

EPR system performance in the European Union

Preliminary release of key findings

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Background

The Packaging and Packaging Waste Regulation (PPWR) entered into force in 2025, setting binding recycling targets and harmonised reporting requirements across the EU-27. Whether Member States can meet these obligations depends significantly on how their Extended Producer Responsibility (EPR) systems are designed and governed. EUROOPEN commissioned this study to CIRCPACK by Veolia to identify what separates the EPR schemes already on track from those that are not, and what must change for the 2030 and 2035 PPWR obligations to be met across the EU-27. The study assesses the EPR systems of all 27 EU Member States, drawing on Eurostat 2023 data, PRO-published financial and operational reports, national waste registry submissions, and a CIRCPACK's format-specific recycling-rate dataset covering 13 packaging sub-categories. The analysis is structured around four analytical pillars: minimising material losses, circular reporting and monitoring, creating circular markets, and transparency. The findings are further illustrated using five country case studies: Belgium, Italy, Spain, Germany, Hungary.

The EU-27 generated 79.7 million tonnes of packaging waste in 2023, equivalent to 177.8 kg per capita; overall recycling stood at 64.1% (Eurostat 2023). The spread across Member States is wide: Belgium recycles 79.7% of its packaging while Romania recycles 37.3%, a 40 percentage-point gap that has not closed meaningfully over the past decade. This report's main objective is to identify what separates high-performing EPR systems from the rest, and, at a time where nearly half of Member States still landfill more than 30% of their municipal waste, and four more than 60%, to provide perspective on how to reach Europe's recycling objectives.

Fee structure, not fee level, drives recycling performance

The design of the EPR fee structure is the strongest driver of recycling performance identified in the study. Systems with granular eco-modulated fees, where fees are differentiated by material, format and recyclability, outperform those with flat or basic fee structures by 16.5 percentage points in overall packaging recycling. Countries applying basic weight-based modulation average 57.4%; those with advanced bonus-malus systems reach 64.5%; countries operating granular net-cost models with format-specific fee tiers average 73.9%. This finding is most clearly shown via rigid plastics, where granular systems average 52.0% (CIRCPACK) against 31.3% in basic systems, a 20.7 percentage-point gap.

Fee levels alone, by contrast, do not drive waste prevention. Waste generation volumes track GDP per capita more closely than fee design across all material streams. Fee levels still need to be sufficient to fund the collection, sorting and reprocessing infrastructure the PPWR requires, but raising fees without transparently directing revenue towards specific bottlenecks will not close the performance gap. The proper allocation of fee revenue, not its absolute level, is what drives outcomes.

The bottlenecks observed are measurable: sorting and reprocessing capacity for certain packaging formats remains insufficient in most Member States; separate-collection coverage drops off sharply outside urban centres; and in most systems, fee modulation does not differentiate strongly enough between recyclable and hard-to-recycle formats to shift packaging design choices.

Infrastructural barriers hinder recycling at scale

No single packaging category is on track to meet the PPWR's recycling-at-scale requirements across all 27 Member States. Flexible plastics are the sharpest illustration: they have the lowest recycling rates of any packaging category, negligible sorting and reprocessing capacity in most Member States, and the widest gap between what is collected and what is recycled. Composite beverage cartons, aluminium in certain Member States, and selected paper streams show the same dynamic. The barrier is infrastructural, and no current EPR design, regardless of fee structure granularity, has closed the gap for all categories. Whilst design for recycling will preclude market access for non-recyclable packaging, reaching recyclability at scale by 2035, as mandated by the PPWR, requires sorting and reprocessing capacity that does not yet exist at scale for all packaging categories across the EU-27.

Governance quality matters more than governance model

What distinguishes high-performing systems is not their makeup, i.e. single-PRO, multi-PRO, or state-managed, but rather the level of governance installed. This includes how precisely regulators define what PROs must deliver, how transparently fee revenue is tracked from collection to reprocessing, and whether reporting granularity is sufficient to diagnose performance over time. Belgium (single-PRO) and Germany (competitive multi-PRO) sit in the same top tier despite very different scheme architectures. The spread within governance models is wider than the spread between them. Where governance is strong, both single-PRO and competitive structures deliver.

System performance by governance model

Governance model	Avg. recycling rate	Top performer (%)	Sample (n)
Single-PRO	71.2%	Belgium (79.7%)	6
Competitive multi-PRO	62.9%	Germany (69.4%)	19
State-managed	47.4%	Croatia (51.9%)	2

Source: Eurostat 2023 reporting period, packaging recycling rates by Member State

Data granularity is a key driver of EPR performance

Member States classified High on a composite transparency index - covering reporting coverage, methodology disclosure and reporting frequency - recycle 13.4 percentage-points more packaging on average than Low Transparency systems (69.6% versus 56.2%). The mechanism operates through methodology disclosure: where calculation methodologies are publicly documented, reported rates can be verified against underlying material flows. Where they are not, the reported figure reflects a regulatory classification decision whose basis cannot be externally checked. Belgium tracks at format level and recycles 79.7%; Hungary reports at aggregate level and recycles 42.8%. The pattern across the wider sample is consistent: countries with more granular, publicly available data tend to achieve higher recycling rates. Verifiable data allows regulators, producers and operators to see where material is being lost and to target fees and infrastructure investment at the formats that need intervention. Aggregate figures, instead, obscure underlying performance. For example, when certain formats represent a smaller share of total tonnage, their losses are absorbed into the

average rather than visible against it. More challenging formats, those requiring advanced sorting, dedicated collection or emerging recycling technologies, remain less well served, not because their importance is disputed but because the evidence base needed to direct investment toward them is not consistently available.

