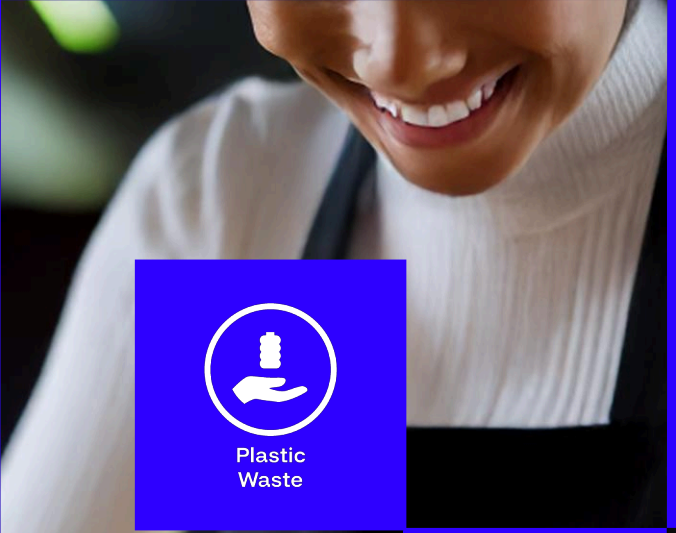
Extended Producer Responsibility (EPR) Recommended Guiding Principles for Liquid Packaging Cartons in Low- and Middle-Income Countries

March 2026

Contents



About the Consumer Goods Forum (CGF) Plastic Waste Coalition of Action

The Consumer Goods Forum ("CGF") Plastic Waste Coalition of Action was founded in 2020 with the aim of developing a more circular approach to the development and processing of plastic packaging in the consumer goods industry. The development of the Coalition builds of the CGF's 2018 endorsement of the Ellen MacArthur Foundation's New Plastics Economy. As a CEO-led group of 40+ committed and innovative retailers, manufacturers, and converters, the Coalition's vision of accelerating progress towards the New Plastics Economy is embodied by its central aims for members to work towards implementing impactful measures through multistakeholder collaborations that will help promote circularity in the industry.

The CGF Plastic Waste Coalition of Action has been exploring Extended Producer Responsibility (EPR) from its inception in 2020 with the publications of "*Building a Circular Economy for Packaging. A View from the Consumer Goods Industry on Optimal Extended Producer Responsibility*", followed by "*Guiding principles for ecomodulation of EPR fees for packaging*" published in 2020, and "*Extended Producer Responsibility (EPR) for Packaging: Design and implementation in low - and middle-income countries*" and "*Critical Considerations for Well-Designed Parallel EPR-DRS Systems for Recycling*" published in 2025.

All initiatives and action points are subject to antitrust rules and will be vetted by external counsel before implementation.

About the Guiding Principles document

- Building on CGF *Extended Producer Responsibility (EPR) for Packaging: Design and implementation in low -and middle-income countries (LMICs)* (2025) and informed by the analysis of how liquid packaging cartons (LPCs) are treated across selected country case studies, The CGF PWCoA defined complementary EPR Guiding Principles for liquid packaging cartons in LMICs. These principles aim to address identified challenges and ensure that EPR design and implementation fairly and adequately reflect the specificities of cartons.
- A wide range of stakeholders can use this document as a guiding tool and information package in the development of EPR schemes for liquid packaging cartons.
- Although this paper focuses on liquid packaging cartons, the relevance of the Guiding Principles can extend to other packaging formats.
- *Note: In this document, "LPC" refers to "liquid packaging carton".*
- The CGF welcomes additional feedback and encourages ongoing engagement on this topic. Please direct any further input or inquiries to: plasticwaste@theconsumergoodsforum.com.

Acknowledgements

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The Consumer Goods FORUM

Plastic Waste

Executive Summary

Liquid packaging cartons (LPCs) are a key packaging format for specific applications, with high recycling potential, including in low- and middle-income countries (LMICs)

Important packaging format for specific applications

Liquid packaging cartons are an important packaging format for food and beverages and are used across both aseptic and chilled applications, especially juice and dairy. Aseptic LPCs offer long shelf life for perishable products without the need for a cold chain – a distinctive characteristic especially relevant in LMICs. Their primary renewable material, paper, also reduces reliance on fossil-based packaging.
(see page 12 for more details)

High material value if recycled

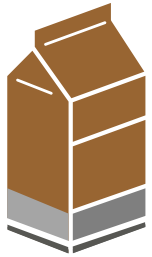
The paper in liquid packaging cartons is made of long fibres, making it particularly valuable. Recycling the PolyAl fraction also creates some commercial opportunities for individual companies where end markets are established (e.g., China, South Africa).

High recycling rates are possible but requires careful attention

Liquid packaging cartons have a multi-layer structure – essential to protect against light, meet food-safety requirements, reduce perishability and extend shelf-life up to 12 months – but this makes recycling more complex, particularly in LMICs with less mature systems. Yet, mature markets show that high recycling rates are achievable.

Liquid packaging cartons are important in enabling safe, efficient packaging for many foods & drinks

The combination of materials that make liquid packaging cartons so effective also creates recycling challenges



75% paper

21% polymers

4% aluminium

Sources: FBCA Global (2025), Food & Beverage Carton Recycling Facts & Figures; Carton Council of Canada; ACE (2022), Beverage Cartons Design For Recyclability Guidelines; Rapid Microbiology (2021), Rapid Microbiological Testing of UHT and ESL Dairy Products; Ziyaina et al. (2018), Monitoring Shelf Life of Pasteurized Whole Milk Under Refrigerated Storage Conditions: Predictive Models for Quality Loss

Packaging EPR is an important lever to achieve circularity potential, yet low- and middle-income countries can face design and implementation challenges that Consumer Goods Forum guidance can help address

01

EPR is an important instrument for packaging circularity

Well-designed EPR accelerates packaging circularity and reduces pollution by improving collection and sorting and mobilising finance for recycling value chains. However, successful packaging EPR implementation relies on publicly-mandated/funded basic waste management systems as packaging EPR cannot fully fund a solid waste management system.

02

EPR momentum and fragmentation in LMICs

EPR is expanding rapidly in low- and middle-income countries (LMICs), yet fragmented policy approaches create significant implementation complexity.

03

LMICs face specific challenges

Existing packaging EPR models do not fully address LMIC challenges, which vary widely based on policy setup, implementation capacity, waste pickers' role and integration, and infrastructure gaps.

04

CGF recommended guidance elements for efficient EPR in LMICs

To overcome these challenges, CGF PWCoA[1] has proposed guidance elements for efficient EPR design and implementation, underscoring institutions, infrastructure, and the informal sector as the most critical to address.

Consumer Goods Forum (CGF) has defined recommend guidance elements for efficient EPR design and implementation in low- and middle-income countries

Summary of EPR design desired outcomes and recommendations for the six guidance elements:

Desired Outcome		Recommendations
A clear, enforceable, and transparent EPR legislative framework, co-designed with key stakeholders, that starts with basic requirements and evolves over time (e.g., expanding material scope, introducing ecomodulation)	POLICY	Establish a strong and adaptable EPR legislative framework aligning with the following principles: • Embedding core regulatory principles—performance targets and timelines, financing and fund management, governance structure, enforcement, monitoring, compliance, data reporting and protection • Co-designing through inclusive consultation with key stakeholders including industry and the informal sector • Phasing in complexity—begin with realistic and enforceable basics and evolve over time with ecomodulation based on design guidelines playing an important role in a second phase • Aligning with existing policies and government departments to ensure coherence and coordination.
A robust, transparent governance structure that drives a long-term waste management and recycling infrastructure development in line with set EPR regulation, enforces compliance, and ensures fair, effective fund management.	INSTITUTION(S)	• In all models, an authority formally appoints a centralised institution / PRO that is a professional, not-for-profit entity responsible for implementing and governing an EPR system, governed by producers through a multi-stakeholder governing board. • Preferably adopt a centralised, single-institution / single-PRO model • If an alternative model is chosen, legally ensure all the seven core functions are fulfilled by the institution(s): strategic roadmap, operational coordination, informal sector integration, consistent producer implementation and enforcement, reporting, online data management and protection, and auditing
EPR drives sustained private and public investment into packaging waste management infrastructure	INFRASTRUCTURE	• Potential to establish mechanisms that attract substantial external investment for packaging waste collection and end of life infrastructure • Rely on existing basic collection services to help fund packaging waste management operations • Prioritize infrastructure investments based on local gaps • Institution(s) to design EPR fee structures to guarantee long-term service revenue for collectors and stable feedstock supply for recyclers for both lower-value and higher value packaging materials • Use EPR to underwrite long-term contracts between central institution and recyclers to unlock investments. • Explore complementary tools (e.g., recycled content mandates) to increase offtake certainty and support a business case for investment.
EPR supports the effective integration of informal sector waste workers*, contributing to a decent livelihood (e.g., informed by living income methodology) and reinforcing efforts to address human rights impacts *Wording is aligned with FCI	INFORMAL SECTOR	Collaborate with the waste value chain and informal sector representatives to ensure integration: • Governance participation: Legally recognize informal waste pickers as stakeholders with the right to participate in EPR design and governance; establish an integration taskforce and implement a formal integration plan. • Guaranteed payments: Establish a service fee, systems for registration, payment, and material tracking, and accessible grievance mechanisms. • Contracting with their organisation: Mandate the centralised institution to facilitate procurement/service contracts, support organizing and capacity-building, and establish grievance procedures for Waste Picker Organisations.
EPR systems should be designed to be cost-effective, especially in LMICs, where any inflation of food and basic goods would be acutely felt	FINANCIAL SUSTAINABILITY	• Reflect in producer payments the actual cost of managing packaging waste by high level materials type (e.g., plastic, paper, glass), offset by any revenues generated from the sale of recovered materials ("net cost" principle) allowing cross-subsidization of materials. • Regularly adjust payments to ensure they reflect changes in costs and commodity values over time. • Minimize administrative costs to maximise the funds that are flowing through to fund systems
EPR policies consider wider system impacts and ensures that reuse/refill business models are not unintentionally penalized	WIDER CONSIDERATIONS	• Ensure circularity is considered beyond recycling - reduce, reuse, and substitution - are carefully considered and actively supported through other policy instruments (e.g. reuse models face less packaging weight) • Once the system is in place use complementary tools to improve efficiency (e.g., recycled content mandates, design guidelines, ecomodulation)

(details in page 21-22)

1) Consumer Goods Forum Plastic Waste Coalition of Action, a CEO-led group of 40+ committed and innovative retailers, manufacturers, and converters working together to develop a more circular approach to the development and processing of plastic packaging in the consumer goods industry. Sources: CGF (2025), EPR for Packaging: Design and implementation in low –and-middle-income countries

Case studies have been used to develop specific recommended EPR Guiding Principles for liquid packaging cartons in low- and middle-income countries

01

Liquid packaging cartons identified insights are derived from case studies in LMICs

We outline key challenges in implementing EPR for liquid packaging cartons (LPCs) in LMICs, drawing on lessons from five case studies: South Africa, India, Vietnam, Chile, and China.[1] While not all challenges are unique to LMICs or are present in every case study, those that do arise offer important insights. Addressing the specific needs of LPCs can help build viable, scalable LPC recycling systems within EPR frameworks.

02

Three key EPR challenges are limiting the performance of liquid packaging cartons recycling systems in LMICs

1) **Liquid packaging cartons are not adequately considered in policy** because they are not consistently included in EPR schemes, are sometimes grouped within a broader or less appropriate category or lack realistic and dedicated targets.
2) **Liquid packaging cartons have not benefited from a level playing field for their recycling pathways** as they may receive only partial recycling recognition or partially acceptance and accounting within the recycling system.
3) **Liquid packaging carton waste management lacks adequate financing** because EPR fees for LPCs sometimes fail to reflect the true net cost of collection, sorting, recycling or disposal. In addition, EPR funds are sometimes not ring-fenced for LPC, and infrastructure and funding remain insufficient to incentivise investment in local LPC recycling.

03

Case studies insights shape the recommended Guiding Principles for liquid packaging carton recycling

Building on the general guidance elements for efficient EPR design and implementation in LMICs, the three identified challenges translate into three complementary Guiding Principles for liquid packaging cartons *(see next page).* Guiding principles are also derived from many design and implementation successes in LMICs (see chapter 4).

1) Disclaimer: These country case studies reflect the policy context in Q4 2025. Ongoing and rapid policy developments may mean that some details have since evolved.

