
Executive Summary

Liquid beverage cartons offer an efficient solution for safely distributing liquid and food products, preserving freshness, flavour, and nutrition in both ambient and chilled conditions. With the global beverage carton market expected to grow from USD 16.51 billion in 2020 to USD 22.44 billion by 2028, their importance is clear. Made of about 70% paperboard, 25% polymers, and 5% aluminium, these cartons are durable, recyclable, and can be repurposed into new paper goods and some amount of plastic-and aluminium based products—highlighting their role in a circular economy. Cartons do more than protect food—they support nutrition access, reduce food waste, and offer a lower climate impact compared to fossil fuel-based packaging, especially in the dairy and juice sectors. When effective recycling systems are in place, they also help keep valuable materials in circulation. As global populations rise and natural resources face increasing pressure, sustainable packaging becomes essential for food preservation and environmental protection.

Tetra Pak India Private Limited (TPIPL) commissions a UBC management study every three years. Conducted by The Energy and Resources Institute (TERI) in 2011, 2015, 2019, 2022 and 2025 the study covers 24 Indian cities. It assesses waste collectors' perceptions, estimates UBC and volumes recycled (especially via mixed paper streams), and provides insights to inform strategies for increasing UBC recycling rates nationwide.

The study revealed that UBCs are collected by waste collectors, small and large-scale dealers, and are subsequently sent to recycling units. The findings highlight the proportion of UBCs present at various levels of the collection chain, offering insight into how much waste leaks into the environment at different stages. In cities across states like Uttar Pradesh and Karnataka, the recycling rate of UBCs is notably high, largely to the well-developed collection infrastructure. The survey found that large and small -scale dealers along with Material Recovery Facilities (MRFs) and substations are actively engaged in collecting both UBCs, which has led to improved collection rates. These materials are then sent to recyclers or paper mills for processing, significantly reducing the volume of UBCs that end up in landfills.

The objective of the study is to assess the management of UBCs based on the specified sample size, with the aim of determining recycling rates through a combination of secondary research and field surveys involving waste collectors, waste dealers, MRF, Substations, Landfill and recyclers.

According to the Ministry of Housing and Urban Affairs (MoHUA), paper and cardboard waste constituted approximately 7.35% of municipal solid waste (MSW) in 2024, with an estimated recovery rate of 57%.

As part of this study, the value chain and economics related to the collection and recycling of UBCs were analysed. It was observed that the recycling rate of UBCs has steadily increased over the years, from 29% in 2011 to 63.66% in 2025, at city level with intermediate rates of 43% (2015), 54% (2019), and 62% (2022).

The recycling rate of 63.67% of UBCs in 2025 can be attributed to informal recycling of 27.65%, and active/formal recycling of 36.02%. The quantity of UBCs reaching landfills was estimated to be 5.65%, and 30.68% was unaccounted.



This improvement is largely attributed to Tetra Pak's interventions, including partnerships with recyclers and investments in infrastructure and technology to enhance the collection and recycling processes of UBCs. As a result, the volume of UBCs disposed of along with mixed paper at landfills decreased, while dedicated collection and recycling streams for UBCs have been significantly strengthened.

Based on the extrapolation of data along with secondary research and consideration of over 1000 cities, using Central Pollution Control Board (CPCB) data on pan-India waste generation, waste recovery, population census and considering the increasing trend of MSW increasing in last 3 years with reference to the consumption, informal and formal generation and collection in India the overall national recycling percentage is about 48.56%, implying that for every two UBC, one is recycled.

Policy interventions like Extended Producer Responsibility (EPR) can play a pivotal role in ensuring accountability across the recycling value chain. EPR can further strengthen these efforts by recognizing recyclers such as paper mills and chipboard manufacturers, through appropriate credit mechanisms that incentivize the recycling of UBCs.

Based on the assessment of UBC (Used Beverage Carton) recycling performance across cities and the interventions undertaken by Tetra Pak, the following recommendations are proposed to strengthen the circular economy framework, enhance collection efficiency, and improve recycling outcomes:

» **Enhance Circular Economy Pathways:**

UBC recycling rates have improved from 2022-2024, but further development of circular economy systems is required. Introducing incentives for end-users and waste collectors to segregate and supply UBCs can increase collection volumes and improve system efficiency.

