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WHITEPAPER

PPWR FORCES GLOBAL BRANDS TO ADOPT DIGITAL PACKAGING INTELLIGENCE

Europe's new packaging rule book rewrites how products are designed, shipped, and sold—turning compliance into a live test of supply-chain agility and digital discipline. And the safe way into the future? Partner with a technology provider to navigate the change

TL;DR

Treat packaging as a strategic lever, not a compliance afterthought, by connecting design, sourcing, and ESG goals through integrated data and performance tracking.

Invest in digital product and packaging management tools—whether a PLM, a regulatory intelligence platform, or an existing sustainability system—to simulate PPWR scenarios, implement GS1 standards, calculate EPR costs, plan redesigns, and avoid stranded assets.

Build ecosystem partnerships across suppliers, retailers, recyclers, and technology providers to scale reuse, recycling, and post-consumer recycled content while maintaining profitability.

The European Union's new Packaging and Packaging Waste Regulation (PPWR) is not a marginal update to existing rules; it is a structural reset of how packaging is conceived, produced, and recovered across the value chain. The regulation's core aim is to reduce packaging waste, boost recyclability, and accelerate the shift to a circular economy while maintaining the coherence of the single market. At the same time, it lands in a region already struggling with rising packaging volumes: In 2023, EU residents generated 79.7 million tons of packaging waste. This corresponded to 177.8 kg per inhabitant.

For companies selling into Europe—from FMCG and beverage brands to industrial manufacturers—the message is clear. Packaging is no longer just a downstream operational detail; it is a strategic factor that directly impacts regulatory compliance, production costs, and market access.

The road to sustainable packaging

PPWR's architecture rests on three linked levers: waste prevention, recyclability, and reuse. Together, they are designed to bend the EU's packaging waste curve downward after a decade of steady growth. The regulation requires countries to reduce per-capita packaging waste from 2018 levels: 5 percent by 2030, 10 percent by 2035, and 15 percent by 2040, forcing companies to redesign their portfolios rather than simply improve end-of-life treatment.

This waste-prevention plan addresses daily design choices. All sales, transportation, and e-commerce packaging must be "optimized," explicitly targeting misleading formats such as false bottoms and decorative double walls. Empty space in e-commerce and transport packaging cannot exceed 50 percent, and several single-use formats, especially in hospitality and food service, face outright bans.

To guarantee that reduction results in actual circularity, PPWR makes recyclability mandatory. By 2030, all packaging sold in the EU must be designed for recyclability; by 2035, it must be recycled at scale, meaning collection and processing infrastructure can reliably handle it across member states. Packaging will be rated A to C based on recyclability performance, with Category C banned from 2030 and only Category B or higher permitted by 2038.