Recommended Guiding Principles for effective design and implementation of EPR for liquid packaging cartons in LMICs can help increase recycling rates

Recommended EPR Guiding Principles for liquid packaging cartons (LPCs) in LMICs

Although these principles draw from practical EPR experience of LPCs in LMICs, their relevance can extend to a wider set of packaging categories such as multi-material formats

Details and sequencing available on pages 28-30

0 Policymakers and Institution(s)/PRO(s) apply CGF guidance

Apply all **CGF guidance elements for effective EPR in LMICs*** from day 1, ideally to all packaging including LPCs or at least define a clear recommended roadmap to include LPCs.
*Policy, Institutions, Infrastructure, Informal Sector, Financial Sustainability, Wider Considerations

1 Policymakers ensure liquid packaging cartons are considered

1a **Preferably establish an LPC-specific category from the outset (within paper grouping) or alternatively, include LPCs within a broader paper category (predominant material) at the start**, with an explicit timeline and roadmap to establish an LPC-specific category in the medium term. LPC categorisation should be defined based on local context and designed to support increased LPC recycling rates.[2] LPCs should not be categorised as plastics.

1b **Set clear and realistic collection and recycling targets for LPCs** based on existing national infrastructure, with timelines and increasing recycling targets over time, and clearly articulated definition of recycling, acceptable recycling pathways, and calculation methodology.[1] Waste not reused or recycled should go to disposal pathways.[3]

2 Institution(s)/PRO(s) create a level playing field for liquid packaging carton recycling

2a **Ensure that LPCs can be accepted in national collection recycling infrastructure from the start of EPR implementation**. While dedicated LPC-recycling technology can maximise value from pure LPC feedstock, LPCs are also recyclable in mixed-fibre streams and should therefore be accepted by paper mills.

2b **Allocate EPR fees for recycling of the whole LPC through the range of recycling pathways.** While the EPR fee needs to be set to account for all LPCs' constituent materials, a methodology needs to be set to account for LPCs recycling both in mixed paper bales and in pure LPCs bales (see page 14).

3 Institution(s)/PRO(s) set adequate financing for liquid packaging carton waste management

3a When the LPC category is established (1a), **set LPC-specific EPR fees with clear objective to ultimately reflect the true net costs of separate collection (of recyclables), sorting, and recycling or disposal of LPCs**, including waste pickers collection service adequately incentivised. Net-cost principle might not be realistic from the start of the scheme, but it should be designed with long-term viability in mind.[1]

3b **Ensure funds generated from LPC EPR fees are ring-fenced for separate collection (of recyclables), sorting, and recycling of LPCs from the start of EPR implementation.**[1]

3c **Ensure from the start of the EPR implementation the necessary national infrastructure for collection and recycling is in place or being developed. Gradually establish multi-year recycling contracts for LPCs that enable national infrastructure investment and support the development of end-markets for both fibre and PolyAl.**

1) Aligns with CGF guidance for EPR in LMICs and enabled by establishing a specific EPR category for LPCs. If no central institution or PRO is in place, it is recommended that funds are ring-fenced to LPC recycling; 2) Subject to the infrastructure and maturity of collection and recycling systems in developing countries, establish a roadmap designed to support increasing recycling rates. In the short term, this journey can start placing the LPCs withing a broader paper category (predominantly material). In order to avoid sizeable disruptions throughout the supply chain, migrating to the creation an LPC- specific category should be considered once all the infrastructure and institutional conditions are met; 3) sanitized landfills or to waste-to-energy

Chapter 1

Liquid packaging cartons in a circular economy

Liquid packaging cartons (LPCs) are an important food & beverage packaging material used for specific applications, providing longer shelf life

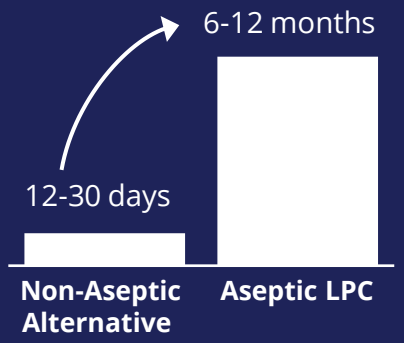
What are liquid packaging cartons?

- **Paper-based composite packaging:** Made on average of 75% paper, 21% plastic, and 4% aluminium by weight.[1]
- **Versatile packaging:** Used for a wide range of foods and drinks – including dairy, juices and food such as soups – and available in multiple sizes and shapes.
- **Two key types:** Aseptic and refrigerated LPCs, both made from multi-layer composites.

Why are liquid packaging cartons an important packaging format for specific applications?

- **Protective packaging:** Provide a sealed, safe container that protects and preserves products.
- **Long shelf-life & limited alternatives:** Integrated aseptic LPC systems enable safe, long-duration ambient storage without preservatives or refrigeration, extending shelf-life, reducing food loss, and increasing accessibility and availability of perishable products. These advantages are particularly important in LMICs, where cold-chain infrastructure is limited.
- **Renewable material:** LPCs are primarily paper, reducing reliance on fossil-based packaging.
- **Portable and efficient:** Strong, lightweight and stackable, optimising transport while reducing costs and emissions.

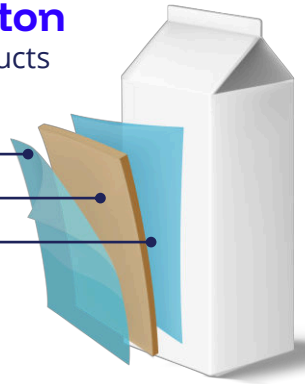
Aseptic packaging can extend milk shelf life by 15–30x



Refrigerated liquid packaging carton

Designed for chilled distribution and ideal for products with live cultures (e.g., yoghurt).

Outer Polyethylene Coating (Liquid Barrier)
Paper (Stability)
Inner Polyethylene Coatings (Liquid Barrier)

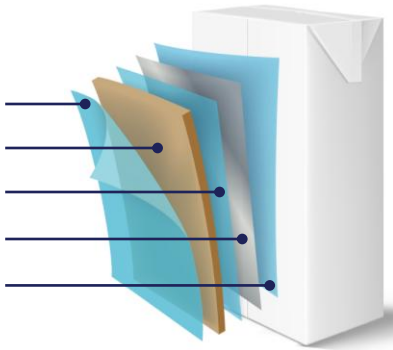


Aseptic liquid packaging carton

Barrier film (aluminum or polymer-based) extends shelf-life without requiring refrigeration.

Aseptic LPCs represent the large majority of LPCs sold in LMICs

Outer Polyethylene Coating (Liquid Barrier)
Paper (Stability)
Middle Polyethylene Coating
Aluminium (Light, Odor & Oxygen Protection)
Inner Polyethylene Coatings (Liquid Barrier)



1) On Average. Source: The Food & Beverage Carton Alliance (2025), Food & Beverage Carton: Recycling Facts and Figures; The Food & Beverage Carton Alliance (N.D.), Food – Focus areas; The Food & Beverage Carton Alliance (2025), Food and beverage cartons have a lower carbon footprint compared to packaging alternatives; The Carton Council of Canada (N.D.), What is a carton? Cartons 101; FBCA (2024), ACE Recycling – Recycling Facts & Figures; Rapid Microbiology (2021), Rapid Microbiological Testing of UHT and ESL Dairy Products; Ziyaina et al. (2018), Monitoring Shelf Life of Pasteurized Whole Milk Under Refrigerated Storage Conditions: Predictive Models for Quality Loss

Due to their multi-material design, building a recycling system for liquid packaging cartons requires a combination of recycling steps and pathways

Liquid packaging cartons (LPCs) have a unique set of recycling challenges

Complex multi-material

The combined *PolyAl* (polymer and aluminium) layers in an LPC currently have low-value end markets. Technology to separate the PolyAl fractions is still evolving, which currently makes recovery costly and energy-intensive. Companies also continue to innovate by removing the aluminium layer and reducing plastic content, ultimately increasing the paper share in LPCs.

Reduced recycling process efficiency

LPCs require longer pulping times than standard pulping processes, because their multi-layer structure slows fibre separation.

Smaller volumes

Although LPCs are widely used in packaging categories where they offer unique advantages, their smaller volumes limit economies of scale and increase transport costs because mills that accept them are more dispersed.

Liquid packaging cartons are typically recycled in standard paper mills, with low collection rates reducing incentives for efficient dedicated mills

- **Standard paper mills remain the most common recycling route for LPCs in LMICs** due to their widespread availability. However, dedicated facilities deliver higher material value and superior recycling efficiency.
- **Dedicated facilities are the preferred pathway** as they maximise fibre value, quality and yield and provide the opportunity to recover PolyAl.
- **Strengthening collection systems for LPCs to increase volume of available LPC is a prerequisite** for viable investments in LPC-dedicated recycling facilities.

Deep-dive **Liquid packaging carton recycling pathways** on the next page

1) Beverage carton recycling rate data from 2024, recycling rate for other materials from 2019. Source: ANIR (2023), Estadísticas de reciclaje 2022: Un panorama que se irá modificando con la implementación de la Ley REP; Latitud R (2020), Circularidad de envases y embalajes en América Latina; CEMPRE Brasil (2024).

Liquid packaging carton recycling pathways differ based on infrastructure availability

Deep-dive

Liquid Packaging Carton (LPC) Recycling Pathways

- **Mixed paper collection** → **Mixed paper bale** (low share of LPCs)
- **Lightweight packaging collection & sorting** → **Pure LPC bale**
- **Dedicated collection** → **Pure LPC bale**
- **Board production pathway** → **Pure LPC bale**

Mixed paper bale (low share of LPCs)

Hydrapulping in standard paper mill
Shorter pulping (~half pulping time vs LPC facility) to extract fibres

- **Recycled fibres:** applications that do not require high-quality fibre (e.g., card)
- **Reject PolyAl** (e.g., landfills)

Pure LPC bale

Hydrapulping in dedicated paper mill
Longer pulping to separate fibres from the two-sided laminate (PolyAl)

- **Recycled fibres** (long-fibres): applications benefitting from high-quality fibre (e.g., tissue, molded fibre tray)
- **PolyAl Recycling:** Through methods including:
  1) Compression (e.g. outdoor roofing sheets)
  2) Mechanical recycling
  3) Advanced mechanical recycling (with the use of chemicals)
  4) Chemical recycling (through pyrolysis)

Shredding and hot compression: producing indoor sheets used in construction

Example process in India

Dry waste collection center, Bangalore

Mixed paper sorting center, India

Dev Priya Duplex Paper Mill, Delhi

Sheet formation, Suryaans Kraft Mill, Chennai

Source: Systemiq pictures, BBC (https://www.bbc.com/news/world-asia-india-46641059)

Despite the challenges, liquid packaging cartons have high inherent material value, that evolving technology and a well-designed recycling system can help unlock

Liquid packaging cartons (LPCs) have inherent advantages and are increasingly recyclable due to improving recycling technologies

High inherent fibre material value

LPCs contain a particularly high-quality fibre (long, strong cellulose fibres) that produce high-value recyclates and can substitute for virgin fibre in higher-value fibre-based products (e.g. paper, tissues). Demand for this fibre quality is growing against a backdrop of restricted global supply of virgin fibre.[1]

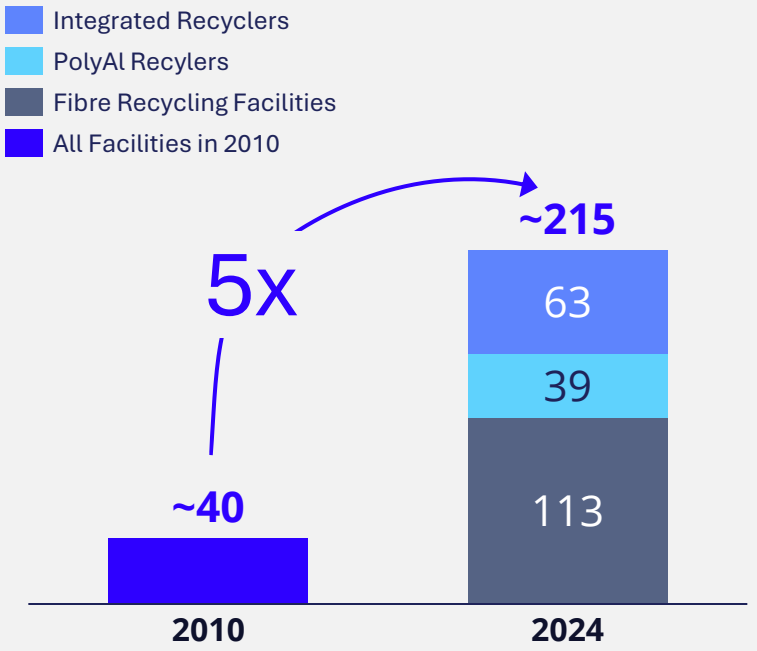
Highly recognisable

LPCs are easy for consumers and waste pickers to identify, which supports efficient collection.

