

Sustainable food packaging to 2045: Regulation and recyclability set to reshape packaging design

A new **global study from Smithers and UPM Specialty Materials** suggests that the future of food packaging will be defined less by material substitution and more by **regulatory compliance, recyclability, and packaging simplification**.

Based on input from more than **230 packaging professionals worldwide**, the report highlights several trends that will be highly relevant to the full value chain including the pressure-sensitive tape and adhesive industry.

Sustainability moves from choice to requirement

According to the report, 71% of respondents believe sustainable packaging will become a strict government mandate by 2045. Extended Producer Responsibility (EPR) schemes, eco-modulated fees, and packaging regulations such as the EU Packaging and Packaging Waste Regulation (PPWR) are expected to increasingly influence material selection and packaging design.

For the adhesives sector, this signals **growing scrutiny of labels, coatings, adhesives, and other packaging components that affect recyclability**. The report notes that future EPR frameworks are likely to assess packaging systems holistically rather than focusing solely on primary materials.



Packaging structures become simpler

One of the report's strongest conclusions is that **packaging formats will simplify significantly** over the next two decades. Brands are expected to move away from complex multi-material laminates toward recyclable **mono-material structures and fibre-based solutions** designed for existing recovery systems.

Industry experts interviewed for the study emphasised that adhesives, inks, labels, and coatings will increasingly be evaluated on their impact on recyclability. Companies that design packaging with end-of-life performance in mind are expected to be better positioned in an EPR-driven market.

Fibre-based packaging gains momentum

Survey respondents forecast **fibre-based packaging increasing its share** of the food packaging market from 37% in 2025 to **42% by 2045**, while polymer-based packaging declines from 53% to 33%. However, the report does not forecast the disappearance of plastics. Instead, **plastics are expected to evolve toward mono-material PET and polyolefin formats** that fit established recycling systems.

Barrier technologies will play a critical role in this transition. The report identifies advances in recyclable barrier coatings as a major enabler for fibre-based packaging to enter more demanding food applications. At the same time, coating technologies must remain compatible with recycling streams to avoid creating new recycling challenges.

Recycling infrastructure remains the critical constraint

While respondents expect global recycling rates for packaging to improve, **infrastructure remains the industry's largest challenge**. The study projects that 37% of food packaging will be recycled by 2045, up from 31% in 2030, yet approximately 30% of packaging is still expected to be landfilled or incinerated.

Experts repeatedly highlighted collection systems, sorting technologies, and consumer participation as the key bottlenecks. The report stresses that even the most recyclable packaging cannot deliver sustainability benefits if recovery infrastructure is inadequate.



What it means for the adhesives, labels and tapes

Several themes stand out:

- Adhesives and labels will increasingly be evaluated based on their impact on recyclability and EPR costs.
- Packaging simplification is expected to accelerate demand for adhesive solutions compatible with fibre-based and mono-material packaging.

- Barrier coatings and functional surface technologies are emerging as key innovation areas for sustainable food packaging.
- Regulatory developments will require closer collaboration across the packaging value chain to ensure packaging components support circularity goals.

Future outlook

The report concludes that the future of sustainable packaging will not be determined by the elimination of a single material category. Instead, success will depend on designing packaging systems that work within real-world collection, sorting, and recycling infrastructure while meeting increasingly stringent regulatory requirements. For adhesives suppliers and converters, **recyclability compatibility** is becoming a strategic design criterion rather than an afterthought.

Source: "[Sustainable Food Packaging to 2045](#)," Smithers and UPM Specialty Materials, June 2026.