PPWR Annex XII Table 3 will require Member States to report at polymer-family level for plastics, with parallel splits for paper and metal. The data infrastructure does not yet exist uniformly to deliver comparable format-level reporting across the EU-27, harmonised sorting analysis protocols, standardised material identification, comparable counting methodologies. Until it does, Member States cannot identify where material is being lost in the system, and fee structures cannot be calibrated to the formats that need intervention.

Financial transparency stops at the Producer Responsibility Organisation

Article 8a of the Waste Framework Directive requires PROs to publish their fee schedule, scheme ownership and membership, and the procedure used to select waste-management operators. It does not require disclosure of how aggregate fee revenue is allocated downstream once it leaves the PRO. Nothing comparable applies to the waste-management operators that actually deliver the service: municipalities, contracted collectors, sorting facilities, reprocessors. In Belgium, formal contracts between Fost Plus and intermunicipal operators trace fee revenue to specific service standards, and per-format reporting allows recovery outcomes to be measured against payments. In most other Member States, PROs disburse to municipalities or contractors without comparable downstream visibility. This downstream opacity is where most fee revenue is spent, and the report identifies it as the single largest visible gap in the current EPR transparency framework.

Country case studies

Five country case studies show how design choices translate into outcomes. Headline packaging recycling rates below are Eurostat (2023 reporting period). Each country illustrates a different point along the performance and reform spectrum:



Belgium (79.7% overall recycling)

Single-PRO household packaging structure (Fost Plus), with a parallel commercial packaging PRO (Valipac). Granular net-cost fees across more than ten material sub-categories, and over three decades of institutional maturity. Formal contracts between Fost Plus and intermunicipal operators trace fee revenue to specific service standards. Belgium has already exceeded the 2030 PPWR targets for most material streams.



Italy (75.6% overall recycling)

Italy's CONAI runs the most granular plastic fee system in Europe via the CONAI single-PRO consortium model with material-stream consortia underneath, with 22 categories in total, including nine plastic sub-categories (A1.1 to C). Italy has already exceeded 2030 targets for paper (92.6%) and is on track for most other streams.



Spain (70.5% overall recycling)

Mid-transition from a 25-year monopoly (Ecoembes/Ecovidrio) to a competitive multi-PRO market under Royal Decree 1055/2022, with thirteen registered PROs as of 2025.

The system is navigating significant structural adjustment following the end of the monopoly, requiring substantial administrative oversight to ensure data integrity.



Germany (69.4% overall recycling)

Competitive multi-PRO market with over ten licensed operators, coordinated through the ZSVR central registry and shared database. Eco-modulation under the German Packaging Act (VerpackG) differentiates fees at the material level but not at the format level (e.g. rigid versus flexible plastic). Achieves comparable performance to single-PRO systems but requires a heavy investment in centralised oversight.



Hungary (42.8%)

Lowest performer of the five. Replaced its multi-PRO market in 2023 with a 35-year state concession to MOHU. The system remains in early implementation, with key operational and reporting parameters still being defined.

Filling the remaining structural gaps for an effective waste management

The PPWR addresses several of the structural gaps this study identifies. Its harmonised calculation methodology requirement (aligned with Directive 2018/852 and CID 2019/665) will reduce the methodological divergence that currently inflates some national recycling figures. Its eco-modulation requirements align with what we observe in the highest-performing systems. Its extended reporting obligations move in the direction of the data granularity that our analysis links to better outcomes.

However, the report's key findings indicate that additional harmonised efforts are needed across the EU to level up the playing field towards the best performing EPR systems. The Member States that perform best combine four design parameters: granular fee structures, consolidated operational responsibility, format-level data, and transparent methodology disclosure. These are design parameters, not spending parameters, that can be achieved by any Member State. Future EU legislation, such as the upcoming Circular Economy Act, will be an essential tool to reform EPR governance and drive a harmonised EU approach to waste management.

Note on sources

Most recycling rates cited above are drawn from Eurostat (2023 reporting period). Format-specific rates for rigid and flexible plastics are drawn from a CIRCPACK dataset that triangulates officially reported figures with material flow analysis, proprietary operational data from Veolia's European recycling operations, and CIRCPACK's deep knowledge of EU-27 recycling infrastructure, built from direct facility-level access (sorting and reprocessing capacity, maturity and geographic reach by Member State). The format-specific dataset is strictly household in scope; Eurostat's all-plastics recycling rate of approximately 40% blends rigid and flexible formats across household and commercial/industrial streams. Numbers in this brief are descriptive: group averages and percentage-point gaps observed in the EU-27 sample.