Advances in PolyAl recycling

New technologies and emerging higher-value end-markets are improving the separation of polymer and aluminium fractions.

This has driven a rapid expansion in liquid packaging carton recycling capacity



Estimated Number of Global Recycling Facilities Handling LPCs[12]

1) LPC are made of a combination of materials of which today some are high-value (fibre) and some low-value material (PolyAl); 2) Estimated numbers. Sources: Recycling News (2023), Recycling essential for circular economy, says Tetra Pak; Tetra Pak (2025), Sustainability Report FY24

Effective EPR, supported by strong infrastructure, enables liquid packaging cartons (LPCs) to overcome recycling challenges and deliver significant benefits

Effective systems enable high recycling rates

- **Strong systems drive results:** When EPR, collection, sorting and end-markets are in place, recycling rates improve rapidly.
- **Policy and investment enable progress:** Well-designed EPR frameworks and targeted investment allow systems to deliver high recycling performance.
- **Recycling can scale quickly:** Countries have shown that LPC recycling can rise sharply from low baselines (examples on right)

~40% in South Africa for 2025, rising rapidly from 24% in 2024, and 8% in 2023.[1]

~39% in Brazil for 2024, up from 33% in the previous year.

~80% in Belgium, enabled by a mature EPR and waste management system that aligns policy, infrastructure and markets to achieve high recycling.[2]

Resulting in economic and development benefits…

- **Creates jobs & safer livelihoods:** Recycling generates employment in low-income communities, more stable incomes.
- **Strengthens inclusion:** Well-designed integration can strengthen waste picker representation and access to benefits.
- **Builds new industries:** Growing LPC recycling develops domestic value chains for recyclates, infrastructure investment and growth in SMEs.

…and environmental benefits

- **Eases pressure on forests and land:** Recycled fibres lower demand for virgin materials by keeping high-quality fibre in circulation.
- **Reduces landfill, incineration and mismanaged waste:** Cuts waste volumes and GHG emissions.

1) 40% recycling rate in 2025 anecdotal estimate for 2025 from PETCO expert. 2) Germany has achieved cartons recycling rates of ~70%; 3) Economic and development benefits apply to non-carton categories as well. Sources: PETCO (2025) Petco's annual results indicate good news; CEMPRE Brazil (2024); ACE (2022), Beverage Cartons Design For Recyclability Guidelines; Tetra Pak Brazil (2024), Recycling in Brazil '; FostPlus rapport d'activite 2024 (Belgium)

Chapter 2

Packaging EPR in low- and middle-income countries

The CGF identified EPR as an important lever to reduce packaging waste and pollution, but it is unlikely to succeed without parallel investments in waste management systems

Packaging EPR plays a significant role in accelerating progress towards a circular economy and reducing packaging pollution

- **Extended Producer Responsibility (EPR)**, as defined by the OECD, is "a policy approach that makes producers responsible for their products along the entire lifecycle, including at the post-consumer stage. An EPR policy is characterised by the shifting of responsibility (physically and/or economically; fully or partially) upstream to producers; and the provision of incentives to producers to take into account environmental considerations when designing their products. Governments that embrace the EPR approach use a suite of policy instruments to shift financial–and sometimes operational–responsibility of waste management and material recovery from governments to producers"[1]

- **Packaging EPR should fulfil three functions:**

Create sustainable funding for effective recycling systems, ensuring long-term sustainable financing for packaging recovery or controlled/sanitary disposal.

Set up shared financial responsibility for packaging waste management, with the cost of collection, sorting, recycling and disposal shared among producers and municipalities (and potentially other value-chain actors).

Align economic incentives with sustainable packaging design (e.g., reducing unnecessary packaging; redesigning for reuse or recycling).

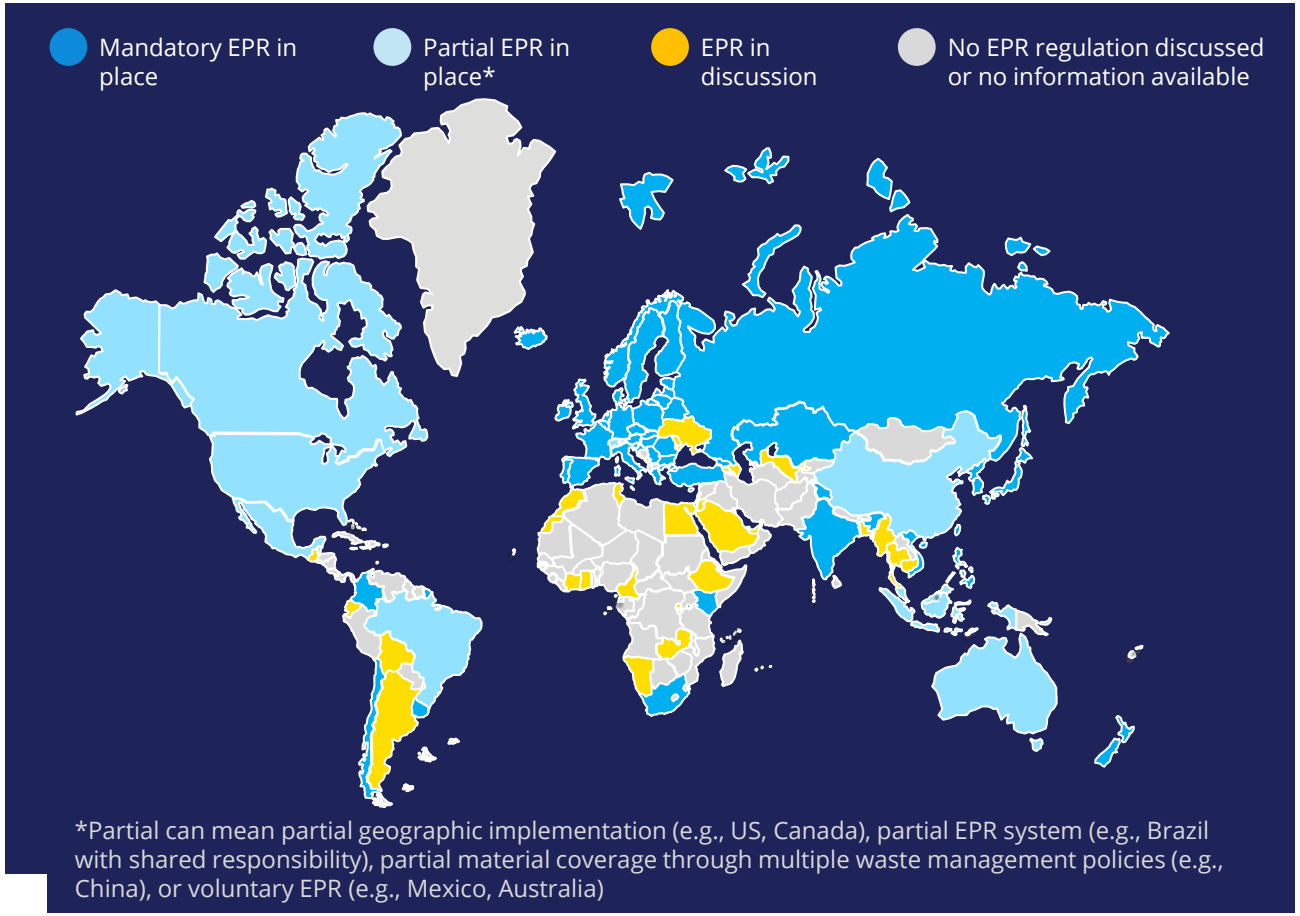
But packaging EPR cannot solve the broader waste challenge

- **Packaging represents only ~20% of municipal solid waste and cannot finance full system needs.[2]**
- **Packaging EPR relies on basic municipal waste collection services,** which remain weak in many LMICs; therefore, EPR rollout must occur alongside government funds and/or service fees from households.[2]
- **Setting up municipal waste management systems remains a complex challenge** for many LMIC governments because it requires strong governance mechanisms and dedicated finances.

1) OECD ENVIRONMENT POLICY PAPER NO. 41 (2024). 2) CGF (2025): Based it on high-level estimation for low- and middle-income countries based on "What a Waste" and expert interviews.1) Sources: OECD (2001), Extended Producer Responsibility: A Guidance Manual for Governments; Consumer Goods Forum (2025), EPR for Packaging: Design and implementation in low-and middle-income countries

Packaging EPR is expanding rapidly with strong backing of leading companies, but implementation remains fragmented across LMICs

EPR is gaining momentum worldwide, as an increasing number of countries adopt formal legislation, including LMICs



*Partial can mean partial geographic implementation (e.g., US, Canada), partial EPR system (e.g., Brazil with shared responsibility), partial material coverage through multiple waste management policies (e.g., China), or voluntary EPR (e.g., Mexico, Australia)

Leading companies are supportive of well-designed EPR as shown by position papers from CGF and Business Coalition for a Global Plastic Treaty

- **EPR has strong industry backing:** More than 40 companies have endorsed the recommended CGF Optimal EPR Principles and were acknowledged in the EPR in LMICs paper, and the Business Coalition for a Global Plastics Treaty – backed by 300+ companies – also calls for robust, harmonised EPR systems.
- **Key scalable solution:** Seen as one of the main viable ways to build functioning waste management systems for packaging.
- **Government / legislative EPR preferred over voluntary efforts:** Provides consistent rules, accountability, and predictable system design.
- **Harmonised EPR:** The increasing number of packaging EPR regulations with local, individual EPR implementation approaches and rules leads to fragmentation, especially in LMICs, increasing complexity and negatively impacting costs, particularly for companies operating in multiple countries.
- **Fair, competitive market:** Creates a level playing field, prevents free-riding and spreads costs across producers.
- **Better materials and design:** Improves access to recycled feedstock and incentivises packaging recyclability.
- **Long-term efficiency and lower risk:** Lowers system costs over time and reduces reputational/ ESG exposure in high-leakage markets.[1]

1) Cost reductions are relative to a consistent baseline; absolute system costs may increase over time ; Sources: Business Coalition for Global Plastics Treaty (2024), Extended Producer Responsibility (EPR) Briefing Paper; Business Coalition for a Global Plastics Treaty (2024), The Business Coalition for a Global Plastics Treaty calls for the adoption of harmonised regulations to end plastic pollution at INC-5.2; EMF (2023), Business coalition for a global plastics treaty; The Consumer Goods Forum (2025), Extended Producer Responsibility for Packaging: Design and Implementation in Low- and Middle-Income Countries; ESKO (2025), Beyond Basic Compliance: Navigating the New Era of Packaging Sustainability. Note: Map adapted from ESKO (2025). Estimates reflect indicative EPR adoption and may vary due to differing definitions, regulatory scopes, and interpretation

Existing EPR systems in LMICs face a range of policy, implementation and infrastructure challenges and highlight learning opportunities

Packaging EPR systems implemented in low- and middle-income countries often encounter challenges, which can be mapped across the six recommended guidance elements set out by CGF[1] (please find the full paper here)

Policy	• **Weak design and enforcement:** Unclear EPR rules (e.g., targets, timelines, penalties, definition of producer) can create inconsistency, low compliance, or uneven enforcement between regions. • **Limited stakeholders' involvement:** Lack of consultation with industry, NGOs, other government ministries in co-designing the policy leading to challenging governance, methodology, targets, or reporting. • **Policy fragmentation and iterations:** Misaligned national–local rules or regular changes in the framework can create confusion and reduce compliance.
Institutions / PROs	• **No PRO or fragmented PRO landscape:** Competing PROs can reduce long-term strategic functions, reducing EPR efficiency. • **Weak capacity and oversight of PRO(s) and umbrella organisation:** Limited funds and monitoring allows free-riding, lack of enforcement, and lack of clearinghouse role. • **Weak data systems:** Weak or inconsistent data can undermine planning and monitoring.
Infrastructure	• **Infrastructure gaps:** Limited collection and sorting capacity often restricts system performance. • **Strong regional disparities:** Infrastructure is often concentrated around urban centres, while rural areas remain underserved and face significantly lower collection access. • **Reduced long-term investment:** Unclear targets, timelines, governance, and financial sustainability undermines business confidence to invest in recycling infrastructure.
Informal Sector	• **High reliance on informal workers:** Systems often depend on waste pickers but can lack pathways for structured integration.
Financial Sustainability	• **Unstable and insufficient financing:** Weak fee collection mechanisms can create unpredictable funding, with fees rarely covering real collection and recycling costs.
Wider Considerations	• **Limited additional tools:** Lack of recycled content targets or eco-modulation can undermine incentives to improve recycling and invest in infrastructure.

