The EU Packaging and Packaging Waste Regulation (PPWR)

ImpactBuying White Paper August 2025

Purpose

The Packaging and Packaging Waste Regulation (PPWR), adopted by the European Union in 2024, represents a transformative step toward reducing environmental impact, promoting sustainability, and fostering a circular economy for packaging. Replacing the 1994 Packaging and Packaging Waste Directive (94/62/EC), the PPWR introduces ambitious targets for waste reduction, recycling, and reuse, while imposing stricter requirements on businesses.

This white paper provides a comprehensive overview of the PPWR, including its background, key definitions, requirements, timelines, consequences for companies, and the ImpactBuying roadmap for implementation. It aims to guide stakeholders in understanding and implementing the requirements in ImpactBuying tools.

> *"The PPWR regulation represents more than compliance—it's an opportunity to lead the industry toward true circular economy principles. At ImpactBuying, we view regulatory challenges as catalysts for innovation. By helping our clients not just meet but exceed these requirements, we're building the sustainable supply chains of tomorrow."*
>
> *Leontien Hasselman-Plugge- ImpactBuying CEO*

Background

The PPWR emerges in response to growing environmental concerns about packaging waste in the EU. Packaging is a significant contributor to waste, accounting for approximately 40% of plastic use and 50% of paper waste in the EU, with 188 kg of packaging waste generated per capita in 2021. The PPWR aligns with the EU's Green Deal and Circular Economy Action Plan, aiming to make all packaging reusable or recyclable by 2030, reduce waste, and combat greenwashing. The regulation is built on three fundamental pillars:

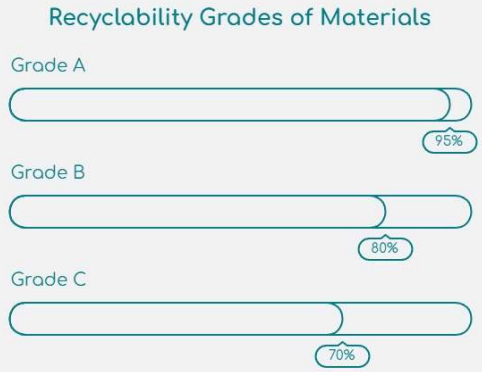
Design for Recycling (DfR): all packaging reusable or recyclable by 2030	Recycled Content Requirements: Mandatory minimum percentages of recycled content in plastic packaging	Extended Producer Responsibility (EPR): Enhanced accountability for packaging throughout its lifecycle

PPWR Goals

The PPWR imposes a range of obligations on businesses, Member States, and other stakeholders to achieve its sustainability objectives. The main purpose is to achieve the Packaging Waste Reduction goals: 5% reduction in packaging waste per capita by 2030 (compared to the 2018 baseline), 10% reduction by 2035, and 15% reduction by 2040.

Recyclability

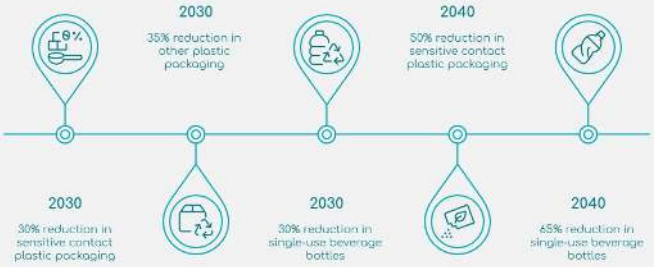
By 2030, all packaging must meet new Design for Recycling (DfR) Standards, classified into grades A, B, or C. By 2035, all packaging must be "Recycled at Scale" within existing infrastructure.



All packaging must be "Recycled at Scale" by 2035. It means that Packaging must be separately collectable, sortable, and recyclable in the existing infrastructure. The companies would be required to introduce documented proof of recyclability across the entire supply chain.

Minimum Recycled Content

Plastic packaging with over 5% plastic by weight must contain minimum recycled content (e.g., 30% by 2030, 65% by 2040 for most types). Food-contact packaging has specific, lower targets.



Exemptions: Food-contact plastic packaging has lower targets (e.g., 10% by 2030 for certain types) due to safety and technical constraints

Re-use and Refill Targets

Mandates for reusable packaging and refill systems: 20% of beverage sales by 2030 (80% by 2040 for specific categories). Take-away food and drink providers must offer reusable formats by 2030 and accept consumer containers starting 2026.