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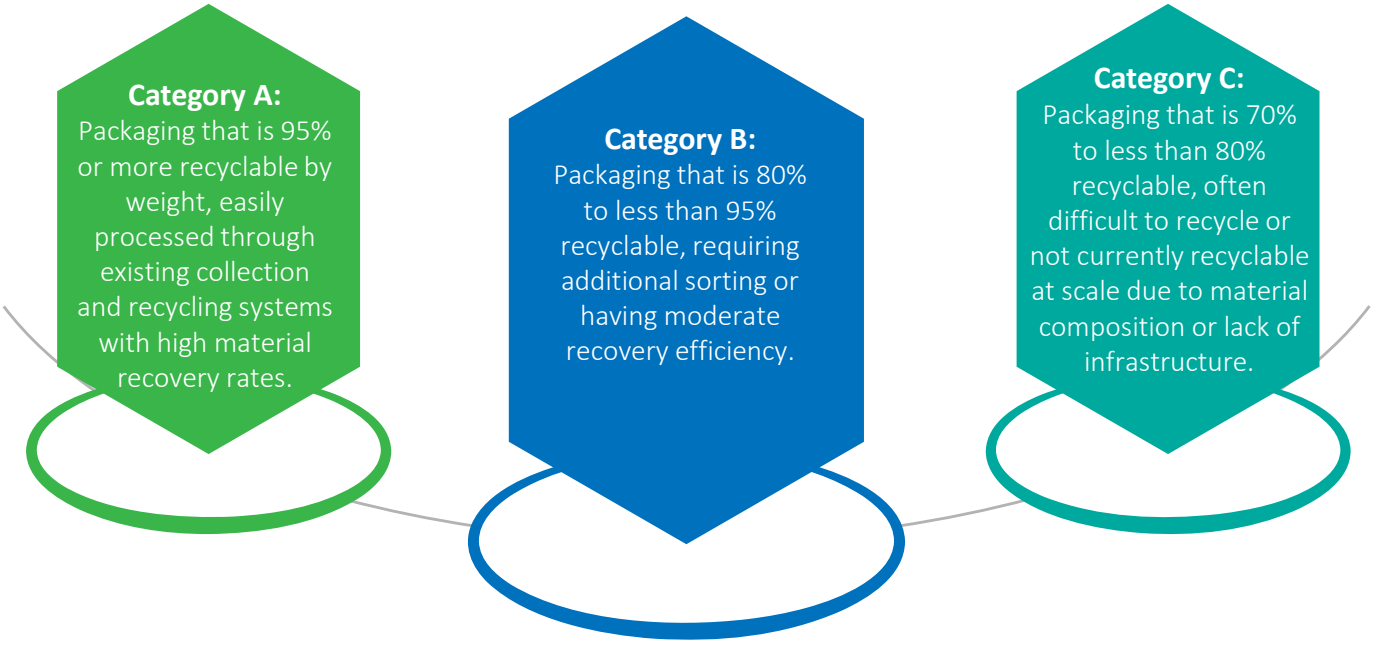


This grading system will affect innovation pipelines, material selections, and ultimately shelf presence.

From linear to loop: Reuse and Refill

If recyclability keeps materials in circulation, PPWR's reuse and refill provisions aim to slow the flow at its source. The regulation sets ambitious reuse targets across multiple categories, requiring brands and logistics providers to design packaging that can endure multiple life cycles while maintaining safety, functionality, and brand integrity.

By 2030, 40 percent of transport packaging should be reusable, increasing to a non-binding 70 percent goal by 2040. For B2B transportation between countries, the standard is higher: 100 percent of packaging for single transport transactions must be reusable by 2030, effectively redefining how pallets, crates, and containers are specified and managed. Group packaging that is not made of cardboard must achieve a 10 percent reusable share by 2030, with an aspirational 25 percent by 2040, while beverage packaging (excluding wine and milk) must reach 10 percent by 2030 and aim for 40 percent by 2040.

Retailers are at the forefront of this reuse movement. PPWR requires them to accept returns from reuse channels and to offer refill options, transforming stores into centers for reverse logistics. This will challenge the operational resilience of omnichannel networks, which were mainly designed for one-way flows of goods.

Raising the stakes on recycled content

The regulation also aims to reshape markets for secondary materials by requiring post-consumer recycled (PCR) content in plastic packaging. For contact-sensitive PET, such as food and medical packaging, the minimum PCR share must reach 30 percent by 2030 and 50 percent by 2040. Non-PET contact-sensitive plastics must include 10 percent PCR by 2030 and 25 percent by 2040, while single-use plastic beverage bottles must reach 30 percent by 2030 and 65 percent by 2040. All other plastic packaging must contain 35 percent PCR by 2030 and 65 percent by 2040, creating ongoing demand for high-quality recycled resins.

These thresholds impact a market where plastic packaging waste has already increased significantly. Achieving PCR targets on a large scale will require expanded collection, improved sorting, investments in advanced recycling technologies, and strong quality management systems to ensure safety in food-contact applications.

