SDG 5 (Gender Equality) – CTL facilitates safer working conditions, skill development and entrepreneurship opportunities for women waste workers. Of the total livelihoods impacted, ~75% are women.
- SDG 8 (Decent Work and Economic Growth) – CTL fosters green jobs in waste collection, sorting, and market linkages. Till Dec 2024, the program has created ~1000 green jobs and positively impacted ~1500 livelihoods.
- SDG 11 (Sustainable Cities and Communities) and SDG 13 (Climate Action) – It aligns with Target 11.6 (reduce environmental impact by improving waste management) by diverting approx. 1,500 MT of textile waste from landfills and reducing pollution. As diverting textile waste from going to landfills leads to avoiding GHG emission, it is also aligned to SDG 13 (Climate Action).
- SDG 12 (Responsible Consumption and Production) – The initiative directly supports Target 12.5 by creating a Circular Textile Waste Management (CTWM) model for post-consumer textile waste in India leading to textile waste recovery and reintegration into the supply chain.
- SDG 17 (Partnerships for Sustainable Development) – Building the ecosystem by forging partnerships with all the relevant stakeholders is at the core of the program. The program works closely with Waste Management Enterprises (WMEs)/Civil Society Organizations (CSOs) to bring all the supply side, demand side players and local government bodies to scale the program.

Background, Challenges and Objectives

The Indian Textiles and Apparel (T&A) industry is a major environmental polluter and littered with social inequities.

- Textile waste is the 3rd largest contributor of municipal solid waste in India.
- ~43% of domestic TW is incinerated or landfilled; 20% of textile industry's emissions come from textile waste
- An estimated 4 million waste pickers in India remain highly vulnerable and stuck in a cycle of poverty. Of these, 90% are women and youth.
- India lacks a formal infrastructure for collection, segregation and sustainable re-use or disposal of textile. Textile recycling hubs rely on pre-consumer or post-consumer imported waste.

“The Indian Textiles and Apparel industry significantly contributes to environmental pollution and social inequities, with textile waste being the third largest contributor to municipal solid waste in India. The CTWM model aims to address these issues by creating a transparent, cooperative value chain and providing scalable solutions for textile waste management, benefiting both the environment and waste workers.”

Our integrated CTWM model addresses the domestic textile waste concerns of India characterized by:

1. Lack of transparency and cooperation in the value chain.
2. Lack of a formal model for waste workers to collect and sort textile waste.
3. Lack of local and scalable solution providers for full circular textile to textile processing.
4. Market linkage gap between domestic waste and recyclers / other solution providers.
5. Limited design for inclusive jobs.

The CTL program balances both planet and people positive outcomes while allowing all stakeholders to unlock the economic value from waste. The CTWM model enables localized, partnership-driven approach that can be scaled and replicated rapidly.

Actions and Implementation

In our actions and implementation chapter, we methodically outline the steps taken to set up the textiles-as-a-service concept:

Phase 1: Seed – Pilot testing the initial design and construct in two geographies/locations in India, understanding existing markets and value chains

Phase 2: Support (Current) – Expansion to 10 geographies, experimenting with diverse contexts, refining the CTWM model for scalability.

Phase 3: Scale – Scaling to 12 to 15 geographies with a focus on accelerated impact, policy integration, market expansion, and long-term financial viability and sustainability of the CTWM model and for all ecosystem stakeholders.

The CTL program places the waste worker community at the centre and ensuring the community's voice on the table.

- The implementation of the CTWM model in each geography is guided by extensive consultation with grassroots implementation partners and waste workers.
- Their firsthand knowledge helps shape an in-depth understanding of the local textile waste landscape and context, including existing infrastructure, historical practices, cultural values, market dynamics, and policy frameworks.
- Based on their insights, the model is adapted to suit each geography's specific needs, ensuring that training programs and capacity-building efforts are both relevant and effective.

The program has established a robust internal Monitoring, Evaluation and Learning (MEL) system. The objective of the internal MEL is (1) To track progress of the program and do course correction as needed (2) To curate lessons learned- what works, what does not work and why.