Compostable Packaging

Specific packaging, such as tea bags, coffee capsules, and sticky labels, must be compostable by 2030. Other packaging types may qualify if they meet EU standards and do not disrupt recycling streams.

Extended Producer Responsibility

Producers are responsible for financing and organizing the collection, sorting, and recycling of packaging waste. All producers must register by August 2028, with fees tied to recyclability performance.

Labeling Requirements

Packaging must feature clear labels indicating recyclability, composability, or reusability. Misleading environmental claims, such as unproven "biodegradable" labels, are strictly prohibited to prevent greenwashing.

E-commerce and Imports

Non-EU companies selling into the EU must appoint an EU-based representative for PPWR compliance. E-commerce platforms are required to verify that their sellers meet all EPR obligations.

Banned Packaging Types

Several types of single-use plastic packaging will be banned from EU markets starting 1 January 2030:

- Single-use plastic outer packaging is used to bundle goods at the point of sale
- Single-use plastic packaging for fresh, unprocessed fruits & vegetables under 1.5 kg (e.g., nets, bags, trays, containers)
- Single-use plastic packaging for food & beverages filled and consumed on-site (HORECA sector: Hotel, Restaurant, and Catering sector)
- Single-use portions of condiments, sauces, coffee creamers, sugar, spices (HORECA)
- Single-use plastic packaging for toiletries and cosmetics in hotels and similar accommodation
- Very lightweight plastic carrier bags with a wall thickness below 15 µm (except where hygiene or food safety justifies use)

Exceptions: Composite packaging (e.g., paper with ≤ 5% plastic) is not banned, but it may still hinder recyclability

The Regulation Timeline

he PPWR is Effective from 11 Feb 2025, with enforcement starting on 12 Aug 2026. Recyclable packaging must be implemented by 1 January 2030, with DfR compliance required. Large-scale recycling is mandated as of January 1, 2035. Recycled content targets are set for 2030 and 2040, such as 30% PET food-grade and 10% non-PET materials. Labels, including harmonized labels and QR codes, should be in place by August 12, 2028. The maximum void space is 50%, with targets for reuse and refill, as well as restrictions on substances like PFAS. In short, we can divide the regulation into 3 phases:

Phase 1: Immediate Implementation (2025- 2026)

- February 11, 2025: PPWR enters into force - The regulation is officially enacted, but most provisions do not yet apply
- August 12, 2026: Most provisions become applicable
- Companies must eliminate PFAS-containing materials from the packaging supply chain
- Reuse and refill obligations - Takeaway businesses must allow customers to bring their own containers
- Harmonized recycling symbols - Implementation of standardized recycling symbols for packaging

Key Actions: Initial compliance preparation, system development, supplier engagement

Phase 2: Core Requirements (2028-2030)

August 2028:

- EPR registration becomes mandatory
- Design for Recycling guidelines - The European Commission will publish secondary legislation, including:
- Guidelines on Design for Recycling (DfR)
- Criteria for assessing recyclability
- Modulation of producer responsibility fees

By 2030:

- 100% recyclable packaging - All packaging placed on the EU market must be recyclable
- Recycled content targets for plastic packaging - Mandatory minimum percentages:
  - Contact-sensitive PET packaging: minimum 30% recycled content
  - Other plastic packaging: 10-35% depending on polymer type and application
- Single-use plastic bans - Ban on single-use plastic packaging for fresh fruits and vegetables

Phase 3: Enhanced Standards (2035-2040)

2035: "Recycled at Scale" requirements implemented- Packaging waste reduction - 10% reduction target compared to baseline

2038: Grade C packaging prohibited.

2040:

- Enhanced recycled content targets - Contact-sensitive PET packaging must contain a minimum 50% recycled content
- All packaging must be reusable or recyclable - All packaging must meet reusability or recyclability requirements
- Packaging waste reduction - 15% reduction target compared to baseline
- Substantial increase in recycled content - Significantly higher recycled content requirements for plastic packaging across all categories.

