

Federation of Indian Chambers of Commerce and Industry

Industry's Voice for Policy Change

Non-conventional Recycling of Plastic Waste

Concept of Zero Waste to Landfill (ZWTL) and Circular Economy

About IPCA

- Incorporated in 2001 as is a not-for- profit, non-government organization (NGO) and is registered under the Society Registration Act XXI of 1860
- Enlisted with Central Pollution Control Board for Plastic Waste Management and pioneer in preparing & executing Extended Producer Responsibility (EPR) action plans for plastic waste management in India.
- Member of expert and core committee constituted by MoEFCC, CPCB, Government of NCT of Delhi, Government of Uttarakhand, Government of Jammu and Kashmir and CPCC for plastic waste management.
- Instituted its recycling units in Greater Noida, Samba and Patiala with collective capacity to recycle over 2000 MT of plastic waste per month. New facility coming up in Chennai.
- Set-up and operating 10 MRFs in India catering to over 250 MT of solid waste per day.

Vision

- Sustainable economic development of India in a way that ensures environmental protection.

Mission

- To improve livelihood through responsible use of natural resources for the welfare of present and future generations.
- To ensure proper recycling/processing of different kinds of waste to produce other useful consumable products, and
- To provide solutions to environment and climate-related problems

Multilayered plastic (MLP)



Such plastic have at least one layer of plastic and at least one layer of another material, such as paper, paperboard, polymeric materials, metalized layers, or aluminum foil.

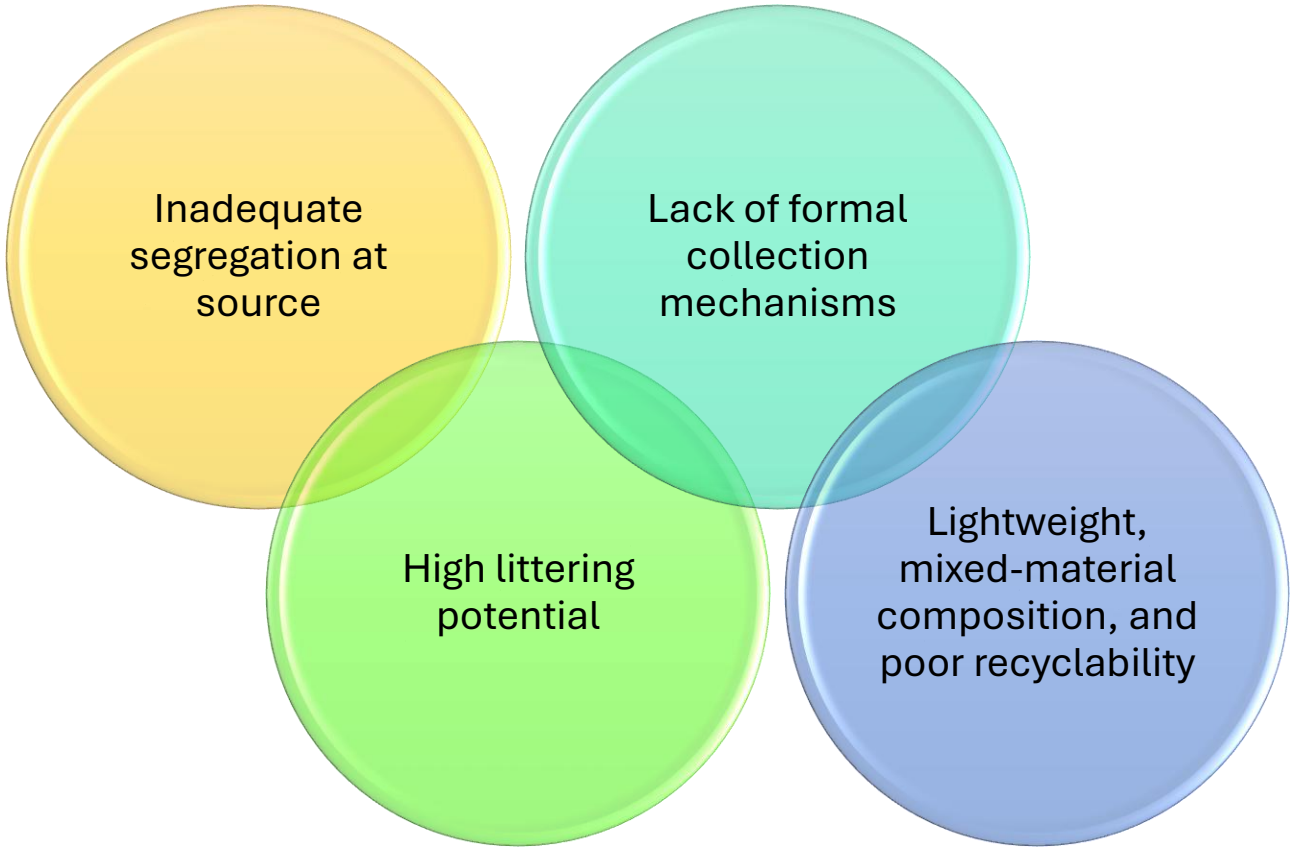


Multilayered plastic (MLP) Waste examples

- Snack packets (chips, biscuits)
- Chocolate wrappers
- Shampoo sachets
- Detergent packets
- Ready-to-eat food pouches
- Toothpaste tubes