The progress of the program is tracked using a monitoring system built over a digital data collection platform. The system captures data related to the KPIs from each grassroots partner in a gender disaggregated manner. Qualitative discussion with all stakeholders across the value chain is conducted to triangulate and validate the findings. All of these lead to identify patterns in the gathered information and curate program learnings to replicate and scale the model.

IN PICTURES: SOLVING THE POST CONSUMER TEXTILE WASTE CRISIS IN INDIA



Erstwhile waste workers now working as sorters for textile waste.



Textile waste sorted as per colour & composition, for recycling.



Good quality textile waste market-sorted for resale.



A Textile Recovery Facility (TRF) established as part of the program



Signages on TRF's wall to help in sorting



Kumudha (left), a microentrepreneur under the program, running the TRF and employing the sorters (right) full time

Under CAIF's flagship "Closing the Loop on textile waste" program, old clothes are kept away from landfills and better opportunities are generated for the underserved and marginalised waste workers



Outcomes and Impact

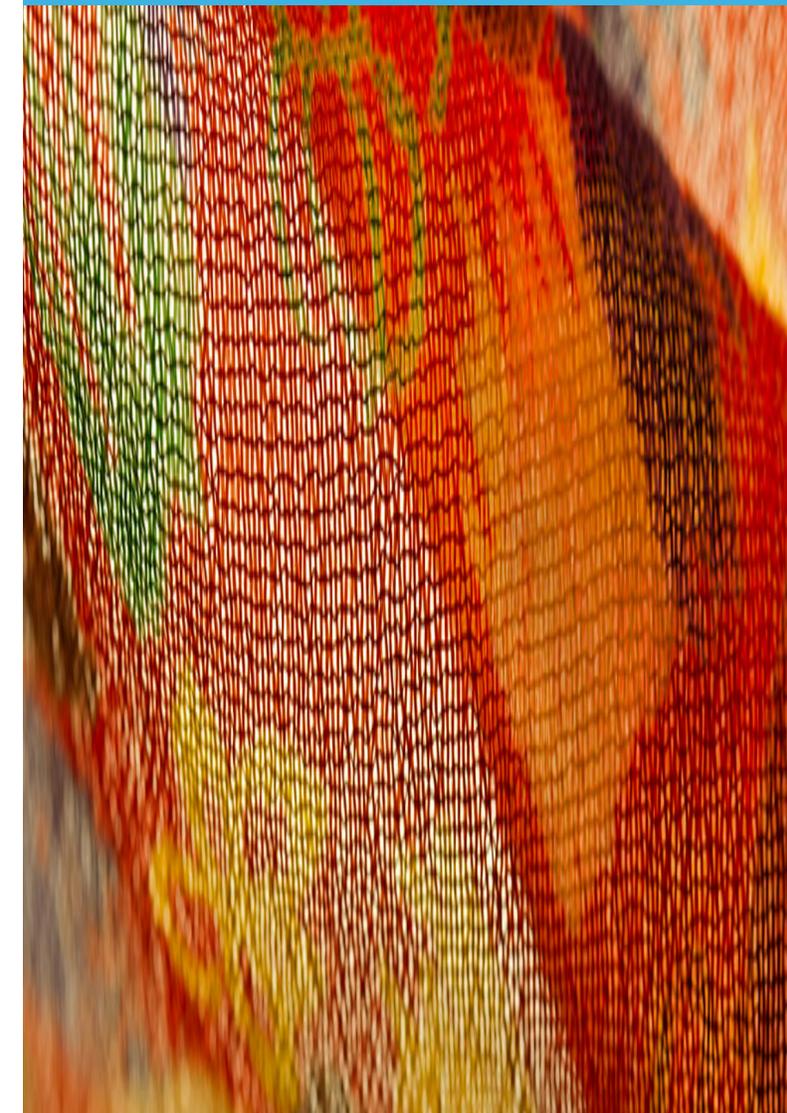
CTL builds on the principles of place-based circular economy, leveraging the local capacities and capabilities to build resilience and sustenance of the local communities. In the case of CTL, the primary target group is the historically underserved and marginalised waste workers. The primary metrics measured are bucketed into two broad categories:

Environmental impact:

- ~ 1500 MT of textile waste diverted from going to landfills
- The volume of textile diverted can be equated to ~3000 MT of CO2e emissions avoided

Social impact:

- ~1500 lives impacted through building skills and capabilities to manage textile waste, unlocking new green jobs and job roles, improving working conditions, gender inclusion and empowerment
- 30+ microentrepreneurs created/ supported



ca. 1,500 MT

of textile waste diverted from going to landfills.

ca. 1,500 lives

impacted through building skills and capabilities to manage textile waste, unlocking new green jobs and job roles, improving working conditions, gender inclusion and empowerment.

30+ microentrepreneurs

created and supported.

Replicability and Scaleability

CTL has demonstrated strong potential for replication and scale-up, as evidenced by its expansion across 12 cities in India, with plans to reach 15 cities by the end of the program. The initiative has been successfully adopted in both Tier 1 cities (major urban hubs) and Tier 2 cities like Aurangabad, showing its adaptability across diverse urban environments.

Key Lessons for Replication

1. Local context matters while replicating the model in additional new geographies. While the core model is replicable, success depends on understanding city-specific factors such as existing waste flows, infrastructure, labor networks, and market demand.
2. Continuous stakeholder engagement is crucial. Early collaboration with local governments, informal players, and waste aggregators augments long-term feasibility.
3. Harmonising supply with sufficient demand for textile waste drives success, Replication should factor in available textile waste buyers and recyclers to ensure that collected materials are effectively reintegrated.
4. Placing the waste worker community at the centre of the model design and building higher order skills of waste workers in integral to (i) integrate circular business models (ii) unlock green jobs
5. At the level of Waste Management Enterprises who are key implementation partners in program locations, leveraging existing resources (solid waste management system, collection network, existing Material Recovery Facilities, waste collection and sorting staff) optimally is crucial to increase efficiency and achieve scale at pace
6. Designing for 'ease of access' while mobilizing local resources (human resource, textile waste, logistics) leads to increased willingness of the community (waste worker community, citizens) to participate in CTWM model.
7. Establishing 'a steering committee' (the role that CAIF plays in this program) is important to establish the model and drive scale
8. Stitching partnerships with local government is crucial to unlock large scale resource access.
9. Co-opting Waste Management Enterprises/Civil Society Organizations who have a clear intent of developing textile waste management as a line of business is crucial for sustainability of the model. And these entities need to gradually move to forward integration/secondary material business to strengthen the economic viability of the business.

CTL has a dedicated communication and outreach strategy that ensures digital coverage to amplify visibility and drive industry participation. There is a system in place to document the best practices and facilitate knowledge sharing for faster adoption.

Inclusion and Innovation

Partnerships

Building the ecosystem by forging partnerships with all the relevant stakeholders is at the core of the program. The program brings all the supply side and demand side players together to collaborate with and complement each other. The Waste Management Enterprises (WMEs)/Civil Society Organizations (CSOs) collaborate with the supply side players (households, housing societies, office complexes, educational institutions, religious institutions, corporates etc.) to ensure uninterrupted inflow of textile waste. They also forge partnerships with various demand side players (resellers, upcyclers, recyclers, downcyclers) to ensure steady outflow and market uptake of the textile waste. Lastly, the WMEs/CSOs work closely with local government bodies (e.g. municipality, rural development agencies) to leverage their existing resources to scale the program.

Inclusivity

The program promotes inclusiveness in three broad ways:

1. Integrating the informal sector in program design: The program integrates the informal waste workers in a formal work environment at the Textile Recovery Facilities (TRF). The program also supports hyperlocal waste micro-entrepreneurs to operate and grow their formal waste management businesses.
2. Gender integration: The program promotes equal representation of women. The program also promotes making the TRFs inclusive and gender-sensitive in terms of infrastructure (access to separate toilet for women, access to clean drinking water) as well as policies (minimizing gender pay gap, promoting flexible work hours for the female waste workers etc.)
3. Integration with traditional communities who have depended on textile waste for centuries: The program works closely with informal local communities like the Waghri community, who have been trading textile waste, in certain program locations. It has led to formal engagement with such communities and improvement in the inflow and outflow of the textile waste through business transactions with them.