Challenges in LMICs provide important context and learning opportunities

- **No clear EPR solution:** No country managed to fully address all barriers faced in LMICs.
- **Recurring challenge areas:** Assessments of LMIC EPR systems show recurring challenges that can be mapped across the six guidance elements set out by CGF.[1]

1) Not exhaustive and based on case study research for this paper (see Chapter 4). Source: CGF (2025), Extended Producer Responsibility (EPR) for Packaging: Design and implementation in low -and middle-income countries

To overcome these challenges, the CGF Plastic Waste Coalition of Action has defined key recommended guidance elements for EPR in LMICs (1/2)

Please find the full paper here

Desired outcome		Description of recommended guidance elements
A clear, enforceable, and transparent EPR legislative framework, co-designed with key stakeholders, that starts with basic requirements and evolves over time (e.g., expanding material scope, introducing ecomodulation)	**Policy**	Establish a strong and adaptable EPR legislative framework aligning with the following principles: • **Embedding core regulatory principles** – performance targets and timelines; financing and fund management[1] ; governance structure; enforcement, monitoring, compliance, data reporting and protection. • **Co-designing through inclusive consultation** with key stakeholders including industry and the informal sector. • **Phasing in complexity** – begin with realistic and enforceable basics and evolve over time, with ecomodulation based on design guidelines playing an important role in a second phase. • **Aligning with existing policies and government departments** to ensure coherence and coordination.
A robust, transparent governance structure that drives a long-term waste management and recycling infrastructure development in line with set EPR regulation, enforces compliance, and ensures fair, effective fund management.	**Institution(s)**	• **In all models, an authority formally appoints a centralised institution / PRO that is a professional, not-for-profit entity, responsible for implementing and governing an EPR system, governed by producers through** a multi-stakeholder governing . • **Preferably, adopt a centralised, single-institution / single-PRO model.** In larger countries with a regionalised or federal governance structure, centralised single institutions that represent a region, province, or state could be considered as a preferred option. • **If an alternative model is chosen, legally ensure all the seven core functions are fulfilled by the institution(s)**: strategic roadmap, operational coordination, informal sector integration, consistent producer implementation and enforcement, reporting, online data management and protection, and auditing.
EPR drives sustained private and public investment into packaging waste management infrastructure	**Infrastructure**	• **Potential to establish mechanisms that attract substantial external investment for packaging waste collection and end of life infrastructure.** • **Rely on existing basic collection services** to help fund packaging waste management operations. • **Prioritise infrastructure investments based on local gaps.** • **Institution(s) to design EPR fee structures to guarantee long-term service revenue for collectors and stable feedstock supply for recyclers**, for both lower-value and higher value packaging materials. • **Use EPR to underwrite long-term contracts between central institution and recyclers** to unlock investments. • **Explore complementary tools** (e.g., recycled content mandates) to increase offtake certainty and support a business case for investment.

1) How producers can fulfil their EPR obligations; (2) how EPR funds shall be deployed to ensure waste management infrastructure build-out and operation; (3) how waste pickers are contracted and paid
Sources: CGF (2025), EPR for Packaging: Design and implementation in low –and-middle-income countries

To overcome these challenges, the CGF Plastic Waste Coalition of Action has defined key recommended guidance elements for EPR in LMICs (2/2)

Please find the full paper here

Desired outcome		Description of recommended guidance elements
EPR supports the effective integration of informal sector waste workers*, contributing to a decent livelihood (e.g., informed by living income methodology) and reinforcing efforts to address human rights impacts	**Informal sector** Deep-dive follows	**Collaborate with the waste value chain and informal sector representatives to ensure integration:** • **Governance participation:** Legally recognise informal waste pickers as stakeholders with the right to participate in EPR design and governance; establish an integration taskforce and implement a formal integration plan. • **Guaranteed payments:** Establish a service fee, systems for registration, payment, and material tracking, and accessible grievance mechanisms. • **Contracting with their organisations:** Mandate the centralised institution to facilitate procurement/service contracts, support organising and capacity-building, and establish grievance procedures for Waste Picker Organisations.
EPR systems should be designed to be cost effective, especially in LMICs, where any inflation of food and basic goods would be acutely felt	**Financial sustainability**	• **Reflect in producer payments the actual costs** of managing packaging waste by high level materials type (e.g., plastic, paper, glass), offset by any revenues generated from the sale of recovered materials **("net cost" principle)**, allowing cross-subsidization of materials. • **Regularly adjust payments** to ensure they reflect changes in costs and commodity values over time. • **Minimise administrative costs** to maximise the funds that are flowing through to fund systems.
EPR policies consider wider system impacts and ensures that reuse/refill business models are not unintentionally penalised	**Wider considerations**	• **Ensure circularity is considered beyond recycling - reduce, reuse, and substitution - are carefully considered and actively supported** through other policy instruments (e.g. reuse models face less packaging weight). • Once the system is in place, **use complementary tools to improve efficiency** (e.g., recycled content mandates, design guidelines, ecomodulation).

1) How producers can fulfil their EPR obligations; (2) how EPR funds shall be deployed to ensure waste management infrastructure build-out and operation; (3) how waste pickers are contracted and paid
Sources: CGF (2025), EPR for Packaging: Design and implementation in low –and-middle-income countries

Informal sector deep dive: Brazil and South Africa are progressing in the integration of waste pickers

Deep-dive

BOX 1

Integration of the informal sector in Brazil

Governance participation:

Waste pickers' role is legally recognised in the law. It has a long history of consultation with waste pickers, through Waste and Citizenship Forums and Federal Inter-Ministerial Committee for the Social Inclusion of Waste Pickers.[1] They are central to Brazil's social-inclusion agenda.

Guaranteed payments

Waste pickers are organised around cooperatives which enables earning higher and more stable income through producer partnerships.

Contracting with their organisations

Brazil's National Solid Waste Policy mandates that the participation of waste picker cooperatives must be prioritised. Through cooperatives, they gain access municipal subsidies and stable contracts as cooperatives operate sorting centers.

Deep-dive

BOX 2

Integration of the informal sector in South Africa

Governance participation

Waste pickers are recognised by law and the Waste Picker Integration Guideline provides a process for engaging with them.[2] Waste Picker Organisations are on the relevant PRO Alliance's Taskforce.

Guaranteed payments

EPR law requires PROs to "compensate waste collectors, reclaimers or pickers, who register with the National Registration Database, for collection services [...] through the collection service fee".[3] The database (although it still face challenges) is set up for waste pickers registration and payment against the tonnage collected and is reviewed by the government.

Contracting with their organisations

South Africa's EPR law highlights that PROs must integrate informal waste collectors into collection value chain (section 5A).

Images: https://wastepickers.org.za/; https://www.wiego.org/wp-content/uploads/2021/12/WIEGO_Statistical_Brief_N29_Brazil_WPs.pdf
Sources: 1) Dias, Sonia M. "Recycling in Belo Horizonte, Brazil – An Overview of Inclusive Programming." WIEGO Policy Brief No. 3, WIEGO, 2011.; 2) https://wasteroadmap.co.za/wp-content/uploads/2021/02/Waste-Picker-Integration-Guidelines.pdf; 3) Byrne and Samson (2022), 'Waste Picker Registration Manual South Africa', UNIDO, CISR and University of Johannesburg.

Chapter 3

Recommended EPR Guiding Principles for liquid packaging cartons in low- and middle-income countries

Liquid packaging carton recycling faces issues in EPR implementation: Policy coverage (1/3)

Key takeaways:

- Liquid packaging cartons (LPCs) have distinct recycling system needs in LMICs, driven by their complex multilayer structure, currently limited recycling capacity, and weak end-markets for PolyAl, which make collection and recycling harder to scale than for large volume single-material packaging categories.
- We outline challenges in implementing EPR for liquid packaging cartons in LMICs, drawing on lessons from six case studies (Chapter 4). While not all challenges are unique to LMICs, their relevance is often heightened in these contexts and as countries develop their EPR system. The challenges raised do not all occur in every country; however, some countries face several simultaneously.
- The challenges observed in some countries stand in contrast to other case studies where these issues were not present, revealing important success factors (see Chapter 4) that informed effective EPR design and implementation for LPCs.
- Addressing the specific needs of liquid packaging cartons is essential to build viable, scalable LPC-recycling systems within EPR frameworks

Challenges that can occur when implementing EPR for liquid packaging cartons in LMICs

1 Liquid packaging cartons are not adequately considered in policy

- **LPCs are not consistently included in EPR:** When LPCs are initially omitted from EPR policy frameworks, this can make it more challenging to include them later, setting back the development of long-term economically and socially sustainable recycling systems.
- **LPCs are sometimes grouped within a broader, less appropriate material or format category:** This can result from a confusion on how to classify them (e.g., under “multi-material”, or “multi-material plastics”) despite unique recycling pathways. Plastics is the most challenging categorisation for the development of the LPC value chain.
- **No realistic and dedicated targets:** Few systems set LPC-specific collection or recycling targets, or targets are unrealistic.

Examples from case studies[1]

(see details in Chapter 4)

- **India / Philippines:** LPCs are classified under the plastic category, instead of a LPC or paper category, leading to a range of implications on the LPC value-chain.
- **Chile:** With limited collection infrastructure and 3% recycling rates today, 60% recycling targets by 2034 for LPCs is not a realistic starting point.

1) Disclaimer: These country case studies reflect the policy context in Q4 2025. Ongoing and rapid policy developments may mean that some details have since evolved.

Liquid packaging carton recycling faces issues in EPR implementation: Level-playing field for their recycling pathways (2/3)

Challenges that can occur when implementing EPR for liquid packaging cartons in LMICs

2 Liquid packaging cartons (LPCs) have not benefited from a level playing field for their recycling pathways

- **Partial recycling recognition for LPCs**: Recycling is sometimes only recognised for one layer of an LPC (e.g., only for the plastic content) vs. the full packaging unit.
- **Partial acceptance and accounting of LPC recycling:** LPCs are not always easily accepted in paper mills or properly accounted and captured when recycled within mixed-paper feedstock (vs. pure LPC feedstock).

Examples from case studies[1]

(see details in Chapter 4)

- **India:** Categorising LPCs as plastic composites under plastic EPR makes it more complicated for paper mills to receive EPR certificates for recycling LPCs. It requires paper mills to register as plastic waste processors, which means that they need to amend their Consent to Operate, triggering government scrutiny. Even when a paper mill can receive certificates for LPCs recycling, certificates are only provided for the plastic fraction of LPCs, not accounting for the recycling benefits of recycling the fibre fraction.

1) Disclaimer: These country case studies reflect the policy context in Q4 2025. Ongoing and rapid policy developments may mean that some details have since evolved.