PPWR anticipates these challenges and signals potential support mechanisms. Extended Producer Responsibility (EPR) fees are expected to be adjusted based on recyclability and PCR content, making less sustainable packaging less financially attractive. The European Commission plans a formal review in early 2028 to evaluate feasibility and, if needed, modify the course, but the overall direction remains clear.

Compostable packaging: Narrower, but stricter

Unlike previous waves of eco-innovation that treated compostable materials as a broad alternative to plastics, PPWR narrows their role. Compostable packaging will be reserved for formats that are highly likely to be discarded with food waste and can be handled efficiently in industrial composting streams. By February 12, 2028, sticky labels on fruit and vegetables, as well as tea and coffee bags, will need to be compostable under industrial conditions.

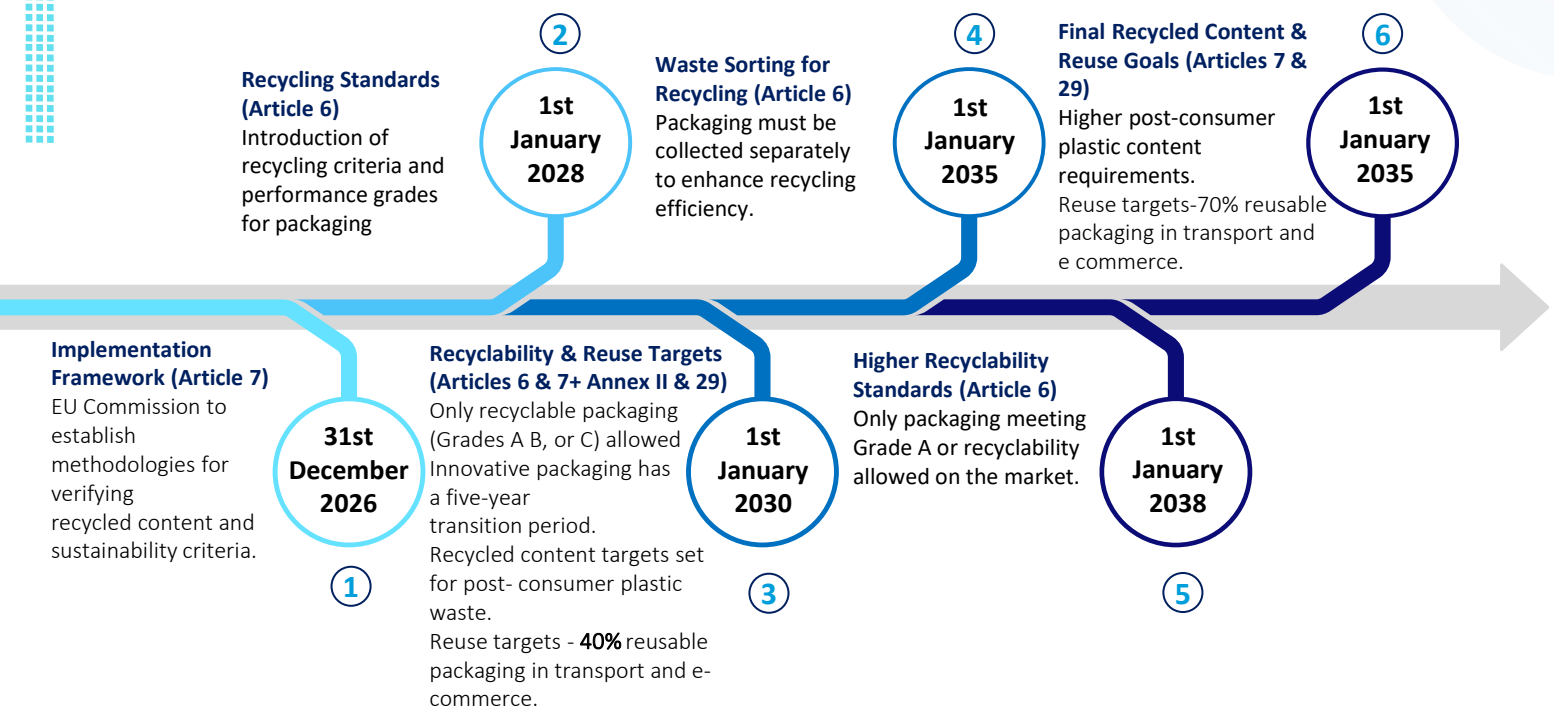
Member states may go further by requiring compostability for non-metal coffee pods and certain very lightweight plastic bags, but the regulation is explicit that compostability is not a free pass for all packaging types. The Commission will also update the criteria and labeling requirements for both industrial and home composting, with a timeline expected by 2026, creating a more consistent framework across markets.