Innovative Features

- The program has established a unique and first of its kind pan-India model for recovery and reclaiming value from textile waste, particularly domestic post-consumer textile waste.
- The program design factors in testing and replicating several innovative mechanisms such as a skills-as-a-service model for waste workers to engage with circular business models such as upcycling and innovative financing mechanisms to unlock access and availability of capital to establish and grow their micro-entrepreneurship businesses.

CLOSING THE LOOP ON TEXTILE WASTE (CTL), a flagship program of Circular Apparel Innovation Factory (CAIF), an Intellectap initiative

Establishing an integrated Circular Textile Waste Management model that leverages a pan-India network of hyperlocal material recovery facilities powered by waste pickers

THE CIRCULAR TEXTILE WASTE MANAGEMENT MODEL (CTWM)
We are closing the textile waste loop through 5 pathways



EXPANDING FOOTPRINT ACROSS INDIA
We have replicated the CTWM model across 12 cities in India



Accountability and Sustainability



1. The CTL program has laid the foundation for addressing the gaps and challenges detailed above. Prior to this, there was no mechanism that could effectively and systematically divert post-consumer textile waste from landfills and formally integrate the informal waste picker community, which forms the backbone of solid waste management in India. By establishing and replicating an inclusive and economically sustainable CTWM model, the CTL program has successfully created evidence and use case of scaling the underlying ecosystem approach.

2. The program has established clear roles and value propositions for each ecosystem stakeholder group to participate in and contribute to scaling the model.



3. The program has created evidence around pathways for waste management enterprises and grassroots waste microentrepreneurs to manage textile waste as an economically viable business

4. The program has built new skills and capabilities of informal waste worker communities and unlocked new green jobs and job roles related to textile waste management, while improving their working conditions and driving gender inclusion and empowerment.

Financial Data

The CTL program has been funded by philanthropic organizations such as IKEA Foundation, Alwaleed Philanthropies with a combined budget allocation of approx. USD 5 million.

Intellectap, has allocated a dedicated team of experienced professionals from its circularity practice (CAIF). Intellectap has partnered with reputed waste management companies and CSOs in the program locations and provided them required viability gap funding to set up, replicate and grow the CTWM model as an economic viable model.

Intellectap has channelized significant effort and available funds for training and building skills and capabilities of waste worker communities in program locations to enable them to formally engage with the textile waste management ecosystem by undertaking new green jobs and job roles unlocked by the program.

The CTL program has been instrumental in laying the foundation for a replicating and economically sustainable circular textile waste management model. Through an ecosystem approach, the CTL program has successfully delivered the following outcomes to date.

Environmental:

1. ~ 1500 MT of textile waste diverted from going to landfills
2. The volume of textile diverted can be equated to ~3000 MT of CO₂e emissions avoided

Social outcomes:

1. ~1500 lives impacted through building skills and capabilities to manage textile waste, unlocking new green jobs and job roles, improving working conditions, gender inclusion and empowerment
2. 30+ microentrepreneurs created/ supported

Economic outcomes:

1. The program has shown waste management enterprises (our grassroots implementation partners) across program locations, clear pathways and a business case for manage textile waste as an economically viable business
2. The viability gap funding support provided to these partners has enabled them to grow their revenues from textile waste managed and progress towards breaking even in the coming months/year.
3. We have set up a dedicated communication and outreach strategy for the CTL program that ensures digital coverage to amplify visibility and drive industry participation. We have also created a system to document the best practices and facilitate knowledge sharing for faster adoption.
4. The progress of the program is tracked using a monitoring system built using a digital data collection platform. The platform captures data related to the KPIs from each grassroots partner in a gender disaggregated manner.

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