Key Actions: Advanced compliance monitoring, continuous improvement systems

Ongoing Requirements Throughout Timeline

- Maximum Empty Space Restrictions- Maximum ratio of 50% empty space in packaging to reduce unnecessary packaging
- Complex Multi-layered Packaging- Reduction of complex multi-layered packaging that is difficult to recycle
- Producer Responsibility- Extended Producer Responsibility (EPR) schemes compliance across all 27 EU Member States
- Compliance and Penalties
- Continuous monitoring and reporting requirements

Note: It is essential to note that implementing the acts is crucial for a comprehensive understanding of the requirements outlined in the regulation. They haven't been fully published yet (as of July 2025) and will be published at different times (see Annex A).

What Data Points Do We Need to Collect?

The PPWR Impact on Supplier Data Collection and Introducing New Information requirements, such as: Detailed information on packaging material composition, data on recycled content percentages, information on recyclability and biodegradability, compliance certificates, and laboratory approvals.

Packaging Category and Type

The packaging category, as defined in Annex II of the regulation, must be specified. The packaging category, material, and type dictate specific requirements, such as recyclability. Therefore, this data must be collected and recorded in our system, for example:

Predominant packaging material	Packaging type
Glass	Glass and composite packaging, of which the majority is glass
Paper/cardboard	Paper/cardboard packaging/ Composite packaging
Metal	Steel and composite packaging/ Aluminum -rigid
Plastic	PET/ PP/ HPDE and PP/ PS and XPS/ EPS/ other – rigid PET/ PP/ other – flexible Biodegradable plastics- rigid and flexible
Wood, cork	Wooden packaging, including cork
Textile	Natural and synthetic textile fibers
Ceramics or porcelain stoneware	Clay, stone

*ImpactBuying Classification will include more details, such as food-contact packaging, cosmetics packaging.

Material Composition Data

The packaging components, divided into main body, colors, inlay, packaging aid, and decoration, will be collected, including their country of origin, weight, and specific parameters needed for the recyclability and recycled content calculations. Precise measurement of plastic components (with a threshold of >5%) is essential information.

For Example, a 250ml shampoo bottle:

Bottle: Length (depth): 39 mm, Width: 71 mm, Height: 204 mm, Cap: Diameter: 25mm, Height: 20 mm, Countries of

Distribution: NL

Material / Component	Weight (g)	Value (%)	CAS No.	Recycled content (%)	Flexible / Rigid Component	Irreversible Removal through Consumption / Usage	Removal for Disposal by Average Consumer	Adhesion to the Main Body	Is Physically Attached to the Main Body
HDPE- bottle	24.0	71.0 %	9002-88-4	50%	Rigid	-	-	-	-
PP - screw cap	9.0	26.6 %	9003-07-0	0%	Rigid	Yes	Yes	-	-
Paper Label-Decoration	0.8	2.4 %	9004-34-6	10%	Flex	No	No	Yes	No
Total packaging weight	33.8 g	100 %							

Substances of Concern

The PPWR addresses significant environmental and health concerns by targeting per- and polyfluoroalkyl substances (PFAS), heavy metals, and other substances of concern in packaging. A certification, declaration, accompanied by test results, would have to be provided by the suppliers.

PFAS, known as "forever chemicals" due to their persistence, are restricted under Article 5, with a ban on their use in food contact materials by January 1, 2030, unless proven essential and safe, aiming to reduce bioaccumulation risks.

Heavy metals, such as lead, cadmium, mercury, and hexavalent chromium, are similarly prohibited under the same article, with limits set at 100 mg/kg (as per Directive 94/62/EC), effective immediately, to prevent contamination of food and ecosystems.

Substances of concern, broadly defined as those with adverse environmental or health impacts, are subject to a phase-out by 2035. The EC is tasked with identifying and restricting specific compounds by December 2026, ensuring a precautionary approach.

Biobased Feedstock in Plastic Packaging

Although Article 8 does not yet impose direct obligations, it signals that binding requirements are likely to be in place by 2028, following a Commission review. We will ask suppliers to state whether the packaging is Bio-based and the percentage of bio-based content it contains.