» **Review EPR Credit Mechanism for Category III Packaging:**

The current EPR credit system recognizes credits only for the recycling of the plastic content of multi-layer packaging under Category III. Recyclers currently receive 30% credit despite processing the full volume of Category III packaging like UBCs as it contains only 30% polyAl content and remainder 70% paperboard recycled goes unrecognized, making compliance challenging. A revised, material-neutral credit calculation method or registration process for Category III plastic waste processors would better align credits with actual recycling processes.

» **Strengthen Markets for Recycled UBC Products:**

Stable recycling outcomes depend on consistent market demand for recycled UBC outputs. Enhancing market linkages, expanding applications of UBC-derived products, and supporting business development for recyclers can increase economic incentives across the value chain.

» **Improve Waste Dealer and Recycler Network Coordination:**

Strengthening coordination among waste collectors, aggregators, and recycling units is important. Ensuring reliable economic returns can encourage waste dealers to handle UBCs, supporting improvements in formal collection volumes and recycling efficiency.



» Utilize Inactive Recycling Potential:

With approximately 27.65% of UBCs already recycled inactively through mixed wastepaper streams, there is considerable untapped potential. Integrating these inactive recycling activities into active systems can substantially increase infrastructure of recycling and support improvement in national UBC recycling rates.

» Scale Successful City Models Across India:

Cities such as Lucknow, Kanpur, and Bengaluru exhibit strong recycling performance due to established UBC collection centres and mature local systems. Adopting similar models in other urban areas—especially those with less developed collection infrastructure, can support improvements in UBC recovery and recycling.

The following graph provides a clear picture of the recycling rate of UBCs in 24 cities:

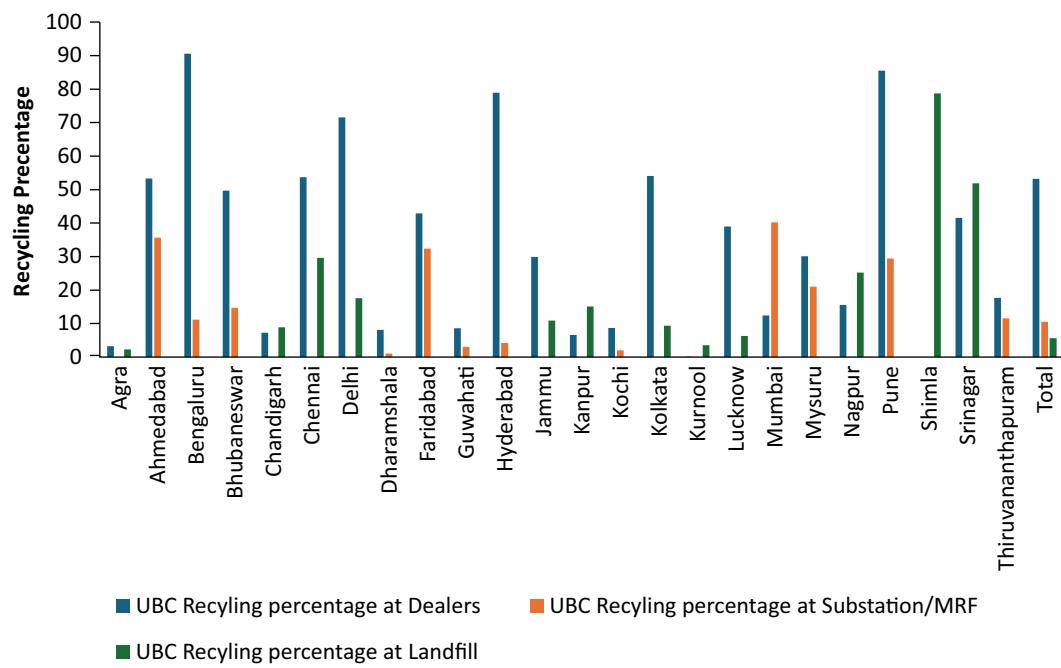


FIGURE 1 Recycling rates of UBC in 24 cities