Ineffective DevSecOps Implementation

Cloud promises agility through automation, with DevSecOps embedding security into CI/CD for faster, safer releases. However, many enterprises struggle to realize the benefits due to complex organizational structures and incomplete implementations.

Security checks are often implemented late, resulting in delays, rework, and missed vulnerabilities caused by inadequate tooling or misconfigured pipelines. This drives up remediation costs. Result: Enterprises pay for DevSecOps tools without realizing the financial or security benefits, undermining the efficiency goals of cloud adoption.:

PPWR Roadmap: The Key Sustainability Milestones



A brewery's journey: From regulatory risk to PLM-led compliance

An EU-based global brewery exemplifies what a PPWR-aligned transformation looks like in practice. Confronted with a complex array of evolving rules—covering EPR, plastic and packaging waste directives, carbon border adjustment mechanisms, and emerging CSRD disclosures—the company struggled with siloed processes across 20+ countries, fragmented data, and increasing demands from retailers and B2B customers, for detailed ESG information at the product level.

To resolve this deadlock, the brewer partnered with ITC Infotech to incorporate sustainability compliance into its Product Lifecycle Management (PLM) and procurement processes.

The solution developed by ITC Infotech integrated PLM and a sustainability platform that automated data exchange across various regulations, supported lifecycle assessments and product carbon footprint calculations, and offered role-based dashboards for suppliers to upload and monitor ESG data. The system also integrated eco-design tools to promote circular design choices and automated the collection of product specifications and sustainability attributes for tenders and should-cost models.

Why business leaders are uneasy?

Despite PPWR's environmental intent, industry reaction has been mixed. Executives recognize the need for change but worry about uneven implementation and unintended consequences. A first concern is regulatory inconsistency across member states: some markets may move faster or adopt stricter interpretations, complicating cross-border packaging flows and increasing the cost of standardization.

The second concern is the technical feasibility of food-contact packaging. Incorporating recycled content into sensitive applications requires effective decontamination, strict testing, and close collaboration with regulators; food brands worry about supply shortages and uncertainty regarding approvals.

The third concern is about strict recycled content mandates on plastics. The mandates exempt paper and cardboard. This could speed up the shift from plastic to paper, which might lead to increased deforestation and water use.

Finally, many companies anticipate significant supply chain adjustments. New reuse systems, reverse logistics, upgraded sorting and recycling capacity, and redesigned packaging lines will all require capital. Those investments come at a time when inflation, energy costs, and consumer price sensitivity are already challenging margins.

What leading companies should do now?