Compostable Packaging

By 12 February 2028, packaging from the following shall be compatible with the standard for composting in industrially controlled conditions in bio-waste treatment facilities

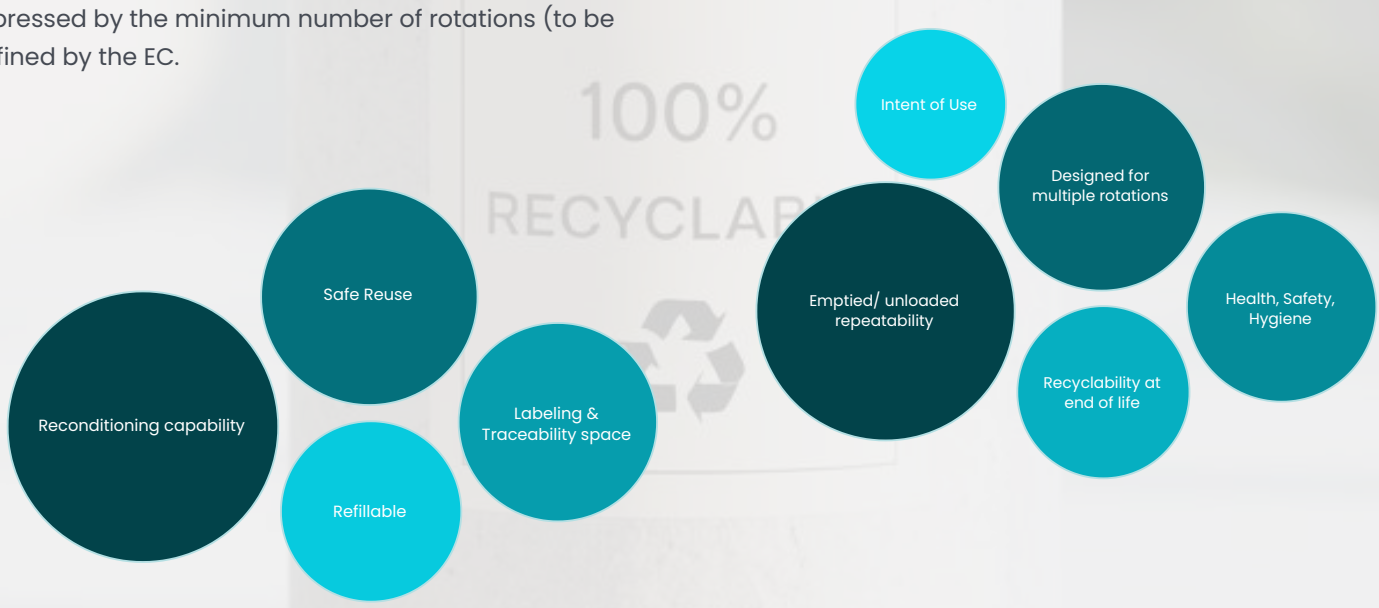
- Fruit and vegetable stickers
- Tea bags and coffee pods/pads (Article 3(1)(f))
- Very lightweight plastic bags and similar compostable packaging (Article 3(1)(g))
- Suppliers will need to indicate whether the package is compostable (Yes/No) and provide the supporting documentation.

Reusable Packaging

To ensure compliance with Article 11, we need to collect specific technical, safety, and functional data from your packaging producers or suppliers. This is especially important if you are claiming that packaging is reusable under the regulation that takes effect on 11 February 2025.

The regulation mentions mentions 9 criteria that the package has to meet in order to claim it reusable:

We accept the supplier's specification regarding the reusability of the package and request that they upload the supporting documentation. Reusability can be expressed by the minimum number of rotations (to be defined by the EC.



Packaging Labeling

Labelling requirements are specified for compostable packaging, deposit and return systems, reusable packaging, recycled content percentage, and substances of concern information.

Data Collection Challenges

1. Multi-material Packaging: Complex composition analysis requirements
2. Supply Chain Fragmentation
3. Multiple Tiers: Data collection across extended supplier networks
4. Global Sourcing: Coordination across different regulatory environments
5. Language and Standards: Harmonization of data collection protocols
6. More datapoints regarding Solley for the packaging, much more than before
7. Integration of AI/ML with knowledgeable analysts

The Level of Detail Required from Retailers

- [ ] Chemical Level: Precise composition of polymers and additives
- [ ] Functional Level: Laboratory recyclability tests
- [ ] Regulatory Level: Compliance certificates and regulatory body approvals
- [ ] Logistical Level: Tracking collection and transport routes

Required Documentation:

- [ ] Test certificates from accredited laboratories
- [ ] Supplier declarations on recycled content
- [ ] Supply chain audit documents
- [ ] Quarterly recycling performance reports

Data Handling and Calculations

Calculating Packaging Recyclability

To calculate the recyclability of a package, we need the minimum data points as described earlier. Components and the characteristics of the packaging are necessary for the calculation as described in the PPWR regulation, Annex II, Table 3.