Liquid packaging carton recycling faces issues in EPR implementation: Lack of adequate financing (3/3)

Challenges that can occur when implementing EPR for liquid packaging cartons in LMICs		Examples from case studies[1] *(see details in Chapter 4)*
3 **Liquid packaging carton (LPC) waste management lacks adequate financing**	• **EPR fees for LPCs do not reflect to true net cost of collection, sortation, recycling or disposal:** EPR fees are not always set transparently or for LPCs specifically, resulting in fees that do not reflect the real costs of collecting, sorting, transporting (e.g., long distance to mills) and recycling LPCs. As a result, EPR fees typically do not fully cover the collection service cost, making them low priority for waste pickers. Underfunded systems cannot support the expansion of local LPC recycling, high-value end-markets or PolyAl processing capacity. • **Weak and inefficient funding flows:** Financing routed through multiple actors creates unstable, uneven remuneration, especially for waste pickers.	• **All selected case studies:** Funds allocated to collection are often too low to cover the service provided and incentivise waste pickers to collect LPCs, requiring voluntary industry support. • **India:** Funds from the certificates do not cover the collection service.
	• **EPR fees not ring-fenced:** Use of EPR funds can lack transparency, with LPC producers' contributions not always allocated to the LPC value-chain.	• **Vietnam:** In dual compliance system, the centralised option through Vietnam Environment Protection Fund (VEPF) fund is the most used today. However, the use of the VEPF fund today remains opaque. • **Chile:** Although fees are targeting LPCs, the use of the fee remains unclear given the limited focus of PROs on LPCs. • **India/Chile:** EPR obligations can be fulfilled through purchase of certificates from other material categories.
	• **Infrastructure and funding through EPR are insufficient to incentivise investment in local LPC recycling:** Few facilities can accept LPCs, with limited dedicated lines or dedicated facilities. Infrastructure to recover PolyAl remains limited and towards low-value applications. Paper mills and PolyAl recyclers lack confidence to invest in LPC recycling, in part due to short term-contracts.	• **India:** Lack of PRO to support multi-year recycling contracts and coordinate infrastructure building. • **Vietnam:** Limited end-markets for recycling LPCs. • **Chile:** PROs do not support multi-year contracts and the development of national LPC recycling infrastructure, instead relying on export. • **South Africa:** PROs with different EPR fees leads to different services and involvement in supporting multi-year contracts and end-markets.

1) Disclaimer: These country case studies reflect the policy context in Q4 2025. Ongoing and rapid policy developments may mean that some details have since evolved.

To address these specific challenges, recommended Guiding Principles can help enable effective EPR for liquid packaging cartons in LMICs (1/2)

Recommended Guiding Principles for effective design and implementation of EPR for liquid packaging cartons (LPCs) in LMICs		Rationale
0 Policymakers and institution(s) apply CGF guidance	Apply all **CGF guidance elements for effective EPR in LMICs*** from day 1, ideally to all packaging including LPCs or at least define a clear roadmap to include LPCs. *Policy, Institutions, Infrastructure, Informal Sector, Financial Sustainability, Wider Considerations	
1 Policymakers ensure liquid packaging cartons are considered	**1a. Preferably establish an LPC-specific category from the outset (within paper grouping) or alternatively, include LPCs within a broader paper category (predominant material) at the start**, with an explicit timeline and roadmap to establish an LPC-specific category in the medium term. LPC categorisation should be defined based on local context and designed to support increased LPC recycling rates.[2] LPCs should not be categorised as plastics.	• Categorisation of LPCs as plastics can negatively affect their recyclability, limit eligibility for recycling recognition, and constrain investment in appropriate processing infrastructure, and ultimately hinders the ability to meet the other principles.
	1b. Set clear and realistic collection and recycling targets for LPCs based on existing national infrastructure, with timelines and increasing recycling targets over time, and clarity on the recycling definition, acceptable recycling pathways, and calculation methodology.[1] Waste not reused or recycled should go to disposal pathways.[3]	• LPCs are harder to recycle than many other paper/plastic packaging formats and so if the target is not set at the LPC level the system is not incentivised to collect them (the targets would be fulfilled by other materials with more established recycling systems).
2 Institution(s)/ PRO(s) create a level playing field for liquid packaging carton recycling	**2a. Ensure that LPCs can be accepted in national collection and recycling infrastructure** from the start of the EPR scheme. While dedicated LPC-recycling technology can maximise value from pure LPC feedstock, LPCs are also recyclable in mixed-fibre streams and should therefore be accepted by paper mills.	• If LPCs are not categorised as paper or in an LPC specific category, paper mills and dedicated LPC mills may not be able to register as an LPC recycler due to its composite structure.
	2b. Allocate EPR fees for recycling of the whole LPC through the range of recycling pathways. While EPR fees should reflect all constituent materials in LPCs (rather than only one of the constituent materials), a clear methodology is also needed to account for LPC recycling both in mixed paper bales (i.e., potentially a combination of multiple EPR format/material categories) and in dedicated LPC bales (see page 14).	• LPCs are commonly included in mixed fibre feedstock, which presents a risk of recyclers not receiving a service fee for recycling LPCs. • LPCs have different recycling economics to their constituent parts alone, so they need their own EPR fee in order to achieve net cost coverage. It is likely that the EPR fee of a broader category (e.g., paper) will not be appropriate.

Note: Although these principles draw from practical EPR experience of LPCs in LMICs, their relevance can extend to a wider set of packaging categories such as multi-material formats.
1)Aligns with CGF guidance for EPR in LMICs and enabled by establishing a specific EPR category for LPCs. If no central institution or PRO is in place, funds must still be ring-fenced to LPC recycling; 2) Subject to the infrastructure and maturity of collection and recycling systems in developing countries, establish a roadmap designed to support increasing recycling rates. In the short term, this journey can start placing the LPCs withing a broader paper category (predominantly material). In order to avoid sizeable disruptions throughout the supply chain, migrating to the creation an LPC- specific category should be considered once all the infrastructure and institutional conditions are met; 3) sanitized landfills or to waste-to-energy

To address these specific challenges, recommended Guiding Principles can help enable effective EPR for liquid packaging cartons in LMICs (2/2)

Recommended Guiding Principles for effective design and implementation of EPR for liquid packaging cartons in LMICs		Rationale
3 Institution(s)/ PRO(s) adequate financing for liquid packaging carton waste management	**3a. When the LPC category is established (1a), set LPC-specific EPR fees with clear objective to ultimately reflect the true net costs of separate collection (of recyclables), sorting, and recycling or disposal of LPCs, including waste pickers collection service adequately incentivised. Net-cost principle might not be realistic from the start of the scheme, but it should be designed with long-term viability in mind.[1]** • Lower-infrastructure markets may not initially have EPR systems that are net-cost and may require industry sponsorship, particularly early incentives and capacity building. However, these systems should be designed with long-term viability in mind, ensuring that each packaging category can ultimately operate without reliance on industry funding. • Collection services, whether provided by waste pickers or through municipal waste systems, should be adequately incentivised. As the system becomes more formalised, it is important to ensure that it strengthens collection of recyclable materials, and that dedicated funding is allocated to consumer awareness campaigns.	• LPC recycling has often required significant voluntary industry funding to establish recycling systems. In a long-term sustainable EPR model, industry funding is all directed through a net cost EPR fee.
	3b. Ensure funds generated from LPC EPR fees are ring-fenced for separate collection (of recyclables), sorting, and recycling of LPCs from the outset of the EPR scheme.[1]	• Diverting EPR funds away from strengthening collection and recycling for this category will hinder its ability to achieve higher recycling rates. This disproportionally affects harder-to-recycle packaging. Ring-fencing can help ensure adequate investment across these different packaging formats.
	3c. Ensure from the start of the EPR implementation the necessary national infrastructure for collection and recycling is in place or being developed. Gradually establish multi-year recycling contracts for LPCs that enable national infrastructure investment and support the development of end-markets for both fibre and PolyAl.	• Institution/PRO not fulfilling all its functions does not enable the long-term build up of the ecosystem for recycling and securing the long-term viability of the system. This disproportionally affects multi-material packaging.

Note: Although these principles draw from practical EPR experience of LPCs in LMICs, their relevance can extend to a wider set of packaging categories such as multi-material formats.
1) Aligns with CGF guidance for EPR in LMICs and enabled by establishing a specific EPR category for LPCs. If no central institution or PRO is no place, funds must still be ring-fenced to LPC recycling

Recommended EPR Guiding Principles for liquid packaging cartons in LMICs can be sequenced based on country EPR maturity

Recommended Guiding Principles

(Full description of the recommended Guiding Principles on pages 28-29)

1 Policymakers ensure liquid packaging cartons (LPCs) are considered	1a	Preferably establish a LPC specific category from the outset *or* include LPCs within a broader paper category.[1]
	1b	Set clear and realistic collection and recycling targets for LPCs.
2 Institution(s)/ PRO(s) create a level playing field for liquid packaging carton	2a	Ensure that LPCs can be accepted in national collection and recycling infrastructure.
	2b	Allocate EPR fees for recycling of the whole LPC through the range of recycling pathways.
3 Institution(s)/ PRO(s) set adequate financing for liquid packaging cartons waste management	3a	Set LPC-specific EPR fees with clear objective to ultimately reflect the true net costs of separate collection of recyclables, sorting, recycling or disposal of LPCs.
	3b	Ensure funds generated from LPC EPR fees are ring-fenced for LPC separate collection of recyclables, sorting and recycling.
	3c	Ensure the necessary national infrastructure for LPC collection and recycling is in place or being developed.

EPR Maturity

EPR policy under discussion	EPR under implementation	EPR already implemented
Aim to implement **principles 1a and 1b**: Establish an LPC specific category from the outset or set a clear roadmap (in the meantime LPCs fall under paper).	**If a category for LPCs is not established from the start (principle 1a) or targets for LPCs are not clear and realistic (principle 1b)**, policymakers could define a plan and timeline to incorporate LPCs as a category in the EPR scheme.	
Principles 2a and 2b: Ensure the collection and recycling of LPCs is enabled and allocation of EPR fees is based on the full LPC.		**If LPCs collection and recycling challenges remain**, ensure institution(s)/PRO(s) define a roadmap to unlock recycling, following principles 2a and 2b.
Principles 3a and 3b: Set high-level net-cost and ring-fencing principles in policy.	**Principles 3a and 3b**: Establish the net-cost and ring-fenced principles in EPR implementation for LPCs. The EPR fee for LPCs should aim to be net cost (e.g., in stages), ensuring LPC collection is incentivised. **Principle 3c:** Ensure visibility and commitment on LPC recycling infrastructure development.	**Principles 3a, 3b, 3c:** Continue working towards net-cost, ring fencing of LPC EPR fund, and incentivising LPC infrastructure building and high-quality end-markets.

Note: Although these principles draw from practical EPR experience of LPCs in LMICs, their relevance can extend to a wider set of packaging categories such as multi-material formats.
1) Subject to the infrastructure and maturity of collection and recycling systems in developing countries, establish a roadmap designed to support increasing recycling rates. In the short term, this journey can start placing the LPCs withing a broader paper category (predominantly material). In order to avoid sizeable disruptions throughout the supply chain, migrating to the creation an LPC- specific category should be considered once all the infrastructure and institutional conditions are met

Chapter 4

Country case studies





Disclaimer: These country case studies reflect the policy context in Q4 2025. Ongoing and rapid policy developments may mean that some details have since evolved.

High-level takeaways of EPR systems on liquid packaging cartons (LPCs) against the recommended LPC Guiding Principles across five case studies

- South Africa and China have EPR systems most closely aligned with recommended EPR Guiding Principles for LPCs, maximising EPR system efficiency for LPCs.
- Clear LPC categorisation and realistic targets (Principle 1) are a fundamental prerequisite for an effective EPR system for LPCs. In their absence, India remains the most challenging EPR environment for LPCs, with significant issues also evident in Chile.
- Across all selected country case studies, setting EPR fees that reflect the true net cost of collection, sorting, recycling, and disposal remains the primary challenge (Principle 3a), especially where basic collection and sorting infrastructure is lacking. This challenge is closely linked to the second most critical gap in many of the selected countries: creating an enabling environment for the development of LPC recycling infrastructure (Principle 3c).
- These case studies have been assessed along the recommended CGF Guidance Elements (pages 21-22). It is important to note that that EPR design and implementation should also be account for the specific local circumstances.
- *Disclaimer: These country case studies reflect the policy context in Q4 2025. Ongoing and rapid policy developments may mean that some details have since evolved.*

Robust EPR framework and implementation progress, but challenges with enforcement and PRO fragmentation persist (1/2)

SOUTH AFRICA

	Overview of the EPR system	Implications
Policy	• **Strong mandatory EPR framework** with clear product classification and defined collection and recycling targets, with producers being responsible for the end-of-life management of their products, clear rules set for PRO, their auditing and penalties for non-compliance.[1] • **Liquid Packaging Board (LPCs) has ambitious but realistic targets** requiring 30% collection and 25% recycling by 2026.[2] • **Policy formalises the role of waste pickers**, with the 2020 Waste Picker Integration Guideline setting clear requirements for inclusion within EPR systems and includes the payment of a service fee.[4] • **Limited industry involvement and policy co-design:** Minimal challenge to PRO-proposed targets and government misconceptions about the role of a single PRO (e.g., fear of monopoly).	• **Strong policy set up and credible targets enable system development:** Ambitious yet realistic LPC targets provide a clear investment signal and support steady build-out of South Africa's EPR system. • **Broad producer definition increases complexity:** Broad producer definition increase administrative complexity, especially for smaller companies. • **Weak PRO oversight and enforcement:** Compliance of the PROs to the statutes of the EPR remains an issue, with gaps in monitoring and evaluating PRO registration, compliance and efficiency as well as weak enforcement of penalties for missed targets which allows underperforming PROs to continue operating without consequence.
Institutions /PROs	• **Decentralised multi-PRO system:** With ~13 PROs, the system is fragmented, which creates some challenges but also increases PRO competitiveness. • **A statutory 5-year amendment/review exists**, but it is unclear how strongly it will be used to correct underperformance.[3] • **PRO Alliance aims to overcome some of the challenges with PRO fragmentation** to work on broader system challenges (e.g., service fee payment, MRFs investment). • **Waste Bureau is in its infancy and government still managing the enforcement:** The umbrella organization in charge of coordination, auditing, and data, has been set up, yet it is early days in its implementation and does not yet function as a clearing house.	• **Fragmented PRO landscape can undermine optimal performance:** Fragmentation drives funding challenges and limits incentives for strategic capacity building and delivery of core obligations (e.g., long-term contracting), leaving the system potentially underprepared and underfunded to meet national targets. While some PROs perform credibly and meet targets, others underperform, resulting in inconsistent outcomes across producers and materials. • **Insufficient scale to drive system change:** Fragmentation can prevent any single PRO from achieving the economies of scale required to meet targets and catalyse system change. • **Weak coordination and transparency:** A fragmented system can lead to weak overarching coordination, uneven implementation of recycling standards and reporting, greater risk of free-riding, and data inconsistencies that hinder accurate regulatory oversight.