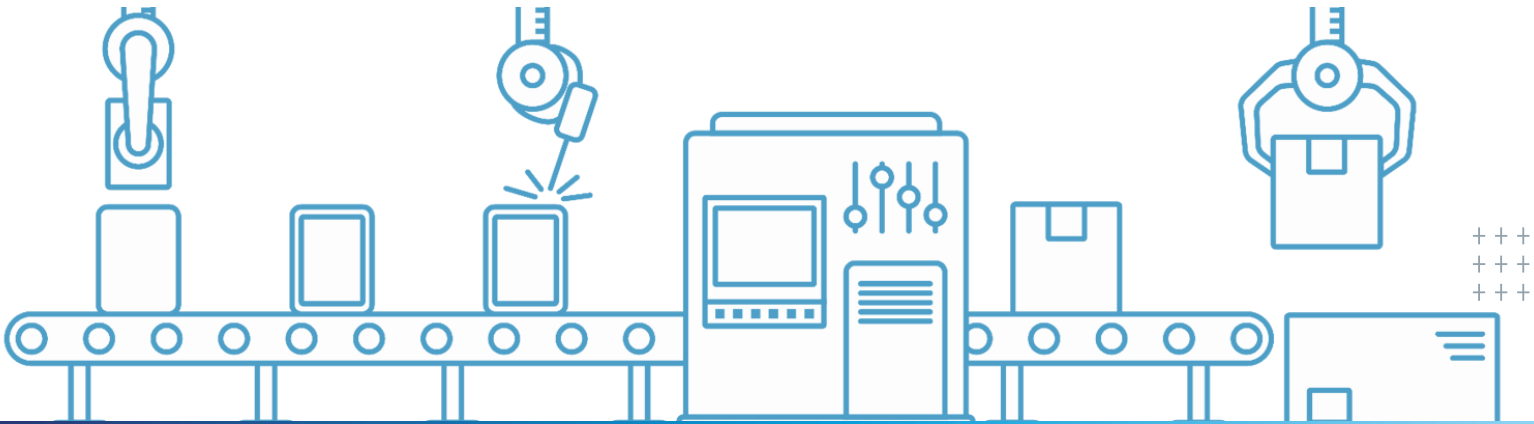
In this environment, waiting for perfect regulatory clarity is a high-risk strategy. The companies that gain from PPWR will treat it as a catalyst for modernizing data, processes, and collaboration, rather than just a compliance burden. Three moves stand out:

First, organizations need to build a digital backbone for packaging intelligence. That means integrating product, material, and regulatory data (often scattered across R&D, procurement, manufacturing, and sustainability teams) into advanced analytics platforms that can model compliance scenarios and costs.

Second, ESG reporting capabilities must evolve from periodic document production to real-time performance management. Companies will require systems that can track packaging materials, recycling rates, and lifecycle emissions at the SKU level, with strong capabilities to verify PCR content and demonstrate due diligence across suppliers.

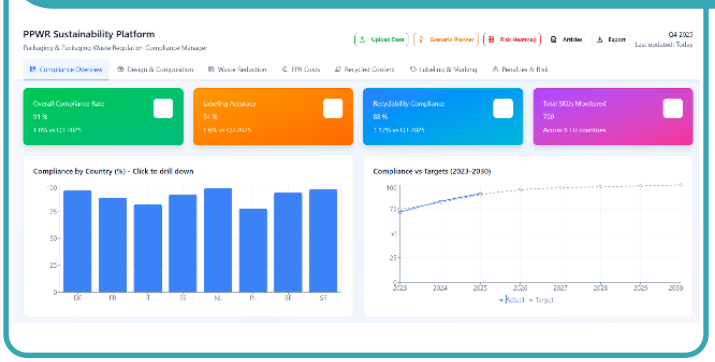
Third, traceability solutions will be critical for proving compliance, especially for recycled content verification.

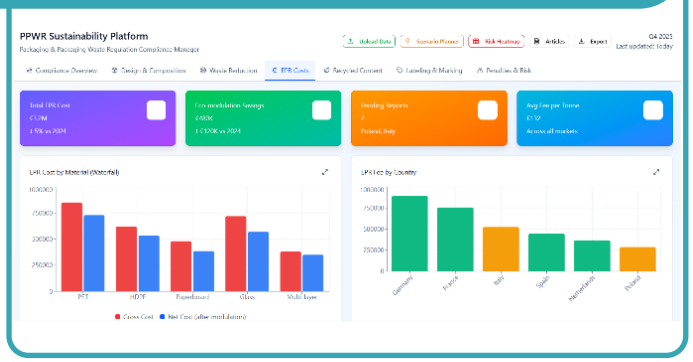
No single company can build the required reuse loops, collection networks, and advanced recycling capacity on its own. Partnerships with technology providers, recyclers, logistics firms, and retailers—like the brewery's collaboration around PLM-integrated sustainability—will be central to making new models economically viable.