Problem Statement

Low-Value plastic waste such as MLP remained a critical waste management challenge. There was no existing supply chain for the collection and recycling of this type of waste, as it is difficult to integrate into the collection system due to following:





Transformative Solution by IPCA:

An innovative, non-conventional recycling method for MLP Waste



Viable solution to the issue of Low-commercial value plastic waste recycling

Until recently, a substantial volume of low-commercial value plastic waste was directed to co-processing or waste-to-energy plants due to the lack of viable recycling solutions for this material.

With significant R&D, IPCA has developed a sustainable solution to the issue by developing a collect back mechanism for low-commercial value plastic waste by generating awareness, building the capacities of waste workers, developing infrastructure for material recovery and recycling.



Viable solution to the issue of Low-commercial value plastic waste recycling

- IPCA is amongst the pioneer organization in India for developing a technology to cater complex plastic wastes like multi layer plastic packaging waste (MLP).
- Using the hot and cold press technology, IPCA has set-up two plastic recycling units in India (each in Greater Noida, Samba & Patiala) which cater to more than 2000 MT of plastic waste every month.
- At these facilities, shredded low-value plastic is layered on a platform, with weight adjusted for board thickness (6–30 mm). It's then pressed using hot and cold press machines to produce uniform chipboards (8 ft × 4 ft), which are later fabricated into various consumer products.**



Greater Noida, Uttar Pradesh



Focal Point, Patiala, Punjab



Samba, Jammu

Another unit coming up in Chennai



Recycled Chipboards

At the recycling plant, we produce chipboards from plastic waste, used for making consumer products and supplied to buyers for varied applications. These boards retain plastic's durability and, under ideal conditions, last for decades. Their strength and properties are tested at NABL-accredited labs.

- Water Absorption: 0.19 %
- Tensile breaking load: 20.61 N/mm2
- Screw holding capacity: 139 kg
- Nail Holding capacity: 13.5 kg
- Hardness: 96 Shore A
- Flexural Strength: 24.65 N/mm2



These sheets are used in diverse applications like construction, furniture, FMCG pallets, planters, stationery, gifting items, home décor, and more. Several consumer products have already been developed, with their quality and range continuously enhanced through ongoing R&D.

Technology in use



The technology used in IPCA's facilities enables it to convert shredded plastic waste into chipboards using a combination of hot and cold press methods. This indigenous technology compresses and binds plastic flakes without the need for additional adhesives, making it an eco-friendly solution for recycling plastic waste into durable chipboards.

No waste is generated in the production of these chipboards. Since only clean plastic waste is sourced, there is no any washing line at the recycling units.

Specifications

The chipboards underwent testing to meet industry standards, confirming their reliability and suitability as a sustainable plywood alternative. The table is showing the specifications of the produced sheets:

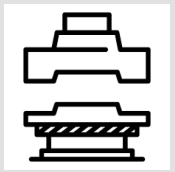


Thickness	Dimensions (ft)	Weight (kg)
6 mm	8 x 4	18
8 mm	8 x 4	24
12 mm	8 x 4	36
18 mm	8 x 4	56
24 mm	8 x 4	72
6 mm (Roof Sheeting)	8 x 3	18

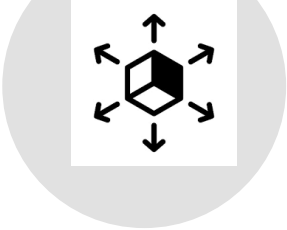
Process



Grinding: The low-value plastic waste is sorted, cleaned, and fed into grinders, which shred the plastic into flakes of 10 mm in size.



Hot and cold pressing: The spread flakes are covered with a thin plastic sheet and placed in a hot and cold press machine via a scissor lift. These machines apply regulated temperature and pressure to bond the plastic flakes into a single, cohesive sheet.