Each packaging type is evaluated against several criteria, including:

- Material recyclability: Is the material widely accepted in recycling streams?
- Collection & sorting compatibility: Can it be readily separated using existing sorting systems?
- Reprocessing performance: Does the recycled material meet quality and safety standards?

Packaging scoring below 40 points would fall outside the regulated grades and be considered not effectively recyclable under PPWR standards.

It is important to note that Grade A packaging is fully compliant with DfR (Design for Recyclability) requirements and meets ambitions for 2030 recyclability targets. Grade B may require design adjustments or improved collection to achieve future compliance. Grade C packaging must undergo substantial redesign in material or structure to align with future regulatory requirements, or risk being phased out.

Recyclability Targets

All packaging must be recyclable by January 1, 2030, adhering to design-for-recyclability (DFR) criteria to be specified by the European Commission. By 2035, packaging must be recycled at an industrial scale, supported by enhanced collection and sorting infrastructure. Practically, it means that all packaging must score 70% or higher to be considered recyclable.

We recommend that each client set a strategic plan to shift their portfolio toward A/B-grade formats before the 2030–2038 deadlines.

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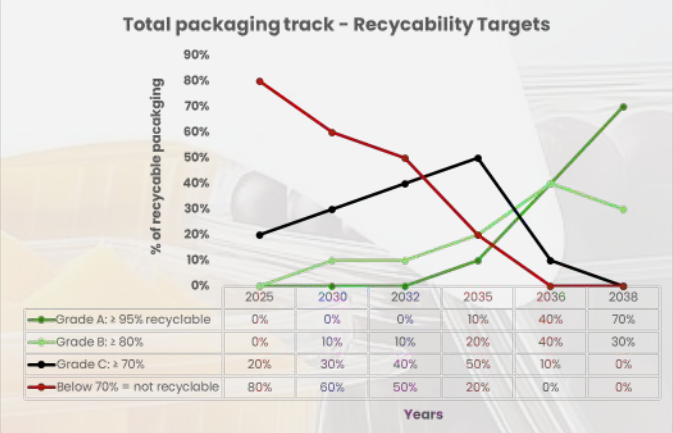


	2025	2030	2032	2035	2036	2038
Grade A: ≥ 95% recyclable	0%	0%	0%	10%	40%	70%
Grade B: ≥ 80%	0%	10%	10%	20%	40%	30%
Grade C: ≥ 70%	20%	30%	40%	50%	10%	0%
Below 70% = not recyclable	80%	60%	50%	20%	0%	0%

By 1 January 2030, all packaging must achieve at least Grade C.

By 1 January 2035, Packaging must meet design for recycling criteria A-C.

By 1 January 2038, only packaging achieving at least Grade B will be permitted.

Note: These grades influence the retailer's fee calculation: higher recyclability (A) results in lower fees, while grades C (≥70%) and below incur higher fees, and sub-70% non-compliance fees apply

Calculating Recycled Content

"Recycled content" means the percentage by mass of post-consumer recycled (PCR) material in a product or packaging, relative to its total mass.

$$\text{Recycled content (\%)} = \left(\frac{\text{Mass of PCR material}}{\text{Total packaging mass}}\right) \times 100$$

Looking at the same example , 250 ml shampoo bottle:

Material / Component	Weight (g)	Value (%)	CAS No.	Recycled content (%)
HDPE- bottle	24.0	71.0 %	9002-88-4	50%
PP - screw cap	9.0	26.6 %	9003-07-0	0%
Paper Label- Decoration	0.8	2.4 %	9004-34-6	10%
Total packaging weight	33.8 g	100 %		

$\frac{50\% * 24 + 10\% * 0.8}{33.8}$ = **35.7%**

Recycled Content Targets

The recycled content provisions are detailed in Article 7. A material-level basis must be calculated separately for each material in the packaging, taking into account the recycled content of each material. Every plastic component of each SKU must be individually assessed and meet the threshold of its respective category.