Sources: Systemiq research and expert interviews; 1) National Environmental Management: Waste Act, 2008; Regulations regarding extended producer responsibility: Government Notice no. 1184 of 2020; Amendment to the Regulations and Notices regarding extended producer responsibility: Government Notice no. 400 of 2021; 2) Department of Forestry, Fisheries and the Environment (2020), *Extended Producer Responsibility Scheme for Paper, Packaging and Some Single Use Products,* Government Gazette No. 43882; 3) CER (2020), *NEMWA Extended Producer Responsibility Regulations 2020; 4)* Department of Forestry, Fisheries and the Environment (2022), *Response to Parliamentary Question 1988 of 2022: Assistance for the Informal Waste Sector.*; 5) Research and Markets (2024), South Africa Solid Waste Management Report 2024; 6) Infrastructure News (2024), Challenges within the South African recycling industry; 7) Expert input; 8) DFFE and DSI, 2020; 9) Minister of Forestry, Fisheries and the Environment (2020) Extended Producer Responsibility Regulations, 2020; section 5(l) the DFFE; 10) https://wastepickerintegration.org/wp-content/uploads/2024/10/World-Bank-supporting-waste-picker-integration-and-registration-in-SA-2023.pdf?utm

Robust EPR framework and implementation progress, but challenges with enforcement and PRO fragmentation persist (2/2)

SOUTH AFRICA

	Overview of the EPR system	Implications
Infrastructure	• **Infrastructure is improving**, though bottlenecks remain, with few MRFs, and periodic operational disruptions (e.g., loadshedding, water leakage). • **Regular collection covers ~60% of households**, but access is uneven in rural/informal settlements[1] • **Some recycling rates are comparatively high** (46% plastics, 70% paper, 72% cans, 42% glass), showing that some material streams benefit from stronger infrastructure.[2] • **Uneven infrastructure rollout**, with variable producer involvement in long-term contracts to unlock investment. • **LPC recycling has enough capacity concentrated geographically** in Johannesburg, creating long transport distances and higher costs. • **EPR sets tight timelines**, requiring feasibility studies within 2 years and operational facilities within 3 years.	• **Strong base for recycling gains:** Improving infrastructure, high collection coverage and high recycling rates in some materials indicate clear potential to scale performance. • **Limited sorting and aggregation capacity:** Sparse infrastructure and few MRFs restrict recycling and divert material to recovery or disposal. • **Urban-centred collection model:** Reliance on buy-back centres limits material capture in rural and peri-urban areas.
Informal Sector	• **Active informal sector drives most collection**, collecting 80–90% of all recycled material and diverting ~50% of paper and packaging waste by maintaining an entrepreneurial dynamic.[1] • **Waste pickers earn materials payments and service fees:** Material value is paid by buy-back centers and the service fee is paid by the PRO (often through buy-back centers). PRO engage also with waste pickers through the provision of PPE and workshop/education. • **Promotion of collaboration between formal and informal waste sectors**, support waste pickers' autonomy while seeking greater involvement from producers and municipalities.[3] • **Growing movement towards cooperatives** to reduce reliance on middle-men which erodes waste pickers earnings. • **Legal requirement to register all informal collectors** with the National Registration Database for Collection.	• **Strong informal-sector foundation:** A highly active, entrepreneurial informal sector underpins collection performance, capturing the majority of recycled material and providing a powerful base for EPR integration and scale-up. • **Some remaining uncertainty on waste-picker integration:** Remaining lack of clarity on waste pickers' integration leading to different interpretations. • **Service-fee payment challenges:** Payment of service fee still faces some challenges in a sector mainly cash-based.[5]
Financial Sustainability	• **Net-cost fee model**, where producers/PROs cover full collection, sorting and recycling costs, with PRO-supervised governance ensuring transparent oversight. • **Fees must be published and reviewed every three years**, with Finance Minister concurrence and strict spending rules, including a 12% admin cap and 5% allocation to the Waste Management Bureau.[1]	• **Limited fee flexibility:** Government approval requirements limit PROs' ability to adjust fees dynamically in response to market conditions.
Wider Considerations	• **Growing emphasis on design for recycling guidelines** (National Environmental Management Waste Act) to increase the quality of recyclates. • **Unique environmental assessment requirements:** self-declared environmental claims must be introduced within 3 years, and an LCA completed within 5 years based on applicable standard (reduce, reuse, recycling).[4]	• **Design standards support recyclate quality:** Growing emphasis on design-for-recycling guidelines strengthens material quality lowering system costs and improves recycling outcomes.

Sources: Systemiq research and expert interviews; 1) Expert input; 2) Infrastructure News (2022), *Challenges within the South African Recycling Industry*, 3) DFFE and DSI, 2020; 4) Minister of Forestry, Fisheries and the Environment (2020) Extended Producer Responsibility Regulations, 2020; section 5(I) the DFFE; 5) https://wastepickerintegration.org/wp-content/uploads/2024/10/World-Bank-supporting-waste-picker-integration-and-registration-in-SA-2023.pdf?utm_source=chatgpt.com

EPR impact on liquid packaging cartons: strong institutional foundation and early performance, but PRO fragmentation continue to pose a challenge

SOUTH AFRICA

	Context	Implications
Successful existing EPR implementation **01** **With a good policy set up, some established PROs provide proven guide for effective implementation of EPR that can be replicated for liquid packaging cartons**	• **Proven institutional model that can be replicated for LPCs:** Proven PRO models exist that establish a transparent, ring-fenced, and net-cost model as well as provide financial support and long-term recycler agreements, historically enabled up to ~60% PET recycling performance.[1] • **Structured risk-sharing:** Stable, predictable gives recyclers confidence to invest.	• **Useful precedent:** Established and successful PRO models demonstrate some best-in-class example of how the system can be set up and implemented effectively to improve recycling performance – offering a relevant model point for scaling LPC recycling.
Supportive categorisation **02** **Clear liquid packaging cartons categorisation incentivising recycling investments**	• **LPCs are categorised under Composite Packaging Category** within the broader Paper and Packing Product Group. • **Performance Targets:** LPCs is subject to targets requiring 30% collection and 25% recycling by 2026[2] – targets viewed as ambitious but attainable.	• **Calibrated targets matter and incentivise infrastructure:** Targets must be ambitious yet achievable to provide strong signals for recycling investments –overly high targets risk non-compliance, while low targets weaken circularity and discourage investment.
Multi-PRO challenges **03** **Multiple PROs cover liquid packaging cartons, creating fragmentation and a lack of unified oversight**	• **Fragmentation:** Different PROs operate separately for LPCs, which can lead to system duplication, inconsistent EPR approaches, lack of coordinated decision-making and long-term planning. • **Economic inefficiencies:** No PRO has the individual scale to support LPCs effectively on its own.	• **Funding challenges and limited investment:** Fragmentation can result in funding challenges and reduce the ability and scale to invest in LPC-specific technology and infrastructure.
Long-term financial sustainability challenge **04** **Liquid packaging carton value-chains and infrastructure is currently supported by a few actors and needs to become viable**	• **Industry injects funds to ensure rapid system building and recycling results for LPCs,** to unlock some of the infrastructure and education gaps to incentivise LPC collection.	• **PRO to ensure financial sustainability** through net-cost EPR fees after a few years.

Sources: Systemiq research and expert interviews; 1) PETCO (2024), Here's how we drove collection & recycling in 2023; 2) Department of Forestry, Fisheries and the Environment (2020), EPR Scheme for Paper, Packaging and Some Single Use Products, Government Gazette No. 43882

EPR framework shows progress, yet limited coordination and low certificate price leads to reduced EPR effectiveness (1/2)

INDIA

	Overview of the EPR system	Implications
Policy	• **PWMR[1] 2016 sets plastic EPR**; 2022 guideline operationalise it; 2025 draft further refine the EPR. Parallel EPR for paper, glass, metal still being discussed (draft stage). Environmental Compensation for not meeting targets is not yet enforced. • **EPR regulation primarily targeting plastic, have placed LPCs in a secondary position based on its plastic layer.** • **LPCs are classified under Category III multilayered plastic packaging, with recycling targets:** 30% (2024–25), 40% (2025–26), 50% (2026–27), 60% (2027–28).	• **Limited EPR scope:** Focused on packaging containing plastics and not on all packaging. • **Uncertainty in EPR implementation:** Variability in state-level implementation, frequent rule updates, and uneven enforcement capacity can create uncertainty for the industry, challenging enforcement and long-term investments.
Institutions /PROs	• **Decentralised EPR:** India runs a national EPR system where producers, importers and brand-owners (PIBOs) meet their own obligations[2] (through one of the R5[3] pathways and recycled content) by purchasing EPR certificates from registered processors via the CPCB[4] portal. The system relies on multiple registered recyclers offering credits and sell them to PIBOs. • **No licensed PROs exist today[5]; CPCB now runs the EPR portal**, offering central system oversight and enforcement.	• **Limited coordination of decentralised system:** Portal system and waste management agencies do not cover the coordination and strategic roadmap functions, limiting effectiveness and industry planning. • **Limited oversight:** Absence of formal PRO recognition has resulted in unlicensed entities supporting individual EPR schemes, limiting transparency and system-wide coordination.[7]
Infrastructure	• **Basic waste management infrastructure is not very well developed, with a fragmented system to collect LPCs**, with a mix of municipal contracts, informal sector networks, private sector-led system. • India's paper mills are predominantly low-technology, with only a small **subset equipped to process LPCs**. When recovered, the recycled fibre is mainly used across the packaging industry. • **Recovery of the PolyAl fraction is emerging**, directed towards lower value applications. • **Reduction of EU waste imports:** EU Waste shipment regulation[6] impacting Indian products including card and other fibre-based products.	• **Limited incentive to build infrastructure:** EPR certificate price do not incentivise necessary investments especially for harder to recycle materials as the cost structure fails to reflect the net cost for collection, sorting, recycling or disposal. • **Likely material supply reduction:** It can influence long-term infrastructure and investment planning.