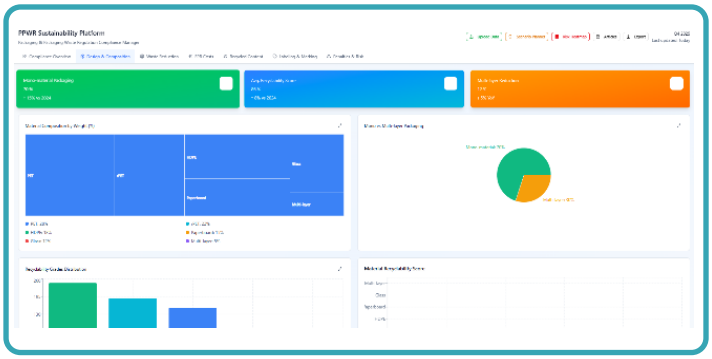


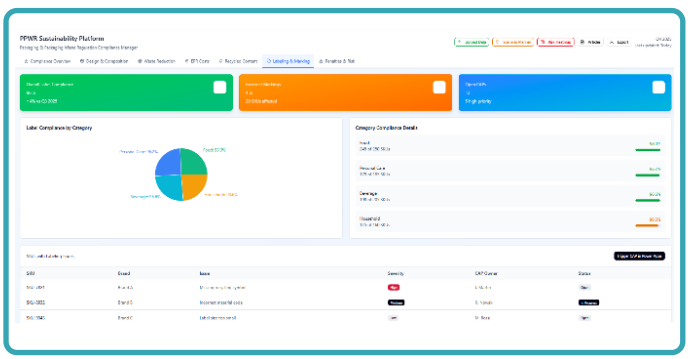
How technology partners like ITC Infotech can accelerate the transition?

Select snapshots from ITC Infotech's PPWR Sustainability Platform









Specialist technology partners like ITC Infotech can become critical allies in navigating PPWR's complexity. Our experience in sustainability compliance and packaging regulations can help companies move beyond ad hoc fixes toward integrated, data-driven operating models.

ITC Infotech's key capabilities include:

01

Regulatory intelligence platforms that use AI to track and interpret evolving rules

02

Smart packaging lifecycle management (PLM) tools to optimize packaging materials

03

Automated ESG dashboards that highlight non-compliance risks in near real time.

04

Advanced analytics for circular economy use cases that identify where reuse, lightweighting, or material switches can provide both environmental benefits and cost savings

05

EPR fee-optimization engines that drive design choices to reduce regulatory costs

For leaders, the strategic question is no longer whether PPWR will reshape their business, but how quickly they can convert mandatory change into competitive differentiation. Early movers that digitize their packaging value chain, invest in robust data, and build the right partnerships will not only stay ahead of regulators, they will also be better positioned to meet rising customer expectations for credible, transparent sustainability.

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About ITC Infotech

ITC Infotech is a leading global technology services and solutions provider, led by Business and Technology Consulting. ITC Infotech provides business-friendly solutions to help clients succeed and be future-ready, by seamlessly bringing together digital expertise, strong industry specific alliances and the unique ability to leverage deep domain expertise from ITC Group businesses. The company provides technology solutions and services to enterprises across industries such as Banking & Financial Services, Healthcare, Manufacturing, Consumer Goods, Travel and Hospitality, through a combination of traditional and newer business models, as a long-term sustainable partner.

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