Any plastic part of packaging placed on the market shall contain the following minimum percentage of recycled content recovered from post-consumer plastic waste per packaging type and format as referred to in Table 1 of Annex II in the regulation:

30%
By 2030, Contact-sensitive packaging, PET

50%
By 2040, Contact-sensitive packaging, PET

10%
By 2030, Contact-sensitive packaging, non-PET

50%
By 2040, Contact-sensitive packaging, non-PET

30%
By 2030 Single-use plastic beverage bottles

65%
By 2040, Single-use plastic beverage bottles

30%
By 2030, Other plastic packaging

65%
By 2040, Other plastic packaging

Note: By 31 December 2026, the Commission shall adopt implementing acts establishing the methodology for calculating and verifying the percentage of recycled content recovered from post-consumer plastic waste collected within the Union. (The numbers stated in the diagram is the minimum percentage to achieve).

Data Verification

The Verification Process

ImpactBuying verifies and validates data evidence, utilizing automated checks for details like supplier ID, location, and certification. The standardized PPWR data format simplifies rapid assessment.

Our data assurance is provided through a structured process:

01	02	03
Data completeness checks identify missing information.	Active supplier engagement assists in providing necessary data.	Sustainability analysts perform substantive data and evidence review.

Our data services are covered by our ISAE 3000 certification, assuring non-financial information such as sustainability and governance.

Quality Assurance

Our structured quality control minimizes inaccuracies and strengthens reporting reliability, giving auditors and stakeholders confidence in verified and traceable sustainability claims.

Key quality control measures include:

- Statistical Sampling: Risk-based verification intensity.
- Continuous Monitoring: Ongoing assessment and re-verification.
- “Four-eye” principle: Dual-person checks.
- Corrective Action Procedures: Standardized responses to non-compliance.
- Regular analyst alignment meetings.

Why Choose ImpactBuying?

Market Demand Drivers

Regulatory compliance is crucial as the mandatory nature of PPWR creates a captive market demand. The complexity of requirements necessitates **specialized expertise**, and penalties for noncompliance drive investment in verification systems. Furthermore, the harmonization of regulations across the EU creates a scalable market opportunity.

Corporate sustainability has become increasingly important due to the growing **corporate commitments** to circular economy principles, investor pressure for **transparent** sustainability reporting, brand protection through verified compliance claims, and supply chain risk management requirements.

Our Roadmap

After extensive research and consultations, we have identified the data points and information that must be collected in the short term and long term, as the regulation evolves over multiple years.

In the short term, we will update our tools to address regulatory requirements (2025-2027)to enable our clients to assess the current degree of compliance with the regulation and prepare accordingly.

Competitive Advantages

ImpactBuying's solution is based on our Required Evidence Technology. This technology enables the client to translate their strategy, goals, and legal requirements into rules, thereby providing evidence that needs to be provided at both the supplier and product levels.

We offer:

- Existing infrastructure and established ESG data collection capabilities
- Existing supplier relationships that reduce onboarding friction
- Proven verification methodologies adaptable for PPWR
- Integration capabilities with retailer systems
- Deep understanding of supply chain data challenges
- Benchmarking and performance comparison tools
- Training and education program development

Data that needs to be collected to meet the requirements for recycled packaging and the percentage of recycled material in packaging will also be available in our software as early as January 2026.