Sources: Systemiq research and expert interviews; 1)PMWR: Plastic Waste Management Rules; 2) Targets are differentiated for better clarity i.e. producers only pre-consumer and Brands for post-consumer; 3) R5: Reuse, recycle, recovery, reprocessing, and refurbish; 4) CPCB: Central Pollution Control Board, PIBO: Producers, Importers, and Brand Owners; 5) earlier PROs were discontinued; 6) EU Waste Shipment Regulation;; 7) EU Waste Shipment Regulation; World Bank (2025), Extended Producer Responsibility for Plastic Packaging in Selected ASEAN Member States

EPR framework shows progress, yet limited coordination and low certificate price leads to reduced EPR effectiveness (2/2)

INDIA

	Overview of the EPR system	Implications
Informal Sector	• **Central role in collecting LPCs incentivised through industry programs:** Most used LPCs are collected, sorted by waste pickers, kabadiwalas and other intermediaries, that sell material to aggregators who then supply it to paper mills. • While the regulation references waste picker inclusion, it provides **little guidance on how integration should be implemented.** • **Ongoing government integration of waste pickers into the NAMASTE scheme** to advance their formal recognition and improve access to safe, sustainable livelihoods.	• **Progress in waste pickers' integration, yet challenges remain:** The portal does not yet systematically register the informal sector, guarantee payments, or define social safeguards.
Financial Sustainability	• **Certificate price is low and falls below net-cost for collection, sorting, recycling or disposal:** Plastic-waste processors/recyclers offer the credit to PIBOs for reported tonnage, yet these credits trade at low prices.	• **Not net-cost:** EPR certificate price tend to not reflect the real net-cost for materials management resulting in reduced compliance or voluntary industry efforts to close the cost gap.
Wider Considerations	• **Recycled content mandates send strong circularity signals for all materials in scope.** Recycled content targets are set for the plastic content for multilayered plastic packaging: 5% from April 2025 and rising to 10% from 2028.[1] • **Food-safety and standards guidance for recycled plastics is not yet clear or harmonised**, except for PET and ban of PFAS and BPA in food contact materials.[2] • **Three states have implemented/are discussing DRS** to overcome EPR challenges. LPCs are in scope for DRS in Goa.	• **Unclear recycled content mandate definition:** Lack of clarity on how to comply to mandates requires coordinated response from multiple ministries/ government bodies create uncertainty for industry and make compliance challenging.

Sources: Systemiq research and expert interviews; 1) Table p2 - category III: https://egazette.gov.in/WriteReadData/2025/263615.pdf ; 2) FSSAI issued guidelines for acceptance of recycled PET as FCM (FCM-rPET) : https://fssai.gov.in/upload/notifications/2025/05/6834550d9ff1eGuidelines%20for%20acceptance%20of%20recycled%20Polyethylene%20terephthalate_PET_as%20Food%20Contact%20Material.pdf; https://fssai.gov.in/upload/uploadfiles/files/Draft%20FSS_Packaging_Amendment%20regulations2025.pdf

EPR impact on liquid packaging cartons: Current EPR categorisation and guidance undermines LPC recycling

INDIA

	Context	Implications
01 ***Categorisation challenge:*** **Although liquid packaging cartons are included in the plastic EPR framework, categorisation of LPCs as multi-material plastic (Category III) has a range of negative consequences that impact LPCs recycling rates and availability of EPR credits for LPCs**	• **LPC recycling in paper mills is not recognised appropriately/fully**. Despite the full LPC being processed, the credit is available only for the plastic fraction (~20-25%), and does not recognise the majority fraction of fibre recycled by paper mills. • **LPCs recycled with mixed recycling stream in paper mills are not counted in the EPR system.** • **Recycling rate are based on full LPCs weight,** yet fibres do not receive credits. • **Paper mills struggle to also register as plastic recyclers**, requiring changes to their Consent to Operate that attracts government scrutiny (given that majority of feedstock remains paper), so large share of real LPC recycling in paper mills does not generate any EPR certificate.	• **LPC recycling in paper mills is not fully captured or rewarded** under the current plastic categorisation and only partly visible on the portal (PolyAl). • **Current plastic credit pricing does not reflect the actual cost of collection and recycling for the full LPC**, requiring industry support for LPC collection and recycling to incentivise waste pickers to collect LPCs. • **Discrepancy between credit system and recycling targets** with the first covering plastics fraction only and the second the full LPC. • **LPC-specific performance is harder to track transparently** as system is based on credits from plastic fraction.
02 ***Plastic rContent challenge:*** **Unclear food-safety guidance and misaligned portal reporting make it challenging to get EPR credits for plastic recycled-content[1]**	• **Recycled content targets apply only to the plastic layer of multi-material plastics**, with recycled plastic not allowed for food-contact layers. • **No clarification from food-safety authorities** on the acceptable recycled-content quality and certification. • **Reporting for recycled content from chemical recycling is not enabled through the portal:** The portal only allows reporting by total pack weight, not for the plastic layer only.	• **Structural compliance challenge:** Even though the rule mandates 5% recycled content on the plastic fraction, this cannot be reported through the portal. • **LPC producers face regulatory exposure and compliance challenge:** Lack of clarity on recycled content quality (e.g., chemical recycling) and certification (e.g., ISCC+) allowance.

Source: Systemiq research and expert interviews

Despite government progress in addressing EPR set up, low enforcement and business uncertainty remains (1/2)

VIETNAM

	Overview of the EPR system	Implications
Policy	• **LEP 2020 introduces mandatory EPR packaging nationally, but lack of policy clarity leads to low compliance**; Operational EPR system and penalties were later set. Frequent amendments aim at clarifying the EPR set up.[1] • **National EPR Council[2] set as a coordinating organization** to assist MoNRE[3] in managing and supervising the EPR implementation and is operating the EPR Portal, and integrating it other national data (e.g., tax, business registration). • **Uneven and delayed EPR implementation:** Consolidation process of provinces / ministries is ongoing. • LPCs are classified as **multilayer composite paper packaging** and producers and importers of packaging must meet **a 15% recycling rate for this category (2024–2026/27).**	• **Delayed enforcement:** Policy volatility and country transition create changes and uncertainty for industry (e.g., auditing, recycling cost), limiting enforcement. • **Limited transparency of consultation:** Centralised consultation process but limited transparency on how feedback shapes revisions.
Institutions /PROs	• **Dual-compliance options:** Producers must either meet material-specific recycling obligations themselves (or together with an authorised PRO) or pay a recycling fee (Fs) into the Vietnam Environment Protection Fund (VEPF) based on standard recycling costs for various types of products. After selecting a method, producers must register their recycling plan with the MONRE. • **Centralised and single PRO:** PRO Vietnam (PROVN) is the only industry-led PRO for packaging that acts as an authorised recycling organisation, contracting MONRE-recognised recyclers, reporting via the national EPR portal. • **Lack of independent auditing body:** There is no organisation checking recycling claims and financial contributions.	• **Enforcement and accounting challenges:** Dual compliance and weak audits leads to gap in EPR enforcement and potential risks of under- or double-counting between the different options.

Sources: Systemiq research and expert interviews. 1) LEP: Law on Environmental Protection; Decree 08/2022 includes recycling target and an option to pay into VEPF; Decree n°45/2022/ND-CP set penalties; Decree 05/2025 refines and amends key EPR provisions; Circular 07/2025 further details procedures, reporting and implementation. 2) Decision No. 252/QD-BTNMT on February 14, 2023; 3) MONRE: Ministry of Natural Resources and Environment of Vietnam; 4 UNDP (2021-2025), ADB (2023)

Despite government progress in addressing EPR set up, low enforcement and business uncertainty remains (2/2)

VIETNAM

	Overview of the EPR system	Implications
Infrastructure	• **Collection remains uneven**–strong in urban areas but weak in rural regions–while MRF capacity is limited and recycling infrastructure varies significantly by material type and remains low for hard-to-recycle packaging. • **PROVN recycler network expansion:** PROVN plans to expand its MONRE-recognized recycler network from 9 to 13 recyclers in 2025, strengthening collection and recycling capacity. • **Sufficient mills and growing LPC-recycling capacity:** Vietnam has dedicated mixed-paper-LPC recycling lines, with authorised paper-LPC and mixed recyclers (~79 kt/yr in 2025 plans). • **Demand for recycled fibres:** Insufficient LPC domestic collection but growing demand for recycled fibres, including through imports of cardboard. PolyAl is not recycled.	• **Unclear recycling compliance requirements:** Lack of clarity on the calculation of recycling costs, rates, and on criteria to determine if a recycling unit met the necessary legal requirements adds to business uncertainty. Recyclers do not see benefits in registering volumes. • **Lack of PolyAl recycling:** Limited capacity to process complex plastics may represent a threat to meeting targets.
Informal Sector	• **Despite being crucial for packaging collection, waste pickers are not recognised in EPR law:** With waste pickers collecting over 30% of waste,[4] there participation is not prohibited but they lack necessary integration and safeguards. • **Discussion on waste pickers integration:** PROVN's partnership with International Union for Conservation of Nature (IUCN) includes recommendations on integrating the informal sector into EPR policies.	• **Inconsistent integration of the informal sector:** Integration is left to local arrangements or cooperatives/ companies which can create basic integration challenges for informal waste pickers (e.g., access to funds for collection, safeguards).
Financial Sustainability	• **Centralised fee system:** EPR fees (Fs) for multilayer composite paper packaging is USD 0.27/kg, covering collection, sorting, transport, recycling and EPR administration. The Fs are then pooled together in VEPF. • **PROVN as alternative:** PRO Vietnam works with MONRE-recognised, PROVN-verified recyclers and offers pricing that are lower than the estimated MONRE Fs, providing members with a cheaper operational compliance option. • Given the lack of policy clarity and end-market drivers, **many producers still choose the pay-only route (VEPF).**	• **Lack of transparency in fee calculation and fund allocation:** Fs calculation methods are seen as insufficiently transparent to assess whether it achieve net-cost. VEPF funding remains opaque, non–ring-fenced raising concerns about whether funds are dedicated toward relevant value-chain development and infrastructure investment.
Wider Considerations	• **No eco-modulation or recycled content requirements are currently in place.** • **DRS is being explored for single-use beverage containers** (mainly PET and cans), with city-level pilots underway.	

Source: Systemiq research and expert interviews; 1) LEP: Law on Environmental Protection; Decree 08/2022 includes recycling target and an option to pay into VEPF; Decree n°45/2022/ND-CP set penalties; Decree 05/2025 refines and amends key EPR provisions; Circular 07/2025 further details procedures, reporting and implementation. 2) Decision No. 252/QD-BTNMT on February 14, 2023; 3) MONRE: Ministry of Natural Resources and Environment of Vietnam; 4) UNDP (2021-2025), ADB (2023)

EPR impact on liquid packaging cartons: Without clear EPR Policy certainty and market incentives, existing challenges will persist

VIETNAM

	Context	Implications
01 ***Policy challenge:*** **Frequent government amendments leads to lack of clarity, affecting particularly LPCs value-chain**	• **Frequent amendments aim to improve EPR (fee, timeline, auditing) creates regulatory uncertainty** for all packaging value chains.	• **Uncertainty prevents investment:** Frequent regulatory revisions prevent investment in LPC recycling value chains, particularly as infrastructure less established. • **Policy could omit LPCs:** Risk that government does not fully consider decision impact on LPCs, given smaller market share (vs plastics).
02 ***Recycling challenge:*** **Policy changes and uncertainty leads to disengagement from recyclers**	• **Recyclers face a lot of uncertainty:** Recyclers face unclear policy requirement (e.g., auditing), high compliance costs and limited end-markets. • **Demand for recycled fibre and PolyAl remains limited**, and the absence of reinforcing policy (e.g., EPR enforcement) further constrains market development.	• **Producers struggle to fulfil their EPR obligations through contracting with a LPCs recycler:** Recyclers have little incentive to process LPCs due to recyclers high implementation. uncertainty, limited end-markets, and challenges in processing LPCs. • **Limited infrastructure incentive:** Context limits the development of infrastructure project.
03 ***Infrastructure challenge:*** **Lack of transparent fee setting and fund use hinder LPCs infrastructure development**	• **Lack of transparent EPR fee (Fs) methodology make it unclear if they achieve net-cost (vs exceed/fall short).** Fs for composite paper is $0.27/kg (vs PET or mono paper $0.08/kg).[1] • **Fs into VEPF are pooled and not ring-fenced** leading to lack of transparency on fund use. • **Despite challenges with VEPF, most producers pay into VEPF due to recycling challenge** (above).	• **Fees minimally targeted at LPCs value-chain:** Fs payments by LPC producers contribution to VEPF do not necessarily finance LPC recycling. Real improvements in LPC recycling depend mainly on organised recycling via PROVN and voluntary investments.