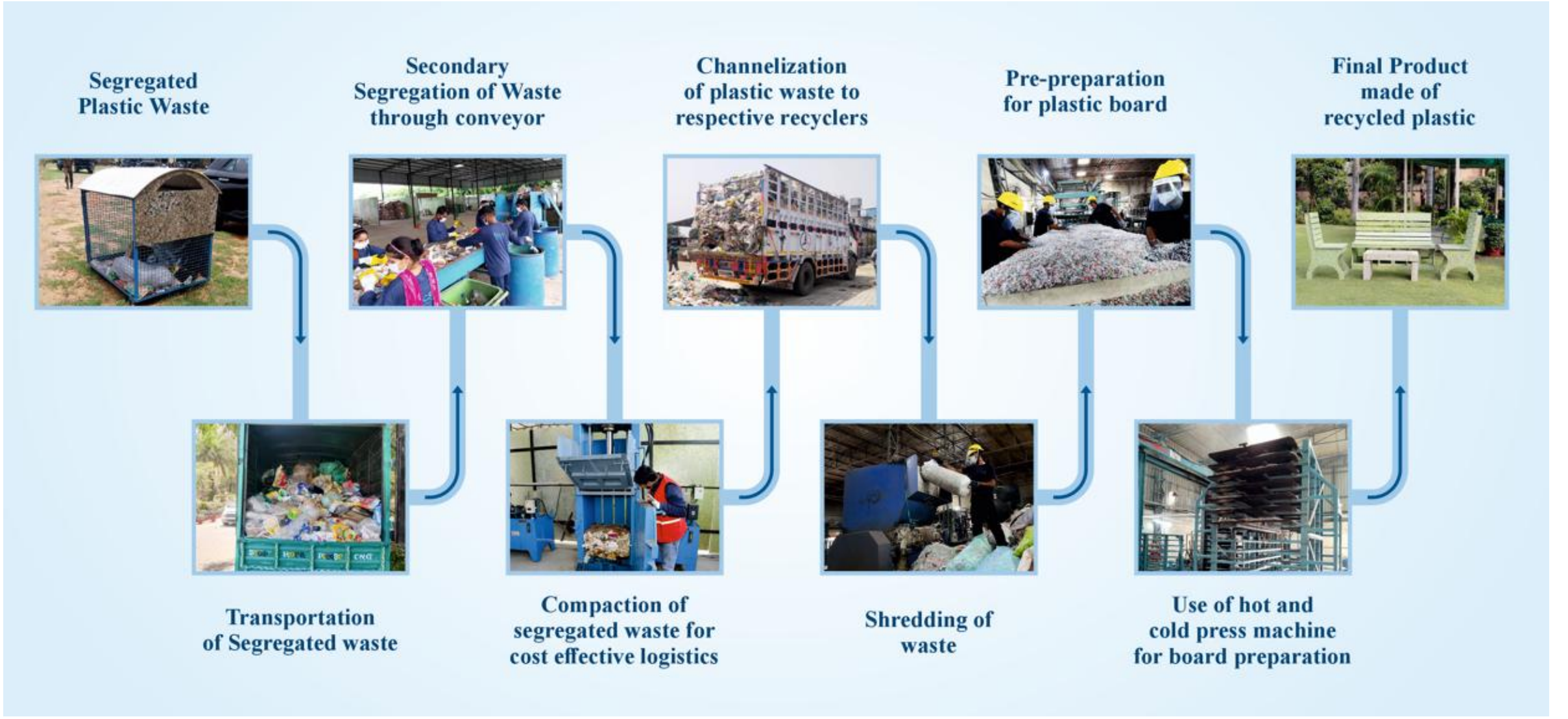


Distribution of flakes: The shredded plastic is then evenly spread on a platform with dimensions of 8 ft by 4 ft. The weight of these flakes is adjusted depending on the required thickness of the final board (ranging from 6 mm to 30 mm).



Chipboard production: After pressing, the boards with dimensions of 8 ft by 4 ft, suitable for a variety of applications are made. These boards are termite-resistant, water-resistant, and rust-resistant, making them ideal for use in furniture, warehouse pallets, gifting, and other infrastructure materials.

Supply chain for MLP waste management



Applications













Applications




GCPRS 1
iPCA
SUSTAINABILITY IS OUR GOAL
Indian Pollution Control Association
OUR SERVICES
EXIT


iPCA
DRY WASTE
(सूखा कूड़ा)
iPCA
WET WASTE
(गीला कूड़ा)




H6
iPCA
SUSTAINABILITY IS OUR GOAL
Indian Pollution Control Association
Chemicals
Extended Producer Responsibility
EPR Services
Supply Chain for
Organic Waste Management
Supply Chain for
Plastic Waste Management
iPCA
SUSTAINABILITY IS OUR GOAL
iPCA
SUSTAINABILITY IS OUR GOAL
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SUSTAINABILITY IS OUR


Extended Producer Responsibility
EPR Services
EPR Expertise
Our Services
Capacity Building of Waste Workers
Behavioral Change Oriented Community Engagement Programs
Implementation of Decentralized Solid Waste Management System
Setting Up and Operating Material Recovery Facilities
Setting Up and Operating Plastic Recycling Facilities
Executing EPR for Plastic Waste, Battery Waste, E-Waste & Tyre Waste
Air Quality Monitoring and Management
Design and Implementation of CSR Projects
Research & Academics
Supply Chain for
Organic Waste Management
Awareness Session on Source Segregation
Installation of Composter in Society
Recieving of Wet Waste at Composting Site
Harvesting of Compost
Input of Mixed Waste into Composter
Preparation of Feed Stock
Keeping Compost under Sun for 2 Days
Sieving of Compost
Utilization of Compost
This Bin is made from
35kg
of Plastic Waste


TRUFLO
IPCA

Let’s reimagine

the WASTE MANAGEMENT for SUSTAINABILITY!

THANK YOU