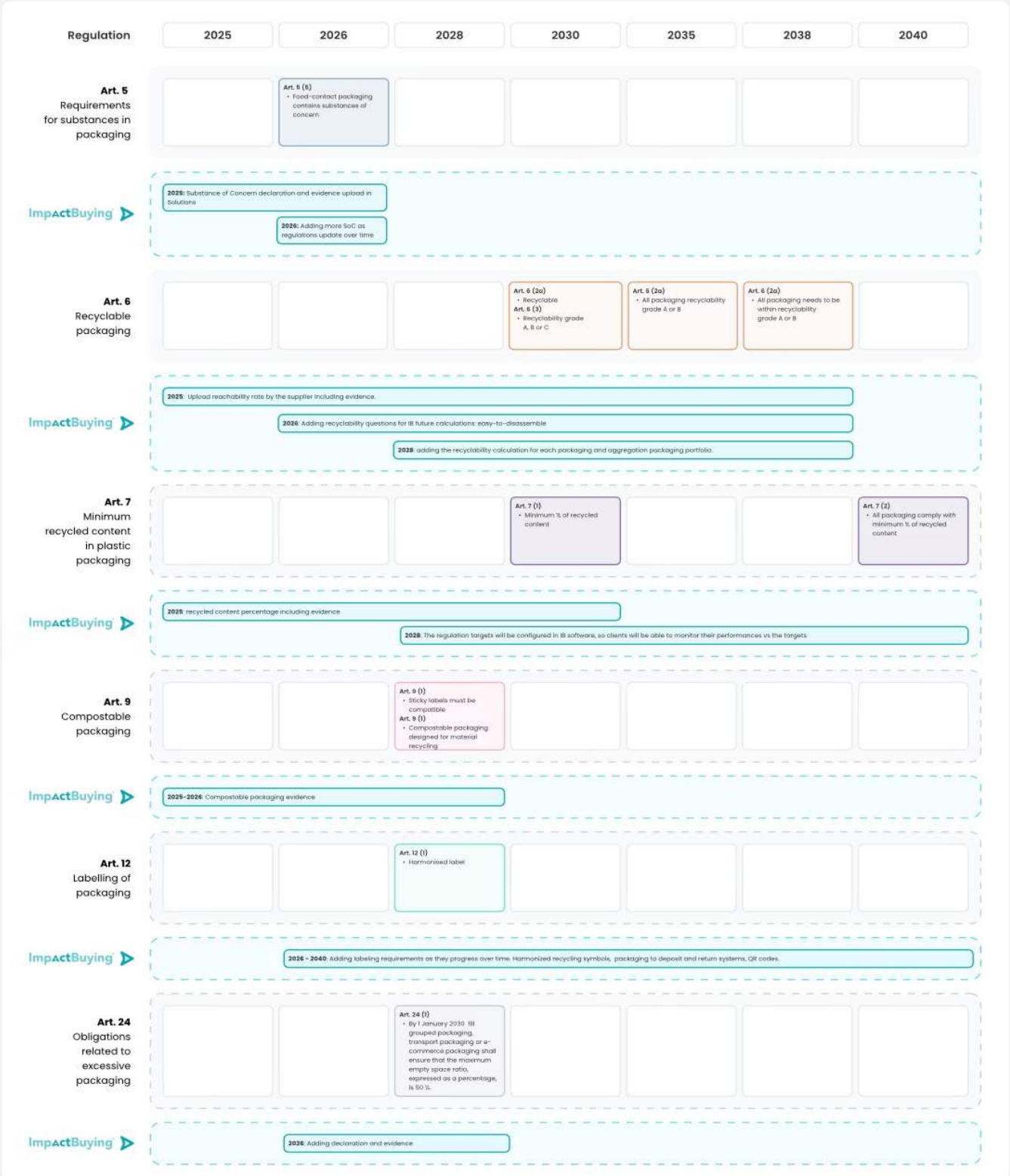
In 2030, there the regulation requires for packaging to be recyclable and classified according to A, B C. In order for our customers to know what their baseline is, and work with their suppliers to improve their packaging recyclability, this feature will be ready by 2028 (two years before the regulatory requirement on the subject).

The same applies to the percentage of recycled component materials: as early as 2026, we will start collecting relevant data and add the next step of calculations in 2028. This is as we are taking into consideration that there is no clear and concise calculation methodology published at the moment (see Annex A for expected publishing dates).

The regulation has set targets in 2030 for two key figures: total recycled packaging and total recycled material. ImpactBuying will provide also dashboarding on an aggregated level to keep track on an ongoing basis of these targets.

All in all ImpactBuying is committed to implement over time the full requirements of the PPWR and support our customers on that journey.

ImpactBuying Roadmap



Sources

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- Verpact- **https://www.verpact.nl/nl/recyclebaarheid-design-recycling**
- Ø GS1- PPWR and GS1 Standards - **https://gs1.eu/wp-content/uploads/2025/07/GS1-in-Europe-White-Paper-Packaging-and-Packaging-Waste-Regulation-and-GS1-Standards.pdf**
- Ø Stakeholders: Pre-Zero experts, Strategic Clients

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