Source: Systemiq research and expert interviews

Despite strong legal framework, early implementation has delivered mixed results, reflecting low and fragmented collection (1/2)

CHILE

	Overview of the EPR system	Implications
Policy	• **Formal EPR framework:** It operates a full mandatory EPR system for packaging (2016).[1] • **LPCs as separate material category:** LPCs have their own targets and obligations, distinct from paper, plastic, and glass. Recycling targets for LPCs is 60% by 2034. • **EPR phased rollout:** EPR is today deployed in only ~10% of Chile following a learning by doing approach, with a clear plan to expand year by year until national coverage is achieved. • **Centralised rules, uneven local delivery:** Environment ministry sets national regulations, but municipalities execute them inconsistently, creating wide regional performance difference. • **Emerging legislation propose to tackle exports:** With high exports, Greenwashing bill propose that recycling targets only counts if packaging is recycled domestically.	• **Phased rollout supports system maturation, but progress remains slow:** While sequencing enables learning and model refinement, infrastructure gaps and early-stage PRO capacity continue to delay effective implementation and compliance. • **Unclear application of penalties** for PROs not complying to targets. • **Unrealistic LPC recycling targets:** Limited collection and recycling capacity makes targets hard to achieve, discouraging producers and reducing compliance. • **Compensation rules mask structural gaps:** Cross-material target compensation until 2026 helps manage early implementation challenges but delays investment in infrastructure for harder-to-recycle materials. • **Regulatory uncertainty beyond EPR:** Regulations could incentivise local recycling but create uncertainty for materials lacking local infrastructure.
Institutions /PROs	• **Integrated financing and compliance obligations:** Brand owners must join or establish a PRO, finance collection, sorting and recycling, and meet targets through approved management plans. • **Limited transparency and oversight:** Fee-setting mechanisms and use of EPR funds lack visibility, with limited auditing and governance of PRO operations. • **Weak public–private coordination:** Coordination between government, municipalities and producers on recycling planning and infrastructure development remains limited.	• **PROs enables coordination:** Mandatory PRO participation creates a clear institutional vehicle to aggregate obligations, finance operations and drive compliance. • **Converters excluded from PROs**: It limits access to data and decisions. • **LPCs face structural challenges:** Despite policy defining LPC as its category, limited attention dedicated to LPC collection and infrastructure. Limited public–private coordination slows LPC system build-out. • **PRO focus on high-volume materials:** It limits attention on smaller LPC category.

Sources: Systemiq research and expert interviews; Creatividad Positiva (2024), ANIR presented the recycling statistics for Chile; 1) Ley 20920 https://www.bcn.cl/leychile/navegar?idNorma=1090894 ; 2) 2024 Kyklos–ANIR packaging study

Despite strong legal framework, early implementation has delivered mixed results, reflecting low and fragmented collection (2/2)

CHILE

	Overview of the EPR system	Implications
Infrastructure	• **Collection infrastructure is the bottleneck for all materials:** Without widespread door-to-door collection, Chile rely on drop-off points and has uneven material acceptance across municipalities. • **Relatively low recycling performance across all materials:** Chile recycles ~47% of paper/card, ~29% of PET, 27% of aluminum, ~22% of glass and ~3% of LPC.[2] • **Sparse domestic recycling infrastructure:** Chile's network of recycling centres, MRFs and treatment plants remains limited and uneven, leading to large exports.	• **Collection does not consistently align with law**: Municipalities manage collection contracts and may exclude some materials, even if they are legally covered under EPR. • **Strong performance in some materials shows what is possible:** Higher recycling rates in other waste streams demonstrate potential for improvement. • **Export dependence limits domestic infrastructure:** Chile currently allows waste exports, enabling companies to meet targets through external channels rather than investing in local recycling capacity.
Informal Sector	• **Limited role of informal sector:** Recycling system relies minimally on waste pickers. • **Recognition of the waste pickers in law:** The law include mechanisms of training, financing and formalisation of waste pickers to ensure their integration into EPR system**.** PROs must submit annual, audited reports and are legally required to integrate them.	• **Increase reliance on formal systems for collection** that are uneven across the territory.
Financial Sustainability	• **Opaque fee structure and use:** No clear rationale to material fee and unclear use of fee. • **Financial stability varies by PRO:** Overall system resilience depends on each PRO's scale (number of members) and its ability to negotiate efficient contracts with municipalities and recyclers.	• **Limited clarity in EPR fee-setting:** Limited visibility into PRO expenditures makes it challenging to assess how fees are associated to system needs. • **Moderate investment signal:** Incentives to scale collection and strengthen the recycling value chain remain constrained.
Wider Considerations		

Sources: Systemiq research and expert interviews; Creatividad Positiva (2024), ANIR presented the recycling statistics for Chile; 1) Ley 20920 https://www.bcn.cl/leychile/navegar?idNorma=1090894 ; 2) 2024 Kyklos–ANIR packaging study

EPR impact on liquid packaging cartons: Despite formal LPC categorisation, limited incentives for collection and local recycling continue to constrain improvements in recycling performance

CHILE

	Context	Implications
01 *Policy-practice gap on collection* **Despite liquid packaging carton category in EPR law, PRO and municipalities put lower priority than larger categories**	• **Smaller category deprioritised:** Although liquid packaging cartons have their own category, they are often deprioritized in practice, with PROs focusing on higher-volume materials (plastics, paper, glass). • **Fragmented local implementation:** Some local authorities continue to exclude LPCs from collection, undermining national policy objectives. • **Households do not recognise LPCs as a separate recyclable category:** Lack of public guidance means LPCs are often not separated.	• **Persistent underperformance against targets:** The gap between formal policy recognition and operational prioritisation limits LPC collection, making it difficult to achieve LPC-specific EPR targets. • **Financial risk for LPCs:** Difficulty in meeting targets may prompt PRO fee increases, potentially placing a disproportionate burden on liquid packaging LPCs. • **Limited LPCs collection:** Even where collection infrastructure for LPCs exist, lack of education campaigns on LPC recyclability limits LPCs collection.
02 *Local recycling gap* **Limited local liquid packaging carton recycling infrastructure and export of materials are self-reinforcing barriers**	• **Structural infrastructure constraints:** The absence of domestic LPC-recycling facilities creates persistent bottlenecks for material recovery, limiting system performance regardless of collection efforts. • **Export-dependent outcomes:** LPC recycling rates remain capped by export channels, constraining scalability and long-term resilience. • **Limited economies of scale constrain mill interest:** In a large and well-supplied paper market, low LPC volumes provide insufficient incentive for mills to adapt pulping lines.	• **Reliance on compensation mechanisms:** In practice, producers are pushed to comply through cross-material compensation rather than LPC recovery, weakening incentives to invest in LPC-specific collection, awareness and recycling infrastructure. • **Constrained local value-chain development:** Low LPC collection undermine the business case for domestic recycling, reinforcing dependence on exports and delaying the emergence of a local LPC recycling value chain.
03 *Unrealistic liquid packaging cartons targets* **Despite minimal collection and recycling, targets are higher than current EU recycling rate for liquid packaging cartons**	• **Low LPC collection and recycling performance:** Limited household segregation, low awareness of LPC acceptance at drop-off points, and constrained domestic recycling infrastructure result in recycling rates of around 3%, largely dependent on exports. • **Despite this context, Chile set very ambitious LPC targets:** Chile has set targets for LPCs at 60% by 2034.	• **Limited feasibility of LPC-specific compliance:** Ambitious LPC targets, set without sufficient supporting infrastructure, make compliance through LPC recycling alone unlikely. • **Targets lack stakeholder input:** Target-setting for LPCs involved limited consultation with relevant stakeholders, contributing to misalignment between policy ambition and operational realities.

Source: Systemiq research and expert interviews

China EPR for liquid packaging cartons: Government-set objectives combined with industry response has delivered successful pilot results for LPCs, however long-term policy direction remains uncertain (1/2)

CHINA

	Overview of the EPR system	Implications
Policy	• **China has fragmented sector specific EPR** (e.g., LPCs, electronics, vehicles) defined through waste sorting, eco-design, and recycled content requirements, but does not have a single nationwide packaging EPR regulation. • **The 2016 EPR Implementation Plan launched China's pilot-based EPR for LPCs:** The government designated LPCs as the only packaging product under a national EPR pilot. The 2020 Implementation Plan then operationalized it into a 2021–25 national pilot with defined producer duties and target.[1] LPCs were chosen because of established recycling capability and technology foundation and concentrated industry players. • **Target for LPC:** 40% recycling rate by 2025.	• **Policy focuses only on LPCs**, with no timeline on setting up an EPR for other packaging types. • **Unclear post-2025 regulatory trajectory:** The exact post-2025 pathways on how to deploy the EPR policy is still open.
Institutions /PROs	• **Government-guided and industry-driven EPR pilot with the coordination relying on industry consortium and cooperation**: A policy founded flexible approach to implement the EPR pilot allowing industry self-regulation and initiative. The Carton Recycling Industry Coalition (CRIC) brings together the main LPC producers (~80% market share). It develops the operation mechanisms, rules, and approach for achieving the goals, functioning like a PRO but on a voluntary coalition basis. • **Industry consortium reports audited data:** It submits annually EPR performance reports to the relevant government department, disclosing progress across eco-design, information disclosure, and standardised recycling.	• **Policy enables industry to organize a relevant and efficient system** responding to public requirements. • **Consortium functions like a voluntary industry PRO,** without formal enforcement power set in policy, leaving room for free-riders.
Infrastructure	• **Increase in recycling rates is dependent on feedstock access**: Collection and sorting, not mill capacity, are the main bottlenecks to further recycling progress. • **Industry has developed strong recycling infrastructure and end-markets** • **Dedicated LPC-recycling capacity:** Around 10 specialized recyclers across North, East and South China process used LPCs, producing kraft, tissue and papers. • **PolyAl processing solutions developed**: Industry and partners have developed PolyAl recycling routes, with low and high value outputs such as s, metal-coating, metallurgical additives, and various chemical compounds.	• **LPC recycling infrastructure and high-value end-markets** for fibres and PolyAl has enabled to reach set targets and develop a long-term system. • **Public-private infrastructure collaboration is needed:** Increased collection and sorting requires growing basic waste management infrastructure.

Sources: Systemiq research and expert interviews. 1) 2009 Circular Economy Promotion Law sets China's national circular-economy and "3R" (reduce-reuse-recycle) mandate, 2016 Extended Producer Responsibility Promotion Scheme formally launches EPR nationally and mandates a pilot-based rollout; 2020 Implementation Plan set a 2021–25 carton-EPR pilot with targets and duties, 2020 Solid Waste Law is the umbrella law that makes producers responsible for life-cycle waste impacts and provides the legal basis for EPR

China EPR for liquid packaging cartons: Government-set objectives combined with industry response has delivered successful pilot results for LPCs, however long-term policy direction remains uncertain (2/2)

CHINA

	Overview of the EPR system	Implications
Informal Sector	• **Informal sector remains central to collection of LPCs, but with limited integration:** Although 'reverse invoicing' is being promoted, encouraging recyclers to issue invoice to sellers that bring waste to them guaranteeing payment to waste pickers, they are not explicitly integrated in EPR governance or provided service contracting or grievance procedures. • **Integration into more formal collection models:** Government attempts to formalize collection (e.g., municipal waste-sorting programs, intelligent collection bins), offers more structured channels that informal actors can feed into.	• **Lack of clarity on the integration of the informal sector with the growing formal collection models:** Collection models can exclude the informal sector unless policy integrate them.
Financial Sustainability	• **Industry funds the pilot:** The LPCs scheme operates as a voluntary EPR pilot (it is not funded through mandatory producer fees), with industry cost-sharing, ring-fenced to the pilot. • **Monetary incentives paid by the LPCs producers**: Industry pays to recyclers to stimulate them on collection and recycling, and ensures their profitability. Industry currently pays to recyclers to stimulate them on collection and recycling.	• **Efficient resource use:** Industry decides its own budget and operational design, maintaining affordability and effectiveness, and reduction of operational cost. • **Industry covers the gap between the cost and revenue of LPC collection & recycling**: development of waste management infrastructure by public sector is necessary.
Wider Considerations	• **Progress on packaging design and recyclability criteria:** Industry worked closely to define design guidelines and *Recycling Label for Beverage Paper-Based Composite Packaging* standard on recyclability and accurate sorting. • **Industry-developed EPR performance evaluation best practices:** It focuses on green and low-carbon transformation, covering eco-design, product carbon footprint accounting, and carbon-reduction performance from resource recovery.	• **EPR pilot and efforts framed in a broader green transformation agenda.**

Source: Systemiq research and expert interviews.

Extended Producer Responsibility (EPR) Recommended Guiding Principles for Liquid Packaging Cartons in Low- and Middle-Income Countries

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